

1964

Surface Water Records of Colorado



UNITED STATES DEPARTMENT OF THE INTERIOR-GEOLOGICAL SURVEY

Prepared in cooperation with the State of Colorado
and with other agencies

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

SURFACE WATER RECORDS
OF COLORADO

1964

Prepared in cooperation with

Colorado Water Conservation Board
Office of the State Engineer
Southeastern Colorado Water Conservancy District
Arkansas River Compact Administration
Colorado Agricultural Experiment Station
Colorado River Water Conservation District
City and County of Denver, Board of Water Commissioners
City of Colorado Springs, Department of Public Utilities
City of Westminster, City Manager
Bureau of Reclamation, U.S. Department of the Interior
Corps of Engineers, U.S. Department of the Army
Soil Conservation Service, U.S. Department of Agriculture

Copies of this report may be obtained from
District Engineer, Surface Water Branch
U. S. Geological Survey
1455 Ammons Street Room 22
Denver, Colorado 80215

CALENDAR FOR WATER YEAR 1964

OCTOBER 1963

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SURFACE WATER RECORDS OF COLORADO, 1964

INTRODUCTION

The surface-water records for the 1964 water year for gaging stations, partial-record stations, and miscellaneous sites within the State of Colorado 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 J. W. Odell, district engineer, Surface Water Branch.

Through September 30, 1960, the records of discharge and stage of streams and contents and stage of lakes and 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 Colorado were contained in Parts 6B, 7, 8, and 9 of that series.

Beginning with the 1961 water year, streamflow records and related data have been released by the Geological Survey in annual reports on a State-boundary basis. Distribution of these basic-data reports is limited and primarily for local needs. Records will be published in Geological Survey water-supply papers at 5-year intervals.

COOPERATION

Cooperative agreements between the U.S. Geological Survey and organizations of the State of Colorado for the systematic collection of streamflow records began in 1895. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreements with the Survey are:

Colorado Water Conservation Board, F. L. Sparks, director.
 Office of the State Engineer, J. E. Whitten.
 Southeastern Colorado Water Conservancy District,
 C. H. Boustead, executive secretary.
 Arkansas River Compact Administration, F. M. Bell, chairman.
 Colorado Agricultural Experiment Station, S. G. Wheeler,
 director.
 Colorado River Water Conservation District, P. P. Smith,
 secretary-engineer.
 City and County of Denver, Board of Water Commissioners,
 W. F. Nicholson, president.
 City of Colorado Springs, Department of Public Utilities,
 R. D. Nixon, director.
 City of Westminster, R. A. Hellbusch, Acting City Manager.

Financial assistance was also provided by Corps of Engineers, U.S. Department of the Army; Bureau of Reclamation, U.S. Department of the Interior; and Soil Conservation Service, U.S. Department of Agriculture.

The New Mexico district of the U.S. Geological Survey furnished records for six gaging stations published in this report.

DEFINITION OF TERMS AND ABBREVIATIONS

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 gage 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.

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 runoff 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.

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 indentation in the listing of

gaging stations in the table of contents of this report represents one rank. This downstream order and system of indentation 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 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 stations, such as 6-7520.00, includes the part number "6" 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 6-7520.00 appears as 6-7520, 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 chart of fluctuations (for digital recorders, a tape punched at 15-, 30-, or 60-minute intervals) or from direct readings on a nonrecording 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.

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, 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 discharge if there is little or no regulation; the minimum daily discharge if there is extensive regulation (also the minimum discharge if useful); and the minimum gage height if it is significant. 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 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 or ditches.

The daily table gives the discharge corresponding to the daily mean gage height unless there are large or rapid changes in discharge during the 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. For digital recorders, the daily mean discharge is always the average of the discharges at each punched reading. For stations equipped with nonrecording gages, the daily discharge corresponds to once-daily readings of the gage or to the mean of twice-daily readings; but for periods of rapidly changing stage the discharge is determined from a gage-height graph based on gage readings.

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. Discharge for the month is expressed in acre-feet (line headed "Ac-ft").

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. 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. The methods used in computing data for such footnoted periods have been explained in preceding paragraphs.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station, a monthly summary table of stage and contents. For some reservoirs a table showing daily contents or stage is given. A skeleton table of capacity at given stages is published each year for all reservoirs for which records are published on a daily basis, but it is not published for reservoirs for which only monthly data are given.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

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 a few such stations, monthly and annual figures are adjusted for diversions or storage above station. 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 this report. Data for partial-record stations are presented in a table of discharge measurements at low-flow partial-record stations. Discharge measurements at miscellaneous sites are given in a second table.

Information of a more detailed nature than the published for most of the gaging stations is on file in the district office, such as discharge measurements and recorder charts or nonrecording-gage readings. Some gaging-station records in the State through 1957 have been analyzed with an 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. At some gaging stations water samples are collected from the streams for the purpose of making chemical analyses; computing dissolved solids, suspended sediment loads, and particle-size distribution; or measuring water temperatures. For most of these samples the results are published in an annual series of U.S.

Geological Survey water-supply papers entitled "Quality of Surface Waters of the United States." Information on the availability of electronic computer analyses, unpublished data, or quality of water records may generally be obtained from the district office.

10 RECORDS OF DISCHARGE COLLECTED BY AGENCIES OTHER THAN THE
GEOLOGICAL SURVEY

The table below contains a list of gaging stations at which records of discharge were collected during the water year October 1963 to September 1964 by the Colorado Springs Water Department. The records of these stations are not contained in publications of the Geological Survey.

Stream	Location	Period
Bear Creek.....	Near Colorado Springs, Colo.....	1918-64*
Boehmer Creek.....	Near Pikes Peak, Colo.....	1909-64*
Cabin Creek.....	Near Halfway, Colo.....	1906-64*
Crystal Creek.....	Below reservoir near Green Mountain Falls, Colo.	1935-64
Do.....	Near Green Mountain Falls, Colo.	1935-64
French Creek.....	Near Cascade, Colo.....	1935-64
Lion Creek.....	Near Halfway, Colo.....	1908-64*†
Little Beaver Creek..	Near Pikes Peak, Colo.....	1909-64*†
North Cascade Creek..	At Cascade, Colo.....	1935-64
North Catamount Creek	Near Green Mountain Falls, Colo.	1935-64†
Sackett Creek.....	Near Pikes Peak, Colo.....	1909-64*†
Sheep Creek.....	Near Halfway, Colo.....	1908-64*†
South Cascade Creek..	At Cascade, Colo.....	1935-64†
South Catamount Creek	Below reservoir near Green Mountain Falls, Colo.	1935-64
Do.....	Near Green Mountain Falls, Colo.	1935-64
South Ruxton Creek...	At Halfway, Colo.....	1906-64*
Sutherland Creek.....	Near Manitou, Colo.....	1918-64*

* Records prior to 1931 are contained in water-supply papers published by the Geological Survey.

† Records prior to 1951 published in WSP 1311.

6-6160. North Fork Michigan River near Gould, Colo.

Location.--Lat 40°33'10", long 106°00'36", in NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.27, T.7 N., R.77 W., on right bank 325 ft downstream from dam on recreation lake, 2 miles northeast of Gould, 3 $\frac{1}{2}$ miles upstream from mouth, and 19 miles southeast of Walden.

Drainage area.--20.2 sq mi.

Records available.--October 1950 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 8,848 ft above mean sea level, unadjusted.

Average discharge.--14 years, 17.0 cfs (12,310 acre-ft per year).

Extremes.--Maximum discharge during year, 226 cfs May 17 (gage height, 2.49 ft), from rating curve extended above 120 cfs; no flow Dec. 11 to Apr. 30, caused by filling of recreation lake upstream.

1950-64: Maximum discharge, 290 cfs May 25, 1961 (gage height, 3.15 ft), from rating curve extended above 160 cfs; maximum gage height recorded, 3.96 ft Apr. 17, 1962 (backwater from ice); minimum discharge, that of Dec. 11, 1963, to Apr. 30, 1964.

Remarks.--Records good except those for period of no gage-height record, which are fair. One small diversion above station to Canadian River drainage. Slight natural regulation by recreation lake (capacity, 1,250 acre-ft) since Dec. 11, 1963.

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	4.2	1.7					0.1	71	34	9.9	6.6
2	4.2	3.6	1.7					.1	* 67	30	9.9	5.8
3	4.2	4.0	1.6					.1	67	27	9.9	5.3
4	* 4.4	4.0	1.6					.1	68	25	11	5.1
5	4.4	4.6	* 1.6					.1	68	22	9.6	4.8
6	4.6	3.8	1.6					*.1	68	22	8.8	4.8
7	5.1	* 4.2	1.6					.1	75	20	* 9.6	5.3
8	4.8	4.0	1.3					.1	81	* 19	8.1	5.3
9	4.8	4.4	1.0	(*)		(*)		10	63	17	7.1	5.1
10	4.6	4.4	.5					15	* 60	16	6.6	4.8
11	4.6	4.2	0					* 20	61	15	6.4	4.4
12	4.6	4.0	0					20	56	14	6.1	4.2
13	4.6	3.8	0			(*)		21	50	14	6.1	4.0
14	4.6	4.0	0					29	49	12	5.8	3.8
15	4.4	3.8	0					67	44	12	5.6	4.2
16	4.4	4.0	0					123	(*) 42	11	5.6	* 4.6
17	4.4	3.6	0					176	* 43	11	6.1	4.8
18	4.4	3.6	0					186	50	11	5.8	4.8
19	4.6	3.0	0					190	42	10	6.1	9.2
20	4.6	2.5	0					194	40	9.6	6.9	9.9
21	5.6	2.3	0					186	40	9.2	6.1	8.1
22	5.1	2.3	0					190	40	11	5.8	6.6
23	4.6	2.3	0					172	40	12	5.3	5.8
24	4.8	2.3	0					152	39	17	4.8	5.3
25	4.8	2.3	0					* 140	35	12	4.6	5.1
26	4.6	1.8	0					142	33	9.6	4.4	4.8
27	4.6	1.8	0					156	32	8.5	8.8	4.8
28	4.4	1.7	0					128	35	7.8	9.6	4.8
29	4.4	1.7	0					123	43	7.8	11	4.8
30	4.4	1.7	0					97	38	9.2	9.9	4.8
31	4.6	-----	0		-----			77	-----	10	7.8	-----
Total	142.4	97.9	14.2	0	0	0	0	2,614.8	1,540	465.7	229.1	161.7
Mean	4.59	3.26	0.46	0	0	0	0	84.3	51.3	15.0	7.39	5.39
Ac-ft	282	194	28	0	0	0	0	5,190	3,050	924	454	321

Calendar year 1963: Max 74 Min 0 Mean 9.28 Ac-ft 6,720
 Water year 1963-64: Max 194 Min 0 Mean 14.4 Ac-ft 10,440

Peak discharge (base, 100 cfs).--May 17 (1900) 226 cfs (2.49 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 19 to May 11 (stage-discharge relation affected by ice during part of period).

PLATTE RIVER BASIN

6-6200. North Platte River near Northgate, Colo.

Location--Lat 40°56'10", long 106°20'21", in SW¼SE¼ sec.11, T.11 N., R.80 W., on right bank 350 ft downstream from bridge on State Highway 125, 0.8 mile upstream from Camp Creek, 4.2 miles northwest of Northgate, and 4.4 miles south of Colorado-Wyoming State line.

Drainage area--1,431 sq mi.

Records available--May to November 1904 (published as "near Pinkhampton"), May 1915 to September 1964. Monthly discharge only for some periods, published in WSP 1310.

Gage--Water-stage recorder. Datum of gage is 7,810.39 ft above mean sea level, adjustment of 1912. May 11 to Nov. 9, 1904, staff gage 0.8 mile downstream at different datum. Apr. 30, 1915, to May 12, 1916, staff gage, May 13, 1916, to Sept. 17, 1917, chain gage, Sept. 18, 1917, to Apr. 7, 1918, staff gage, and Apr. 8, 1918, to Aug. 21, 1961, water-stage recorder, at site 0.8 mile downstream at datum 3.36 ft lower.

Average discharge--49 years, 433 cfs (313,500 acre-ft per year).

Extremes--Maximum discharge recorded during year, 1,220 cfs June 30 (gage height, 4.03 ft); maximum gage height, 7.85 ft Apr. 19 (backwater from ice); minimum daily discharge, 32 cfs Jan. 13-15. 1904, 1915-64: Maximum discharge, 6,720 cfs June 11, 1923 (gage height, 6.24 ft, site and datum then in use); maximum gage height recorded, 8.84 ft Apr. 9, 1962; minimum daily discharge, 19 cfs July 17-19, 1934.

Remarks--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 130,000 acres of hay meadows above station. Transbasin diversions above station to Cache la Poudre River basin (see elsewhere in this report).

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

1.9	57	3.2	510
2.2	112	4.0	1,200
2.7	260		

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	62	80	62	52	40	42	120	714	705	1,120	256	157
2	60	80	62	54	38	40	130	858	612	921	256	130
3	60	83	60	48	36	38	120	732	*559	732	260	114
4	*58	92	60	46	36	38	110	492	580	620	276	99
5	57	105	*60	42	36	38	120	450	628	538	276	94
6	57	112	58	42	36	36	130	*450	628	480	280	90
7	58	*117	56	42	36	36	120	406	687	480	*272	90
8	60	119	52	40	38	36	130	406	795	*456	239	92
9	60	119	54	*36	38	*36	140	428	1,080	434	215	94
10	58	119	52	36	44	38	150	434	876	417	192	92
11	57	114	50	34	46	40	170	468	588	395	168	85
12	57	112	48	34	44	40	200	524	559	360	157	77
13	57	110	48	32	*42	40	180	480	545	322	146	70
14	58	108	52	32	40	38	160	504	652	327	143	68
15	58	105	58	32	38	40	*215	612	768	284	138	66
16	60	102	60	34	38	40	260	741	732	268	135	*69
17	60	95	60	38	38	42	300	822	*768	280	148	70
18	60	80	60	42	38	40	400	912	732	288	146	70
19	58	70	58	42	38	40	600	1,060	813	268	143	74
20	63	64	56	40	38	42	1,100	1,050	669	232	174	88
21	77	68	54	40	40	46	1,050	939	596	239	212	94
22	92	72	52	40	40	54	980	1,050	696	239	199	97
23	81	72	52	38	40	48	*903	1,120	813	256	165	97
24	76	70	56	36	40	46	876	1,010	652	350	140	86
25	74	70	58	38	38	50	1,000	*813	498	422	121	76
26	74	68	60	40	38	58	696	858	439	360	103	66
27	74	68	60	40	38	58	531	1,020	492	309	108	62
28	77	64	56	38	38	64	439	1,020	652	272	162	58
29	77	62	54	38	40	76	*412	1,090	1,110	242	186	58
30	77	62	52	38	-----	92	559	1,000	1,190	232	208	57
31	81	-----	50	40	-----	110	-----	849	-----	246	189	-----
Total	2,038	2,662	1,730	1,224	1,130	1,482	12,301	23,312	21,114	12,389	5,813	2,540
Mean	65.7	88.7	55.8	39.5	39.0	47.8	410	752	704	400	188	84.7
Ac-ft	4,040	5,280	3,430	2,430	2,240	2,940	24,400	46,240	41,880	24,370	11,530	5,040

Calendar year 1963: Max 1,470 Min 48 Mean 245 Ac-ft 177,600
 Water year 1963-64: Max 1,190 Min 32 Mean 240 Ac-ft 174,000

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 1, 2, Nov. 14 to Apr. 22 (no gage-height record Mar. 20 to Apr. 15).

6-6575. Laramie River near Glendevey, Colo.

Location.--Lat 40°48'00", long 105°52'40", in NW¼ sec.25, T.10 N., R.76 W., on left bank just upstream from Stub Creek, 180 ft downstream from bridge on county road, 250 ft downstream from Nunn Creek, and 1½ miles north of Glendevey Post Office.

Drainage area.--101 sq mi.

Records available.--June 1904 to October 1905, August 1910 to September 1964. Monthly discharge only for some periods, published in WSP 1310. Published as "at Glendevey" 1905, 1910-18.

Gage.--Water-stage recorder. Altitude of gage is 8,230 ft (from topographic map). Prior to Nov. 7, 1910, staff gage. Prior to Sept. 21, 1922, at datum 1.22 ft higher, Sept. 21, 1922, to Sept. 26, 1923, at datum 1.94 ft higher, July 9, 1929, to July 22, 1931, at datum 2.73 ft higher, and July 23, 1931, to Sept. 19, 1935, at datum 2.09 ft higher; all at site 180 ft upstream. Sept. 27, 1923, to July 8, 1929, at site 140 ft upstream at datum 1.35 ft higher.

Average discharge.--55 years, 73.2 cfs (52,990 acre-ft per year).

Extremes.--Maximum discharge during year, 485 cfs June 29 (gage height, 3.07 ft); minimum daily, 12 cfs Dec. 10, 11, 27, 28. 1904-5, 1910-64: Maximum discharge, 2,240 cfs June 9, 1923 (gage height, 4.55 ft, site and datum then in use, from floodmarks), from rating curve extended above 1,400 cfs; minimum daily recorded, 5 cfs Feb. 14, 15, 1911, but may have been less during winter periods of no gage-height record.

Remarks.--Records good except those for periods of ice effect, which are fair. Diversions for irrigation of about 700 acres of hay meadows above station. Transbasin diversions above station to Cache la Poudre River and tributaries (see elsewhere in this report).

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

0.6	11	1.5	100
.8	20	2.0	190
1.0	38	3.0	440

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	30	18	16	14	14	14	17	58	164	172	114	50
2	29	19	16	14	14	14	17	58	164	154	115	46
3	29	22	15	13	14	13	18	47	*172	130	122	45
4	*29	23	15	14	15	13	18	41	182	114	112	44
5	32	22	*15	14	15	13	18	47	180	104	100	40
6	27	22	15	14	15	13	19	39	194	100	96	38
7	26	*22	15	14	14	13	20	*45	242	85	*90	39
8	25	21	14	14	14	13	20	48	260	*72	81	39
9	25	20	13	15	15	13	21	45	198	66	77	44
10	25	21	12	*15	15	*13	21	48	204	64	72	57
11	25	20	12	15	15	13	21	58	212	61	68	46
12	24	19	13	14	*14	14	21	50	174	57	65	40
13	24	19	13	14	14	14	22	53	174	52	64	37
14	26	19	14	14	14	14	22	71	180	93	64	35
15	25	22	15	14	13	14	*18	97	170	176	59	33
16	23	19	15	15	13	14	21	176	186	172	58	*38
17	21	16	15	15	13	14	23	178	*194	158	68	34
18	21	18	14	15	13	13	24	218	202	152	59	33
19	21	19	13	14	13	14	27	260	134	143	61	54
20	23	19	13	14	13	14	27	315	122	132	81	57
21	24	18	13	15	13	14	25	330	122	124	62	47
22	22	19	13	15	13	14	27	320	124	134	57	41
23	22	19	13	15	13	14	31	312	112	143	52	37
24	21	17	13	15	14	15	44	295	106	204	48	35
25	20	16	13	14	14	15	46	300	106	150	44	32
26	22	18	13	14	14	15	37	*315	124	134	41	30
27	22	17	12	15	14	16	30	312	136	120	60	29
28	19	16	12	15	14	16	27	282	145	115	66	30
29	18	16	13	15	14	16	38	244	345	117	85	28
30	18	16	14	15	-----	16	53	194	202	120	70	27
31	19	-----	14	15	-----	17	-----	162	-----	124	57	-----
Total	737	572	426	448	403	438	773	5,018	5,230	3,742	2,268	1,185
Mean	23.8	19.1	13.7	14.5	13.9	14.1	25.8	162	174	121	72.2	39.5
Ac-ft	1,460	1,130	845	889	799	869	1,530	9,950	10,370	7,420	4,500	2,350

Calendar year 1963: Max 228 Min 10 Mean 40.3 Ac-ft 29,140
 Water year 1963-64: Max 345 Min 12 Mean 58.0 Ac-ft 42,110

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18-21, 23, 24, Nov. 26 to Dec. 8, Dec. 10, 11, 30, Jan. 3 to Mar. 15, Mar. 19, 20, 23, 25, 26, Mar. 30 to Apr. 1, Apr. 3-5, 8-10.

PLATTE RIVER BASIN

6-6950. South Platte River above Elevenmile Canyon Reservoir, near Hartsel, Colo.

Location.--Lat 38°58'03", long 105°34'51", in NE¼ sec.32, T.12 S., R.73 W., on left bank 200 ft downstream from highway bridge, 2.5 miles upstream from water line of Elevenmile Canyon Reservoir at elevation 8,561 ft, and 13 miles southeast of Hartsel.

Drainage area.--880 sq mi.

Records available.--June 1933 to September 1964 (no winter records prior to 1940). Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 8,612.83 ft above mean sea level (datum of Denver Board of Water Commissioners). Prior to May 27, 1939, water-stage recorder near present site at different datum. May 27, 1939, to Nov. 4, 1961, at datum 0.46 ft lower.

Average discharge.--25 years (1939-64), 79.0 cfs (57,190 acre-ft per year).

Extremes.--Maximum discharge during year, 400 cfs Aug. 8 (gage height, 2.44 ft); minimum not determined.
1933-64: Maximum discharge recorded, 1,290 cfs June 19, 1949; maximum gage height, 4.76 ft (present datum) July 22, 1957; minimum daily discharge recorded, 0.9 cfs Apr. 22, 1940.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Flow regulated by Antero Reservoir (capacity, 22,300 acre-ft). Many small diversions above station for irrigation of about 24,000 acres.

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

0.2	5.5	1.2	130
.3	11	1.6	207
.5	29	2.0	294
.8	66	2.4	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	44	b30	13	6	2.5	9	53	*27	18	141	130	38
2	42	b32						110	37			
3	52	b33						155	33			
4	40	34						274	*31			
5	34	30						*354	30			
6	34	28						347	27			
7	33	27						344	26			
8	33	24						354	24			
9	33	25						276	25			
10	*33	27						190	26			
11	33	25						132	18			
12	33	24						114	17			
13	32	23						102	14			
14	30	23						93	12			
15	30	24						102	13			
16	29	b27	94	17								
17	29	b23	99	*15								
18	36	21	93	20								
19	32	22	82	21								
20	31	*27	*83	33								
21	40	21	83	37								
22	46	24	77	28								
23	45	21	*82	70	23							
24	42	24	143	62	19							
25	39	23	178	52	18							
26	37	22	176	48	22							
27	36	22	135	46	26							
28	33	21	*72	109	134	48	31					
29	28	21	33	110	104	51	31					
30	27	21	25	114	121	39	28					
31	*29	-----	17	-----	-----	132	40	-----				
Total	1,095	749	403	186	72.5	279	1,590	1,759	950.4	3,568	4,189	740
Mean	35.3	25.0	13	6	2.5	9	53	56.7	31.7	115	135	24.7
Ac-ft	2,170	1,490	799	369	144	553	3,150	3,490	1,890	7,080	8,310	1,470

Calendar year 1963: Max 379 Min 3.8 Mean 63.9 Ac-ft 46,220
Water year 1963-64: Max 354 Min - Mean 42.6 Ac-ft 30,920

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 27 to Apr. 30 (stage-discharge relation affected by ice during most of period).

6-6960. South Platte River near Lake George, Colo.

Location.--Lat 38°54'19", long 105°28'22", in SW¼ sec.20, T.13 S., R.72 W., on left bank 700 ft downstream from Elevenmile Canyon Reservoir and 8.2 miles southwest of town of Lake George.

Drainage area.--963 sq mi.

Records available.--October 1929 to September 1964. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 8,458 ft (from topographic map). Prior to Oct. 26, 1940, at site 1 mile downstream at datum 8,423.95 ft above mean sea level, adjustment of 1912.

Average discharge.--35 years, 71.0 cfs (51,400 acre-ft per year).

Extremes.--Maximum discharge during year, 445 cfs July 27 (gage height, 3.58 ft); minimum daily, 4.0 cfs Feb. 15.
1929-64: Maximum discharge, 990 cfs Aug. 15, 1930, from rating curve extended above 600 cfs; maximum gage height, 5.85 ft June 20, 1949; no flow at times in January 1930, February 1931, November 1935.

Remarks.--Records good. Discharge measurements generally made twice a month. Natural flow of stream affected by transmountain diversions through East and West Hoosier ditches at Hoosier Pass prior to 1941, storage in Elevenmile Canyon Reservoir (see elsewhere in this report) and Antero Reservoir (capacity, 22,300 acre-ft), diversions for irrigation, and return flow from irrigated areas.

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

0.2	4.0	1.5	115
.3	8.0	2.0	182
.5	19	3.0	337
1.0	60	4.0	531

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	236	32	9.0	1.0	9.0	4.8	5.2	20	320	103	323	47
2	236	32	9.0	1.0	9.0	4.8	5.2	20	285	267	323	47
3	a 236	32	9.0	1.0	9.0	4.8	5.2	20	276	381	322	47
4	a 236	23	9.0	1.0	9.0	4.8	5.2	20	190	381	349	46
5	a 236	21	9.0	1.0	9.0	4.8	5.2	20	23	379	208	47
6	a 236	21	9.0	1.0	9.0	4.8	12	152	181	363	332	47
7	a 236	21	8.5	1.0	9.0	4.8	22	223	274	327	349	47
8	a 236	21	9.0	1.0	9.0	4.8	34	220	276	327	383	43
9	a 236	21	9.5	1.0	9.0	4.8	56	212	118	327	401	37
10	236	21	9.5	1.0	9.0	4.8	95	214	23	325	400	37
11	236	21	9.5	1.0	9.0	4.8	121	214	23	325	253	33
12	235	21	9.0	1.0	9.5	4.8	128	214	23	325	128	32
13	235	21	9.0	1.0	9.5	4.8	53	212	24	342	88	32
14	235	21	9.0	1.0	5.6	4.8	29	212	24	359	74	28
15	178	21	9.0	1.0	4.0	4.8	99	224	24	374	63	21
16	236	21	9.5	1.0	4.4	4.8	84	229	21	358	70	20
17	236	22	9.5	1.0	4.4	4.8	113	229	21	359	80	19
18	236	22	9.5	1.0	4.8	4.8	5.6	128	253	21	370	81
19	236	22	9.5	1.0	4.8	4.8	5.2	128	265	21	367	81
20	236	22	9.5	1.0	4.8	4.8	4.4	128	252	21	368	81
21	109	22	9.5	1.0	4.8	4.4	64	281	21	368	81	15
22	32	14	9.5	9.5	4.8	4.4	27	312	21	354	81	16
23	32	10	9.5	9.0	4.8	4.4	27	325	21	327	80	19
24	32	9.5	9.5	9.0	4.8	4.4	27	354	21	328	67	19
25	32	9.5	9.5	8.5	4.8	4.4	27	400	19	328	77	19
26	32	9.5	9.0	8.5	4.8	4.4	27	400	18	328	65	19
27	32	9.5	8.5	8.5	4.8	4.4	27	400	18	370	59	19
28	32	9.0	8.5	8.5	4.8	4.4	27	400	18	423	54	20
29	32	9.0	9.0	8.5	4.8	4.4	27	400	59	376	45	20
30	32	9.0	9.0	8.5	-----	5.2	22	385	103	322	39	20
31	32	-----	9.5	8.5	-----	5.2	-----	351	-----	322	36	-----
Total	5,088	570.0	284.5	297.0	194.0	146.8	1,558.0	7,433	2,508	10,573	5,163	873
Mean	164	19.0	9.18	9.58	6.69	4.74	51.9	240	83.6	341	167	29.1
Ac-ft	10,090	1,130	564	589	385	291	3,090	14,740	4,970	20,970	10,240	1,730

Calendar year 1963: Max 351 Min 3.6 Mean 108 Ac-ft 78,080
Water year 1963-64: Max 423 Min 4.0 Mean 94.8 Ac-ft 68,790

a No gage-height record.

PLATTE RIVER BASIN

6-7005. Goose Creek above Cheesman Lake, Colo.
(Known also as Lost Park Creek)

Location.--Lat 39°12'32", long 105°18'11", in sec.2, T.10 S., R.71 W., on right bank 1 mile upstream from water line of Cheesman Lake at elevation 6,842 ft and 1.7 miles west of Cheesman Dam.

Drainage area.--86.6 sq mi.

Records available.--August to December 1899, October 1924 to September 1964 (no winter records in some years). Monthly discharge only for some periods, published in WSP 1310. Published as "at Lake Cheesman" 1899.

Gage.--Water-stage recorder and compound rectangular weir. Altitude of gage is 6,910 ft (from topographic map). Aug. 1 to Dec. 31, 1899, staff gage at site about 2 miles downstream at different datum.

Average discharge.--27 years (1924-30, 1935-36, 1939-41, 1943-47, 1950-64), 26.5 cfs (19,190 acre-ft per year).

Extremes.--Maximum discharge during year, 136 cfs May 27 (gage height, 2.27 ft); minimum not determined.
1924-64: Maximum discharge, 487 cfs June 9, 1957, from rating curve extended above 170 cfs; maximum gage height, 4.57 ft May 30, 1942; minimum discharge not determined.

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

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

0.4	8.0
.8	23
1.2	42
1.7	73
2.2	126

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	11						52	90	32	16	11
2	15	10						46	107	27	14	10
3	15	11						38	121	24	16	*10
4	14	12						32	103	21	22	10
5	13	11						42	96	21	*30	10
6	13	10	(*)					44	91	21	21	10
7	12	10						52	87	20	32	10
8	12	10					15	50	83	19	64	9.8
9	12	8.9						48	79	*19	39	10
10	*12	9.5						53	75	19	26	11
11	12	9.2						57	71	21	21	10
12	11	8.3						56	68	23	26	9.5
13	11	8.3						56	70	19	23	8.6
14	11	8.3						69	75	17	21	9.2
15	11	8.3					(*)	*70	74	17	20	10
16	11	8.0	4	3.5		8		26	72	60	18	1.7
17	11	8.3						30	64	53	18	14
18	10	9.0						40	58	50	17	*11
19	10	10						48	53	47	17	15
20	11	11						50	51	44	*16	14
21	16	(*)						42	54	44	14	16
22	13			(*)				43	52	42	*14	15
23	11							42	49	40	14	15
24	10							51	46	37	15	12
25	10							63	46	*35	17	13
26	9.8	7.5	(*)					53	51	34	14	13
27	9.8							45	108	32	14	13
28	9.8							42	76	30	13	12
29	9.5							48	*66	28	11	13
30	*9.5							*52	67	37	19	10
31	11							74		17	11	
Total	362.4	267.1	124	108.5	116	248	900	1,752	1,903	569	617	342.9
Mean	11.7	8.90	4	3.5	4	8	30.0	56.5	63.4	18.4	19.9	11.4
Ac-ft	719	530	246	215	230	492	1,790	3,480	3,770	1,130	1,220	680

Calendar year 1963: Max 42 Min 1.2 Mean 8.92 Ac-ft 6,450
Water year 1963-64: Max 121 Min - Mean 20.0 Ac-ft 14,500

Peak discharge (base, 110 cfs).--May 27 (1400) 136 cfs (2.27 ft); June 3 (0800) 133 cfs (2.25 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 18 to Apr. 15 (stage-discharge relation affected by ice during most of period).

6-7015. South Platte River below Cheesman Lake, Colo.

Location.--Lat 39°12'33", long 105°16'02", in SE¼ sec.6, T.10 S., R.70 W., on left bank 1,400 ft downstream from Toe of Cheesman Dam and 4 miles southwest of Deckers.

Drainage area.--1,752 sq mi.

Records available.--October 1924 to September 1964. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 6,609.29 ft above mean sea level, datum of 1929. Prior to May 14, 1956, at site 370 ft upstream at datum 0.50 ft higher.

Average discharge.--40 years, 156 cfs (112,900 acre-ft per year).

Extremes.--Maximum discharge during year, 656 cfs July 5 (gage height, 3.00 ft); minimum daily, 3.9 cfs Feb. 27.
1924-64: Maximum discharge, 3,020 cfs Apr. 23, 1942 (gage height, 8.46 ft, site and datum then in use), from rating curve extended above 1,800 cfs; minimum daily determined, 1.6 cfs Apr. 8-14, 1957.

Remarks.--Records good except those for Feb. 15-27, which are poor. Natural flow of stream affected by minor transmountain diversion from Colorado River basin through Boreas Pass ditch (see elsewhere in this report), Elevenmile Canyon Reservoir and Cheesman Lake (see elsewhere in this report), diversions for irrigation of about 40,000 acres, and return flow from irrigated areas.

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

0.1	1.2	1.0	113
.2	5.1	1.5	216
.3	13	2.0	343
.4	23	3.0	656
.6	50		

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	250	164	43	5.1	27	4.3	101	300	156	368	179	32
2	282	122	43	5.1	27	4.7	75	287	122	394	198	75
3	233	96	50	5.1	27	4.3	67	279	96	438	391	*128
4	205	53	68	15	*27	82	68	254	62	472	346	151
5	205	53	57	30	27	*92	44	250	62	462	*429	149
6	205	47	*37	*40	27	106	4.7	290	62	639	535	149
7	205	43	31	43	27	106	9.0	295	62	525	571	81
8	205	44	37	36	27	106	9.8	319	67	522	584	49
9	205	44	58	36	27	106	9.8	295	64	*447	615	49
10	*205	43	61	32	27	121	9.8	221	*117	354	432	49
11	214	43	61	28	28	132	9.8	257	198	300	450	37
12	219	43	61	28	30	128	9.8	285	205	300	259	32
13	219	44	61	28	30	82	9.8	285	250	300	285	32
14	216	44	61	28	16	82	9.8	285	160	324	247	26
15	216	43	61	28	5.9	82	*9.8	*311	106	343	223	20
16	212	43	61	28	5.9	97	9.8	340	156	343	205	19
17	203	43	61	28	5.9	130	11	340	282	300	194	19
18	189	43	61	28	5.9	136	14	335	349	252	194	*19
19	156	43	61	28	6.7	138	15	316	316	254	212	20
20	119	*43	61	28	6.7	136	9.8	349	295	262	*203	20
21	75	43	61	28	7.5	136	9.6	414	292	295	134	20
22	61	43	61	*28	7.5	136	11	435	242	*340	117	20
23	36	43	61	28	8.3	136	72	435	189	303	117	21
24	47	43	61	28	7.5	138	134	435	185	287	115	20
25	86	43	61	27	6.7	138	138	462	*235	354	101	19
26	119	43	*56	27	5.9	138	158	538	272	351	86	19
27	134	43	33	27	3.9	*138	274	551	300	351	81	19
28	144	43	6.7	27	4.3	138	266	574	335	408	46	19
29	156	43	4.7	27	4.3	138	262	*362	368	447	24	20
30	*158	43	4.7	27	-----	138	*277	242	371	285	26	20
31	164	-----	5.1	27	-----	138	-----	196	-----	179	27	-----
Total	5,343	1,571	1,510.2	828.3	466.9	3,426.0	2,108.3	10,537	5,976	11,199	7,626	1,353
Mean	172	52.4	48.7	26.7	16.1	111	70.3	340	199	361	246	45.1
Ac-ft	10,600	3,120	3,000	1,640	926	6,800	4,180	20,900	11,850	22,210	15,130	2,680

Calendar year 1963: Max 447 Min 4.7 Mean 161 Ac-ft 116,600
Water year 1963-64: Max 639 Min 3.9 Mean 142 Ac-ft 103,000

* Discharge measurement made on this day.

PLATTE RIVER BASIN

6-7060. North Fork South Platte River below Geneva Creek, at Grant, Colo.

Location.--Lat 39°27'28", long 105°39'28", in NW¼ sec.10, T.7 S., R.74 W., on left bank at Grant, 1,600 ft downstream from Geneva Creek and 1.3 miles downstream from east portal of Harold D. Roberts tunnel.

Drainage area.--127 sq mi.

Records available.--July 1908 to November 1913 (published as "at Cassells"), June 1942 to September 1964. Monthly discharge only for some periods, published in WSP 1310. December 1913 to March 1918 equivalent records may be obtained by summation of flow of North Fork South Platte River at Grant (above Geneva Creek) and Geneva Creek at Grant.

Gage.--Water-stage recorder. Datum of gage is 8,558.60 ft above mean sea level (Bureau of Reclamation bench mark). July 4 to Dec. 13, 1908, and May 23 to Nov. 30, 1913, staff gages at site 185 ft downstream from bridge at Santa Maria (formerly Cassells) about 2 miles down stream at various datums. Dec. 14, 1908, to May 22, 1913, chain gage on bridge at Santa Maria about 2 miles downstream at different datum. June 19, 1942, to Mar. 15, 1948, staff gage at site 1,200 ft upstream from present site at datum 13.07 ft higher. Mar. 16 to July 22, 1948, staff gage at site 400 ft upstream from present site at datum 6.35 ft higher than present datum.

Average discharge.--27 years, 72.6 cfs (52,560 acre-ft per year), adjusted for inflow from Harold D. Roberts tunnel since 1964.

Extremes.--Maximum discharge during year, 294 cfs Aug. 7; maximum gage height, 3.62 ft May 21; minimum daily discharge, 13 cfs Jan. 21-27, Feb. 1, 26, 28.

1908-13, 1942-64: Maximum discharge observed, 990 cfs June 7, 8, 1912 (gage height, 3.30 ft, site and datum then in use), from rating curve extended above 530 cfs by logarithmic plotting; maximum gage height, 4.72 ft, present site, Feb. 11, 1952 (backwater from ice); minimum daily discharge, 6.5 cfs Nov. 27, 1958.

Remarks.--Records good. Discharge measurements generally made two or more times a month. Small diversions above station for irrigation of about 200 acres. Transmountain diversions from Colorado River basin to North Fork South Platte River above station through Harold D. Roberts tunnel (see elsewhere in this report).

Rating table (gage height, in feet, and discharge,
in cubic feet per second)
(Shifting-control method used Jan. 23, Aug. 3-9, Aug. 17 to Sept. 26)

2.4	13	3.0	85
2.6	27	3.3	155
2.8	52	3.7	290

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	52	28	20	17	13	14	15	42	89	102	197	250
2	52	32	17	17	14	14	15	37	93	98	200	250
3	51	32	18	17	14	14	14	28	96	93	215	250
4	51	32	19	17	14	14	14	29	91	91	262	250
5	51	31	18	16	14	15	14	36	104	93	254	254
6	49	30	18	16	15	15	14	34	108	91	250	250
7	48	31	18	16	15	15	14	34	136	85	270	250
8	48	30	16	16	14	15	14	32	147	85	262	246
9	46	31	18	15	14	15	15	28	119	85	232	246
10	42	31	18	15	15	15	15	37	150	96	222	250
11	39	29	17	16	15	15	17	44	161	96	215	246
12	42	26	18	16	15	16	17	35	155	87	206	243
13	42	26	18	15	15	16	17	44	161	78	200	243
14	42	28	18	15	15	15	17	71	150	75	197	243
15	41	26	17	15	15	15	19	91	142	82	200	246
16	41	26	17	14	14	15	25	121	152	85	209	254
17	41	21	17	14	14	16	28	142	152	115	218	215
18	39	19	18	14	14	17	27	150	152	158	232	194
19	39	19	18	14	14	16	37	133	133	152	250	197
20	41	21	18	14	14	15	34	133	133	150	258	203
21	41	22	18	13	14	16	29	185	124	147	250	200
22	38	22	17	13	14	16	30	188	113	152	243	209
23	37	20	16	13	14	16	35	164	102	152	240	236
24	37	22	16	13	14	16	45	161	104	170	232	232
25	36	23	17	13	14	15	39	170	108	161	246	232
26	36	21	17	13	13	15	27	176	104	150	258	181
27	36	25	17	13	14	15	25	170	104	147	258	28
28	35	21	16	14	13	15	28	144	104	144	258	26
29	36	20	17	14	14	17	37	126	106	161	258	24
30	35	19	17	14	-----	18	35	104	110	176	250	25
31	35	-----	17	14	-----	14	-----	93	-----	197	250	-----
Total	1,299	764	541	456	411	475	712	2,982	3,703	3,754	7,292	6,173
Mean	41.9	25.5	17.5	14.7	14.2	15.3	23.7	96.2	123	121	235	206
Ac-ft	2,580	1,520	1,070	904	815	942	1,410	5,910	7,340	7,450	14,460	12,240

Calendar year 1963: Max 124 Min 13 Mean 39.4 Ac-ft 28,540
Water year 1963-64: Max 270 Min 13 Mean 78.0 Ac-ft 56,640

6-7070. North Fork South Platte River at South Platte, Colo.

Location.--Lat 39°24'30", long 105°10'30", in SW¼ sec.25, T.7 S., R.70 W., on left bank 0.2 mile west of South Platte and 0.3 mile upstream from mouth.

Drainage area.--479 sq mi.

Records available.--June 1909 to September 1910, April 1913 to September 1964. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 6,090.55 ft above mean sea level, adjustment of 1912. Prior to May 13, 1925, staff gage at same site and datum.

Average discharge.--52 years, 154 cfs (111,500 acre-ft per year), adjusted for inflow from Harold D. Roberts tunnel since 1964.

Extremes.--Maximum discharge during year, 439 cfs May 27 (gage height, 3.12 ft); minimum not determined.
1909-10, 1913-64: Maximum discharge, 2,050 cfs June 13, 1949 (gage height, 6.30 ft); minimum observed, 4.0 cfs Dec. 8, 1932 (discharge measurement).

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. Small diversions above station for irrigation of about 2,000 acres. Transmountain diversions from Colorado River basin to North Fork South Platte River above station through Harold D. Roberts tunnel (see elsewhere in this report).

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

1.6	27	2.3	122
1.8	40	2.6	220
2.0	61	3.0	385

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	83	63					48	117	186	154	244	252
2	83	66					66	117	197	139	228	248
3	83	74					63	105	216	134	236	240
4	85	71					49	92	209	125	268	244
5	85	61					48	100	212	122	304	240
6	81	60					55	98	216	122	268	240
7	79	59					46	98	236	122	312	236
8	77	61					43	94	260	120	336	240
9	77	63					50	92	228	120	288	244
10	77	63					61	90	224	125	260	244
11	72	61					64	96	236	142	252	244
12	71	56					81	98	224	142	256	236
13	72	57					67	98	228	128	260	236
14	72	57					61	115	244	122	236	240
15	72	57					81	154	212	120	232	244
16	72	56	28	31	29	37	108	212	205	125	224	260
17	71	55					131	244	209	122	228	236
18	71	30					125	272	201	201	232	190
19	71	40					139	252	190	205	252	193
20	72	37					148	205	176	186	256	212
21	79						122	264	170	182	248	216
22	74						122	300	160	193	248	209
23	69						120	276	145	201	244	232
24	66						131	260	134	209	236	240
25	64						142	276	139	240	236	236
26	61	30					117	280	136	209	256	236
27	63						100	362	136	197	252	122
28	64						94	292	136	190	252	79
29	64						105	252	139	193	248	60
30	64						117	224	163	232	252	48
31	71							193		244	252	
Total	2,265	1,447	868	961	841	1,147	2,704	5,728	5,767	5,066	7,895	6,397
Mean	73.1	48.2	28	31	29	37	90.1	185	192	163	255	213
Ac-ft	4,490	2,870	1,720	1,910	1,670	2,280	5,360	11,360	11,440	10,050	15,660	12,690

Calendar year 1963: Max 179 Min - Mean 59.5 Ac-ft 43,050
Water year 1963-64: Max 362 Min - Mean 112 Ac-ft 81,500

Note.--Stage-discharge relation affected by ice Nov. 19 to Dec. 10. No gage-height record Dec. 11 to Apr. 1 (stage-discharge relation affected by ice during most of period).

PLATTE RIVER BASIN

6-7075. South Platte River at South Platte, Colo.

Location.--Lat 39°24'30", long 105°10'10", in SE¼ sec.25, T.7 S., R.70 W., on left bank at South Platte, 200 ft downstream from bridge on State Highway 75 and 400 ft downstream from North Fork.

Drainage area.--2,579 sq mi.

Records available.--July 1887 to September 1891, May to October 1892, October 1895 to September 1897, October 1898 to June 1900, October 1900 to September 1964. Monthly discharge only for some periods, published in WSP 1310. Published as "at" or "near Deansbury," "at Deansbury and Platte Canyon," "at" or "near Platte Canyon," prior to 1901, and as "below North Fork, at South Platte" 1914.

Gage.--Water-stage recorder. Datum of gage is 6,078.43 ft above mean sea level, adjustment of 1912. Prior to Mar. 28, 1902, staff gages or water-stage recorder at several sites less than 9 miles downstream at various datums. Mar. 28, 1902, to May 6, 1905, staff gage at bridge 200 ft upstream at different datum. May 7, 1905, to Mar. 13, 1910, staff gage at present site and datum.

Extremes.--Maximum discharge during year, 1,050 cfs Aug. 7; maximum gage height, 4.07 ft May 27; minimum daily discharge, 37 cfs Feb. 21.

1887-92, 1895-97, 1898-1964: Maximum discharge, 6,320 cfs June 8, 1921 (gage height, 8.95 ft), from rating curve extended above 3,500 cfs; minimum daily determined, 10 cfs Dec. 5, 1899.

Remarks.--Records good except those for period of ice effect or no gage-height record, which are poor. Discharge measurements generally made twice a month. Natural flow of stream affected by transmountain diversions through Boreas Pass ditch and Harold D. Roberts tunnel (see elsewhere in this report), Elevenmile Canyon Reservoir and Cheesman Lake (see elsewhere in this report), diversions above station for irrigation of about 45,000 acres, and return flow from irrigated areas.

Rating tables, except periods of ice effect (gage height, in feet,
and discharge, in cubic feet per second)
(Shifting-control method used May 27, June 20-25)

Oct. 1 to Mar. 25

Mar. 26 to Sept. 30

1.5	88	2.5	301	1.5	88	3.0	510
2.0	176	3.1	540	2.0	184	4.0	1,040
				2.5	315		

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	317	256	75	58	77	50	282	470	425	550	433	276
2	361	218	70	61	69	58	250	453	389	540	417	276
3	358	213	42	60	75	55	220	441	417	560	590	336
4	284	160	45	64	75	47	193	401	357	625	655	389
5	289	139	96	56	87	47	184	382	343	580	754	389
6	286	133	102	56	71	135	156	425	332	743	826	393
7	284	130	109	73	65	161	128	425	346	690	941	385
8	281	124	38	82	70	175	122	441	371	650	963	303
9	281	126	44	76	66	152	124	441	332	615	941	300
10	278	123	93	85	76	180	130	354	340	496	732	303
11	278	121	68	80	80	172	132	364	433	453	864	303
12	289	117	71	80	85	199	156	413	445	445	535	285
13	292	117	92	74	71	229	140	417	488	429	560	282
14	295	117	92	71	61	128	140	429	506	433	520	279
15	298	117	93	78	71	151	171	474	346	461	465	285
16	298	116	83	73	47	148	195	575	360	470	453	297
17	284	119	85	78	45	160	255	610	461	449	437	279
18	284	94	85	78	45	203	273	655	535	474	437	230
19	245	96	93	80	50	229	279	610	520	457	453	230
20	238	96	93	70	45	200	288	575	470	457	478	252
21	186	111	91	78	37	196	248	685	453	474	413	250
22	170	117	88	88	38	210	225	770	433	525	371	245
23	145	90	84	88	40	218	220	743	332	550	360	264
24	124	95	104	92	40	214	329	726	318	488	357	270
25	141	110	123	70	50	204	354	743	340	595	354	264
26	184	94	119	63	40	208	329	798	405	575	360	267
27	202	96	122	86	45	213	397	914	421	565	346	182
28	222	110	100	86	45	216	413	897	453	570	354	117
29	225	94	69	79	39	223	409	721	506	695	294	104
30	238	75	40	77	-----	240	421	570	555	595	285	88
31	248	-----	48	74	-----	267	-----	441	-----	453	282	-----
Total	7,905	3,724	2,557	2,314	1,705	5,288	7,163	17,363	12,432	16,662	16,230	8,123
Mean	255	124	82.5	74.6	58.8	171	239	560	414	537	524	271
Ac-ft	15,680	7,390	5,070	4,590	3,380	10,490	14,210	34,440	24,660	33,050	32,190	16,110

Calendar year 1963: Max 530 Min 38 Mean 227 Ac-ft 164,200
Water year 1963-64: Max 963 Min 37 Mean 277 Ac-ft 201,300

Note.--Stage-discharge relation affected by ice Nov. 22 to Feb. 19, Mar. 5-13, 18. No gage-height record Feb. 20 to Mar. 4, Mar. 14-17, 19-26 (stage-discharge relation affected by ice during most of periods).

PLATTE RIVER BASIN

6-7080. South Platte River at Waterton, Colo.

Location.--Lat 39°29'18", long 105°05'32", in NE¼ sec.34, T.6 S., R.69 W., on left bank 168 ft downstream from bridge on State Highway 221, half a mile east of Waterton, 5 miles west of Louviers, and 6 miles upstream from Plum Creek.

Drainage area.--2,621 sq mi.

Records available.--May 1926 to September 1964. Monthly discharge only prior to 1934, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 5,484.43 ft above mean sea level, adjustment of 1912.

Average discharge.--38 years, 172 cfs (124,500 acre-ft per year).

Extremes.--Maximum discharge during year, 816 cfs May 27 (gage height, 2.38 ft); minimum daily, 2.2 cfs Apr. 4, 6, 8.
1926-64: Maximum discharge, 5,700 cfs Apr. 23, 1942 (gage height, 5.68 ft); minimum daily, 0.1 cfs Mar. 6, 7, 1933, Feb. 28 to Mar. 2, Mar. 20, 1938.

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. Natural flow of stream affected by transmountain diversions (see elsewhere in this report), Eleven-mile Canyon Reservoir and Cheesman Lake (see elsewhere in this report), diversions for irrigation of about 55,000 acres and municipal use, and return flow from irrigated areas.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 2-5)

0.5	1.0	1.1	98
.6	3.0	1.3	169
.7	10	1.6	315
.8	24	1.9	505
.9	44	2.3	800

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	78	59	49	56	30	11	28	203	199	212	231	66
2	124	52	46	52	28	23	2.8	173	165	190	212	54
3	124	49	38	46	26	b18	2.6	169	186	217	222	44
4	72	64	40	b 36	28	b13	2.2	131	142	282	236	54
5	62	95	52	36	28	13	2.4	105	124	241	315	54
6	54	95	49	b 34	32	b14	2.2	139	114	236	357	54
7	44	59	40	34	b 28	7.9	2.4	150	118	231	524	54
8	44	54	36	b 35	b 26	8.6	2.2	161	105	231	612	62
9	42	52	36	b 36	28	8.6	17	165	62	195	598	56
10	52	52	40	38	28	13	64	154	84	118	564	59
11	56	49	38	42	28	6.5	17	173	92	158	640	59
12	62	46	40	40	34	10	11	203	75	173	333	46
13	62	46	b 47	b 38	b 35	9.3	9.3	199	108	161	250	38
14	64	49	b 54	34	26	5.1	10	208	158	161	222	36
15	72	49	b 52	34	b 25	3.7	42	246	81	199	150	36
16	81	49	b 43	30	b 16	4.4	34	315	142	212	131	52
17	75	52	b 43	24	11	5.8	50	345	298	208	121	62
18	69	46	b 45	28	11	5.1	105	375	282	236	124	54
19	62	46	b 48	44	11	5.1	118	315	255	203	124	52
20	66	44	b 50	44	b 11	4.4	131	260	203	178	139	56
21	75	49	b 48	30	b 13	4.4	95	333	199	169	142	54
22	62	49	b 44	30	b 11	5.1	64	382	121	182	124	46
23	44	46	56	26	b 11	5.1	84	351	95	182	114	36
24	36	49	66	44	b 11	8.6	236	333	161	146	105	38
25	34	52	69	38	11	10	266	357	154	186	101	36
26	34	46	69	32	13	4.4	236	414	150	182	98	32
27	32	49	59	28	11	4.4	208	672	146	158	78	42
28	30	49	84	42	11	3.0	89	736	135	158	86	59
29	26	49	62	38	11	3.0	64	598	186	260	105	52
30	38	49	b 52	28	-----	2.8	150	388	222	293	72	40
31	49	-----	49	26	-----	2.8	-----	190	-----	241	72	-----
Total	1,825	1,594	1,544	1,123	593	243.1	2,119.9	8,943	4,562	6,199	7,272	1,483
Mean	58.9	53.1	49.8	36.2	20.4	7.84	70.7	288	152	200	232	49.4
Ac-ft	3,620	3,160	3,060	2,230	1,180	482	4,200	17,740	9,050	12,300	14,280	2,940

Calendar year 1963: Max 298 Min 2.8 Mean 73.3 Ac-ft 53,050
Water year 1963-64: Max 736 Min 2.2 Mean 102 Ac-ft 74,240

b Stage-discharge relation affected by ice.

Note.--No gage-height record Feb. 27 to Mar. 2 (stage-discharge relation affected by ice during most of period), Apr. 17.

PLATTE RIVER BASIN

6-7095. Plum Creek near Louviers, Colo.

Location.--Lat 39°29'04", long 105°00'07", in SE¼ sec.33, T.6 S., R.68 W., on right bank at downstream side of bridge on county road from U. S. Highway 85 to Louviers, three-quarters of a mile northeast of Louviers, 1¼ miles downstream from Indian Creek, and 7½ miles upstream from mouth.

Drainage area.--302 sq mi.

Records available.--October 1947 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 5,585 ft (from topographic map). Prior to Feb. 12, 1957, at site 2½ miles downstream; prior to Oct. 1, 1954, at datum 5,518.71 ft above mean sea level, datum of 1929, and Oct. 1, 1954, to Feb. 11, 1957, at datum 5,517.19 ft above mean sea level, datum of 1929.

Average discharge.--17 years, 20.9 cfs (15,130 acre-ft per year).

Extremes.--Maximum discharge during year, 290 cfs Mar. 18 (gage height, 3.81 ft); no flow Aug. 17-25.

1947-64: Maximum discharge, 3,800 cfs July 21, 1954 (gage height, 5.07 ft, site and datum then in use); no flow at times in 1951-52, 1956-60, 1963-64.

Remarks.--Records poor. Discharge measurements generally made twice a month. Diversions above 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	0.1	0.1	1.4	2.6	8.2	14	57	47	16	3.0	0.1	0.1
2	.1	.1	1.4	2.6	9.0	16	54	46	26	1.8	.1	.1
3	.1	.1	1.6	2.8	5.0	16	51	44	24	1.2	.1	.1
4	.1	.1	2.0	2.6	5.2	8.4	40	41	22	.8	.1	.1
5	.1	.1	2.3	2.6	5.2	7.7	41	38	20	.5	.4	.1
6	.1	.1	2.0	2.8	5.2	5.8	42	35	22	.5	.3	.1
7	.1	.1	1.4	3.0	5.2	7.0	38	32	20	.5	.2	.1
8	.1	.1	1.4	2.8	5.2	8.4	37	34	20	.5	.2	.1
9	.1	.2	1.6	3.0	5.0	7.7	37	28	18	.5	.1	.1
10	.1	.2	1.1	3.0	5.0	9.9	34	20	12	.7	.1	.1
11	.1	.2	1.1	2.8	5.4	7.0	33	16	12	1.2	.1	.1
12	.1	.2	1.4	2.6	6.0	21	33	14	10	1.4	.1	.1
13	.1	.2	1.6	2.8	7.2	26	33	16	22	.6	.1	.1
14	.1	.2	1.4	3.6	7.6	9.9	33	18	30	.3	.1	.1
15	.1	.2	1.1	4.4	7.6	12	38	16	23	.2	.1	.1
16	.1	.2	1.6	4.0	7.4	18	46	15	17	.2	.1	.1
17	.1	.2	2.3	3.8	6.8	42	56	14	15	.2	0	.1
18	.1	.2	3.2	4.0	7.4	65	57	12	8.0	.1	0	.1
19	.1	.2	3.2	4.2	8.6	32	67	12	3.2	.1	0	.1
20	.1	.2	2.5	4.6	1.1	3.2	75	12	2.2	.1	0	.1
21	.1	.2	2.3	5.4	1.1	1.3	83	12	1.6	.1	0	.1
22	.1	.2	2.0	6.8	1.1	4.2	81	11	1.6	.1	0	.1
23	.1	.2	2.4	6.0	1.0	7.8	78	9.6	1.6	.1	0	.1
24	.1	.7	2.2	5.6	9.8	24	77	7.6	1.6	.1	0	.1
25	.1	.7	2.0	5.0	9.8	7.0	75	7.4	1.4	.1	0	.1
26	.1	.9	2.0	5.6	1.0	6.2	68	7.9	1.4	.1	.1	.1
27	.1	1.1	2.0	6.2	1.0	6.0	61	10	1.4	.2	.1	.1
28	.1	.9	2.2	5.4	1.1	1.8	53	9.9	1.6	.3	.1	.1
29	.1	.9	2.4	5.0	1.1	3.8	52	1.5	1.8	.1	.1	.1
30	.1	1.1	2.2	5.8	-----	4.8	49	3.3	2.2	.1	.1	.1
31	.1	-----	2.4	6.8	-----	5.5	-----	2.0	-----	.1	.1	-----
Total	3.1	10.1	59.7	128.2	226.8	672.2	1579	653.4	378.6	15.8	2.9	3.0
Mean	0.10	0.34	1.93	4.14	7.82	21.7	52.6	21.1	12.6	0.51	0.09	0.10
Ac-ft	6.1	20	118	254	450	1,330	3,130	1,300	751	31	5.8	6.0

Calendar year 1963: Max 21 Min 0 Mean 3.54 Ac-ft 2,560
 Water year 1963-64: Max 83 Min 0 Mean 10.2 Ac-ft 7,400

Peak discharge (base, 220 cfs).-- Mar. 18 (1830) 290 cfs (3.81 ft); Mar. 22 (2215) 270 cfs (3.78 ft).

Note.--Stage-discharge relation affected by ice Dec. 23 to Feb. 2. No gage-height record Feb. 3 to Mar. 1 (stage-discharge relation affected by ice during part of period), Mar. 26-29, May 9-14, May 31 to June 9, June 18 to Aug. 7.

6-7100. South Platte River at Littleton, Colo.

Location.--Lat 39°37'10", long 105°01'10", in NE¼ sec.17, T.5 S., R.68 W., on left bank 200 ft downstream from Crestline Avenue (formerly Hazard Street) Bridge at Littleton and 3.1 miles upstream from Bear Creek.

Drainage area.--3,069 sq mi.

Records available.--July 1941 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 5,304.36 ft above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Nov. 23, 1948, wire-weight gage on bridge 200 ft upstream at datum 1.00 ft higher. Nov. 23, 1948, to Sept. 30, 1951, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge.--23 years, 220 cfs (159,300 acre-ft per year).

Extremes.--Maximum discharge during year, 838 cfs May 28 (gage height, 5.14 ft); minimum daily, 15 cfs Feb. 3.
1941-64: Maximum discharge, 9,720 cfs Apr. 23, 1942 (gage height, 8.55 ft, from floodmark, site and datum then in use), from rating curve extended above 4,800 cfs; minimum daily, 7.2 cfs Oct. 2, 1956.

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. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions for irrigation and municipal use, and return flow from irrigated areas.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 9-25, June 9 to July 8)

Oct. 1 to May 8				May 9 to Sept. 30			
2.9	13	3.6	108	2.6	20	3.8	232
3.1	30	4.0	223	2.9	57	4.4	430
3.3	54	4.5	440	3.3	125	5.0	740

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	70	50	39	39	21	31	75	230	188	161	176	46
2	100	45	38	42	19	37	72	206	193	131	165	41
3	115	34	37	39	15	37	79	193	206	153	165	28
4	92	41	32	31	18	36	68	160	193	186	173	32
5	65	70	40	29	19	32	75	132	161	176	275	30
6	59	96	50	30	20	32	77	154	157	173	311	30
7	50	57	57	21	21	28	70	169	139	167	452	29
8	42	50	51	20	19	30	65	184	129	173	590	36
9	40	40	44	22	18	29	81	186	92	163	650	31
10	40	42	46	20	20	32	113	159	85	97	550	36
11	29	32	40	20	22	28	79	159	99	110	565	42
12	24	33	42	20	25	38	59	186	80	139	257	36
13	19	36	44	22	25	56	54	169	82	131	176	23
14	20	36	46	26	26	33	51	167	190	127	165	21
15	30	36	52	24	45	29	72	184	88	149	129	28
16	39	37	60	26	34	39	77	227	96	167	104	38
17	42	41	67	28	30	74	104	272	220	167	95	53
18	39	38	67	28	30	140	146	296	215	186	95	54
19	38	39	67	34	27	166	187	272	208	165	86	49
20	36	37	64	34	28	68	220	230	165	147	93	51
21	54	39	64	32	26	64	178	260	159	147	101	50
22	79	39	60	28	28	115	138	335	123	163	101	44
23	57	36	57	26	28	166	122	323	60	171	90	32
24	48	36	46	26	29	96	234	299	110	141	83	26
25	36	36	56	30	27	74	304	299	112	173	82	28
26	34	34	56	33	26	67	a 320	362	108	171	75	22
27	37	34	51	26	28	62	a 310	674	104	151	69	30
28	32	36	48	28	45	54	a 200	740	101	153	54	50
29	31	40	40	26	31	53	a 110	656	121	238	82	51
30	33	45	36	26	-----	64	a 150	452	155	240	51	33
31	45	-----	34	20	-----	77	-----	213	-----	195	47	-----
Total	1,475	1,265	1,531	856	750	1,887	3,890	9,548	4,139	5,011	6,107	1,100
Mean	47.6	42.2	49.4	27.6	25.9	60.9	130	276	138	162	197	36.7
Ac-ft	2,930	2,510	3,040	1,700	1,490	3,740	7,720	16,950	8,210	9,940	12,110	2,180

Calendar year 1963: Max 320 Min 11 Mean 61.9 Ac-ft 44,860
Water year 1963-64: Max 740 Min 15 Mean 99.9 Ac-ft 72,520

a No gage-height record.

Note.--Stage-discharge relation affected by ice Dec. 11-16, 18, 28-30, Jan. 8-17, 20, 24, 25, 29, Feb. 23, 26.

PLATTE RIVER BASIN

6-7105. Bear Creek at Morrison, Colo.

Location.--Lat 39°39'11", long 105°11'43", in SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.35, T.4 S., R.70 W., on left bank at Morrison, 180 ft upstream from bridge on U. S. Highway 285 and a quarter of a mile upstream from Mount Vernon Creek.

Drainage area.--164 sq mi.

Records available.--September 1887 to September 1891, May 1895 to December 1901, February 1902 (gage heights only), October 1919 to September 1964. No winter records for water years 1888-90, 1896, 1898, 1900. Monthly discharge only for some periods, published in WSP 1310. Published as "near Morrison" 1900-1902, as "at Starbuck" 1919-28, and as "at Idledale" 1929-34.

Gage.--Water-stage recorder. Datum of gage is 5,780.43 ft above mean sea level, datum of 1929. Prior to Apr. 1, 1899, staff gage at site a quarter of a mile downstream at different datum. Apr. 1, 1899, to Feb. 28, 1902, staff gage at site a quarter of a mile upstream at different datum. Oct. 1, 1919, to Feb. 28, 1921, staff gage and Mar. 1, 1921, to Sept. 30, 1934, water-stage recorder, at Idledale 4 miles upstream at different datum. Oct. 1, 1934, to Oct. 10, 1961, water-stage recorder at site 80 ft downstream at same datum.

Average discharge.--49 years (1890-91, 1896-97, 1898-99, 1900-1901, 1919-64), 53.3 cfs (38,590 acre-ft per year).

Extremes.--Maximum discharge during year, 286 cfs Aug. 7 (gage height, 5.17 ft), from rating curve extended above 83 cfs; minimum daily, 6.5 cfs Jan. 13.
1887-91, 1895-1901, 1919-64: Maximum discharge, 8,600 cfs (estimated) July 24, 1896; minimum daily, 0.8 cfs Nov. 26, 1939, result of freezeup.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made three times a month. Small 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)

3.2	5.5	4.0	42
3.4	12	4.3	65
3.7	25	4.7	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	37	18	9.5	13	8.5	11	37	51	68	44	30	14
2	36	15	8.0	a13	9.0	14	32	51	83	37	28	14
3	36	17	7.0	a12	9.0	15	27	46	98	34	26	12
4	34	19	8.0	a10	8.5	13	22	43	88	31	38	13
5	33	18	11	11	9.0	12	20	46	89	32	68	14
6	32	17	11	11	9.0	11	24	42	87	31	39	13
7	31	18	10	12	8.0	13	20	43	86	29	56	13
8	31	19	10	12	9.5	12	18	40	84	28	66	13
9	30	20	9.5	9.5	10	11	21	37	72	28	43	14
10	29	20	9.0	10	11	11	26	38	68	29	35	14
11	28	20	6.6	9.0	11	12	27	41	67	32	31	14
12	28	18	7.0	7.0	12	13	32	37	63	37	31	14
13	26	18	a7.5	6.5	10	13	28	39	70	31	31	13
14	26	18	a9.5	8.0	11	13	26	46	69	26	30	12
15	26	20	a10	8.5	8.5	12	35	52	59	26	28	14
16	26	20	a10	9.5	9.0	14	47	59	54	28	26	19
17	26	16	11	9.8	9.0	19	54	62	52	30	28	18
18	26	11	12	9.9	9.0	24	41	65	49	36	26	15
19	25	13	11	10	10	28	56	59	45	29	25	16
20	26	12	13	9.9	12	19	54	58	44	27	24	20
21	33	12	a12	10	10	20	45	59	46	24	23	22
22	28	12	a11	11	10	24	47	62	44	22	20	20
23	26	11	11	11	9.5	24	48	59	40	23	19	19
24	26	11	12	8.5	10	16	54	54	38	28	18	17
25	26	11	13	9.5	9.0	17	58	54	37	29	18	16
26	24	10	12	9.9	8.5	17	48	58	36	26	17	15
27	23	12	12	9.0	10	14	45	87	35	25	16	16
28	23	11	11	8.5	11	13	43	69	39	32	16	19
29	22	12	11	8.5	11	16	47	64	42	24	16	18
30	22	12	11	8.0	-----	25	46	68	48	22	14	16
31	22	-----	13	8.0	-----	30	-----	57	-----	24	15	-----
Total	867	461	319.6	303.5	282.0	506	1,128	1,646	1,800	904	901	467
Mean	28.0	15.4	10.3	9.79	9.72	16.3	37.6	53.1	60.0	29.2	29.1	15.6
Ac-ft	1,720	914	634	602	559	1,000	2,240	3,260	3,570	1,790	1,790	926

Calendar year 1963: Max 104 Min 2.0 Mean 16.8 Ac-ft 12,180
Water year 1963-64: Max 98 Min 6.5 Mean 26.2 Ac-ft 19,000

Peak discharge (base, 250 cfs)--Aug. 7 (0620) 286 cfs (5.17 ft).

a No gage-height record.
Note.--Stage-discharge relation affected by ice Nov. 2-9, 14, 17, Nov. 19 to Jan. 17, Jan. 24, 25, Jan. 27 to Feb. 8, Feb. 13-18, 21-27, Mar. 4, 9-11, 13, 14.

6-7115. Bear Creek at mouth, at Sheridan, Colo.

Location.--Lat 39°39'08", long 105°01'57", in NW¼NW¼ sec.5, T.5 S., R.68 W., on left bank just downstream from bridge on State Highway 70 at northwest city limits of Sheridan, 1.3 miles upstream from mouth and 2.3 miles west of city hall in Englewood.

Drainage area.--260 sq mi.

Records available.--April to November 1914, March 1927 to September 1964. Monthly discharge only prior to October 1933, published in WSP 1310. Published as "at Sheridan Junction" 1934-41.

Gage.--Water-stage recorder. Altitude of gage is 5,295 ft (from topographic map). Apr. 1 to Nov. 30, 1914, staff gage and Feb. 23, 1927, to June 18, 1931, water-stage recorder, at site 1 mile downstream at different datums. June 19, 1931, to Oct. 8, 1953, water-stage recorder at site 0.8 mile downstream at datum 5,282.72 ft above mean sea level, datum of 1929, prior to June 6, 1949, and at datum 5,280.72 ft thereafter.

Average discharge.--37 years (1927-64), 33.2 cfs (24,040 acre-ft per year).

Extremes.--Maximum discharge during year, 137 cfs Aug. 7 (gage height, 3.47 ft); minimum daily, 0.2 cfs May 24.
1914, 1927-64: Maximum discharge, 3,000 cfs July 7, 1933 (gage height, 6.95 ft, site and datum then in use), from rating curve extended above 1,100 cfs on basis of slope-area measurement of peak flow; maximum gage height, 7.21 ft Sept. 2, 1938 (site and datum then in use); no flow July 13, 1954.

Remarks.--Records poor. Discharge measurements generally made twice a month. Storage and diversions above station for irrigation of about 12,000 acres.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Dec. 5-22, Feb. 6-20, Mar. 17 to May 7,
May 14-27, July 2-28, Sept. 10-30)

1.9	0.1	2.4	6.5
2.0	.3	2.7	22
2.1	.8	2.9	40
2.2	1.8	3.2	84
2.3	3.7		

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	5.1	9.2	12	14	15	11	20	13	36	3.7	12	9.6
2	3.7	6.5	14	14	16	11	19	12	47	3.3	16	5.0
3	3.7	5.9	14	14	17	11	20	12	40	1.8	14	2.2
4	6.5	3.5	14	12	17	10	15	7.0	34	2.6	16	2.0
5	6.5	6.5	14	12	20	11	15	3.1	27	2.6	50	2.2
6	3.1	11	14	15	18	14	17	5.9	20	3.5	24	2.2
7	5.4	16	14	17	14	12	16	2.6	19	3.7	35	2.2
8	3.3	14	14	14	11	12	14	5.9	15	3.7	36	2.4
9	3.3	14	17	13	12	9.2	13	3.5	18	2.8	23	2.4
10	2.8	14	16	15	14	8.8	14	1.1	15	2.2	14	2.8
11	2.4	13	17	14	14	6.2	18	1.0	14	3.1	10	2.8
12	3.3	11	16	12	15	11	17	1.2	8.3	4.8	9.2	2.2
13	3.5	11	14	13	12	14	16	1.0	9.6	4.8	10	2.0
14	3.7	1.8	14	16	12	11	15	1.2	9.2	4.8	11	1.7
15	5.1	17	16	15	9.6	13	18	.6	7.0	4.8	8.3	3.5
16	5.1	15	17	14	9.2	13	20	14	3.5	3.3	8.3	3.1
17	2.8	16	15	14	9.6	14	21	2.8	6.2	4.5	9.2	3.3
18	2.0	13	14	15	11	14	18	.6	4.5	7.8	7.8	2.8
19	3.7	12	14	15	12	15	19	2.6	3.5	4.5	12	3.5
20	5.1	12	14	15	11	14	20	.6	4.0	3.7	8.8	3.3
21	6.2	11	15	14	10	13	14	.8	4.0	3.7	6.5	3.7
22	6.2	12	14	14	11	14	10	.6	4.5	3.7	8.3	4.0
23	7.0	12	15	14	11	13	7.8	.8	4.3	2.9	11	3.7
24	5.7	12	16	10	12	12	7.0	.2	4.5	4.0	16	3.7
25	5.4	12	14	16	9.6	12	9.6	.4	4.5	4.8	16	4.3
26	4.8	12	14	15	12	11	11	9.0	3.5	4.3	14	2.9
27	5.7	12	14	15	11	11	7.8	3.3	2.8	3.7	14	3.1
28	5.4	12	13	14	11	12	6.2	2.8	4.0	4.3	12	3.1
29	5.4	12	14	14	11	12	5.7	3.0	4.5	1.3	12	2.8
30	5.7	12	12	15	-----	12	12	3.9	3.5	3.7	11	3.1
31	7.8	-----	14	14	-----	16	-----	3.5	-----	4.0	12	-----
Total	145.4	357.6	449	438	368.0	373.2	436.1	268.5	380.9	128.1	467.4	95.6
Mean	4.69	11.9	14.5	14.1	12.7	12.0	14.5	8.66	12.7	4.13	15.1	3.19
Ac-ft	288	709	891	869	730	740	865	533	756	254	927	190

Calendar year 1963: Max 150 Min 0.2 Mean 7.87 Ac-ft 5,700
Water year 1963-64: Max 50 Min 0.2 Mean 10.7 Ac-ft 7,750

PLATTE RIVER BASIN

6-7120. Cherry Creek near Franktown, Colo.

Location.--Lat 39°21'30", long 104°45'50", in NE¼ sec.15, T.8 S., R.66 W., on right bank 1½ miles upstream from Russellville Gulch and 2½ miles south of Franktown.

Drainage area.--169 sq mi.

Records available.--November 1939 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,150 ft (from topographic map). Prior to Oct. 1, 1953, at site 1,000 ft downstream, at datum 6,149.53 ft above mean sea level (unadjusted) prior to Apr. 13, 1942, and at datum 6,147.53 ft above mean sea level Apr. 13, 1942, to Sept. 30, 1953.

Average discharge.--24 years (1940-64), 9.45 cfs (6,840 acre-ft per year).

Extremes.--Maximum discharge during year, 400 cfs Mar. 30. (gage height, 4.49 ft); minimum daily, 0.7 cfs Aug. 23, 24, Sept. 2-4. 1939-64: Maximum discharge, 9,170 cfs Aug. 5, 1945 (gage height, 4.91 ft, site and datum then in use), by float measurement; minimum daily, 0.2 cfs July 13, 1946, Sept. 30, Oct. 1, 1950. Highest flood known occurred Aug. 3, 1933, when Castlewood Dam failed.

Remarks.--Records good. Discharge measurements generally made twice a month. Many small diversions above station for irrigation of about 800 acres.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-23, Nov. 27 to Dec. 24, Mar. 31 to Apr. 3,
June 15-21, July 2 to Aug. 4)
(Stage-discharge relation affected by ice Feb. 3)

1.5	0.6	2.8	16
1.6	.9	3.0	25
1.7	1.3	3.3	60
1.9	2.3	3.6	114
2.3	5.5	4.0	220
2.6	10		

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	1.7	2.3	1.6	2.0	2.4	2.6	136	3.6	5.4	2.4	1.4	0.8
2	1.6	2.4	1.4	2.2	3.7	3.0	66	3.3	7.7	1.6	1.0	.7
3	1.5	2.5	1.6	2.2	3.2	3.0	38	2.5	6.4	1.2	.9	.7
4	1.6	2.3	1.5	2.1	2.5	3.6	29	2.9	5.5	1.1	.9	.7
5	1.4	2.0	1.6	2.4	2.6	3.9	33	2.6	3.5	1.1	30	.8
6	1.3	2.1	1.7	2.4	2.4	3.1	34	2.4	3.6	1.1	13	.8
7	1.3	2.0	.9	2.2	2.4	2.8	19	2.4	3.0	1.1	6.1	.9
8	1.2	2.0	1.1	2.1	2.6	2.8	22	2.9	2.6	1.1	3.5	.9
9	1.2	2.0	1.3	2.9	2.5	4.3	27	2.5	2.3	1.1	2.4	.8
10	1.1	2.0	1.0	2.4	2.6	3.4	28	2.5	2.1	1.1	2.0	.9
11	1.2	2.0	.9	2.3	2.6	3.6	24	2.6	2.0	1.1	1.6	.9
12	1.1	2.0	1.3	2.2	2.5	3.3	28	2.5	2.0	3.6	1.4	2.1
13	1.1	2.1	1.1	2.2	3.1	3.1	22	2.2	3.6	1.6	1.3	1.6
14	1.1	2.1	1.1	2.2	3.1	3.1	19	2.2	2.9	.9	1.2	1.3
15	1.2	2.1	1.0	2.9	3.0	3.4	21	2.2	4.7	.9	1.0	2.0
16	1.1	2.2	1.2	2.4	2.6	3.6	22	1.7	3.3	1.1	1.0	1.9
17	1.1	2.4	1.6	2.4	2.6	3.9	21	2.0	2.7	.9	.9	1.5
18	1.2	2.1	1.6	2.4	2.4	7.7	18	2.0	2.2	.9	.8	1.4
19	1.3	2.0	1.6	2.5	2.4	16	16	1.8	2.0	.8	.8	1.4
20	1.4	1.8	1.4	2.4	2.4	10	14	2.4	2.0	.8	.8	1.3
21	1.4	1.8	1.3	2.6	2.6	12	12	2.5	2.0	.8	.8	1.3
22	1.5	1.8	1.2	2.8	2.7	5.6	11	2.2	2.0	.9	.8	1.2
23	1.6	1.7	1.4	2.8	2.6	8.9	9.6	2.2	1.8	.8	.7	1.2
24	1.6	2.4	1.4	2.4	2.4	5.6	8.4	2.1	1.8	.8	.7	1.1
25	1.4	2.3	1.6	2.2	2.4	30	6.5	2.1	1.8	1.0	.8	1.2
26	1.4	2.2	1.6	2.2	2.4	16	5.3	2.4	1.7	.8	.8	1.2
27	1.4	1.8	1.5	2.5	2.4	16	4.1	3.3	1.6	.8	1.1	1.3
28	1.4	1.8	1.6	2.4	2.5	20	3.6	2.6	1.6	1.7	.9	1.2
29	1.8	1.7	1.7	2.4	2.4	14.6	3.6	4.5	1.6	4.3	.9	1.1
30	1.8	1.8	2.0	2.4	-----	21.7	3.6	1.4	1.6	1.6	.8	1.1
31	2.3	-----	2.0	2.4	-----	15.2	-----	6.6	-----	1.6	.8	-----
Total	43.3	61.7	43.8	73.9	76.0	900.2	704.7	93.7	113.1	55.9	81.1	35.3
Mean	1.40	2.06	1.41	2.38	2.62	29.0	23.5	3.02	3.77	1.80	2.62	1.18
Ac-ft	86	122	87	147	151	1,790	1,400	186	224	111	161	70

Calendar year 1963: Max 60 Min 0.6 Mean 2.97 Ac-ft 2,150
Water year 1963-64: Max 217 Min 0.7 Mean 6.24 Ac-ft 4,540

Peak discharge (base, 200 cfs).-- Mar. 22 (2115) 238 cfs (4.13 ft); Mar. 30 (1500) 400 cfs (4.49 ft).

PLATTE RIVER BASIN

6-7125. Cherry Creek near Melvin, Colo.

Location.--Lat 39°35'42", long 104°48'44", in SE¼SE¼ sec.19, T.5 S., R.66 W., near right bank on downstream side of Arspahoe Road bridge, 0.9 mile upstream from Piney (South Cherry) Creek, 2.3 miles southeast of former site of Melvin, 5½ miles upstream from Cherry Creek Dam, and 6.0 miles northwest of Parker.

Drainage area.--336 sq mi.

Records available.--October 1939 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 5,630 ft (from topographic map). Prior to Oct. 1, 1960, at site 1 mile downstream at datum 5,608.21 ft above mean sea level, datum of 1929.

Average discharge.--25 years, 12.8 cfs (9,270 acre-ft per year) (24 years, 13.2 cfs, 9,560 acre-ft per year; figures previously published in error).

Extremes.--Maximum discharge during year, 910 cfs Mar. 31 (gage height, 3.16 ft), from rating curve extended above 35 cfs; no flow for many days.

1939-64: Maximum discharge, 17,600 cfs July 18, 1946 (gage height, 7.45 ft, site and datum then in use), from rating curve extended above 11,000 cfs; no flow at times in most years.

Maximum stage known, 9.72 ft, former site and datum, Aug. 3, 1933, from floodmarks (discharge, 34,000 cfs, by slope-area measurement of peak flow at Kenwood damsite 6 miles downstream), caused by failure of Castlewood Dam.

Remarks.--Records poor. Discharge measurements or observations of no flow generally made twice a month. Diversions above station for irrigation of about 1,800 acres.

Revisions.--Revised figures of monthly and yearly discharge for water year 1963, superseding those previously published, are given herewith:

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
August 1963.....	680	566	0	21.9	1,350
Water year 1962-63.....	-	566	0	1.90	1,370

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	171	0	0	0	0	
2						0	86	0	0	0	0	
3						0	54	0	0	0	0	
4						0	32	0	0	0	0	
5						0	32	0	0	0	10	
											2.1	
6						0	30	0	0	0	0	
7						0	36	0	0	0	0	
8						0	22	0	0	0	0	
9						0	27	0	0	0	0	
10						0	21	0	0	0	0	
11						0	22	0	0	0	0	
12						0	24	0	0	0	0	
13						0	22	0	0	0	0	
14						0	16	0	26	0	0	
15						0	15	0	0	0	0	
16						0	13	0	0	0	0	
17						2	11	0	0	0	0	
18						6	11	0	0	0	0	
19						0	10	0	0	0	0	
20						0	6.4	0	0	0	0	
21						0	0	0	0	0	0	
22						0	1.1	0	0	0	0	
23						0	1.5	0	0	0	0	
24						0	0	0	0	0	0	
25						0	0	0	0	0	0	
26						0	0	0	0	0	0	
27						0	0	0	0	0	0	
28						0	0	0	0	0	0	
29						0	0	0	0	0	0	
30						0	0	0	0	0	0	
31						-----	0	6.5	0	0	0	
						-----	80	0	-----	0	0	-----
Total	0	0	0	0	0	88	655.0	6.5	26	0.8	12.1	0
Mean	0	0	0	0	0	2.84	21.8	0.21	0.87	0.03	0.39	0
Ac-ft	0	0	0	0	0	175	1,300	13	52	1.6	24	0

Calendar year 1963: Max 566 Min 0 Mean 1.90 Ac-ft 1,370
 Water year 1963-64: Max 171 Min 0 Mean 2.15 Ac-ft 1,570

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

PLATTE RIVER BASIN

6-7130. Cherry Creek below Cherry Creek Reservoir, Colo.

Location.--Lat 39°39'10", long 104°51'40", in SW¼SW¼ sec.35, T.4 S., R.67 W., on right bank 2,000 ft downstream from Cherry Creek Dam, 2 miles southeast of Sullivan, 9 miles southeast of Civic Center in Denver, and 11 miles upstream from mouth.

Drainage area.--385 sq mi.

Records available.--June 1950 to September 1964.

Gage.--Water-stage recorder and concrete control. Datum of gage is 5,490.51 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark).

Average discharge.--14 years, 3.10 cfs (2,240 acre-ft per year), unadjusted.

Extremes.--Maximum discharge during year, 130 cfs Apr. 4 (gage height, 4.46 ft); no flow for most of time.

1950-64: Maximum discharge, 1,440 cfs July 31, 1956 (gage height, 6.07 ft); no flow for many days in 1957-64.

Maximum flood known, 34,000 cfs Aug. 3, 1933, by slope-area measurement near present site (Castlewood Dam failure).

Remarks.--Records good. Discharge measurements or observations of no flow generally made one or more times a month. Flow regulated by Cherry Creek Reservoir (capacity, 95,960 acre-ft). Reservoir was completed in June 1950. Permanent storage started May 15, 1957. Contents Sept. 30, 1964, 10,380 acre-ft. Change in contents during water year 1964, -1,840 acre-ft. Diversions above station for irrigation of about 1,800 acres.

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

Apr. 1.....	84	Apr. 5.....	124
2.....	124	6.....	119
3.....	116	7.....	119
4.....	122	8.....	44

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
April.....	852	124	0	28.4	1,690
Calendar year 1963.....	-	245	0	2.79	2,010
Water year 1963-64.....	-	124	0	2.33	1,690

Note.--Flow occurred only on days listed above.

6-7135. Cherry Creek at Denver, Colo.

Location.--Lat 39°44'58", long 105°00'08", in NE¼ sec.33, T.3 S., R.68 W., on right bank on downstream side of Wazee Street Bridge in Denver, 0.5 mile upstream from mouth.

Drainage area.--409 sq mi.

Records available.--August 1942 to September 1964.

Gage.--Water-stage recorder (digital). Datum of gage is 5,176.34 ft above mean sea level, datum of 1929. Prior to Jan. 23, 1945, wire-weight gage at Broadway Bridge 1.8 miles upstream at datum 57.29 ft higher. Jan. 23 to Feb. 26, 1945, wire-weight gage at Downing Street Bridge 2.8 miles upstream from present site at different datum. Feb. 27, 1945, to Sept. 30, 1947, wire-weight gages at Washington Street Bridge 2.4 miles upstream from present site at datum 72.31 ft higher and Oct. 1, 1947, to Sept. 30, 1949, at datum 71.31 ft higher than present datum. Oct. 1, 1949, to July 15, 1951, wire-weight gage at Market Street Bridge 0.1 mile upstream from present site at datum 8.49 ft higher.

Average discharge.--22 years, 16.0 cfs (11,580 acre-ft per year).

Extremes.--Maximum discharge during year, 718 cfs May 29 (gage height, 5.25 ft); minimum daily, 3.5 cfs May 3, 1942-64; Maximum discharge observed, 3,120 cfs Aug. 5, 1945 (gage height, 5.25 ft, site and datum then in use); minimum daily, 0.4 cfs June 16-18, 1948.

Flood of July 26, 1885, reached a discharge of 20,000 cfs, by float measurement. Flood of May 19, 20, 1864, reached a somewhat higher stage. Flood of Aug. 3, 1933, reached a discharge of about 15,000 cfs, as determined by rise of South Platte River at Denver.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Discharge measurements generally made twice a month. Several diversions above station for irrigation of about 1,900 acres. Flood flow regulated by Cherry Creek Reservoir 11 miles upstream (capacity, 95,960 acre-ft).

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

3.2	3.3	3.6	36
3.3	8.3	3.8	67
3.4	16	4.1	137

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	8.3	6.0	4.8	4.6	6.5	11	5.5	13	6.1	7.1	6.0
2	14	6.7	5.9	5.3	6.3	8.9	79	4.3	21	5.9	5.8	6.3
3	11	6.0	6.2	11	5.5	a15	115	3.5	17	6.3	7.1	6.5
4	10	6.3	6.1	11	6.6	a10	105	8.0	17	5.9	11	7.0
5	10	6.7	6.2	10	6.1	a9.0	108	4.1	16	5.5	9.1	6.5
6	11	6.3	6.0	9.0	5.3	a8.0	106	4.4	14	6.9	6.7	6.2
7	13	5.2	5.7	8.3	5.2	a7.0	104	4.4	11	7.1	9.8	11
8	16	5.2	5.9	8.3	5.0	a9.0	76	12	11	7.1	6.9	12
9	15	5.4	5.4	5.0	4.9	a7.0	12	4.4	13	7.3	6.7	8.0
10	14	5.2	5.3	5.1	5.5	a10	11	4.8	10	7.1	7.3	7.5
11	8.6	5.3	5.5	4.9	5.6	15	10	4.8	7.1	18	7.0	13
12	5.8	5.0	5.5	4.9	13	9.9	9.2	4.4	7.3	26	7.4	13
13	5.3	4.8	5.3	5.9	7.0	8.7	9.3	4.8	9.2	6.7	6.6	13
14	5.7	5.2	5.4	4.9	7.9	6.8	12	5.9	7.5	6.7	6.7	12
15	5.8	5.2	6.0	5.3	7.5	6.3	7.2	5.9	6.4	7.2	6.3	35
16	6.6	14	7.3	5.7	7.2	5.7	7.5	5.9	9.7	7.9	5.8	7.5
17	5.1	14	6.0	7.9	8.6	5.8	5.1	4.8	6.4	12	7.6	13
18	8.5	5.0	6.2	6.6	7.3	5.9	4.9	7.6	8.2	9.2	7.1	13
19	9.2	4.6	6.1	5.4	4.5	16	5.2	5.9	6.2	7.4	8.1	18
20	12	4.5	6.8	5.4	4.3	5.6	5.0	6.4	7.6	8.4	7.3	12
21	8.9	4.9	6.9	5.6	4.2	4.7	5.8	6.4	5.6	8.3	7.1	12
22	6.9	4.7	7.0	5.6	5.1	4.4	8.4	5.9	7.6	8.4	6.2	8.7
23	7.0	4.6	9.7	6.8	6.1	4.3	15	6.4	6.7	9.1	6.6	a9.0
24	5.7	5.1	9.7	6.0	6.7	7.8	6.9	6.4	7.6	9.0	11	a 10
25	5.8	4.8	6.4	4.6	6.8	9.6	5.3	10	8.3	8.0	6.9	11
26	8.1	4.8	6.0	5.1	8.9	5.5	4.8	33	6.5	7.5	8.1	a 12
27	7.7	4.8	6.1	5.8	7.3	4.8	4.3	11	6.6	7.5	18	a 13
28	8.1	4.6	5.7	5.0	8.2	6.6	4.5	5.9	7.5	9.0	10	a 10
29	6.5	4.9	7.6	7.1	6.6	4.4	5.2	119	7.0	16	10	a 10
30	6.7	5.7	5.3	4.5	-----	5.0	16	50	6.4	10	12	a 10
31	13	-----	5.9	4.7	-----	5.2	-----	5.3	-----	6.6	8.9	-----
TOTAL	285.0	177.8	195.1	195.5	187.8	238.4	878.6	371.1	288.4	274.1	232.2	332.2
MEAN	9.19	5.93	6.29	6.31	6.48	7.69	29.3	12.0	9.61	8.84	8.14	11.1
AC-FT	565	353	387	388	372	473	1,740	736	572	544	500	659

CALENDAR YEAR 1963	MAX	225	MIN	3.6	MEAN	12.0	AC-FT	8,715
WATER YEAR 1963-64	MAX	119	MIN	3.5	MEAN	10.0	AC-FT	7,289

a No gage-height record.

PLATTE RIVER BASIN

6-7140. South Platte River at Denver, Colo.

Location.--Lat 39°45'35", long 105°00'10", in NW¼SE¼ sec.28, T.3 S., R.68 W., on right bank 20 ft upstream from Nineteenth Street Bridge in Denver and 0.4 mile downstream from Cherry Creek.

Drainage area.--3,804 sq mi.

Records available.--May to October 1889, June to October 1890, July 1895 to September 1964. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 5,162.12 ft above mean sea level, datum of 1929. Prior to Aug. 12, 1909, staff gages and Aug. 12, 1909, to Aug. 28, 1931, water-stage recorder, at several sites within half a mile of present site at approximately present datum.

Average discharge.--69 years, 338 cfs (244,700 acre-ft per year).

Extremes.--Maximum discharge during year, 3,020 cfs May 29 (gage height, 2.94 ft); minimum daily, 34 cfs Sept. 6. 1889-90, 1895-1964: Maximum discharge, 22,000 cfs Sept. 10, 1933 (gage height, 10.98 ft), from rating curve extended above 8,800 cfs on basis of float-area measurement at gage height 9.44 ft; minimum daily, 8.8 cfs Mar. 25, 1951.

Remarks.--Records good. Discharge measurements generally made twice a month. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 79,000 acres and municipal use, and return flow from irrigated areas.

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

Oct. 1 to May 29				May 30 to Sept. 30			
0.3	27	1.3	400	0.3	33	1.3	463
.5	50	1.6	740	.5	60	1.7	870
.8	110	2.0	1,260	.7	101		
1.0	195			1.0	231		

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	98	80	68	66	40	55	98	207	319	175	184	70
2	110	74	64	70	45	74	175	213	373	154	179	57
3	134	63	63	72	44	96	307	207	319	158	166	50
4	120	63	60	63	46	78	243	180	296	179	195	37
5	86	84	61	52	46	64	219	138	244	205	319	43
6	74	114	76	49	45	66	225	142	226	189	365	34
7	66	84	64	52	39	52	207	165	184	184	521	38
8	61	72	60	46	38	64	155	190	195	195	650	38
9	58	68	60	38	40	56	93	185	150	189	700	37
10	56	63	53	55	44	56	128	142	108	133	630	38
11	45	60	49	52	44	72	128	142	137	123	610	54
12	44	49	53	45	64	82	98	185	105	179	418	49
13	38	60	63	39	45	114	91	155	99	141	257	40
14	38	64	61	43	52	74	91	155	250	133	226	38
15	37	64	72	43	48	70	82	170	171	141	179	120
16	55	72	86	50	58	78	108	225	112	166	133	92
17	55	134	91	58	53	86	117	262	238	184	126	71
18	53	72	93	50	48	155	155	274	270	200	119	77
19	53	66	91	46	49	268	195	262	264	179	108	90
20	63	60	88	56	46	105	231	231	215	162	105	90
21	72	61	88	63	45	82	225	237	195	150	115	81
22	88	61	86	49	49	98	180	314	184	154	115	75
23	86	61	82	50	50	170	155	320	101	162	97	58
24	74	58	91	38	53	124	219	314	115	141	99	50
25	61	58	84	49	56	105	307	320	137	145	94	54
26	55	60	80	55	50	80	314	490	130	162	94	52
27	55	60	80	55	52	70	300	680	115	145	133	64
28	55	60	74	44	52	82	231	776	115	141	94	68
29	53	55	96	55	60	63	98	1,230	123	215	94	70
30	49	72	68	50	-----	63	138	826	154	250	81	68
31	82	-----	68	45	-----	74	-----	382	-----	210	75	-----
Total	2,074	2,072	2,273	1,598	1,401	2,776	5,313	9,719	5,644	5,244	7,281	1,803
Mean	66.9	69.1	73.3	51.5	48.3	89.5	177	314	188	169	235	60.1
Ac-ft	4,110	4,110	4,510	3,170	2,780	5,510	10,540	19,280	11,190	10,400	14,440	3,580

Calendar year 1963: Max 1,190 Min 22 Mean 91.8 Ac-ft 66,420
 Water year 1963-64: Max 1,230 Min 34 Mean 129 Ac-ft 93,620

6-7165. Clear Creek near Lawson, Colo.

Location.--Lat 39°45'40", long 105°39'06", in SE 1/4 sec.27, T.3 S., R.74 W., on right bank 500 ft south of U. S. Highway 6 and 40, 0.4 mile downstream from West Fork Clear Creek, and 1 mile west of Lawson.

Drainage area.--145 sq mi.

Records available.--March 1946 to September 1964. Records prior to 1959 include inflow from Jones Pass tunnel.

Gage.--Water-stage recorder. Datum of gage is 8,193.72 ft above mean sea level (State Highway Department bench mark).

Average discharge.--18 years, 136 cfs (98,460 acre-ft per year), adjusted for inflow from Jones Pass tunnel prior to 1959.

Extremes.--Maximum discharge during year, 549 cfs June 17 (gage height, 4.28 ft); minimum daily, 20 cfs Apr. 13.
1946-64: Maximum discharge, 6,130 cfs June 4, 1956 (gage height, 7.41 ft), from rating curve extended above 1,600 cfs on basis of computation of peak flow over dam, caused by failure of Georgetown Dam on White Reservoir about 3 miles upstream; minimum daily, 13 cfs Feb. 20, 1955.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow affected by minor transmountain diversion from Colorado River basin through Berthoud Pass ditch (see elsewhere in this report). No diversion 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 to June 2)

2.2	19	3.0	118
2.3	24	3.5	245
2.5	42	4.0	415
2.7	65	4.5	630

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	78	49	29	26	26	27	26	37	187	418	172	60
2	76	50	27	28	24	26	25	37	177	401	164	57
3	77	52	28	27	23	24	23	32	177	390	177	54
4	72	53	29	26	25	23	24	31	204	376	172	53
5	71	51	29	25	26	25	22	*32	234	380	167	52
6	65	48	27	25	23	24	22	30	263	*376	169	49
7	60	50	26	25	24	23	21	33	342	362	198	48
8	61	49	26	24	27	23	22	35	373	348	177	49
9	60	50	26	25	26	24	22	38	338	331	159	49
10	59	*50	25	27	29	25	22	40	*404	331	147	50
11	63	49	24	26	28	26	23	49	426	317	136	48
12	*63	44	25	25	27	28	24	44	426	306	138	46
13	63	45	25	24	26	26	20	39	415	300	129	44
14	60	48	30	24	25	26	24	55	390	289	*120	45
15	61	43	*31	24	22	28	24	72	415	286	110	48
16	59	43	29	*24	23	28	30	93	459	286	110	52
17	59	33	28	28	25	30	30	125	472	269	108	49
18	58	30	28	26	*24	30	*30	167	440	257	100	*48
19	57	31	30	24	25	28	31	190	*404	237	102	55
20	63	32	34	28	24	25	32	220	404	220	114	55
21	63	32	33	26	24	27	29	260	384	212	94	53
22	58	30	29	26	24	30	26	290	370	217	93	52
23	57	28	29	25	24	27	26	280	338	204	87	46
24	57	28	33	23	22	25	30	300	366	228	82	46
25	54	30	33	25	23	25	32	330	394	201	80	45
26	54	28	30	26	23	25	29	352	398	185	74	48
27	53	28	28	26	24	*25	29	331	404	169	80	51
28	51	28	26	26	26	24	30	*314	408	162	78	50
29	52	28	25	26	26	24	30	278	422	152	71	46
30	52	29	26	26	-----	27	32	237	435	152	68	45
31	55	-----	26	26	-----	26	-----	206	-----	193	64	-----
Total	1,891	1,189	874	792	718	804	790	4,577	10,870	8,555	3,740	1,493
Mean	61.0	39.6	28.2	25.5	24.8	25.9	26.3	148	362	276	121	49.8
Ac-ft	3,750	2,360	1,730	1,570	1,420	1,590	1,570	9,080	21,560	16,970	7,420	2,960

Calendar year 1963: Max 324 Min 15 Mean 80.0 Ac-ft 57,880
Water year 1963-64: Max 472 Min 20 Mean 99.2 Ac-ft 71,980

Peak discharge (base, 600 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 18 to Dec. 19, Dec. 22, 23, Dec. 26 to Feb. 20, Mar. 4-6, 29. No gage-height record Feb. 21 to Mar. 3, Mar. 7-27 (stage-discharge relation affected by ice during most of periods), May 19-25.

PLATTE RIVER BASIN

6-7195. Clear Creek near Golden, Colo.

Location--Lat 39°45'02", long 105°14'54", in NE¼ sec.32, T.3 S., R.70 W., on left bank 0.2 mile upstream from headgate of Church ditch, 0.7 mile downstream from headgate of Welch ditch (revised), 1.0 mile west of Golden, and 12½ miles downstream from North Clear Creek.

Drainage area--399 sq mi.

Records available--October 1908 to December 1909, June 1911 to September 1964. Monthly discharge only for some periods, published in WSP 1310. Records for 1940-58 include inflow from Jones Pass tunnel.

Gage--Water-stage recorder. Datum of gage is 5,735.27 ft above mean sea level (State Highway Department bench mark). Prior to May 15, 1919, at site half a mile upstream at different datum. May 15, 1919, to Mar. 16, 1934, at present site at datum 3.13 ft higher. Mar. 17, 1934, to Aug. 29, 1941, at present site at datum 4.00 ft higher. Aug. 30, 1941, to Apr. 16, 1942, at present site at datum 2.00 ft higher. Apr. 17, 1942, to Jan. 20, 1943, at site 600 ft downstream at datum 7.50 ft lower.

Average discharge--54 years, 229 cfs (165,800 acre-ft per year), adjusted for inflow from Jones Pass tunnel and Berthoud Pass ditch 1940-58.

Extremes--Maximum discharge during year, 786 cfs June 11 (gage height, 4.44 ft); maximum gage height, 5.60 ft Feb. 28 (backwater from ice); minimum daily discharge, 24 cfs Dec. 7-9, 12. 1908-9, 1911-64: Maximum discharge, 5,890 cfs Sept. 9, 1933 (gage height, 11.57 ft, present datum, from floodmarks), from rating curve extended above 2,200 cfs on basis of slope-area measurement of peak flow; minimum daily recorded, 11 cfs Mar. 13, 1954. Maximum discharge known, 8,700 cfs Aug. 1, 1888, from reports of State engineer of Colorado for station 5½ miles upstream.

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. Natural flow of stream affected by minor transmountain diversion from Colorado River basin through Berthoud Pass ditch (see elsewhere in this report) and several small reservoirs above station. Diversion 0.7 mile above station by Welch ditch for irrigation of about 1,000 acres below station.

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

2.2	22	3.5	265
2.4	37	4.0	470
2.7	70	4.5	840
3.0	126		

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	112	72	28	37	41	40	55	80	368	565	258	112
2	110	70	28	36	41	38	52	88	368	518	218	108
3	110	75	27	34	42	38	53	80	356	500	227	102
4	104	76	27	33	41	39	47	73	340	476	251	100
5	102	73	26	33	40	40	50	81	376	465	227	96
6	98	70	26	32	39	39	50	78	396	460	209	92
7	90	73	24	31	40	42	46	81	512	435	272	86
8	88	73	24	31	40	43	46	86	628	412	272	81
9	90	73	24	31	42	44	46	81	488	392	224	83
10	94	73	26	31	43	43	48	84	600	384	206	88
11	94	73	25	31	41	41	49	100	663	392	194	88
12	94	69	24	31	39	42	53	94	642	368	194	83
13	94	70	25	32	38	42	46	94	607	352	194	76
14	92	75	25	32	38	41	43	120	551	336	183	72
15	90	73	25	33	39	41	56	165	530	336	175	76
16	90	73	25	35	40	41	65	221	621	340	170	86
17	90	67	26	35	40	45	73	265	635	324	178	78
18	90	54	28	35	42	46	60	320	635	304	160	72
19	88	52	30	36	41	42	65	332	530	279	155	78
20	94	50	32	38	41	40	66	340	551	262	175	88
21	104	45	32	37	41	39	55	450	506	254	158	80
22	96	41	34	36	42	40	56	544	494	272	146	76
23	92	37	36	34	44	40	56	506	420	258	139	69
24	90	32	37	35	46	40	64	506	435	293	126	67
25	86	32	35	36	43	40	72	565	488	272	120	65
26	83	33	33	37	45	41	57	607	512	248	118	62
27	83	33	32	37	44	41	55	607	506	221	120	69
28	80	32	32	38	42	42	57	551	530	209	133	69
29	78	30	33	38	40	46	64	530	537	203	126	66
30	76	29	34	38	-----	54	65	445	579	197	122	67
31	80	-----	34	39	-----	57	-----	380	-----	254	118	-----
Total	2,862	1,728	897	1,072	1,195	1,307	1,670	8,554	15,404	10,581	5,568	2,435
Mean	92.3	57.6	28.9	34.6	41.2	42.2	55.7	276	513	361	180	81.2
Ac-ft	5,680	3,430	1,780	2,130	2,370	2,590	3,310	16,970	30,550	20,990	11,040	4,830

Calendar year 1963: Max 558 Min 23 Mean 113 Ac-ft 81,590
 Water year 1963-64: Max 663 Min 24 Mean 146 Ac-ft 103,700

Peak discharge (base, 1,100 cfs)--No peak above base.

Note--Stage-discharge relation affected by ice Nov. 18 to Mar. 23 (no gage-height record Jan. 14-23, Feb. 24-26, Mar. 2-15), Mar. 26, 27. No gage-height record Sept. 30.

6-7200. Clear Creek at mouth, near Derby, Colo.

Location.--Lat 39°49'42", long 104°57'30", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.36, T.2 S., R.68 W., on right bank 160 ft downstream from bridge on highway to Welby, 0.6 mile upstream from mouth, and 2½ miles west of Derby.

Drainage area.--575 sq mi.

Records available.--April to November 1914, March 1927 to September 1964. Prior to October 1933 monthly discharge only, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 5,110 ft (from topographic map). Apr. 1 to Nov. 30, 1914, chain gage at bridge 160 ft upstream at different datum. Feb. 25, 1927, to June 7, 1942, water-stage recorder at several sites within 1,000 ft of present site at various datums. June 8, 1942, to May 30, 1948, water-stage recorder at site 160 ft upstream at datum 4.00 ft higher, May 31, 1948, to Aug. 27, 1956, at datum 2.00 ft higher, and Aug. 28, 1956, to Nov. 14, 1957, at datum 1.00 ft higher. Nov. 15, 1957, to July 15, 1958, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge.--37 years (1927-64), 87.5 cfs (63,350 acre-ft per year).

Extremes.--Maximum discharge during year, 638 cfs May 29 (gage height, 3.73 ft), from rating curve extended above 280 cfs; minimum daily, 1.8 cfs Sept. 12.

1914, 1927-64: Maximum discharge, 3,650 cfs Sept. 3, 1938 (gage height, 4.04 ft, site and datum then in use), from rating curve extended above 1,300 cfs; minimum daily, 0.4 cfs Mar. 11, 1943.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Natural flow of stream affected by transmountain diversions (see elsewhere in this report), storage reservoirs, diversions for irrigation of about 75,000 acres above station, and return flow from irrigated areas.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 26 to May 17, July 27 to Aug. 17, Sept. 2-30)

Oct. 1 to May 5		May 6 to Sept. 30	
1.4	2.2	1.3	0.8
1.5	6.0	1.4	2.2
1.6	12	1.5	6.0
1.8	32	1.6	12
2.0	56		
		1.8	32
		2.0	68
		2.5	190
		3.1	380

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	13	*19	32	29	23	25	20	11	68	356	64	96
2	11	16	32	30	23	29	19	10	48	279	19	90
3	9.6	15	32	31	21	33	33	10	20	235	19	8.4
4	9.6	16	*32	32	23	29	41	9.0	42	212	26	6.6
5	9.6	16	32	28	23	30	39	*6.6	20	207	32	6.6
6	9.0	21	31	*25	24	29	48	10	11	218	19	5.2
7	9.0	23	26	28	24	25	*43	9.0	62	190	45	4.1
8	9.0	24	29	28	23	25	39	10	165	173	112	5.2
9	8.4	23	31	25	23	26	36	11	*81	157	35	4.5
10	*7.8	21	30	26	*24	28	28	12	50	154	18	3.7
11	9.0	18	31	24	22	28	23	16	32	173	22	2.2
12	7.8	18	b28	23	25	32	24	16	81	215	18	1.8
13	9.0	18	29	24	24	38	21	23	141	157	*21	3.0
14	9.0	18	29	25	25	31	15	31	149	117	15	*3.7
15	9.0	17	24	24	25	28	33	62	114	*86	11	4.9
16	9.6	17	25	26	24	32	3.3	126	144	77	11	3.7
17	9.6	33	26	29	23	32	4.9	165	173	70	11	5.2
18	9.6	32	28	29	22	30	5.6	207	212	40	9.6	4.5
19	9.6	33	30	28	22	42	6.0	173	154	20	9.6	4.5
20	11	36	30	26	22	24	*11	103	141	13	9.6	5.2
21	18	36	28	25	22	a22	9.0	149	144	13	9.0	6.0
22	15	*38	24	*29	24	a20	10	300	162	30	9.6	6.0
23	11	36	25	28	23	17	11	232	81	54	13	4.9
24	12	35	31	24	*25	26	12	212	11	60	14	5.2
25	11	35	29	24	25	23	15	*235	*40	56	14	4.5
26	12	35	25	24	26	20	15	286	110	31	*16	4.5
27	21	34	28	25	29	20	15	283	210	22	16	4.5
28	15	33	26	24	29	20	18	*77	229	21	15	5.6
29	16	31	25	25	28	18	16	191	249	28	13	5.2
30	10	33	*28	24	-----	18	14	325	338	25	14	5.6
31	13	-----	30	23	-----	20	-----	126	-----	*50	13	-----
Total	343.2	780	889	815	696	820	598.1	3,436.6	3,482	3,539	673.4	153.6
Mean	11.1	26.0	28.7	26.3	24.0	26.5	19.9	111	116	114	21.7	5.12
Ac-ft	681	1,550	1,760	1,620	1,380	1,630	1,190	6,820	6,910	7,020	1,340	305

Calendar year 1963: Max 520 Min 1.8 Mean 25.6 Ac-ft 18,530
Water year 1963-64: Max 356 Min 1.8 Mean 44.3 Ac-ft 32,210

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

PLATTE RIVER BASIN

6-7205. South Platte River at Henderson, Colo.

Location.--Lat 39°55'12", long 104°52'18", in NW¼SE¼ sec.34, T.1 S., R.67 W., on left bank 1,200 ft upstream from bridge on State Highway 22 and 0.3 mile west of Henderson.

Drainage area.--4,713 sq mi.

Records available.--May 1926 to September 1964. Prior to October 1933 monthly discharge only, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 5,005.12 ft above mean sea level, datum of 1929. Prior to Apr. 17, 1956, at site 1,240 ft downstream. May 1, 1926, to Apr. 19, 1942, at datum 3.00 ft higher, Apr. 20, 1942, to Sept. 30, 1953, at datum 1.00 ft higher, and Oct. 1, 1953, to Apr. 16, 1956, at present datum. Apr. 17, 1956, to May 31, 1960, at site 840 ft downstream at present datum.

Average discharge.--38 years, 319 cfs (230,900 acre-ft per year).

Extremes.--Maximum discharge during year, 4,460 cfs May 29 (gage height, 6.17 ft), from rating curve extended above 640 cfs; minimum daily, 20 cfs Nov. 16.

1926-64: Maximum discharge, 14,800 cfs May 9, 1957 (gage height, 11.35 ft), from rating curve extended above 9,500 cfs; minimum daily, 4.4 cfs Apr. 1, 1950.

Remarks.--Records fair except those for Oct. 1 to Nov. 21 and those for periods of no gage-height record, which are poor. Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals, diversions for irrigation of about 253,000 acres, and return flow from irrigated areas.

Rating table, (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-4, 9-12, May 19-26, June 6 to Aug. 16)

0.8	20	2.5	520
1.1	60	3.0	850
1.5	134	4.0	1,740
2.0	275		

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	177	37	51	74	190	a 140	99	202	250	572	287	92
2	154	36	56	74	190	a 110	92	254	357	490	234	80
3	161	35	70	76	204	105	152	213	295	440	216	73
4	132	33	70	78	216	107	178	207	315	395	234	101
5	94	32	73	73	222	94	127	177	254	430	342	116
6	80	26	71	68	213	92	116	190	177	435	460	105
7	71	30	78	71	207	85	112	179	154	410	490	92
8	70	26	76	71	199	87	103	244	231	380	708	90
9	57	27	87	70	188	85	101	188	156	365	760	96
10	58	27	85	71	204	89	90	152	172	315	637	98
11	66	27	83	66	204	85	89	145	268	287	644	98
12	66	24	89	66	234	90	85	185	283	553	572	92
13	70	22	83	66	237	98	90	185	360	346	351	89
14	81	22	78	70	225	85	81	172	455	283	299	94
15	73	21	78	65	213	81	66	207	400	261	240	144
16	80	20	78	66	225	85	62	279	351	283	210	242
17	81	68	78	68	234	89	51	405	430	295	177	92
18	76	68	74	70	234	89	45	440	552	303	143	96
19	68	76	78	66	231	146	57	425	484	261	130	112
20	68	85	74	65	234	81	48	315	390	225	121	154
21	89	85	78	65	134	85	50	307	342	210	130	98
22	76	85	74	66	145	90	30	552	342	216	123	90
23	85	83	71	63	145	98	22	540	182	258	108	73
24	83	83	80	62	154	103	35	478	141	247	119	68
25	50	81	81	63	a 158	103	62	514	193	228	114	73
26	48	89	74	65	a 158	98	76	767	228	231	121	65
27	45	85	74	68	a 155	98	51	906	346	213	169	68
28	48	83	71	78	a 150	98	24	822	385	202	134	76
29	46	50	70	210	a 148	94	40	1,590	420	264	99	83
30	42	42	68	207	-----	94	103	1,680	514	346	89	85
31	40	-----	73	204	-----	99	-----	546	-----	324	83	-----
Total	2,435	1,508	2,324	2,545	5,651	2,983	2,337	13,466	9,427	10,068	8,544	2,935
Mean	78.5	50.3	75.0	82.1	195	96.2	77.9	434	314	325	276	97.8
Ac-ft	4,830	2,990	4,610	5,050	11,210	5,920	4,640	26,710	18,700	19,970	16,950	5,820
Calendar year 1963:	Max 2,850	Min 20	Mean 124	Ac-ft 89,860								
Water year 1963-64:	Max 1,680	Min 20	Mean 175	Ac-ft 127,400								

a No gage-height record.

PLATTE RIVER BASIN

6-7225. South St. Vrain Creek near Ward, Colo.

Location.--Lat 40°05'27", long 105°30'50", in NE¼SW¼ sec.36, T.2 N., R.73 W., on left bank at downstream side of bridge, 1.3 miles north of Ward and 3½ miles downstream from Brainard Lake.

Drainage area.--14.4 sq mi.

Records available.--October 1925 to September 1927, October 1928 to September 1931, September 1954 to September 1964. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 9,372 ft (from topographic map). May 29, 1926, to Sept. 30, 1927, and May 21, 1929, to Sept. 30, 1931, at site 600 ft downstream at datum 24.37 ft lower.

Average discharge.--15 years, 28.7 cfs (20,780 acre-ft per year).

Extremes.--Maximum discharge during year, 165 cfs June 28 (gage height, 3.59 ft); maximum gage height recorded, 3.64 ft Dec. 3 (backwater from ice); minimum daily discharge, 1.6 cfs Feb. 13-15, Mar. 7-9. 1925-27, 1928-31, 1954-64: Maximum discharge, 462 cfs June 29, 1957; maximum gage height, 4.11 ft June 27, 1957; minimum daily discharge determined, 1 cfs Mar. 20, 1930.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station. Slight regulation by several small lakes 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	*14	6.8	2.8	2.6	2.0	2.0	1.8	5.6	46	110	53	12
2	14	7.8	2.8	2.8	2.0	2.0	1.8	7.0	48	*106	48	11
3	13	6.4	*2.8	2.8	2.0	1.8	2.1	6.2	54	99	44	9.8
4	12	*6.0	2.8	2.8	2.0	1.8	2.5	5.3	52	106	42	8.0
5	11	6.0	2.6	2.6	2.2	1.8	2.4	5.9	54	120	37	11
6	11	5.8	2.6	2.6	2.2	1.8	2.2	5.3	59	110	*36	11
7	10	5.9	2.6	2.6	2.0	1.6	2.3	6.2	81	89	37	9.4
8	10	6.1	2.6	2.6	1.8	1.6	2.3	*6.2	*94	87	32	8.9
9	10	5.6	2.6	2.6	1.8	1.6	2.1	6.2	69	83	30	8.9
10	9.8	5.6	2.4	2.4	*1.8	1.8	2.0	9.4	78	78	29	8.9
11	9.8	5.6	2.4	2.4	1.8	*1.8	1.9	12	92	94	28	8.9
12	9.6	5.4	2.4	2.4	1.8	1.8	1.9	10	89	85	26	8.9
13	9.6	5.2	2.4	*2.2	1.6	1.8	2.2	13	81	81	25	8.9
14	9.4	5.0	2.4	2.2	1.6	1.8	2.4	19	72	81	23	14
15	9.0	5.0	2.6	2.2	1.6	1.8	2.6	25	76	81	22	23
16	8.8	4.6	2.6	2.2	1.8	1.8	2.8	30	85	72	21	28
17	8.8	4.0	2.6	2.0	1.8	1.8	2.6	39	*85	66	21	23
18	8.6	3.6	2.6	2.0	1.8	1.8	2.8	42	89	57	20	20
19	8.6	3.6	2.6	2.2	1.8	1.8	3.2	46	66	55	19	22
20	9.0	4.0	2.6	2.2	1.8	1.8	4.0	54	60	53	20	23
21	10	3.8	2.4	2.2	1.8	1.8	4.2	72	66	49	19	22
22	9.4	3.6	2.4	2.4	1.8	2.0	3.8	85	67	48	16	21
23	8.8	3.2	2.4	2.4	1.8	2.0	3.6	87	55	49	16	19
24	8.6	3.4	2.4	2.2	2.0	2.0	4.6	83	59	53	15	17
25	8.2	3.4	2.4	2.2	2.0	2.2	4.8	85	78	54	13	17
26	8.0	3.2	2.6	2.0	2.0	2.0	4.4	*92	96	56	12	19
27	8.0	3.2	2.6	2.0	1.8	1.8	4.6	92	113	47	13	20
28	7.4	3.2	2.6	2.0	1.8	1.8	4.8	76	123	45	13	19
29	6.8	3.0	2.4	2.2	1.8	2.0	5.0	67	145	45	14	19
30	7.2	3.0	2.4	2.2	2.0	2.0	*5.2	55	123	42	14	18
31	7.0	-----	2.4	2.0	-----	1.8	-----	48	-----	45	*12	-----
Total	295.4	141.0	78.8	72.2	54.0	57.2	92.9	1,195.3	2,357	2,246	770	469.6
Mean	9.53	4.70	2.54	2.33	1.86	1.85	3.10	38.6	78.6	72.5	24.8	15.7
Ac-ft	586	280	156	143	107	113	184	2,370	4,680	4,450	1,530	931

Calendar year 1963: Max 186 Min 1.8 Mean 23.1 Ac-ft 16,730
 Water year 1963-64: Max 145 Min 1.6 Mean 21.4 Ac-ft 15,530

Peak discharge (base, 170 cfs).--No peak above base.

* Discharge measurement made on this day.
 Note.--No gage-height record Oct. 1, Oct. 3 to Nov. 4, Dec. 3 to Mar. 31, Apr. 13-30 (stage-discharge relation affected by ice during most of periods). Stage-discharge relation affected by ice Nov. 5, 6, 8, 12, 13, Nov. 16 to Dec. 2.

PLATTE RIVER BASIN

6-7240. St. Vrain Creek at Lyons, Colo.

Location.--Lat 40°13'05", long 105°15'34", in NW¼ sec.20, T.3 N., R.70 W., on left bank 75 ft southwest of State Highways 7 and 66 at southeast edge of Lyons, 400 ft upstream from headgate of St. Vrain Supply Canal, and 0.4 mile downstream from confluence of North and South St. Vrain Creeks.

Drainage area.--212 sq mi.

Records available.--August 1887 to September 1891, June 1895 to September 1964. Monthly discharge only for some periods, published in WSP 1310. Published as "near Lyons" 1901, 1903.

Gage.--Water-stage recorder. Altitude of gage is 5,292 ft (from topographic map). Prior to Apr. 6, 1923, staff gages near present site at different datums. Apr. 6, 1923, to Sept. 30, 1956, water-stage recorder at same site at datum 1.00 ft higher.

Average discharge.--73 years, 130 cfs (94,120 acre-ft per year).

Extremes.--Maximum discharge during year, 458 cfs May 27 (gage height, 3.73 ft); minimum daily, 0.7 cfs Mar. 8. 1887-91, 1895-1964: Maximum discharge, 10,500 cfs June 22, 1941 (gage height, 8.06 ft, from floodmark), from rating curve extended above 2,100 cfs on basis of slope-area measurement at gage height 7.90 ft; no flow Jan. 19, 20, 1922, Jan. 12, 13, 1950. Outstanding floods occurred in June 1864 and May 1876. Flood in May or June 1894 reached a stage of 9.13 ft, from information by local resident (discharge, about 9,800 cfs). For discussion of these floods, see WSP 997.

Remarks.--Records good. Discharge measurements generally made twice a month. Diversions above station for irrigation of about 20,000 acres. Flow partly regulated by small reservoirs above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Dec. 12 to Jan. 12, Jan. 28 to Feb. 11, Mar. 3-13)

1.9	0.6	2.6	33
2.0	2.0	2.7	54
2.1	4.0	2.9	117
2.2	7.0	3.2	226
2.4	16	3.6	390
2.5	22		

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	17	16	14	8.6	6.7	20	46	177	368	128	30
2	12	25	8.6	12	7.8	1.9	20	52	170	338	120	28
3	12	29	4.6	12	8.2	1.0	18	28	222	310	117	23
4	11	28	6.1	9.0	9.0	1.0	17	30	218	294	124	21
5	32	25	10	9.0	8.2	1.3	17	50	230	298	120	21
6	46	24	12	9.0	7.8	.9	20	19	234	294	110	21
7	44	23	12	9.4	7.8	.9	17	22	282	254	124	20
8	41	21	9.0	9.4	7.8	.7	14	32	302	238	114	20
9	39	21	6.4	7.4	8.6	.9	17	31	215	226	100	21
10	35	20	4.0	8.2	9.0	.9	19	30	230	215	91	21
11	33	20	4.0	7.4	7.8	.9	18	33	298	254	78	21
12	33	19	9.4	6.4	7.8	.9	21	33	266	238	69	21
13	33	20	14	5.5	6.7	.9	19	33	266	218	66	19
14	32	20	16	4.6	5.8	1.4	18	46	234	211	63	18
15	31	19	18	4.3	5.5	1.0	22	72	230	199	54	18
16	30	20	18	4.6	5.8	.8	31	87	282	192	48	33
17	29	20	20	6.4	5.2	3.2	54	124	286	174	57	26
18	25	13	20	7.8	4.9	4.6	32	166	294	159	48	21
19	23	15	20	8.2	5.5	4.6	39	192	250	159	46	25
20	28	16	17	10	4.9	3.2	39	266	266	134	60	44
21	44	18	15	9.8	4.6	3.0	32	314	270	120	54	39
22	15	20	13	9.4	5.2	3.2	31	355	266	117	46	33
23	10	12	13	8.2	5.2	2.8	31	334	215	120	37	31
24	8.2	15	14	8.2	5.8	2.6	37	318	218	142	33	28
25	6.7	20	14	9.0	4.6	2.0	50	338	286	145	31	25
26	5.2	11	13	8.6	5.8	2.2	39	355	318	142	24	26
27	4.9	14	13	8.2	5.8	2.0	37	390	338	114	29	41
28	4.6	18	12	9.8	5.8	2.2	32	346	330	100	37	37
29	4.3	11	12	8.6	5.8	2.6	46	338	350	120	37	31
30	7.4	8.6	13	8.2	-----	2.6	44	274	368	117	48	29
31	13	-----	14	7.0	-----	12	-----	196	-----	114	35	-----
Total	706.3	562.6	391.1	259.6	191.3	74.9	851	4,950	7,911	6,124	2,148	792
Mean	22.8	18.8	12.6	8.37	6.60	2.42	28.4	160	264	198	69.3	26.4
Ac-ft	1,400	1,120	776	515	379	149	1,690	9,820	15,690	12,150	4,260	1,570

Calendar year 1963: Max 806 Min 3.4 Mean 81.7 Ac-ft 59,160
Water year 1963-64: Max 390 Min 0.7 Mean 68.2 Ac-ft 49,520

6-7255. Middle Boulder Creek at Nederland, Colo.

Location.--Lat 39°57'42", long 105°30'14", in NE¼SE¼ sec.13, T.1 S., R.73 W., on left bank at Nederland just downstream from North Beaver Creek, 1,000 ft upstream from Barker Reservoir.

Drainage area.--36.2 sq mi.

Records available.--June 1907 to September 1964. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder and compound sharp-crested weir. Datum of gage is 8,186.0 ft above mean sea level (Public Service Co. bench mark). Prior to Mar. 18, 1909, at datum 4.0 ft lower. Mar. 18, 1909, to Apr. 23, 1952, at datum 2.5 ft lower than present datum.

Average discharge.--57 years, 53.8 cfs (38,950 acre-ft per year).

Extremes.--Maximum discharge during year, 292 cfs May 21 (gage height, 2.50 ft); minimum daily, 4.1 cfs Jan. 15.
1907-64: Maximum discharge, 811 cfs June 2, 1914 (gage height, 5.37 ft, datum then in use), by computation of peak flow over compound weir; minimum daily, 0.8 cfs Jan. 14, 1908.

Remarks.--Records fair. Discharge measurements generally made twice a month. No diversion above station. Flow regulated at times by Jasper Lake (capacity, 326 acre-ft). North Beaver Creek entered Middle Boulder Creek downstream from station June 1 to Dec. 31, 1907, March 1911 to Dec. 31, 1916.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Dec. 8, 12)
(Shifting-control method used June 23-27)

0.2	3.5	1.1	34
.3	5.5	1.5	91
.5	9.5	2.0	188
.8	18	2.5	297

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	20	10	6.3	6.3	4.9	5.1	6.7	33	114	174	75	14
2	20	12	5.5	6.3	5.1	5.1	6.5	38	132	166	63	14
3	19	12	5.5	6.5	5.3	5.1	6.1	30	158	158	63	13
4	18	11	5.7	6.7	5.5	5.1	6.9	26	156	154	59	12
5	17	11	5.5	6.9	5.5	4.9	7.1	28	162	156	50	11
6	17	11	5.7	6.1	5.7	5.1	6.7	24	184	150	49	11
7	16	12	5.5	5.9	5.7	5.1	6.5	30	212	138	46	12
8	16	11	5.4	5.7	5.7	5.1	6.5	32	204	134	42	11
9	15	11	5.3	5.5	5.9	4.9	6.7	29	164	126	39	12
10	14	11	4.7	5.1	6.3	4.7	6.7	34	196	116	36	12
11	14	11	5.5	5.1	6.3	4.5	6.7	39	214	124	33	12
12	13	10	5.5	5.1	6.3	4.9	6.9	33	200	116	29	10
13	12	9.8	5.5	4.7	5.9	4.9	5.9	42	178	112	28	10
14	12	10	5.3	4.3	5.9	4.9	5.9	63	164	106	26	9.5
15	12	9.8	5.0	4.1	5.9	4.9	6.9	81	176	103	24	15
16	12	9.5	4.7	4.3	5.9	5.1	10	116	190	103	24	17
17	11	6.3	5.5	4.7	5.7	5.5	12	164	188	93	25	13
18	11	8.7	5.7	4.9	5.7	5.7	11	182	180	86	24	11
19	10	8.3	6.1	4.9	5.7	5.3	14	190	144	83	24	14
20	14	8.7	6.1	4.9	5.7	5.3	13	212	146	78	24	16
21	16	8.7	6.1	4.9	5.7	5.3	12	235	140	72	22	15
22	15	7.7	5.9	4.9	5.5	6.1	14	239	130	74	20	13
23	14	7.3	5.9	4.9	5.5	6.3	16	222	103	72	17	12
24	13	8.3	6.3	4.9	5.5	5.9	22	212	114	94	16	10
25	12	7.9	6.5	4.7	5.3	5.3	25	216	136	77	16	9.5
26	12	8.5	6.1	4.9	5.3	6.5	20	216	150	74	15	9.8
27	12	8.1	5.9	4.7	5.1	5.9	16	200	156	68	17	11
28	10	7.9	5.9	4.7	5.1	6.1	17	188	166	64	17	10
29	10	7.1	6.5	4.5	5.1	6.3	23	174	174	68	19	9.5
30	10	6.7	6.3	4.5	-----	7.1	30	138	172	69	18	8.9
31	11	-----	6.5	4.7	-----	6.9	-----	118	-----	77	16	-----
Total	428	282.3	177.9	160.3	162.7	168.9	353.7	3584	4903	3285	976	358.2
Mean	13.8	9.41	5.74	5.17	5.61	5.45	11.8	116	163	106	31.5	11.9
Ac-ft	849	560	353	318	323	335	702	7,110	9,720	6,520	1,940	710

Calendar year 1963: Max 246 Min 1.1 Mean 40.8 Ac-ft 29,510
Water year 1963-64: Max 239 Min 4.1 Mean 40.5 Ac-ft 29,440

Peak discharge (base, 280 cfs).--May 21 (2000) 292 cfs (2.50 ft).

PLATTE RIVER BASIN

6-7270. Boulder Creek near Orodell, Colo.

Location.--Lat 40°00'23", long 105°19'49", in NE $\frac{1}{4}$ sec.34, T.1 N., R.71 W., on left bank along State Highway 119, 0.7 mile southwest of old Orodell, 1 mile upstream from Fourmile Creek, and 3 miles southwest of courthouse in Boulder.

Drainage area.--102 sq mi.

Records available.--August to October 1887, April to October 1888, October 1906 to November 1914, March 1916 to September 1964. Monthly discharge only for some periods, published in WSP 1310. Figures of daily discharge for Feb. 3-10, 17-25, 1912, published in WSP 326, have been found to be unreliable and should not be used. Published as North Boulder Creek, Colorado 1887-88 and as "at Orodell" March 1907 to December 1916.

Gage.--Water-stage recorder. Altitude of gage is 5,826 ft (from topographic map). Prior to Sept. 1, 1907, staff gage and Sept. 1, 1907, to May 11, 1917, water-stage recorder, at sites 1 mile downstream, just upstream from Fourmile Creek, at different datums.

Average discharge.--56 years (1906-14, 1916-64), 91.4 cfs (66,170 acre-ft per year).

Extremes.--Maximum discharge during year, 299 cfs June 29 (gage height, 2.96 ft); minimum daily, 2.9 cfs Nov. 8, Jan. 22. 1887-88, 1906-13, 1916-64: Maximum discharge, 2,500 cfs June 6, 1921 (gage height, 4.31 ft), from rating curve extended above 1,200 cfs; minimum daily, 1 cfs Jan. 29, Feb. 1-3, 16-24, 1933.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Flow regulated by Barker Reservoir (capacity, 11,500 acre-ft). Low flow during nonirrigation season regulated by Orodell powerplant 1,500 ft upstream from 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	56	3.4	26	16	14	26	19	40	109	214	152	17
2	53	4.0	22	17	14	24	20	44	128	218	143	17
3	52	3.8	25	8.0	14	*30	27	45	161	218	138	16
4	*52	3.2	26	12	13	25	22	43	128	218	130	17
5	50	4.4	30	15	13	24	28	41	138	218	113	14
6	50	3.4	30	7.2	13	24	24	38	167	214	75	11
7	50	3.0	36	9.7	14	35	21	38	185	*204	95	11
8	49	*2.9	24	10	14	32	22	39	185	191	79	12
9	47	3.6	30	10	12	38	*25	37	149	188	70	11
10	46	3.0	23	*8.3	17	42	30	37	138	176	63	12
11	30	26	24	21	*15	40	22	49	149	182	*50	12
12	18	22	26	4.6	14	38	30	*45	167	188	40	11
13	17	31	*26	4.4	16	38	25	46	182	179	36	11
14	*24	27	32	6.3	15	40	22	52	182	167	35	*11
15	20	30	22	4.3	13	40	*32	68	*182	155	35	11
16	14	28	32	4.3	12	36	34	97	176	143	34	13
17	14	31	29	4.3	14	39	41	146	167	140	32	15
18	14	25	23	4.3	11	41	33	218	173	135	32	11
19	15	28	28	4.3	8.6	45	31	197	161	122	27	12
20	17	26	26	4.3	8.6	40	31	170	158	107	28	12
21	24	27	29	4.3	8.6	39	27	*200	161	97	27	11
22	19	25	28	2.9	8.6	39	32	232	179	91	27	11
23	19	34	28	11	8.6	33	*31	232	170	*97	20	12
24	17	24	14	14	17	*43	36	204	173	118	17	13
25	15	27	24	14	27	42	40	179	*200	140	16	14
26	14	17	33	7.3	29	39	28	182	232	149	*14	13
27	13	29	27	14	27	43	25	207	251	*122	12	11
28	13	28	30	14	21	39	20	207	259	125	11	11
29	13	*28	28	13	29	45	31	185	283	125	11	9.2
30	12	34	*29	*16	-----	46	37	128	259	111	11	8.6
31	4.8	-----	11	16	-----	17	-----	97	-----	125	16	-----
Total	851.8	581.7	821	301.8	441.0	1,122	846	3,543	5,352	4,877	1,589	370.8
Mean	27.5	19.4	26.5	9.74	15.2	36.2	28.2	114	178	157	51.3	12.4
Ac-ft	1,690	1,150	1,630	599	875	2,230	1,680	7,030	10,620	9,670	3,150	735
Calendar year 1963:	Max 279	Min 2.7	Mean 60.8	Ac-ft 43,990								
Water year 1963-64:	Max 283	Min 2.9	Mean 56.5	Ac-ft 41,060								

* Discharge measurement made on this day.

Note.--No gage-height record Dec. 12-20, Jan. 12-22, 25, Feb. 18 to Mar. 1.

6-7295. South Boulder Creek near Eldorado Springs, Colo.

Location.--Lat 39°55'52", long 105°17'43", in SE¼ sec.26, T.1 S., R.71 W., on left bank 0.2 mile downstream from South Draw, 1 mile west of Eldorado Springs, 1½ miles downstream from South Boulder diversion canal, 5 miles south of Boulder, and about 6 miles downstream from Gross Reservoir.

Drainage area.--109 sq mi.

Records available.--April 1888 to October 1892, May 1895 to September 1901, August 1904 to September 1964. No winter records for water years 1889-92, 1900. Monthly discharge only for some periods, published in WSP 1310. Prior to January 1911, published as "at" or "near Marshall"; January 1911 to December 1913 as "at Eldorado Springs." Records for periods June 1900 to September 1901, August 1904 to September 1908, October 1909 to September 1911 are not adjusted for diversions by Community ditch and South Boulder and Coal Creek ditch, all other records contain flow in these ditches.

Gage.--Water-stage recorder. Altitude of gage is 6,080 ft (from topographic map). Prior to Sept. 25, 1929, staff gage or water-stage recorder at sites 1 mile downstream at different datums. Sept. 25, 1929, to May 2, 1934, water-stage recorder at site a quarter of a mile downstream at different datum. May 3, 1934, to Sept. 3, 1938, water-stage recorder at site 250 ft upstream at datum 4.00 ft higher than present datum. Sept. 4, 1938, to May 9, 1940, staff gages at site about 300 ft upstream or water-stage recorder at site half a mile downstream at different datums.

Average discharge.--58 years (1895-99, 1908-9, 1911-64), 76.5 cfs (55,380 acre-ft per year), adjusted for storage and diversion.

Extremes.--Maximum discharge during year, 626 cfs July 10 (gage height, 3.24 ft); minimum not determined.

1888-92, 1895-1901, 1904-64: Maximum discharge, 7,390 cfs Sept. 2, 1938 (gage height, 9.24 ft, from floodmarks, site and datum then in use), from rating curve extended above 600 cfs on basis of slope-area measurement of peak flow; no flow Oct. 15, 1932.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Many small diversions above station for irrigation. Water is imported above Gross Reservoir from Colorado River basin through Moffat water tunnel (see elsewhere in this report). Flow regulated since May 1, 1955, by Gross Reservoir (capacity, 43,060 acre-ft), about 6 miles above station. Contents Sept. 30, 1964, 27,810 acre-ft. Change in contents during water year 1964, +9,210 acre-ft. City of Denver diverts water 1½ miles above station (53,330 acre-ft in water year 1964).

Cooperation.--Contents of Gross Reservoir and diversion by City of Denver furnished by State engineer of Colorado.

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	22	20						55	256	120	34	12	
2	20	7.2						63	261	140	35	12	
3	22	7.2						63	261	154	35	11	
4	* 23	7.6						63	300	157	35	8.1	
5	21	7.6						63	329	157	35	8.1	
6	18	6.8						66	347	157	40	7.6	
7	15	6.8						70	250	*151	44	7.6	
8	13	*6.8						64	210	151	42	7.6	
9	13	7.2						61	214	*151	42	8.1	
10	13	7.2						59	218	130	46	8.1	
11	13	7.6						25	55	218	120	*46	8.1
12	9.3	7.6						30	*54	218	100	44	8.1
13	8.1	6.8						35	52	218	100	38	7.6
14	* 8.1	6.5						38	48	218	100	36	*6.8
15	8.5	6.5						*42	52	*218	102	38	8.5
16	8.5	6.8						35	55	218	86	38	7.2
17	8.9	6.8						29	54	218	75	38	8.1
18	8.1	6.4						29	105	214	81	38	8.5
19	7.2	6.4						29	146	210	81	38	9.3
20	8.1	6.2						28	146	205	81	38	8.9
21	7.2	6.2						27	*162	205	68	38	9.3
22	7.2	6.2						27	223	205	57	38	9.3
23	7.2	6.2						*27	250	179	*57	38	9.3
24	7.6	6.2						29	250	162	57	24	9.3
25	19	7.0						38	250	*130	66	17	9.3
26	40	7.2						46	250	115	63	*10	9.3
27	41	7.2						46	236	115	40	44	9.3
28	40	7.0						46	246	118	30	6.5	9.7
29	40	*6.8						46	250	118	29	10	9.7
30	40	6.8						46	250	120	29	11	9.7
31	40	6.8						46	250	120	31	11	9.7
Total	557.0	218.8	434	263.5	203.0	232.5	783.0	4,011	6,268	2,921	987.9	265.5	
Mean	18.0	7.29	14	8.5	7.0	7.5	26.1	129	209	94.2	31.9	8.85	
Ac-ft	1,100	434	861	523	403	461	1,550	7,960	12,430	5,790	1,960	527	

Adjusted for storage in Gross Reservoir and diversion to Denver

Mean	14.9	11.0	7.8	8.5	7.1	8.5	27.2	129	198	85.7	27.1	10.6
Ac-ft	909	657	480	522	408	523	1,620	7,980	11,800	5,270	1,730	629

Observed

Calendar year 1963: Max	223	Min	-	Mean	37.5	Ac-ft	27,130
Water year 1963-64: Max	347	Min	-	Mean	46.8	Ac-ft	34,000

Adjusted

Calendar year 1963: Mean	36.6	Ac-ft	26,480
Water year 1963-64: Mean	44.8	Ac-ft	32,530

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 18-28, Dec. 1 to Apr. 14 (stage-discharge relation affected by ice during most of period).

PLATTE RIVER BASIN

6-7303. Coal Creek near Plainview, Colo.

Location.--Lat 39°52'40", long 105°16'36", in SE½NE¼ sec.13, T.2 S., R.71 W., on left bank 100 ft upstream from culvert on State Highway 72, 1½ miles south of Plainview, 5 miles downstream from Beaver Creek, and 9 miles north of Golden. Prior to June 17, 1964, at site 60 ft downstream.

Drainage area.--15.1 sq mi.

Records available.--August 1959 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,540 ft (from topographic map). Prior to June 17, 1964, water-stage recorder at site 60 ft downstream at datum 4.49 ft lower.

Average discharge.--5 years, 3.67 cfs (2,660 acre-ft per year).

Extremes.--Maximum discharge during year, 17 cfs Mar. 14 (gage height, 1.26 ft); no flow for many days.
1959-64: Maximum discharge, 195 cfs June 16, 1963 (gage height, 2.44 ft), by contracted-opening measurement of peak flow; no flow for many days in each year.

Remarks.--Records good. No diversion above station.

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

Oct. 1 to June 16		June 17 to Sept. 30	
0.3	0.1	0.1	0
.4	.3	.2	.1
.5	.8	.3	.4
.6	1.4	.4	.9
.8	3.8	.5	1.6
1.0	7.5	.6	2.9
1.2	14	.63	3.5

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	0.6	0.3	0.3	0.3	0.3	0.4	2.9	9.0	6.1	0.9	0.2	
2	.5	.3	.3	.3	.3	.7	2.7	8.7	9.2	.6	.1	
3	.4	.4	*.3	.3	.3	.8	4.5	8.1	11	.5	.1	
4	.4	*.4	.3	b.3	.3	.6	6.5	7.5	12	.4	.1	
5	.4	.3	.2	b.3	.3	.6	4.0	7.5	11	.4	0	
6	.4	.3	.2	b.3	.3	.7	3.8	7.1	10	.3	*.1	
7	.4	.3	.2	.3	b.4	.6	3.4	6.7	9.2	.3	.1	
8	*.4	.3	.2	.3	b.4	.7	3.6	6.5	*8.4	.3	.1	
9	.4	.3	.2	.3	.4	.6	4.2	6.1	6.9	.2	.1	
10	.3	.3	.2	.3	*.4	.8	6.1	5.7	5.9	*.3	0	
11	.3	.3	.2	.2	.4	.8	6.5	5.5	5.3	2.6	0	
12	.3	.3	.2	.2	.4	*.8	7.5	5.1	4.8	1.5	0	
13	.3	.3	.2	*.3	.4	1.5	6.7	5.0	5.0	.8	0	
14	.3	.3	1.1	.3	.4	4.0	6.5	4.8	4.8	.6	0	
15	.3	.3	.2	b.3	b.3	2.4	7.1	4.3	4.2	.4	0	
16	.3	.4	.2	.3	b.3	1.6	9.5	4.2	3.7	.5	0	
17	.3	.4	.2	.3	b.4	1.4	9.2	3.8	3.5	.3	0	
18	.3	.3	.2	.3	b.4	1.7	8.4	3.7	2.9	.3	0	
19	.2	.3	.2	.3	b.4	1.8	9.0	3.6	*2.6	.2	0	
20	.3	.3	.2	.3	.4	1.7	9.0	3.3	2.4	.1	0	
21	.7	.3	.3	.3	.4	1.7	9.0	3.1	2.4	.1	0	
22	.5	.3	.3	.3	.4	1.9	9.2	2.7	2.3	0	0	
23	.4	.3	.3	.3	.4	1.8	9.2	2.4	1.8	0	0	
24	.4	.3	.3	b.2	.4	2.0	*9.8	2.9	1.4	0	0	
25	.3	.3	.3	.2	.4	4.0	10	2.6	1.3	0	0	
26	.3	.3	.3	.2	.4	1.6	9.8	*2.5	1.0	.3	0	
27	.3	.3	.3	.3	.4	1.4	9.0	3.1	1.0	.1	0	
28	.3	.3	.3	.4	.4	1.4	8.4	3.1	.9	.1	0	
29	.3	.3	.3	.3	.4	1.5	7.8	3.0	.9	.2	0	
30	.3	.3	.4	.3	-----	2.2	8.4	5.3	.9	.1	0	
31	.3	-----	.4	.3	-----	2.7	-----	5.7	-----	.1	*0	-----
Total	11.2	9.4	7.8	8.9	10.8	46.4	211.7	152.6	142.8	12.5	0.9	0
Mean	0.36	0.31	0.25	0.29	0.37	1.50	7.06	4.92	4.76	0.40	0.03	0
Ac-ft	22	19	15	18	21	92	420	303	283	25	1.8	0

Calendar year 1963: Max 67 Min 0 Mean 1.18 Ac-ft 851
Water year 1963-64: Max 12 Min 0 Mean 1.68 Ac-ft 1,220

Peak discharge (base, 25 cfs).--No peak above base.

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

b Stage-discharge relation affected by ice.

Note.--No gage-height record Jan. 7-13 (stage-discharge relation affected by ice during part of period).

6-7310. St. Vrain Creek at mouth, near Platteville, Colo.

Location.--Lat 40°15'29", long 104°52'45", in SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.3, T.3 N., R.67 W., on right bank 140 ft downstream from bridge on county road, 1.3 miles upstream from mouth, and 4 miles northwest of Platteville.

Drainage area.--976 sq mi.

Records available.--July 1904 to December 1906, April to December 1915, March 1927 to September 1964. Prior to October 1933 monthly discharge only, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 4,740 ft (from topographic map). July 1, 1904, to Dec. 31, 1906, and Apr. 1 to Dec. 31, 1915, staff gage at bridge 140 ft upstream at different datums. Feb. 24, 1927, to June 10, 1939, water-stage recorder at bridge 140 ft upstream and June 11, 1939, to Apr. 24, 1960, water-stage recorder at site 180 ft upstream at different datum.

Average discharge.--39 years (1904-6, 1927-64), 191 cfs (138,300 acre-ft per year).

Extremes.--Maximum discharge during year, 528 cfs May 30 (gage height, 3.02 ft), from rating curve extended above 160 cfs; minimum daily, 36 cfs May 5.

1904-6, 1915, 1927-64: Maximum discharge, 11,300 cfs Sept. 3, 1938 (gage height, 8.93 ft, site and datum then in use), from rating curve extended above 4,700 cfs; minimum daily, 12 cfs Apr. 23, 1935.

Remarks.--Records fair except those for period of indefinite stage-discharge relation, which are poor. Diversions above station for irrigation of about 177,000 acres. Flow partly regulated by many small reservoirs above station.

Rating table, except period of indefinite stage-discharge relation,
(gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 10-12, Apr. 16 to May 26, Aug. 10-19, Sept. 1-19)

0.9	34	1.9	182
1.2	54	2.3	286
1.5	94	2.8	445

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	102	*104	102	110	98	81	81	45	253	102	140	125
2	96	104	100	110	98	83	83	43	196	98	143	118
3	92	102	100	106	96	81	88	44	158	98	136	121
4	88	100	*102	94	94	81	91	40	158	98	121	118
5	86	98	98	92	94	81	94	*36	138	100	123	94
6	86	96	100	92	92	81	106	37	127	98	114	89
7	86	98	98	*88	91	81	*100	40	140	100	108	84
8	86	94	96	83	88	81	92	40	147	112	106	74
9	81	94	94	83	86	81	89	42	*140	110	102	70
10	78	96	96	86	84	83	84	43	118	116	94	70
11	*75	94	94	86	*84	80	78	45	112	129	64	69
12	80	106	106	86	88	81	73	43	108	158	75	72
13	96	116	118	88	81	81	66	45	108	154	*64	70
14	94	123	114	81	86	80	63	43	151	147	64	70
15	98	123	118	83	78	78	62	42	168	*132	72	*70
16	106	127	112	88	e78	77	61	42	138	123	73	78
17	102	138	106	91	e80	77	61	42	132	118	73	78
18	100	132	112	91	e80	77	62	*57	110	114	68	80
19	102	121	112	91	e76	77	62	65	108	114	70	81
20	104	110	116	91	e76	78	62	65	108	114	72	84
21	108	108	116	91	e74	77	*62	63	112	114	74	88
22	110	*108	112	*94	e76	75	61	66	255	112	*75	89
23	110	104	110	88	e71	75	60	102	255	114	108	94
24	102	106	123	81	*68	74	58	104	199	114	116	98
25	102	104	114	84	73	75	56	96	*158	116	112	94
26	102	102	111	96	68	78	53	96	134	156	121	94
27	102	100	*108	98	89	78	52	168	129	156	125	98
28	100	100	112	96	81	78	49	175	134	125	138	100
29	100	100	118	100	84	78	47	222	118	123	132	100
30	100	100	110	102	-----	*78	45	434	106	*140	134	100
31	100	-----	112	100	-----	81	-----	414	-----	140	134	-----
Total	2,974	3,208	3,340	2,850	2,412	2,447	2,101	2,839	4,418	3,745	3,171	2,670
Mean	95.9	107	108	91.9	83.2	78.9	70.0	91.6	147	121	102	89.0
Ac-Ft	5,900	6,360	6,620	5,650	4,780	4,850	4,170	5,630	8,760	7,430	6,270	5,300

Calendar year 1963: Max 2,000 Min 28 Mean 118 Ac-ft 85,220
Water year 1963-64: Max 434 Min 36 Mean 98.8 Ac-ft 71,740

* Discharge measurement made on this day.
e Stage-discharge relation indefinite.

PLATTE RIVER BASIN

6-7330. Big Thompson River at Estes Park, Colo.

Location.--Lat 40°22'42", long 105°30'48", in NW¼NW¼ sec.30, T.5 N., R.72 W., on right bank in Estes Park, 600 ft downstream from bridge on State Highways 7 and 66, 900 ft downstream from Black Canyon Creek, and 0.3 mile northwest of Estes powerplant. Station is upstream from Lake Estes.

Drainage area.--137 sq mi.

Records available.--October 1946 to September 1964. Prior to October 1947, published as Thompson River at Estes Park.

Gage.--Water-stage recorder and Parshall flume with overflow weirs. Datum of gage is 7,492.5 ft above mean sea level (levels by Bureau of Reclamation). Prior to May 18, 1949, at site 740 ft downstream at different datum. May 18, 1949, to Mar. 22, 1951, at site 60 ft upstream at datum 1.2 ft higher.

Average discharge.--18 years, 126 cfs (91,220 acre-ft per year), adjusted for inflow from Alva B. Adams tunnel Aug. 10, 1947, to Aug. 2, 1950.

Extremes.--Maximum discharge during year, 559 cfs June 11 (gage height, 4.13 ft); minimum daily, 7.4 cfs Feb. 26.
1946-64: Maximum discharge, 1,660 cfs June 18, 1949 (gage height, 3.16 ft, site and datum then in use); maximum gage height, 6.87 ft June 30, 1957; minimum discharge not determined.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Discharge measurements generally made twice a month. Diversion from Colorado River basin to Big Thompson River basin above station through Alva B. Adams tunnel began Aug. 10, 1947, and ended Aug. 2, 1950. Small power development and small diversions for irrigation and municipal use above station.

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

0.2	5.0	1.6	123
.3	8.4	2.0	175
.4	13	2.5	250
.8	40	3.0	335
1.2	77	4.0	531

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	34	18	15	10	78	16	37	222	445	190	56
2	62	34	17	15	10	8.0	15	44	225	398	179	52
3	59	34	16	14	10	8.0	14	40	280	370	216	49
4	56	33	15	13	10	8.0	13	34	278	357	187	47
5	52	32	15	13	9.8	8.0	14	34	321	368	172	45
6	50	31	15	13	9.6	8.0	14	30	334	375	166	43
7	49	33	12	12	9.6	7.8	15	34	433	334	170	43
8	48	31	9.4	11	10	7.8	15	37	473	307	151	41
9	49	32	8.7	10	10	7.6	16	36	330	297	138	44
10	45	31	9.4	10	10	7.4	18	37	398	278	129	45
11	45	31	12	9.4	10	7.4	20	48	463	283	118	45
12	45	30	12	8.9	10	7.4	20	43	379	280	112	43
13	44	30	12	8.6	9.5	8.0	15	50	387	270	102	40
14	43	29	12	8.3	9.0	8.0	17	72	368	272	101	37
15	42	28	12	8.2	8.5	8.6	24	108	353	254	92	45
16	44	28	13	8.2	8.2	9.2	29	160	408	250	86	53
17	40	24	13	8.4	8.0	10	30	212	425	255	86	45
18	38	23	14	9.0	7.8	10	26	262	415	311	80	39
19	37	23	14	10	7.8	10	30	311	300	252	82	65
20	41	24	14	11	7.7	10	28	402	273	221	100	66
21	44	25	14	11	7.6	11	25	439	278	195	82	60
22	38	22	14	10	7.6	11	25	443	297	215	72	54
23	36	20	14	10	7.8	10	24	412	246	222	64	47
24	35	21	15	10	7.7	9.2	27	394	275	222	58	46
25	34	20	14	10	7.6	9.0	35	437	337	207	54	41
26	33	21	14	10	7.4	9.5	30	481	362	188	52	38
27	33	21	14	10	7.6	10	27	467	389	171	66	40
28	33	20	15	10	7.6	11	26	425	392	159	64	36
29	32	20	15	10	7.6	12	29	404	417	164	75	34
30	31	20	15	10	-----	13	34	304	406	192	71	34
31	34	-----	15	10	-----	16	-----	238	-----	190	64	-----
Total	1,336	805	422.5	327.0	254.0	288.7	671	6,475	10,464	8,302	3,379	1,373
Mean	43.1	26.8	13.6	10.5	8.76	9.31	22.4	209	349	268	109	45.8
Ac-ft	2,650	1,600	838	649	504	573	1,330	12,840	20,760	16,470	6,700	2,720

Calendar year 1963: Max 692 Min 7.0 Mean 102 Ac-ft 73,880

Water year 1963-64: Max 481 Min 7.4 Mean 93.2 Ac-ft 67,630

Peak discharge (base, 600 cfs)--No peak above base.

Note.--No gage-height record Dec. 9-22, Jan. 7 to Apr. 8 (stage-discharge relation affected by ice during most of period).

6-7355. Big Thompson River near Estes Park, Colo.

Location (revised).--Lat 40°22'35", long 105°29'06", in NE¼NE¼ sec.29, T.5 N., R.72 W., on right bank 100 ft upstream from Dry Creek, 600 ft downstream from Olympus Dam, and 2.0 miles east of Estes Park.

Drainage area.--156 sq mi.

Records available.--July 1930 to September 1964. Prior to October 1933 monthly discharge only, published in WSP 1310. Published as Thompson River near Estes Park 1934-47.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 7,422.5 ft above mean sea level (levels by Bureau of Reclamation). Prior to Jan. 29, 1934, staff gage on highway bridge 1½ miles downstream at different datum. Jan. 29, 1934, to Mar. 21, 1951, water-stage recorder at site 0.4 mile downstream at datum 10.5 ft lower.

Extremes.--Maximum discharge during year, 318 cfs June 8 (gage height, 2.90 ft); maximum gage height, 3.37 ft Jan. 25 (backwater from ice); minimum daily discharge, 8.9 cfs Jan. 11-13, 21, 22.

1930-64: Maximum discharge observed, 2,800 cfs June 20, 1933, from rating curve extended above 460 cfs (site and datum then in use); maximum gage height, 5.71 ft June 30, 1957; minimum daily discharge, 4.4 cfs Dec. 12, 1940, but may have been less during periods of no gage-height record.

Remarks.--Records excellent except those for periods of ice effect, which are good. Low flow regulated by Lake Estes since Nov. 30, 1948. Diversion from Colorado River to Big Thompson River basin above station through Alva B. Adams tunnel began Aug. 10, 1947 (see elsewhere in this report for diversion during water year 1964); since Apr. 15, 1953, this imported water has been diverted from Lake Estes through Olympus tunnel bypassing this station. Since May 17, 1955, part of the natural flow of Big Thompson River (31,140 acre-ft in 1964) has also been diverted through Olympus tunnel and returned to the river below the station at mouth of canyon, near Drake. Small power developments and small diversions for irrigation and municipal use above station.

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

0.3	8.4	1.5	111
.4	13	2.0	175
.7	33	3.0	335
1.0	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	51	34	20	14	11	10	26	41	133	170	113	56
2	65	36	17	14	11	10	26	47	135	130	106	53
3	67	33	16	14	11	9.4	21	44	167	136	143	51
4	65	33	16	13	11	9.4	20	38	*135	135	113	49
5	62	32	*14	12	11	11	20	39	142	172	111	45
6	59	*31	16	b12	*11	13	21	36	142	156	*124	45
7	57	33	11	b12	11	13	22	*40	212	131	120	43
8	51	32	9.9	b13	11	13	26	42	195	118	113	42
9	52	33	14	13	10	13	*26	41	114	*120	109	43
10	*49	32	13	10	11	13	29	42	164	126	114	*45
11	48	31	13	8.9	11	12	30	53	191	143	109	45
12	49	30	13	8.9	11	*15	30	49	105	139	102	43
13	47	30	13	8.9	11	17	27	54	130	129	107	40
14	46	30	13	9.4	10	17	27	78	123	130	107	37
15	45	29	13	9.4	10	17	34	78	150	112	99	44
16	47	28	13	*9.4	10	17	40	121	161	125	92	54
17	44	26	13	9.4	11	17	40	126	140	138	92	45
18	43	25	13	9.4	11	17	37	133	128	160	85	39
19	42	24	*13	9.4	11	19	40	146	105	100	82	64
20	45	26	15	9.4	*10	22	40	194	95	104	101	67
21	48	*26	15	8.9	10	26	35	*158	109	108	84	61
22	43	24	15	8.9	10	26	34	135	124	135	74	55
23	41	21	15	9.4	11	26	34	119	96	*131	66	48
24	*40	22	15	9.9	10	26	38	137	132	124	61	*46
25	38	22	15	b9.9	10	26	45	162	*164	108	56	43
26	34	23	15	b9.9	10	26	40	152	154	104	53	40
27	34	24	16	11	10	26	33	130	158	107	*67	40
28	34	22	16	10	10	26	30	119	156	108	67	38
29	33	22	14	10	10	26	33	143	165	113	76	36
30	33	22	14	11	-----	*26	40	99	150	147	71	36
31	34	-----	14	11	-----	26	-----	125	-----	129	62	-----
Total	1,446	836	442.9	329.4	306	570.8	944	2,921	4,275	3,988	2,879	1,393
Mean	46.6	27.9	14.3	10.6	10.6	18.4	31.5	94.2	142	129	92.9	46.4
Ac-ft	2,870	1,660	878	653	607	1,130	1,870	5,790	8,480	7,910	5,710	2,760

Calendar year 1963: Max 265 Min 9.9 Mean 62.8 Ac-ft 45,510
 Water year 1963-64: Max 212 Min 8.9 Mean 55.5 Ac-ft 40,320

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

PLATTE RIVER BASIN

6-7380. Big Thompson River at mouth of canyon, near Drake, Colo.

Location.--Lat 40°25'18", long 105°13'34", in SW¼SW¼ sec.3, T.5 N., R.70 W., on right bank at mouth of canyon, 400 ft upstream from Handy Ditch diversion dam and 6.0 miles east of Drake.

Drainage area.--304 sq mi.

Records available.--August 1887 to September 1892, May 1895 to September 1903, October 1926 to September 1933 (no winter records prior to October 1932, except water years 1927-28), April 1938 to September 1949, March 1951 to September 1964. Monthly discharge only for some periods, published in WSP 1310. Published as Big Thompson Creek at Arkins 1887-92, Big Thompson Creek near Arkins 1901-3, and as Thompson River at mouth of canyon, near Drake 1927-30, 1938-47.

Gage.--Water-stage recorder. Datum of gage is 5,297.47 ft above mean sea level (Bureau of Reclamation bench mark). Aug. 25, 1887, to Sept. 30, 1892, and Apr. 1, 1899, to Sept. 21, 1903, staff gages at sites within half a mile downstream below Handy Ditch diversion dam at different datums. May 9, 1895, to Mar. 31, 1899, staff gage at site 1½ miles downstream and 600 ft downstream from Home Supply Ditch diversion dam at different datum. Oct. 1 to Dec. 31, 1926, staff gage at site 6½ miles upstream at different datum. Jan. 1, 1927, to Sept. 30, 1933, water-stage recorder at site 1 mile upstream at different datum. Apr. 19, 1938, to Sept. 30, 1949, water-stage recorder at site 50 ft downstream at datum 1.45 ft lower.

Extremes.--Maximum discharge during year, 274 cfs May 21 (gage height, 2.51 ft); maximum gage height, 2.87 ft Dec. 12 (backwater from ice); minimum daily discharge, 13 cfs Feb. 24.
1887-92, 1895-1903, 1926-33, 1938-49, 1951-64: Maximum discharge, 7,600 cfs July 19, 1945 (gage height, 7.55 ft, site and datum then in use), from rating curve extended above 2,200 cfs; minimum daily recorded, 3.2 cfs Nov. 12, 1959.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions above station for irrigation. Diversion from Colorado River to Big Thompson River basin above station through Alva B. Adams tunnel began Aug. 10, 1947 (see elsewhere in this report for diversion for water year 1964); since Apr. 15, 1953, this imported water has been diverted through Olympus tunnel bypassing this station. Part of the natural flow of Big Thompson River has also been diverted through Olympus tunnel since May 17, 1955 (31,140 acre-ft in 1964), and Dille tunnel since Apr. 20, 1959 (5,830 acre-ft in 1964), and returned to the river just below this station.

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

1.1	10	1.7	77
1.2	16	2.0	136
1.4	34	2.5	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	75	52	38	21	17	14	41	53	128	162	143	68
2	85	50	15	22	20	16	35	56	128	130	130	63
3	92	53	20	*20	17	16	35	57	160	148	153	60
4	86	46	21	17	*18	15	27	53	134	162	*141	57
5	86	49	22	17	17	14	29	49	120	170	120	56
6	83	45	*27	16	17	17	28	*49	106	192	114	53
7	83	*46	30	15	15	18	*30	49	143	155	130	53
8	*79	45	17	20	15	19	31	52	170	155	110	*50
9	72	45	14	16	16	*18	33	53	*100	150	110	49
10	74	45	14	24	18	18	36	50	128	153	106	52
11	70	44	23	21	19	15	36	57	190	172	108	53
12	70	44	30	17	18	18	39	63	85	172	98	50
13	70	39	31	17	17	20	35	59	108	162	98	47
14	68	42	38	17	18	22	32	79	102	153	100	45
15	67	41	22	18	16	20	39	106	96	148	92	44
16	65	41	35	18	17	21	47	118	124	143	96	49
17	67	40	32	18	16	26	54	122	120	*158	106	56
18	63	31	31	21	18	26	46	138	122	182	*100	49
19	62	32	27	20	*16	24	50	136	90	132	90	57
20	62	*35	28	20	16	*21	53	*185	94	124	110	77
21	70	35	26	20	15	29	*47	195	106	128	100	70
22	62	36	26	*19	15	33	45	188	126	141	90	*65
23	*59	34	26	17	14	29	49	155	*92	155	81	59
24	57	34	24	17	13	30	47	155	112	143	74	56
25	57	35	22	15	16	30	54	195	138	138	67	54
26	53	29	21	16	17	27	52	190	126	124	63	50
27	52	32	21	20	15	31	49	185	130	122	67	49
28	46	32	20	20	15	33	41	143	128	130	83	49
29	54	31	21	19	15	33	42	160	146	132	79	46
30	52	30	20	19	-----	33	49	126	122	175	88	44
31	50	-----	23	18	-----	41	-----	102	-----	155	77	-----
Total	2,091	1,193	775	575	476	727	1,231	3,378	3,672	4,666	3,124	1,630
Mean	67.5	39.8	25.0	18.5	16.4	23.5	41.0	109	122	151	101	54.3
Ac-ft	4,150	2,370	1,540	1,140	944	1,440	2,440	6,700	7,280	9,250	6,200	3,230

Calendar year 1963: Max 364 Min 13 Mean 68.6 Ac-ft 49,650
Water year 1963-64: Max 195 Min 13 Mean 64.3 Ac-ft 46,680

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18 to Mar. 26 (no gage-height record Feb. 20 to Mar. 9).

Reservoirs in South Platte River basin

- 6-6955. Elevenmile Canyon Reservoir near Lake George.--Lat 38°54'19", long 105°28'30", in N $\frac{1}{2}$ SW $\frac{1}{4}$ sec.20, T.13 S., R.72 W., at north end of dam on South Platte River, 8 miles southwest of Lake George. Records available, October 1932 to September 1964. Prior to September 1938, published in WSP 1310. Gage is mercury manometer. Prior to May 12, 1964, twice daily staff gage readings. Datum of gage is at mean sea level (datum of Denver Board of Water Commissioners). Maximum contents observed during year, 69,110 acre-ft Oct. 1 (elevation, 8,587.43 ft); minimum observed, 29,380 acre-ft Sept. 30 (elevation, 8,568.01 ft). Maximum contents observed during period 1932-64, 103,400 acre-ft Mar. 29, 1960 (elevation, 8,598.62 ft); no contents at times in 1935. Reservoir is formed by concrete arch dam completed by Denver Board of Water Commissioners in November 1932. Spillway built 5.00 ft higher Aug. 1, 1957. Storage began in October 1932. Capacity, 97,780 acre-ft between elevations 8,488.25 (invert of outlet pipe) and 8,597.00 ft (crest of spillway). Dead storage is negligible. Records given herein represent total contents. Water is for municipal use by city of Denver. Records furnished by Denver Board of Water Commissioners.
- 6-7010. Cheesman Lake near Deckers.--Lat 39°12'26", long 105°16'18", in NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.6, T.10 S., R.70 W., at dam on South Platte River, 4 miles southwest of Deckers. Records available, September 1900 to December 1901, September 1902 to September 1964. Prior to October 1938, published in WSP 1310. Staff gage read twice daily. Datum of gage is 6,622.91 ft above mean sea level (datum of Denver Board of Water Commissioners). Maximum contents observed during year, 27,170 acre-ft Oct. 24 (gage height, 133.32 ft); minimum observed, 17,190 acre-ft Apr. 2 (gage height, 108.78 ft). Maximum contents observed during 1900-1901, 1902-64, 80,820 acre-ft June 23, 1918, and June 7, 1921 (gage height, 214.00 ft); minimum observed since appreciable storage was attained, 3,650 acre-ft Apr. 20, 1933 (gage height, 55.02 ft). Reservoir is formed by masonry dam completed about October 1902. Capacity, 79,060 acre-ft at gage height 212 ft (spillway crest) above sill of lowest gate. No dead storage. Records given herein represent total contents. Water is for municipal use by City of Denver. Records furnished by Denver Board of Water Commissioners.
- 6-7375. Horsetooth Reservoir near Fort Collins.--Lat 40°36'00", long 105°10'06", in NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.6, T.7 N., R.69 W., on right bank near abutment of Horsetooth Dam on tributaries of Cache la Poudre River, 4.8 miles west of city hall in Fort Collins. Records available, April 1951 to September 1964. Staff gage read at irregular intervals varying from 1 to 10 days. Datum of gage is 5,270.00 ft above mean sea level (levels by Bureau of Reclamation). Gage readings have been reduced to elevations above mean sea level. Maximum contents observed during year, 115,800 acre-ft May 8, 10 (elevation, 5,414.50 ft); minimum contents, 22,900 acre-ft Oct. 28, 29 (elevation, 5,340.20 ft). Maximum contents observed during period 1951-64, 141,100 acre-ft June 23, 25, 1961 (elevation, 5,428.75 ft); minimum observed, 3,040 acre-ft Sept. 23, 1954 (elevation, 5,302.20 ft); no storage prior to Apr. 18, 1951. Reservoir is formed by earth- and rock-fill dike and dams closing openings in a subsequent valley between hogbacks. Dams completed July 21, 1959; storage began Jan. 10, 1951; dead storage pools filled Apr. 18, 1951. Usable capacity, 143,500 acre-ft above elevations 5,320 ft (invert of channel from Spring Canyon Dam), 5,310 ft (invert of channel from Dixon Canyon Dam), 5,270 ft (trashrack sill of outlet at Soldier Canyon Dam), and below maximum water surface elevation 5,430 ft (6 ft below crest of Satanka Dike). Dead storage, 8,270 acre-ft. Reservoir is used for storage of water diverted from Colorado River basin through Alva B. Adams tunnel for supplemental irrigation supply to Cache la Poudre River basin as part of the Colorado-Big Thompson project. Figures given herein represent usable contents. Records furnished by Bureau of Reclamation.
- 6-7425. Carter Lake near Berthoud.--Lat 40°19'28", long 105°12'41", in SE $\frac{1}{4}$ sec.10, T.4 N., R.70 W., in hoist house 293 ft from right abutment of Carter Lake Dam on Dry Creek, 7.0 miles west of Berthoud, and 8.9 miles upstream from mouth. Records available, March 1954 to September 1964. Electric tape gage read at irregular intervals varying from 1 to 13 days. Datum of gage is 5,618.00 ft above mean sea level (levels by Bureau of Reclamation). Gage readings have been reduced to elevations above mean sea level. Maximum contents observed during year, 101,100 acre-ft May 6 (elevation, 5,752.05 ft); minimum observed, 21,010 acre-ft Sept. 30 (elevation, 5,663.77 ft). Maximum contents observed during period 1954-64, 108,900 acre-ft June 27, 1962; (elevation, 5,758.94 ft); minimum observed since appreciable storage was attained, 960 acre-ft Oct. 25, 1954 (elevation, 5,621.40 ft). Reservoir is formed by earth- and rock-fill dam and dikes enlarging the natural basin of Carter Lake. Storage began in February 1954 and dead storage pool was filled Mar. 5, 1954. Usable capacity, 113,500 acre-ft between elevations 5,618.00 (trashrack sill at Carter Lake Dam outlet) and 5,763.00 ft (maximum water surface, 6 ft below crest of dam). Dead storage, 3,310 acre-ft. Water diverted from Colorado River basin through Alva B. Adams tunnel is pumped from Flatiron Reservoir into Carter Lake for supplemental irrigation supply to Little Thompson River, St. Vrain Creek, and Boulder Creek basins. Water above elevation 5,620 ft may be released for return to Flatiron Reservoir where pump turbines can operate in reverse to generate power and water can be used for irrigation in Big Thompson or Cache la Poudre River basins. It is part of the Colorado-Big Thompson project. Figures given herein represent usable contents. Records furnished by Bureau of Reclamation.

PLATTE RIVER BASIN

Reservoirs in South Platte River basin--Continued

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

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)	Gage height (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Elevenmile Canyon Reservoir				Cheesman Lake		
Sept. 30.....	8,587.57	69,490	-	128.28	24,900	-
Oct. 31.....	8,584.27	61,040	-8,450	130.77	26,010	+1,110
Nov. 30.....	8,584.26	61,020	-20	128.77	25,120	-890
Dec. 31.....	8,584.24	60,970	-50	124.36	23,220	-1,900
Calendar year 1963...	-	-	-35,770	-	-	-22,740
Jan. 31.....	8,584.15	60,750	-220	123.10	22,690	-530
Feb. 29.....	8,584.07	60,550	-200	123.15	22,710	+20
Mar. 31.....	8,584.17	60,800	+250	109.27	17,360	-5,350
Apr. 30.....	8,584.28	61,070	+270	119.30	21,140	+3,780
May 31.....	8,579.52	50,150	-10,920	117.90	20,590	-550
June 30.....	8,577.68	46,310	-3,840	115.42	19,630	-960
July 31.....	8,569.98	32,390	-13,920	118.40	20,790	+1,160
Aug. 31.....	8,568.55	30,190	-2,200	115.84	19,790	-1,000
Sept. 30.....	8,568.01	29,380	-810	113.81	19,020	-770
Water year 1963-64...	-	-	-40,110	-	-	-5,880
Horsetooth Reservoir				Carter Lake		
Sept. 30.....	5,345.20	27,100	-	5,676.98	30,230	-
Oct. 31.....	5,340.40	23,060	-4,040	5,667.98	23,790	-6,440
Nov. 30.....	-	a33,510	+10,450	-	a40,730	+16,940
Dec. 31.....	5,367.80	49,860	+16,350	5,705.00	53,340	+12,610
Calendar year 1963...	-	-	-20,110	-	-	-3,080
Jan. 31.....	5,380.50	65,270	+15,410	5,719.76	67,220	+13,880
Feb. 29.....	-	a81,660	+16,390	-	a78,870	+11,650
Mar. 31.....	5,404.35	99,240	+17,580	5,742.75	90,880	+12,010
Apr. 30.....	5,411.00	109,900	+10,660	5,751.47	100,400	+9,520
May 31.....	5,404.70	99,780	-10,120	5,740.84	88,830	-11,570
June 30.....	5,407.90	104,900	+5,120	5,735.00	82,660	-6,170
July 31.....	5,389.50	77,300	-27,600	5,712.65	60,400	-22,260
Aug. 31.....	5,363.00	44,520	-32,780	5,684.30	35,830	-24,570
Sept. 30.....	5,355.40	36,640	-7,880	5,663.77	21,010	-14,820
Water year 1963-64...	-	-	+9,540	-	-	-9,220

† Elevation at 1700.

a No elevation record; contents estimated.

6-7440. Big Thompson River at mouth, near La Salle, Colo.

Location.--Lat 40°21'00", long 104°47'04", in SW¼SE¼ sec.33, T.5 N., R.66 W., on left bank just southeast of gage on Evans Town ditch, 0.7 mile upstream from highway bridge, 1.6 miles upstream from mouth, and 4 miles west of La Salle.

Drainage area.--828 sq mi.

Records available.--April 1914 to October 1915, March 1927 to September 1964. Prior to October 1933 monthly discharge only, published in WSP 1310. Published as Thompson River at mouth, near La Salle 1934-47.

Gage.--Water-stage recorder. Altitude of gage is 4,680 ft (from topographic map). Apr. 1, 1914, to Oct. 31, 1915, staff gage and Mar. 1, 1927, to Sept. 30, 1951, water-stage recorder, at bridge 0.7 mile downstream at different datums. Datum lowered 0.50 ft May 21, 1962.

Extremes.--Maximum discharge during year, 420 cfs May 29 (gage height, 2.92 ft); minimum daily, 0.1 cfs June 29. 1914-15, 1927-64: Maximum discharge, 6,100 cfs Aug. 4, 1951 (gage height, 7.80 ft, site and datum then in use), from rating curve extended above 4,500 cfs; maximum gage height, 8.72 ft May 9, 1957, present datum; no flow at times in 1934-35, 1948.

Remarks.--Records fair except those below 30 cfs, which are poor. Discharge measurements generally made twice a month. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions for irrigation of about 95,000 acres above station, and return flow from irrigated areas.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 3-16, June 2-4, July 14 to Sept. 21)

0.3	0	1.0	60
.4	1.0	1.5	126
.5	8.0	2.0	213

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	57	92	66	82	70	54	47	20	142	19	75	41
2	48	90	68	84	71	57	47	13	116	24	74	32
3	45	88	76	85	68	59	52	3.1	77	23	79	27
4	42	82	76	80	72	54	60	2.4	70	17	76	27
5	40	78	76	75	72	54	66	1.0	64	20	60	29
6	44	78	76	72	61	54	66	.9	68	17	45	30
7	44	78	72	76	61	52	62	7.3	64	15	46	28
8	42	77	72	62	62	53	65	5.2	66	11	45	24
9	56	77	75	67	59	51	70	5.9	66	17	77	18
10	52	76	76	78	58	52	68	4.5	62	25	72	22
11	50	76	70	70	59	47	67	3.1	61	29	25	28
12	50	75	81	67	54	52	61	3.1	37	31	28	27
13	47	76	85	70	52	51	56	3.1	34	28	27	32
14	57	73	81	71	53	48	53	3.8	125	29	27	34
15	58	73	84	71	48	48	51	3.1	108	32	26	35
16	66	76	82	71	52	48	50	2.4	54	30	24	46
17	64	81	82	73	52	48	48	.9	28	27	24	47
18	61	75	82	75	50	49	49	1.7	18	25	21	44
19	61	73	82	75	48	47	49	2.4	27	29	17	41
20	67	73	84	73	47	44	51	2.4	19	31	19	47
21	76	72	86	73	50	46	53	2.4	15	26	26	50
22	72	73	81	73	50	45	57	3.1	36	26	29	47
23	70	72	75	72	46	44	66	11	31	22	29	45
24	78	72	85	70	50	44	67	20	16	28	28	46
25	126	71	84	67	47	41	71	13	10	35	98	48
26	130	70	85	70	46	50	76	16	.8	39	120	41
27	105	70	84	73	53	50	67	30	.6	36	129	41
28	99	68	81	70	50	49	45	32	.2	32	143	47
29	97	66	82	71	54	50	29	181	.1	33	132	57
30	94	65	78	70	-----	49	27	202	38	35	137	45
31	93	-----	80	70	-----	47	-----	154	-----	35	57	-----
Total	2,091	2,266	2,447	2,256	1,615	1,537	1,696	753.8	1,419.5	826	1,575	1,126
Mean	67.5	75.5	78.9	72.8	55.7	49.6	56.5	24.3	47.3	26.6	50.8	37.5
Ac-ft	4,150	4,490	4,850	4,470	3,200	3,050	3,360	1,500	2,820	1,640	3,120	2,230

Calendar year 1963: Max 458 Min 0.7 Mean 61.7 Ac-ft 44,630
 Water year 1963-64: Max 202 Min 0.1 Mean 53.6 Ac-ft 38,880

PLATTE RIVER BASIN

6-7475. Cache la Poudre River near Rustic, Colo.

Location (revised).--Lat 40°41'44", long 105°41'23", in NW¼NE¼ sec.4, T.8 N., R.74 W., on right bank 20 ft downstream from trail bridge, 500 ft south of State Highway 14, 800 ft downstream from unnamed tributary, 5.8 miles west of Rustic, 8½ miles downstream from outlet of Laramie-Poudre tunnel, and 33 miles west of Fort Collins.

Drainage area.--199 sq mi.

Records available.--August 1956 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,610 ft (from topographic map).

Average discharge.--8 years, 255 cfs (184,600 acre-ft per year).

Extremes.--Maximum discharge during year, 1,800 cfs May 26 (gage height, 5.45 ft); minimum daily, 9 cfs Feb. 15-18, 21. 1956-64: Maximum discharge, 3,610 cfs June 29, 1957 (gage height, 7.12 ft); minimum daily, 8.0 cfs Jan. 12, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by transbasin and transmountain diversions (see elsewhere in this report), storage reservoirs, and a few small diversions for irrigation.

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

1.5	8.0	3.0	226
1.7	16	3.5	390
2.0	36	4.0	620
2.3	66	5.0	1,280
2.6	120	6.0	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	37	20	14	16	11	13	13	41	650	1,130	338	145
2	37	18	15	16	11	12	13	46	676	1,050	334	133
3	*36	26	12	16	10	12	14	42	730	1,020	372	118
4	34	27	12	16	10	12	13	37	*766	927	376	102
5	34	26	12	15	11	11	13	*40	820	962	355	98
6	33	23	*12	14	11	11	12	36	983	941	*306	98
7	31	25	12	13	10	10	11	40	1,140	*885	330	98
8	31	*26	14	*13	10	12	11	40	1,170	796	324	107
9	30	25	12	12	10	13	12	39	826	736	306	109
10	30	26	10	12	11	14	12	42	990	694	259	113
11	30	25	10	11	*11	*16	12	56	1,260	676	244	107
12	29	23	10	10	10	16	13	53	1,110	655	238	105
13	29	22	14	10	10	14	12	61	1,070	595	226	96
14	30	23	16	12	10	15	*12	105	1,020	511	205	*74
15	29	23	16	14	9	16	14	160	962	410	193	73
16	29	23	16	16	9	16	20	262	*1,090	402	193	105
17	27	15	18	16	9	16	23	470	1,300	402	199	96
18	27	15	20	15	9	15	23	640	1,230	444	190	89
19	27	20	19	14	10	14	25	826	1,050	376	190	113
20	28	20	18	14	10	14	24	997	934	330	223	142
21	34	23	18	14	9	16	23	1,180	864	274	199	158
22	32	20	18	14	10	18	23	1,260	864	334	193	168
23	28	21	18	15	11	16	21	1,230	832	422	179	171
24	28	20	18	16	11	12	25	1,350	878	475	160	165
25	27	20	17	16	10	11	30	1,390	899	426	158	150
26	27	20	15	16	10	*11	25	*1,510	1,000	372	158	54
27	27	20	16	14	12	12	23	1,590	1,120	320	188	44
28	24	19	17	13	13	12	26	1,450	1,150	317	205	34
29	25	19	17	12	14	12	35	1,190	1,210	317	223	31
30	26	15	16	12	-----	12	38	850	1,190	362	190	30
31	26	-----	17	11	-----	13	-----	585	-----	358	150	-----
Total	922	648	469	428	302	417	571	17,618	29,784	17,919	7,404	3,126
Mean	29.7	21.6	15.1	13.8	10.4	13.5	19.0	568	993	578	239	104
Ac-ft	1,830	1,290	930	849	599	827	1,130	34,940	59,080	35,540	14,690	6,200

Calendar year 1963: Max 1,140 Min 8.0 Mean 171 Ac-ft 123,700
 Water year 1963-64: Max 1,590 Min 9 Mean 218 Ac-ft 157,900

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 26, 27, Dec. 10-22, Jan. 4, 5, 9-11, Mar. 29. No gage-height record Jan. 6-8, Jan. 12 to Mar. 26, Apr. 10-14 (stage-discharge relation affected by ice during most of periods).

6-7482. Fall Creek near Rustic, Colo.

Location.--Lat 40°33'06", long 105°37'35", in NW¼ sec.30, at line of sec.19, T.7 N., R.73 W., on left bank on upstream side of bridge, 1.5 miles upstream from mouth, 11 miles southwest of Rustic, and 29 miles west of Fort Collins.

Drainage area.--3.64 sq mi.

Records available.--October 1960 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 9,765 ft (from topographic map).

Extremes.--Maximum discharge during year, 35 cfs June 9 (gage height, 2.23 ft); minimum daily, 0.2 cfs Dec. 14.
1960-64: Maximum discharge, 49 cfs June 15, 1963 (gage height, 2.43 ft); minimum daily, 0.1 cfs Jan. 11-13, 19, 20, 23, 24, 1963.

Remarks.--Records good. No diversion above station.

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

Oct. 1-10		Oct. 11 to Sept. 30			
0.8	2.1	0.5	0.1	1.1	3.4
.9	3.0	.6	.3	1.4	6.8
		.7	.6	1.7	13
		.9	1.9	2.1	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	3.0	1.7	0.9	0.4	0.4	0.3	0.3	1.5	10	23	12	4.4
2	*2.9	1.8	.7	.5	.4	.3	.3	1.5	9.9	22	15	4.2
3	2.9	1.8	.6	.6	*.3	.3	.3	1.2	12	22	18	4.0
4	2.8	1.7	*.6	.5	.3	.3	.3	1.1	*12	22	16	3.8
5	2.7	*1.9	.6	.4	.3	*.3	.3	1.2	14	24	13	3.8
6	2.7	1.9	.6	.4	.3	.3	.3	1.2	19	*23	*13	3.8
7	2.6	1.9	.6	*.4	.3	.3	.3	1.3	24	21	12	3.7
8	2.5	1.8	.6	.4	.3	.3	.3	1.3	22	20	11	3.7
9	2.4	1.7	.5	.4	.3	.3	*.3	1.4	16	19	10	3.7
10	2.4	1.7	.5	.3	.3	.3	.3	1.8	23	19	9.7	3.5
11	2.4	1.7	.4	.3	.3	.3	.3	1.9	22	19	9.3	3.4
12	2.4	1.6	.3	.3	.3	.3	.4	*1.8	20	18	9.1	3.4
13	2.4	1.6	.3	.3	.3	.3	.4	2.3	21	18	8.3	3.3
14	2.4	1.6	.3	.3	.3	.3	.4	3.2	20	18	8.0	3.3
15	2.4	1.6	.3	.3	.3	.3	.4	3.3	*21	17	7.5	*4.3
16	2.4	1.6	.3	.3	.3	.3	.6	6.5	23	17	7.1	4.5
17	2.3	1.5	.3	.3	.3	.3	.7	9.7	25	16	6.8	3.8
18	2.2	1.5	.3	.3	.3	.3	.6	11	22	16	6.5	3.7
19	2.2	1.3	.3	.4	.3	.3	.8	14	18	15	7.0	5.3
20	2.4	1.2	.3	.3	.3	.3	.9	19	18	14	6.4	4.6
21	2.4	1.2	.3	.4	.3	.3	.7	22	18	13	6.0	4.0
22	2.2	1.2	.3	.4	.3	.3	.7	22	17	13	5.6	3.8
23	2.1	1.0	.3	.4	.3	.3	.8	19	15	14	5.3	3.6
24	2.1	1.0	.4	.4	.3	.3	1.2	20	18	14	5.1	3.3
25	1.9	1.2	.4	.4	.3	.3	1.3	23	21	14	4.6	3.2
26	2.1	1.2	.4	.3	.3	.3	.8	23	22	13	4.5	3.6
27	2.2	1.2	.3	.4	.3	.3	.6	*25	23	12	5.9	3.3
28	1.9	1.2	.3	.4	.3	.3	.6	24	25	11	5.3	3.1
29	1.9	1.0	.3	.3	.3	.3	1.2	20	25	11	6.3	3.0
30	1.8	.9	.3	.4	-----	.3	1.4	14	23	11	5.0	3.0
31	1.8	-----	.3	.4	-----	.3	-----	11	-----	12	4.5	-----
Total	72.8	44.2	12.8	11.6	8.9	9.3	17.8	309.2	578.9	521	263.8	112.1
Mean	2.35	1.47	0.41	0.37	0.31	0.30	0.59	9.97	19.3	16.8	8.51	3.74
Ac-ft	144	88	25	23	18	18	35	613	1,150	1,030	523	222

Calendar year 1963: Max 39 Min 0.1 Mean 5.44 Ac-ft 3,940
Water year 1963-64: Max 25 Min 0.2 Mean 5.36 Ac-ft 3,890

Peak discharge (base, 30 cfs)

* Discharge measurement made on this day.

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-27	1800	2.15	30	6-17	2000	2.17	31
6-9	0630	2.23	35	6-28	2030	2.18	32

PLATTE RIVER BASIN

6-7485.1. Little Beaver Creek near Idylwilde, Colo.

Location.--Lat 40°38'20", long 105°39'40", in NW¼ sec.26, T.8 N., R.74 W., on left bank 4.5 miles south of Idylwilde and 8 miles upstream from mouth.

Drainage area.--0.89 sq mi.

Records available.--October 1960 to September 1964.

Gage.--Water-stage recorder and Parshall flume or V-notch sharp-crested weir. Altitude of gage is 10,000 ft (from topographic map).

Extremes.--Maximum discharge during year, 9.7 cfs June 7 (gage height, 1.52 ft); minimum daily, 0.05 cfs Mar. 24 to Apr. 14.
1960-64: Maximum discharge, 14 cfs June 21, 1961 (gage height, 0.91 ft); minimum daily, 0.01 cfs Apr. 25 to May 14, 1961.

Remarks.--Records excellent except those for periods of no gage-height record, which are good.

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

0.3	0.02	0.8	1.5
.4	.09	1.0	3.0
.5	.26	1.2	5.3
.6	.53	1.4	8.0
.7	.93		

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	0.38	0.28	0.22	0.13	0.11	0.08	0.05	0.07	2.1	4.6	1.1	0.47
2	.38	.28	.20	.13	.11	.07	.05	.07	2.2	4.3	1.1	.47
3	*.38	.28	.20	.13	.09	.07	.05	.07	2.3	4.2	1.2	.44
4	.38	.28	.20	.12	.09	.07	.05	.07	2.3	4.0	1.1	.44
5	.38	.28	.20	.12	.09	.07	.05	.07	2.8	4.0	.98	.44
6	.38	.28	.20	.12	.09	.07	.05	.07	4.6	3.4	1.0	.44
7	.38	.28	.20	.12	.09	.07	.05	.07	7.2	3.2	.93	.44
8	.38	.28	.20	.12	.09	.07	.05	.07	5.4	3.1	.84	.41
9	.38	.28	.20	.12	.09	.07	.05	.07	4.4	3.0	.75	.41
10	.38	.28	.20	.12	.09	.07	.05	.07	6.5	2.8	.75	.41
11	.38	.28	.20	.12	.09	.07	.05	.07	* a 6.2	2.7	.71	.41
12	.35	.28	.18	.12	.09	.07	.05	.07	a 5.8	2.6	.71	.38
13	.35	.28	.18	.12	.09	.07	.05	.07	a 6.2	2.4	.67	.38
14	.35	.28	.18	.12	.09	.07	.05	.12	a 6.0	2.2	.64	.35
15	.35	.28	.18	.12	.09	.07	.06	.16	a 6.4	2.2	.60	.44
16	.35	.28	.18	.12	.09	.07	.07	.22	* a 6.6	2.0	.64	.38
17	.35	.26	.16	.12	.09	.07	.07	.26	6.9	2.1	.64	.35
18	.35	.26	.16	.12	.09	.06	.06	.35	6.1	1.9	.60	.33
19	.35	.24	.16	.13	.09	.06	.06	.60	5.3	1.7	.67	.44
20	.38	.24	.16	.13	.09	.06	.06	1.1	5.4	1.6	.56	.38
21	.38	.24	.16	.13	.09	.06	.06	2.1	5.0	1.5	.56	.38
22	.35	.24	.15	.13	.09	.06	.06	2.6	4.2	1.5	.56	.35
23	.38	.24	.15	.12	.09	.06	.06	2.5	4.2	1.5	.53	.33
24	.38	.24	.15	.11	.08	.05	.06	3.1	4.8	1.4	.50	.33
25	.35	.24	.15	.11	.08	.05	.06	4.4	5.1	1.3	.50	.33
26	.35	.24	.13	.11	.08	.05	.06	4.7	5.0	1.2	.50	.33
27	.35	.24	.13	.11	.08	.05	.06	* 4.3	5.1	1.2	.60	.33
28	.35	.24	.13	.11	.08	.05	.06	5.1	5.4	1.2	.56	.33
29	.35	.24	.13	.11	.08	.05	.06	5.7	5.2	1.3	.56	.30
30	.35	.24	.13	.11	-----	.05	.07	2.4	4.7	1.2	.53	.30
31	.33	-----	.13	.11	-----	.05	-----	2.2	-----	1.3	.50	-----
Total	11.28	7.88	5.30	3.71	2.59	1.96	1.69	40.82	149.4	72.6	22.09	11.52
Mean	0.364	0.263	0.171	0.120	0.089	0.063	0.056	1.32	4.98	2.34	0.713	0.384
Ac-ft	22	16	11	7.4	5.1	3.9	3.4	81	296	144	44	23

Calendar year 1963: Max 5.1 Min 0.05 Mean 0.743 Ac-Ft 539
Water year 1963-64: Max 7.2 Min 0.05 Mean 0.904 Ac-Ft 657

Peak discharge (base, 10 cfs).--No peak above base.

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

PLATTE RIVER BASIN

6-7485.3. Little Beaver Creek near Rustic, Colo.

Location.--Lat 40°37'23", long 105°33'52", in N½ sec.34, T.8 N., R.73 W., on left bank 2.6 miles upstream from mouth and 5.5 miles south of Rustic.

Drainage area.--11.4 sq mi.

Records available.--October 1960 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 8,350 ft (from topographic map).

Extremes.--Maximum discharge during year, 45 cfs June 7 (gage height, 1.16 ft); minimum daily, 0.9 cfs Feb. 19 to Mar. 4, Mar. 9, 10, 1960-64: Maximum discharge, 92 cfs June 9, 1961 (gage height, 1.55 ft); minimum daily, that of Feb. 19 to Mar. 4, Mar. 9, 10, 1964.

Remarks.--Records excellent. No diversion above station.

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

0.2	0.6	0.6	7.0
.3	1.4	.7	10
.4	2.9	.9	21
.5	4.8	1.1	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	2.8	2.2	2.0	1.7	1.2	0.9	1.2	3.1	19	17	5.5	2.2
2	* 2.9	2.6	2.2	1.6	1.2	.9	1.2	3.1	20	16	5.5	2.0
3	2.8	2.6	1.7	1.6	1.3	.9	1.2	2.4	22	16	6.6	2.0
4	2.8	2.6	1.8	1.6	* 1.2	*.9	1.2	2.3	* 22	15	5.2	2.0
5	2.8	* 2.6	2.0	1.6	1.2	1.0	1.2	2.6	22	14	* 4.6	1.8
6	2.8	2.4	1.8	1.6	1.2	1.0	1.2	3.1	26	* 14	4.8	1.8
7	2.8	2.4	1.8	1.6	1.2	1.0	* 1.2	3.3	35	12	4.8	1.8
8	2.8	2.3	1.8	1.3	1.2	1.0	1.1	3.3	32	12	4.2	1.7
9	2.8	2.4	1.8	1.2	1.2	.9	1.1	3.7	24	12	4.0	1.7
10	2.8	2.3	1.7	1.2	1.2	.9	1.1	3.8	32	10	3.7	1.6
11	2.8	2.3	1.4	1.2	1.2	1.0	1.0	3.8	32	10	3.5	1.6
12	2.8	2.2	1.4	1.2	1.2	1.0	1.1	* 3.1	28	9.7	3.5	1.4
13	2.8	2.4	1.4	1.2	1.2	1.0	1.0	3.7	28	8.5	3.3	1.6
14	2.6	2.6	1.4	1.2	1.1	1.0	1.2	5.2	27	8.5	3.3	1.4
15	2.4	2.4	1.4	1.2	1.0	1.0	1.3	6.3	27	7.9	3.1	* 2.3
16	2.4	2.4	1.6	1.2	1.1	1.0	2.0	7.6	* 29	7.6	3.1	3.5
17	2.4	1.4	1.7	1.2	1.0	1.0	1.8	9.1	29	7.9	3.1	2.4
18	2.4	2.0	1.8	1.2	1.0	1.0	2.0	9.7	26	7.9	2.9	2.2
19	2.4	1.8	1.8	1.2	.9	1.0	2.2	11	22	6.6	2.9	4.0
20	2.8	2.4	1.7	1.2	.9	1.0	2.8	17	22	6.1	3.1	3.1
21	3.3	2.3	1.7	1.2	.9	1.1	2.4	26	19	5.9	2.8	2.8
22	2.8	2.0	1.7	1.3	.9	1.1	2.6	28	19	6.6	2.6	2.4
23	2.6	2.2	1.7	1.3	.9	1.1	2.8	25	18	6.8	2.4	2.3
24	2.3	2.4	1.7	1.3	.9	1.1	3.5	26	19	5.9	2.3	2.3
25	2.4	2.0	1.7	1.3	.9	1.1	3.3	29	20	5.7	2.3	2.0
26	2.6	2.3	1.7	1.3	.9	1.1	2.4	32	19	5.2	2.2	2.0
27	2.6	2.4	1.6	1.3	.9	1.1	2.2	30	18	4.8	3.3	2.2
28	2.6	2.3	1.6	1.3	.9	1.0	2.3	* 30	19	4.8	2.8	2.0
29	2.4	2.2	1.6	1.2	.9	1.1	2.9	26	20	5.9	3.1	1.8
30	2.4	2.2	1.6	1.2	-----	1.2	3.3	20	18	6.1	2.6	1.7
31	2.4	-----	1.7	1.2	-----	1.2	-----	19	-----	6.1	2.3	-----
Total	82.3	68.6	52.5	40.9	30.8	31.6	55.8	398.2	713	282.5	109.4	63.6
Mean	2.65	2.29	1.69	1.32	1.06	1.02	1.86	12.8	23.8	9.11	3.53	2.12
Ac-ft	163	136	104	81	61	63	111	790	1,410	560	217	126

Calendar year 1963: Max 34 Min 1.0 Mean 4.33 Ac-ft 3,130
 Water year 1963-64: Max 35 Min 0.9 Mean 5.27 Ac-ft 3,820

Peak discharge (base, 40 cfs).--June 7 (2200) 45 cfs (1.16 ft).

* Discharge measurement made on this day.

PLATTE RIVER BASIN

6-7486. South Fork Cache la Poudre River near Rustic, Colo.

Location.--Lat 40°38'30", long 105°29'30", in SW¼ sec.20, T.8 N., R.72 W., on left bank 5.7 miles upstream from mouth, 6 miles south-east of Rustic, and 22 miles west of Fort Collins.

Drainage area.--90.3 sq mi.

Records available.--August 1956 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 7,596.86 ft above mean sea level (Bureau of Reclamation bench mark).

Average discharge.--8 years, 62.8 cfs (45,470 acre-ft per year).

Extremes.--Maximum discharge during year, 301 cfs May 28 (gage height, 3.25 ft); maximum gage height recorded, 3.40 ft Dec. 5 (backwater from ice); minimum daily discharge, 5.0 cfs Jan. 13, 14.

1956-64: Maximum discharge, 1,120 cfs June 29, 1957 (gage height, 4.70 ft); minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station. Slight regulation by small reservoirs and lakes.

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

1.7	10	2.3	60
1.8	13	2.7	123
1.9	19	3.1	230
2.1	35	3.4	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	28	17	10	6.0	6.0	6.8	12	20	160	179	83	22
2	27	17	10	6.2	5.8	6.4	11	21	140	173	84	22
3	27	17	11	6.4	5.8	6.4	11	18	*154	170	112	20
4	25	17	10	6.2	*7.2	*7.0	10	15	147	170	91	19
5	25	17	10	6.0	7.2	7.0	11	17	160	173	76	18
6	23	17	*10	6.0	6.4	6.6	11	16	176	*160	*73	19
7	23	16	9.2	6.0	6.2	11	*18	221	142	76	19	
8	22	*16	8.6	*5.8	6.0	6.2	12	17	240	125	66	18
9	22	15	8.0	5.8	6.2	6.2	*13	17	197	121	63	18
10	22	16	6.8	5.2	6.6	6.8	13	19	224	118	56	18
11	22	15	6.0	5.2	6.4	7.4	13	22	248	114	52	17
12	22	15	6.0	5.2	6.2	7.8	12	20	212	112	48	17
13	21	15	6.0	5.0	6.0	7.8	12	22	215	109	46	16
14	21	15	5.6	5.0	5.8	7.6	13	28	203	105	43	*15
15	20	15	6.0	5.2	5.6	7.6	15	35	*197	102	39	18
16	20	15	6.4	5.2	5.8	8.0	17	47	200	100	36	23
17	20	12	6.8	5.2	5.6	8.0	15	68	194	99	37	18
18	19	12	6.8	5.4	5.4	8.0	16	84	191	107	35	16
19	19	12	6.6	5.6	5.6	8.0	18	100	162	107	33	25
20	20	14	6.6	5.4	5.6	8.8	18	144	165	105	36	25
21	23	13	6.0	6.0	5.6	9.0	17	188	170	105	30	22
22	20	12	5.6	6.2	5.6	9.0	18	194	162	107	28	20
23	19	11	6.0	6.0	5.6	9.0	19	185	138	105	26	18
24	19	13	6.0	5.8	6.0	9.0	21	203	129	107	25	17
25	18	11	6.2	5.8	5.8	8.2	20	240	149	94	24	16
26	18	11	6.2	6.2	5.6	9.0	19	258	154	73	23	15
27	18	11	6.0	6.2	5.8	9.0	15	*274	162	88	28	14
28	17	11	6.0	6.2	6.4	9.0	*16	274	179	83	29	12
29	17	10	5.8	6.0	6.8	10	19	251	197	83	30	12
30	16	10	5.6	6.0	-----	11	20	212	179	83	28	12
31	17	-----	5.6	6.0	-----	12	-----	188	-----	89	24	-----
Total	650	418	221.4	178.4	174.2	248.8	448	3,215	5,425	3,608	1,480	541
Mean	21.0	13.9	7.14	5.75	6.01	8.03	14.9	104	181	116	47.7	18.0
Ac-ft	1,290	829	439	354	346	493	889	6,380	10,760	7,160	2,940	1,070

Calendar year 1963: Max 328 Min - Mean 43.7 Ac-ft 31,620
 Water year 1963-64: Max 274 Min 5.0 Mean 45.4 Ac-ft 32,950

Peak discharge (base, 250 cfs).--May 28 (0200) 301 cfs (3.25 ft); June 11 (0100) 283 cfs (3.23 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 2, 12, 13, Nov. 18 to Apr. 20 (no gage-height record Dec. 11 to Apr. 16), Apr. 24, 25.

Transbasin diversions from North Platte River basin to
Cache la Poudre River basin in Colorado

The following seven diversions, which are equipped with water-stage recorders, divert water from tributaries of the North Platte River to the Cache la Poudre River or its tributaries. Records furnished by State engineer.

6-7455. Cameron Pass ditch diverts water from tributaries of Michigan River in sec.10, T.6 N., R.76 W., to Joe Wright Creek (tributary to Cache la Poudre River) in sec.2, T.6 N., R.76 W.

6-7460. Michigan ditch diverts water from Michigan River, headgate in sec.12, T.6 N., R.76 W., and many small tributaries and Agnes Creek (tributary to Michigan River), headgate in sec.15, T.6 N., R.76 W., to Joe Wright Creek (tributary to Cache la Poudre River) in sec.2, T.6 N., R.76 W.

6-7465. Skyline ditch diverts water from West Branch Laramie River (tributary to Laramie River), headgate in sec.14, T.8 N., R.76 W., to Chambers Lake (tributary to Cache la Poudre River) in sec.31, T.8 N., R.75 W.

6-7470. Laramie-Poudre tunnel diverts water from Laramie River in sec.7, T.8 N., R.75 W., and Rawah Creek (tributary to Laramie River) in sec.14, T.9 N., R.76 W., to Cache la Poudre River in sec.9, T.8 N., R.75 W.

6-7472. Bob Creek ditch diverts water from Nunn Creek (tributary to Laramie River) in sec.9, T.9 N., R.75 W., to Roaring Creek (tributary to Cache la Poudre River) in sec.11, T.9 N., R.75 W.

6-7500. Columbine ditch diverts water from Nunn Creek (tributary to Laramie River) in sec.3, T.9 N., R.75 W., to North Fork Cache la Poudre River (tributary to Cache la Poudre River) in sec.25, T.10 N., R.75 W.

6-7505. Wilson supply ditch diverts water from Sand Creek in sec.22, T.11 N., R.75 W., and at times includes water diverted from tributaries of Deadman Creek in sec.9, T.10 N., R.75 W. Diversion is from the Laramie River basin to Sheep Creek (tributary to North Fork Cache la Poudre River) in sec.13, T.11 N., R.75 W., in the Cache la Poudre River basin. Records herein represent total flow diverted from the Laramie River basin by Wilson supply ditch.

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

Month	Cameron Pass ditch	Michigan ditch	Skyline ditch	Laramie-Poudre tunnel	Bob Creek ditch	Columbine ditch	Wilson supply ditch	Total
October.....	0	0	0	0	0	0	0	0
November.....	0	0	0	0	0	0	0	0
December.....	0	0	0	0	0	0	0	0
January.....	0	0	0	0	0	0	0	0
February.....	0	0	0	0	0	0	0	0
March.....	0	0	0	0	0	0	0	0
April.....	0	484	0	0	0	0	0	484
May.....	0	0	0	4,020	0	0	1,750	5,770
June.....	0	0	2,370	7,440	0	0	692	10,500
July.....	0	0	1,050	4,060	0	0	21	5,130
August.....	0	0	0	0	0	0	0	0
September.....	0	0	0	0	0	0	0	0
Water year 1963-64.....	0	484	3,420	15,520	0	0	2,460	21,880

PLATTE RIVER BASIN

6-7515. North Fork Cache la Poudre River near Livermore, Colo.

Location--Lat 40°42'10", long 105°14'01", in NW¼SW¼ sec.33, T.9 N., R.70 W., on right bank 0.6 mile upstream from mouth, 0.7 mile downstream from Milton Seaman Reservoir, and 6.0 miles southeast of Livermore.

Drainage area--568 sq mi.

Records available--May 1929 to September 1931 (published as "at Livermore"), May 1947 to September 1964.

Gage--Water-stage recorder (digital). Altitude of gage is 5,380 ft (from topographic map). May 24, 1929, to Sept. 30, 1931, chain gage on highway bridge at Livermore 9 miles upstream at datum 5,715.03 ft above mean sea level, datum of 1929.

Average discharge--19 years, 44.2 cfs (32,000 acre-ft per year).

Extremes--Maximum discharge during year, 175 cfs May 23 (gage height, 4.29 ft); minimum daily, 0.1 cfs Aug. 8-10. 1929-31, 1947-64: Maximum discharge, 6,800 cfs May 31, 1930 (gage height, 9.82 ft, from floodmarks, site and datum then in use), from rating curve extended above 390 cfs on basis of slope-area measurement of peak flow; no flow for many days in 1961-63. Maximum flood known, 20,000 cfs (estimated) May 20, 1904.

Remarks--Records good except those for Jan. 13 to Feb. 12, which are poor. Natural flow of stream affected by transbasin diversions (see elsewhere in this report), storage reservoirs, and diversions for irrigation (19,450 acre-ft in water year 1964).

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

2.5	0	3.1	11
2.6	.7	3.3	22
2.7	1.5	3.7	62
2.8	2.5	4.0	110
2.9	4.8	4.5	240

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	4.3	4.1	2.9		3.2	5.7	1.2	149	12	4.4	4.5	
2	.8	4.1	4.1	2.9		3.3	4.6	1.1	139	14	11	4.4	
3	.6	4.0	4.1	2.8		3.2	4.3	1.1	125	20	11	4.3	
4	.5	*4.1	4.0	2.7		3.2	25	1.0	127	5.8	6.3	4.3	
5	.5	3.8	3.9	b2.7		3.2	4.0	*1.0	125	1.7	*1.3	1.6	
6	.4	3.8	3.9	2.9	3.5	3.3	40	.9	113	3.8	.5	3.5	
7	30	3.7	4.0	3.0		3.4	18	.9	65	*5.7	.3	3.5	
8	48	3.7	b3.9	b3.0		3.2	4.6	.9	58	5.8	.1	3.4	
9	48	3.7	3.9	b3.0		3.2	4.1	.9	76	5.6	.1	3.4	
10	48	3.4	*3.9	*3.0			*3.2	3.7	1.0	94	5.5	.1	3.4
11	21	5.0	b3.9	b3.0			3.2	3.2	1.5	*84	5.4	.3	3.2
12	13	6.7	4.0	b3.0		*3.4	3.2	3.2	1.6	54	5.3	2.0	3.2
13	13	6.7	b3.8			3.4	3.2	2.5	1.6	32	5.2	2.9	3.2
14	12	6.7	b3.6			3.4	b3.2	*2.6	1.7	37	5.1	7.8	3.1
15	13	6.7	3.6			3.6	3.2	2.5	3.3	49	5.1	8.0	*3.0
16	15	6.7	3.4		3.4	3.2	2.4	4.4	57	5.8	38	2.8	
17	17	6.7	3.4		3.4	3.2	2.3	12	78	9.0	4.9	2.9	
18	20	6.7	3.4		3.4	3.2	2.3	7.4	112	13	4.3	2.8	
19	20	6.7	3.4	3.0	3.4	3.2	2.3	7.6	113	14	4.2	2.7	
20	20	6.7	3.4		3.2	15	2.3	21	87	6.7	4.1	2.5	
21	26	6.7	3.4		3.2	18	2.2	55	59	6.7	4.1	2.4	
22	29	6.7	3.5		3.3	18	3.0	108	48	4.3	4.1	1.5	
23	29	6.8	3.4		b3.3	19	4.1	170	64	1.9	4.1	.6	
24	29	7.2	3.4		3.3	19	9.5	130	88	1.9	4.3	.5	
25	29	6.9	3.4		3.4	19	9.2	85	92	1.8	4.4	.5	
26	18	6.7	3.4		b3.3	19	8.0	71	77	2.2	4.5	.4	
27	11	6.7	3.3		b3.3	16	7.4	102	39	5.0	4.4	.4	
28	11	6.7	3.2	3.5	b3.3	13	6.4	*138	30	1.7	4.3	.4	
29	7.2	6.7	3.2		3.2	8.6	2.3	138	26	1.7	4.3	.4	
30	4.3	6.1	3.2		8.6	1.5	138	13	1.7	4.6	.3		
31	4.3	-----	3.1		-----	8.1	-----	144	-----	1.7	4.6	-----	
TOTAL	542.2	170.9	112.2	94.9	98.7	242.5	229.2	1,351.1	2,310	185.1	746.1	245.0	
MEAN	17.5	5.70	3.62	3.06	3.40	7.82	7.64	43.6	77.0	5.97	24.1	8.17	
AC-FT	1,080	339	223	188	196	481	455	2,680	4,580	367	1,480	486	

CALENDAR YEAR 1963	MAX	214	MIN	0	MEAN	11.4	AC-FT	8,232
WATER YEAR 1963-64	MAX	170	MIN	.1	MEAN	17.3	AC-FT	12,555

* Discharge measurement made on this day.
 b Stage-discharge relation affected by ice.
 Note.--No gage-height record Jan. 13 to Feb. 12.

6-7520. Cache la Poudre River at mouth of canyon, near Fort Collins, Colo.

Location--Lat 40°39'52", long 105°13'26", in NW¼ sec.15, T.8 N., R.70 W., on left bank at mouth of canyon, 0.5 mile downstream from headgate of Poudre Valley Canal, 1.2 miles upstream from Lewstone Creek, and 9.3 miles northwest of court house in Fort Collins.

Drainage area--1,055 sq mi.

Records available--June to August 1881, May to July 1883, October 1883 to September 1964. Monthly discharge only for some periods, published in WSP 1310. Records for Mar. 23 to Apr. 30 and July 4 to Aug. 20, 1883, published in WSP 9, have been found to be unreliable and should not be used. Prior to 1902, published as Cache la Poudre Creek or River at or near Fort Collins.

Gage--Water-stage recorder. Altitude of gage is 5,220 ft (from topographic map).

Average discharge--81 years (1883-1964), 393 cfs (284,500 acre-ft per year).

Extremes--Maximum discharge during year, 1,940 cfs May 27 (gage height, 4.36 ft); minimum daily, 8.5 cfs Dec. 4, 1881, 1883-1964: Maximum discharge not determined, occurred May 20, 1904; maximum discharge determined, 21,000 cfs June 9, 1891 (from reports of State engineer of Colorado), caused by failure of Chambers Lake Dam; minimum daily discharge, 1.6 cfs Nov. 20, 28, 1948, caused by diversion of Poudre Valley Canal half a mile upstream.

Remarks--Records good except those for periods of no gage-height record, which are poor. Discharge measurements generally made twice a month. Natural flow of stream affected by transbasin and transmountain diversions (see elsewhere in this report), diversions for irrigation (54,900 acre-ft in water year 1964), and diversions for municipal use (8,870 acre-ft in water year 1964).

Revisions--Figure of diversions for irrigation was incorrectly published in 1963; it should be 72,050 acre-ft.

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

1.1	5.0	2.6	430
1.2	12	3.0	690
1.4	30	3.5	1,080
1.6	54	4.0	1,550
1.8	98	4.5	2,110
2.2	222		

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	62	44	20	20	10	25	30	62	816	1,130	292	159
2	58	39	17	25	11	21	28	69	838	1,010	278	156
3	56	37	12	35	11	18	24	73	886	982	316	135
4	54	43	8.5	20	13	22	28	64	878	870	321	118
5	51	50	11	17	23	25	60	48	942	886	302	76
6	50	48	15	15	15	45	65	50	1,090	886	231	56
7	67	44	16	14	12	35	37	44	1,230	846	227	58
8	88	40	15	13	13	25	19	56	1,470	774	205	60
9	88	38	14	11	12	20	20	62	1,030	704	185	48
10	88	37	13	12	10	21	25	29	1,080	641	150	58
11	64	37	14	13	10	22	28	14	1,470	585	115	62
12	54	38	14	12	11	20	30	39	1,200	634	115	58
13	54	36	16	10	14	21	25	29	1,260	557	101	56
14	54	40	14	10	20	22	18	40	1,140	514	90	44
15	60	41	15	11	14	23	21	93	1,070	376	78	38
16	65	41	16	10	13	23	31	101	1,160	348	104	53
17	60	39	17	9.0	14	22	43	268	1,330	365	138	71
18	54	25	18	10	12	21	41	460	1,500	412	135	64
19	54	16	20	10	12	22	43	620	1,100	370	153	67
20	54	22	23	11	13	22	56	830	1,040	302	175	106
21	56	32	20	11	15	23	48	1,130	974	227	156	90
22	58	30	17	12	14	24	44	1,310	934	215	150	90
23	67	29	15	13	13	26	43	1,300	894	263	150	96
24	73	30	16	12	14	28	51	1,280	950	292	126	88
25	71	43	15	13	15	35	64	1,450	990	273	147	62
26	62	34	16	14	17	32	60	1,600	1,040	222	153	96
27	53	32	19	12	20	31	50	1,730	1,150	227	153	54
28	54	30	19	11	25	27	44	1,630	1,210	202	195	47
29	51	28	18	12	35	22	33	1,500	1,280	195	166	43
30	46	25	16	11	-----	27	51	1,200	1,240	268	191	33
31	46	-----	17	10	-----	31	-----	878	-----	287	156	-----
Total	1,872	1,068	496.5	41,900	431	781	1,160	18,059	33,192	15,863	5,454	2,242
Mean	60.4	35.6	16.0	13.5	14.9	25.2	38.7	583	1,106	512	176	74.7
Ac-ft	3,710	2,120	985	831	855	1,550	2,300	35,820	65,840	31,460	10,820	4,450

Calendar year 1963: Max 1,310 Min 4.0 Mean 152 Ac-ft 110,100
 Water year 1963-64: Max 1,730 Min 8.5 Mean 221 Ac-ft 160,700

Note--No gage-height record Dec. 8 to Mar. 26 (stage-discharge relation affected by ice during most of period).

PLATTE RIVER BASIN

6-7525. Cache la Poudre River near Greeley, Colo.

Location.--Lat 40°25'04", long 104°38'22", in NW¼ sec.11, T.5 N., R.65 W., on right bank 25 ft downstream from highway bridge, 3 miles east of courthouse in Greeley, and 3 miles upstream from mouth.

Drainage area.--1,877 sq mi.

Records available.--March to October 1903, August to November 1904, January 1914 to December 1919, June 1924 to September 1964. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 4,610 ft (from topographic map). Prior to Apr. 4, 1916, staff gage and Apr. 4, 1916, to Dec. 17, 1919, water-stage recorder, at sites within 2 miles downstream at different datums. May 27, 1924, to Dec. 13, 1933, at present site at datum 0.51 ft higher.

Average discharge.--45 years (1914-19, 1924-64), 95.6 cfs (69,210 acre-ft per year).

Extremes.--Maximum discharge during year, 342 cfs May 29 (gage height, 4.34 ft); minimum daily, 4.9 cfs May 18, 20. 1903-4, 1914-19, 1924-64: Maximum daily discharge, 4,220 cfs June 24, 26, 1917; minimum daily, 0.8 cfs Oct. 3, 1946.

Remarks.--Records good. Discharge measurements generally made twice a month. Natural flow of stream affected by transmountain and transbasin diversions, storage reservoirs, power developments, diversion for municipal supply, diversions above station for irrigation of about 250,000 acres, and return flow from irrigated areas.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 9, 10, July 21 to Sept. 30)

2.6	4.0	3.0	32
2.7	7.0	3.4	84
2.8	12	4.0	240

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	36	108	92	79	76	78	68	178	105	14	64	21
2	30	105	92	88	74	88	70	170	103	12	52	16
3	22	103	92	84	78	86	97	152	86	12	57	17
4	22	105	92	78	81	82	108	122	68	12	43	17
5	20	105	90	74	81	82	101	101	66	15	11	16
6	20	105	90	86	81	82	103	61	68	12	10	20
7	22	105	86	82	74	82	97	25	63	13	10	22
8	23	105	86	76	68	78	103	16	67	11	12	14
9	34	105	97	74	62	84	110	15	154	10	14	14
10	44	101	92	81	67	81	115	8.0	71	10	12	19
11	46	101	84	74	67	79	108	7.0	63	10	10	22
12	43	101	81	78	66	82	97	9.0	52	9.5	11	30
13	43	103	88	74	63	82	94	6.4	58	9.5	36	28
14	50	105	76	81	66	84	99	6.4	76	9.5	54	20
15	55	105	81	78	60	84	99	5.5	71	9.0	46	29
16	56	108	88	81	63	84	97	5.5	63	9.5	44	32
17	54	108	92	81	68	73	82	5.2	58	10	46	34
18	44	99	82	79	63	73	82	4.9	55	10	50	44
19	38	94	82	78	64	71	81	5.8	48	10	50	46
20	57	92	86	79	58	73	101	4.9	43	10	50	46
21	74	92	82	81	67	73	94	6.1	60	10	50	43
22	73	94	79	81	66	64	88	5.2	67	10	50	45
23	74	90	81	81	57	70	84	6.1	46	11	45	32
24	82	94	86	79	70	63	82	9.5	36	11	49	31
25	90	92	78	81	64	67	71	1.9	34	11	52	34
26	86	92	82	79	63	66	68	24	25	12	58	31
27	86	92	82	81	74	70	183	42	14	15	62	34
28	92	92	81	76	73	68	216	45	12	15	62	38
29	110	92	79	76	82	64	228	130	16	34	32	26
30	105	92	84	76	-----	71	210	234	16	57	21	28
31	105	-----	84	78	-----	66	-----	183	-----	64	20	-----
Total	1,736	2,985	2,647	2,454	1,996	2,350	3,236	1,612.5	1,764	468.0	1,183	849
Mean	56.0	99.5	85.4	79.2	68.8	75.8	108	52.0	58.8	15.1	38.2	28.3
Ac-ft	3,440	5,920	5,250	4,870	3,960	4,660	6,420	3,200	3,500	928	2,350	1,680

Calendar year 1963: Max 446 Min 7.5 Mean 72.7 Ac-ft 52,670
 Water year 1963-64: Max 234 Min 4.9 Mean 63.6 Ac-ft 46,180

6-7540. South Platte River near Kersey, Colo.

Location.--Lat 40°24'44", long 104°33'46", in NW¼SW¼ sec.9, T.5 N., R.64 W., on downstream side of bridge on State Highway 37, 1.9 miles north of railroad in Kersey, and 2½ miles downstream from Cache la Poudre River.

Drainage area.--9,598 sq mi.

Records available.--May 1901 to December 1903, March 1905 to September 1964. Monthly discharge only for some periods, published in WSP 1310. Published as "at Kersey" 1901-3.

Gage.--Water-stage recorder since July 8, 1919. Datum of gage is 4,575.77 ft above mean sea level, datum of 1929. Prior to July 8, 1919, staff or chain gages at former bridge 150 ft downstream at different datum. July 8, 1919, to Sept. 7, 1921, at site 450 ft downstream from present site at different datum. Sept. 8, 1921, to Sept. 12, 1923, at site 750 ft downstream from present site at different datum. Sept. 13, 1923, to July 2, 1935, at site 200 ft downstream from present site at present datum.

Average discharge.--61 years, 724 cfs (524,200 acre-ft per year).

Extremes.--Maximum discharge during year, 4,170 cfs May 30 (gage height, 6.07 ft); minimum daily, 43 cfs May 20. 1901-3, 1905-64: Maximum daily discharge, 31,000 cfs June 7, 1921, from rating curve extended above 17,000 cfs by logarithmic plotting; minimum daily, 28 cfs Apr. 30, 1955.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Discharge measurements generally made three or more times a month. Natural flow of stream affected by transmountain and transbasin diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 888,000 acres, and return flow from irrigated areas.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Feb. 7-13, Mar. 15-18, Apr. 9, 10, May 28, 29, July 29 to Aug. 1)

Oct. 1 to Feb. 23				Feb. 24 to Sept. 30			
2.7	230	1.7	38	2.5	215	4.5	1,470
3.0	360	1.8	50	3.0	410	5.0	2,110
3.4	620	2.1	108	4.0	1,040	5.6	3,200

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	396	494	340	432	564	450	313	232	1,700	112	161	197
2	350	508	340	438	557	455	305	222	1,290	108	155	185
3	310	501	340	438	550	455	353	212	1,100	94	152	176
4	298	494	340	414	550	450	374	191	907	86	138	164
5	278	480	345	396	543	450	396	173	823	86	108	167
6	266	494	355	390	536	440	415	132	781	84	100	158
7	262	494	330	372	501	440	415	92	670	82	100	126
8	254	438	320	360	515	435	415	76	601	78	104	119
9	266	438	390	a 320	501	435	430	70	589	76	126	119
10	290	414	414	a 372	501	430	420	63	485	78	119	123
11	286	414	a 396	a 378	501	410	401	68	425	74	115	123
12	286	402	a 378	a 378	515	401	374	78	357	78	104	128
13	286	426	a 396	a 378	515	392	357	63	313	80	110	140
14	315	468	a 402	a 372	536	392	353	57	388	82	123	130
15	350	414	a 396	a 378	508	388	357	55	485	88	117	128
16	378	426	408	a 414	508	378	388	52	440	90	117	164
17	420	438	438	444	522	370	374	46	374	90	119	173
18	408	420	450	450	508	370	365	44	337	90	128	176
19	384	402	456	462	529	361	337	45	285	90	123	179
20	426	396	468	456	508	361	345	43	226	88	123	197
21	508	384	480	450	543	378	341	45	243	90	123	222
22	550	372	474	456	508	353	325	44	329	86	126	229
23	578	360	450	444	468	337	321	44	440	86	126	218
24	529	360	456	402	470	329	309	54	321	90	170	218
25	592	360	474	384	470	333	285	61	194	92	191	218
26	592	355	480	372	a 445	337	271	70	145	98	254	194
27	543	355	474	378	510	349	278	102	123	102	285	188
28	529	350	456	350	475	374	274	194	108	100	309	191
29	522	345	438	350	455	365	271	537	106	115	293	179
30	501	340	432	420	-----	349	246	3160	110	152	271	164
31	487	-----	432	529	-----	325	-----	2,980	-----	158	246	-----
Total	12,510	12,542	12,748	12,577	14,812	12,092	10,408	9,305	14,695	2,903	4,836	5,093
Mean	404	418	411	406	511	390	347	300	490	93.6	156	170
Ac-ft	24,810	24,880	25,290	24,950	29,380	23,980	20,640	18,460	29,150	5,760	9,590	10,100

Calendar year 1963: Max 6,440 Min 41 Mean 369 Ac-ft 267,400
Water year 1963-64: Max 3,160 Min 43 Mean 340 Ac-ft 247,000

a No gage-height record.

PLATTE RIVER BASIN

6-7576. Kiowa Creek at K-79 Reservoir, near Eastonville, Colo.

Location.--Lat 39°04'00", long 104°34'55", in SE¼NW¼ sec.29, T.11 S., R.64 W., in reservoir area, 140 ft upstream and 250 ft from left end of earth-fill dam on Kiowa Creek and 1.2 miles west of Eastonville.

Drainage area.--3.20 sq mi.

Records available.--August 1955 to September 1964 (no winter records).

Gage.--Water-stage recorder and concrete drop-inlet control structure. Datum of gage is 7,287.14 ft above mean sea level (Soil Conservation Service bench mark).

Extremes.--Maximum outflow during year, 13 cfs Aug. 3 (gage height, 8.20 ft); no flow for many days. Maximum inflow 187 cfs (average for 5-minute interval) Aug. 3, computed from outflow and change in reservoir contents; no rainfall on reservoir surface during time of peak inflow.

1955-64: Maximum outflow, 1,480 cfs July 30, 1957 (gage height, 22.79 ft), from rating curve extended above 68 cfs on basis of slope-area measurement of peak flow in spillway and theoretical flow in outlet tube; no flow for many days in each year. Maximum inflow, 5,250 cfs (average for 5-minute interval) July 30, 1957, computed from outflow and change in reservoir contents; no rainfall on reservoir surface during time of peak inflow.

Remarks.--Records fair except those for periods of no gage-height record, which are poor.

Records of daily discharge are outflow from reservoir, determined from stage-discharge relation for outlet structure. Reservoir is formed by earth dam, 755 ft long, with grass sodded emergency spillway section at gage height 20.1 ft; dam completed in June 1955. Outlet is a 3-foot square uncontrolled drop-inlet structure covered with an anti-vortex baffle, with two 12-inch square uncontrolled portholes on upstream face and two on right face. Crest of drop inlet is at gage height 10.84 ft; inverts of portholes on upstream face are at gage heights 2.90 and 6.87 ft and inverts of portholes on right face are at 4.87 and 8.85 ft. Drop inlet structure connects to a 24-inch diameter outlet pipe at base of dam. Reservoir capacity based on 1961 survey, 123 acre-ft at spillway crest, 21.1 acre-ft at crest of drop inlet, and 10.6, 3.60, 0.48, and 0.00 acre-ft at inverts of portholes. No dead storage. Dam constructed by U. S. Soil Conservation Service as part of the Kiowa Creek Watershed Protection Project.

The following table gives the relationship between gage height and outflow, reservoir capacity, and water-surface area during water year 1964.

Gage Height (ft)	Outflow (cfs)	Contents (acre-feet)	Surface Area (acres)	Gage Height (ft)	Outflow (cfs)	Contents (acre-feet)	Surface Area (acres)	Gage Height (ft)	Outflow (cfs)	Contents (acre-feet)	Surface Area (acres)
4.7	0	0.34	0.71	5.1	0.3	0.68	0.96	6.0	3.6	1.81	1.50
4.9	.01	.50	.84	5.2	.7	.78	1.02	7.0	7.6	3.94	2.70
5.0	.1	.59	.90	5.4	1.4	1.00	1.13	9.0	17	11.4	4.60

Cooperation.--Reservoir capacity table furnished by U. S. Soil Conservation Service.

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	0.03	0
2										*0	.04	0
3										0	2.5	0
4								0.04	0.08	0	2.6	0
5										0	.4	0
6									.03	0	.2	0
7									*.02	0		0
8									*.01	0	.06	0
9									0	0		0
10									0	0		0
11								4	0	0		0
12									0	0		0
13									0	0		0
14	0.01								0	0		0
15									0	0		0
16									.01	0		.1
17									0	0	.02	
18									*.01	0		
19									0	0		
20									0	0		
21									.01	0		
22									0	0		.01
23									0	0		
24									0	0		
25									0	0	.01	
26									0	0		
27									0	.9	.02	
28									.02	0		
29									0	0	.03	
30	.01								.2	0	.02	
31								.1	*0	.02		
Total	0.31	-	-	-	-	-	-	1.30	0.46	3.84	6.42	0.54
Mean	0.010	-	-	-	-	-	-	0.042	0.015	0.124	0.207	0.018
(†)	-	-	-	-	-	-	-	-	0.36	0.50	0.48	-
(‡)	-	-	-	-	-	-	-	-	0.73	0.84	0.83	-
(††)	-	-	-	-	-	-	-	-	-	2.18	2.00	-

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

(†) Contents, in acre-feet, at end of month in reservoir.

(‡) Surface area, in acres, at end of month.

(††) Precipitation, in inches, during month, at rain gage at reservoir.

Note.--No gage-height record Oct. 29-31, May 1-7, May 29 to June 5, July 27-30, Aug. 25, 26, Sept. 3, 10-30.

6-7580. Kiowa Creek at Elbert, Colo.

Location.--Lat 39°12'35", long 104°32'00", in SE¼NE¼ sec.3, T.10 S., R.64 W., on right bank a quarter of a mile southeast of Elbert and half a mile upstream from West Kiowa Creek.

Drainage area.--28.6 sq mi.

Records available.--May 1955 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,740 ft (from topographic map).

Average discharge.--9 years, 0.16 cfs (116 acre-ft per year).

Extremes.--No flow during year.

1955-64: Maximum discharge, 305 cfs Aug. 27, 1955 (gage height, 4.40 ft), from rating curve extended above 61 cfs; no flow most of each year.

Maximum flood known occurred May 30-31, 1935; discharge at site about 1 mile downstream, 43,500 cfs, by slope-area measurement of peak flow. Most of the water is believed to have passed this station. For discussion of this flood, see WSP 997.

Remarks.--No flow since Apr. 30, 1962. Observations of no flow generally made once a month. Floodflows decreased by a series of about 24 retarding dams on Kiowa Creek and tributaries above station.

6-7581. West Kiowa Creek at Elbert, Colo.

Location.--Lat 39°12'38", long 104°32'16", in SE¼NE¼ sec.3, T.10 S., R.64 W., on right bank 260 ft downstream from bridge on State Highway 217, a quarter of a mile south of Elbert, and half a mile upstream from mouth.

Drainage area.--35.9 sq mi.

Records available.--August 1962 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,740 ft (from topographic map).

Extremes.--Maximum discharge during year, 55 cfs Aug. 4 (gage height, 1.98 ft); no flow for many days.

1962-64: Maximum discharge, 92 cfs Aug. 31, 1963 (gage height, 2.22 ft); no flow for many days in each year.

Remarks.--Records fair. Floodflows decreased by a series of about 12 retarding dams on West Kiowa Creek and tributaries above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Feb. 3)

1.1	0	1.4	2.2
1.2	.2	1.5	5.5
1.3	.8		

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	0.1	0.2	0.2	0	0.3	0.1	0.3	(*)	0	
2		0	*.1	.2	.1	.1	.3	.1	.4		0	
3	(*)	0	.2	.2	.1	.1	.4	.1	.3		*0	
4		0	.1	.2	*.3	*.1	.4	.1	*.3		3.7	
5		0	.1	.2	.2	.1	.3	*.1	.2		.1	
6		0	.2	*.2	.3	.1	.3	.1	.1		0	
7		0	.1	.1	.3	.1	a.2	.1	.1		0	
8		0	.1	.1	.3	.1	a.3	.1	.1		0	
9		0	.2	.1	.2	.2	a.3	.1	0		0	
10		0	.1	.1	.2	.1	a.4	.1	0		0	
11		0	.1	.1	.3	.2	a.4	.1	0		C	
12		*0	.1	.1	.3	.2	a.3	.2	0		C	
13		.1	.1	.1	.3	.2	a.3	.1	0		C	
14		.1	.1	.1	.2	.2	*a.3	.2	.5		C	
15		.1	.1	.1	.2	.2	.3	.1	.1		C	
16		.1	.1	.1	.2	*.4	.2	.1	*0		C	
17		.2	.1	*.1	*.1	.6	.1	.1	0		C	
18		.2	.1	.1	.1	*1.1	.1	0	0		C	
19		.2	*.1	.1	.1	1.1	.1	*0	0		C	
20		.2	.1	.2	.1	.9	.1	0	0		*C	
21		.2	.1	.2	.1	.2	.1	0	0		C	
22		.2	.1	.2	0	.8	.1	0	0		C	
23		.2	.1	.2	0	.9	.1	0	0		C	
24		.2	.1	.2	.1	.6	.1	0	0		C	
25		.2	.1	.2	.1	.5	.1	0	0		C	
26		.2	.1	.2	0	.3	.1	0	0		C	
27		.2	.1	.2	0	.4	.1	.1	0		C	
28		.2	.1	.2	0	.3	.1	.1	0		C	
29		.1	.1	.2	0	.8	.1	.2	0		C	
30	(*)	.2	.2	.2	-----	.9	.1	.8	0		C	
31		-----	.2	.2	-----	.6	-----	.4	-----		C	-----
Total	0	3.1	3.6	4.9	4.4	12.4	6.4	3.5	2.4	0	3.8	0
Mean	0	0.10	0.12	0.16	0.15	0.40	0.21	0.11	0.08	0	0.12	0
Ac-ft	0	6.1	7.1	9.7	8.7	25	13	6.9	4.8	0	7.5	0

Calendar year 1963: Max 9.3 Min 0 Mean 0.19 Ac-ft 136
Water year 1963-64: Max 3.7 Min 0 Mean 0.12 Ac-ft 89

* Discharge measurement or observation of no flow made on this day.
a No gage-height record.

PLATTE RIVER BASIN

6-7582. Kiowa Creek at Kiowa, Colo.

Location.--Lat 39°20', long 104°29', in SW¼ sec.20, T.8 S., R.63 W., on left bank 0.7 mile upstream from bridge on State Highway 86 and 0.7 mile south of Kiowa.

Drainage area.--111 sq mi.

Records available.--October 1955 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,350 ft (estimated from nearby bench mark).

Average discharge.--9 years, 3.11 cfs (2,250 acre-ft per year).

Extremes.--Maximum discharge during year, 80 cfs Aug. 4 (gage height, 3.68 ft); maximum gage height, 5.25 ft Mar. 21 (backwater from ice); no flow for many days.

1955-64: Maximum discharge, 5,980 cfs July 20, 1957 (gage height, 6.62 ft, from floodmark), from rating curve extended above 2,200 cfs by logarithmic plotting; no flow for many days in each year.

Maximum flood known occurred May 30-31, 1935; discharge at Elbert about 9½ miles upstream, 43,500 cfs, and at site about 12 miles downstream 110,000 cfs, by slope-area measurement of peak flow. For discussion of this flood see WSP 997.

Remarks.--Records poor. Discharge measurements, field estimates, or observations of no flow generally made twice a month. Little or no diversion above station. Floodflow regulated to some extent by a series of about 64 retarding dams on Kiowa Creek and tributaries 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				2.3	12	1.4	3.2		0	
2		0				2.3	7.5	1.2	4.1		0	
3		0				1.2	7.0	1.1	4.1		0	
4		0				1.0	6.6	.8	3.4		12	
5		0				1.0	5.9	.5	3.0		31	
6		0				.8	7.5	.8	3.2		5.9	
7		0				.6	7.5	.8	2.5		2.3	
8		0				.6	6.3	1.1	2.1		.7	
9		0				.4	5.2	.4	.8		0	
10		0				.5	5.6	.1	.7		0	
11		0				.8	5.2	0	.7		0	
12		0				3.4	3.4	.1	.8		0	
13		0				4.0	3.4	0	1.9		0	
14		0				3.8	4.1	0	2.1		0	
15		0	0.1	0.1	0.1	3.6	3.8	0	.7		0	
16		0				3.6	3.8	0	.2		0	
17		.2				10	4.1	0	0		0	
18		.1				13	4.1	0	0		0	
19		0				13	3.4	0	0		0	
20		.1				6.8	3.8	0	0		0	
21		.1				8.6	4.5	0	0		0	
22		.1				12	3.4	0	0		0	
23		.1				9.0	2.7	0	0		0	
24		.2				7.0	3.0	0	0		0	
25		.1				5.8	2.3	0	0		0	
26		.1				6.4	2.5	0	0		0	
27		.2				6.8	2.5	0	0		0	
28		.1				10	2.1	0	0		0	
29		.1				14	2.1	3.3	0		0	
30		.1				17	1.6	6.3	0		0	
31		-----				16	-----	4.1	-----		0	-----
Total	0	1.6	3.1	3.1	2.9	185.3	136.9	22.0	33.5	0	51.9	0
Mean	0	0.05	0.1	0.1	0.1	5.98	4.56	0.71	1.12	0	1.67	0
Ac-ft	0	3.2	6.1	6.1	5.8	368	272	44	66	0	103	0

Calendar year 1963: Max 205 Min 0 Mean 1.47 Ac-ft 1,070
 Water year 1963-64: Max 31 Min 0 Mean 1.20 Ac-ft 874

Note.--No gage-height record Dec. 1-24, Jan. 4-6, 9-17, Feb. 2-4, Feb. 15 to Mar. 4, Mar. 7-10, 23-31 (stage-discharge relation affected by ice during most of periods). Stage-discharge relation affected by ice Dec. 25 to Jan. 3, Jan. 7, 8, Jan. 18 to Feb. 1, Feb. 5-14, Mar. 5, 6, 11-22.

PLATTE RIVER BASIN

6-7583. Kiowa Creek at Bennett, Colo.

Location.--Lat 39°44'54", long 104°24'46", in NW¼ sec.35, T.3 S., R.63 W., on left bank about a quarter of a mile downstream from U. S. Highways 36, 40, and 287 relocated, and 1 mile east of Bennett.

Drainage area.--236 sq mi.

Records available.--March 1960 to September 1964 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 5,430 ft (from topographic map). Prior to Oct. 1, 1960, at datum 0.15 ft higher.

Extremes.--Maximum discharge during year, 134 cfs Apr. 3 (gage height, 1.04 ft); maximum gage height, 1.12 ft Mar. 26 (backwater from ice); no flow for most of time.

1960-64: Maximum discharge, 3,420 cfs Sept. 22, 1963 (gage height, 3.70 ft, from floodmark), from rating curve extended above 810 cfs on basis of slope-area measurement of peak flow; no flow for many days in each year.

Remarks.--Records poor. Discharge measurements or observations of no flow generally made two or more times a month. Little or no diversion above station. Floodflow regulated to some extent by a series of retarding dams on Kiowa Creek and tributaries above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 21-24, 27, Apr. 1-3;
stage-discharge relation affected by ice Mar. 25, 26)

0.0	0	0.4	12
.1	.1	.5	23
.2	1.3	.7	60
.3	5.0	.9	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	15	0	5.7			
2						0	9.9	0	7.8			
3						0	9.9	0	5.0			
4						0	20	0	3.9			
5						0	35	0	3.2			
6						0	22	0	0			
7						0	78	0	0			
8						0	16	0	0			
9						0	13	0	0			
10						0	9.9	0	0			
11						0	12	0	0			
12						1.9	6.4	0	0			
13						3.1	3.5	0	0			
14						5.0	2.0	0	2.6			
15						8.8	3.9	0	7.8			
16						13	2.4	0	.1			
17						9.2	.7	0	0			
18						60	1.1	0	0			
19						66	2.0	0	0			
20						9.4	3.9	0	0			
21						22	2.4	0	0			
22						40	.7	0	0			
23						42	.2	0	0			
24						21	0	0	0			
25						10	0	0	0			
26						20	0	0	0			
27						13	0	0	0			
28						18	0	0	0			
29						26	0	0	0			
30						30	0	17	0			
31						30	0	9.9	0			
Total	0	0	0	0	0	448.4	199.7	26.9	59.5	0	0	0
Mean	0	0	0	0	0	14.5	6.66	0.87	1.98	0	0	0
Ac-ft	0	0	0	0	0	889	396	53	118	0	0	0

Calendar year 1963: Max 307 Min 0 Mean 3.04 Ac-ft 2,200
Water year 1963-64: Max 66 Min 0 Mean 2.01 Ac-ft 1,460

PLATTE RIVER BASIN

6-7585. South Platte River near Weldona, Colo.

Location.--Lat 40°19'20", long 103°55'15", in SW¼SW¼ sec.7, T.4 N., R.58 W., on left bank 400 ft downstream from bridge on State Highway 144, 2.8 miles southeast of Weldona, and 4.2 miles upstream from Bijou Creek.

Drainage area.--13,245 sq mi.

Records available.--October 1952 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 4,307.80 ft above mean sea level, datum of 1929.

Average discharge.--12 years, 423 cfs (306,200 acre-ft per year).

Extremes.--Maximum discharge during year, 1,660 cfs June 1 (gage height, 5.06 ft); minimum daily, 57 cfs Oct. 14-18.
1952-64: Maximum discharge, 14,200 cfs May 11, 1957 (gage height, 9.92 ft); minimum daily, 43 cfs Dec. 9, 1952.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by transmountain and transbasin diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 29 to Sept. 11)

Oct. 1 to May 31

June 1 to Sept. 30

2.5	52	3.5	440	2.8	85	4.0	720
2.8	115	4.0	750	3.1	195	5.0	1,600
3.1	220	5.0	1,600	3.5	410		

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	* 265	112	92	110	89	148	275	130	1,260	172	306	* 235
2	192	112	92	110	92	148	280	127	629	146	280	220
3	118	112	95	110	95	148	310	121	464	136	275	220
4	86	112	95	110	90	148	332	121	*434	132	230	225
5	72	110	95	110	88	145	368	184	350	126	205	230
6	68	*110	92	105	88	145	416	200	350	164	186	230
7	68	110	84	*92	88	145	440	* 184	334	195	168	225
8	66	110	90	105	88	145	446	184	280	215	109	205
9	63	108	95	100	90	148	*440	176	295	240	260	235
10	63	105	*98	95	90	148	440	166	368	260	290	235
11	63	115	108	105	90	170	440	156	306	255	317	230
12	61	130	130	105	*98	180	392	152	265	245	356	186
13	59	130	135	105	152	180	338	159	255	265	350	186
14	57	124	140	105	159	170	332	166	285	280	356	186
15	*57	124	135	105	170	170	305	159	380	285	265	*190
16	57	124	135	105	166	170	270	152	422	* 265	230	200
17	57	121	140	110	159	166	260	133	230	230	215	200
18	57	118	145	115	159	166	255	124	132	240	200	186
19	61	115	155	120	159	173	240	*118	*115	210	*205	150
20	110	112	175	120	159	173	208	127	122	205	215	150
21	124	112	190	110	162	170	180	136	200	200	215	159
22	124	105	208	102	159	173	*162	124	428	195	154	168
23	121	105	184	* 98	162	173	159	115	300	190	235	182
24	121	102	166	95	159	170	192	145	205	164	235	177
25	127	100	162	92	159	*176	240	142	164	154	225	168
26	127	*100	*170	92	159	166	270	156	129	225	215	168
27	124	100	139	92	*156	166	230	184	115	285	200	177
28	118	98	124	92	152	173	230	240	91	306	182	* 172
29	118	98	121	90	148	188	196	275	*94	*317	177	154
30	118	95	115	92	-----	275	159	440	168	328	205	143
31	115	-----	112	88	-----	255	-----	1,370	-----	356	235	-----
Total	3,037	3,329	4,017	3,185	3,785	5,271	8,805	6,366	9,170	6,986	7,296	5,792
Mean	98.0	111	130	103	131	170	294	205	306	225	235	193
Ac-ft	6,020	6,600	7,970	6,320	7,510	10,450	17,460	12,630	18,190	13,860	14,470	11,490

Calendar year 1963: Max 1,820 Min 57 Mean 235 Ac-ft 170,000
Water year 1963-64: Max 1,370 Min 57 Mean 183 Ac-ft 133,000

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 8, 12, 13, Jan. 5, 6, 8-20, 24, 25, Feb. 1, 6-8. No gage-height record Dec. 14-21 (stage-discharge relation affected by ice during part of period), Feb. 27, 28.

6-7600. South Platte River at Balzac, Colo.

Location.--Lat 40°24'24", long 103°27'58", in NE¹/₄NE¹/₄ sec.13, T.5 N., R.55 W., on right bank just upstream from highway bridge at Balzac siding, 2.8 miles northeast of Union and 7.0 miles downstream from Beaver Creek.

Drainage area.--16,852 sq mi.

Records available.--October 1916 to September 1964. Prior to October 1933 monthly discharge only, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 4,091.06 ft above mean sea level, datum of 1929. Prior to Oct. 18, 1935, chain gage or water-stage recorder at various sites near present site at different datums. Oct. 18 to Dec. 16, 1935, staff gage and Dec. 17, 1935, to Aug. 20, 1947, water-stage recorder, at site 250 ft upstream at present datum. Since Oct. 1, 1936, supplementary water-stage recorder on secondary channel 600 ft to the left at datum 1.69 ft lower.

Average discharge.--48 years, 358 cfs (259,200 acre-ft per year).

Extremes.--Maximum discharge during year, 1,370 cfs June 1; minimum daily, 9.6 cfs Apr. 17, 19.
1916-64: Maximum discharge not determined, occurred May 31, 1935 (gage height, 11.43 ft); maximum daily discharge determined, 31,200 cfs June 11, 1921; minimum daily, 1.3 cfs Jan. 25, 1947.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Discharge measurements generally made twice a month. Natural flow of stream affected by transmountain and transbasin diversions, storage reservoirs, power developments, ground-water withdrawals, diversions above station for irrigation of about 1,065,000 acres, and return flow from irrigated areas.

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	402	15	16	16	13	13	18	104	1,180	209	174	167
2	323	15	15	16	14	12	28	78	840	208	194	160
3	242	15	15	15	14	12	32	63	467	166	249	139
4	183	15	15	15	13	12	25	a 69	336	146	257	138
5	152	15	16	15	13	11	25	80	322	130	230	138
6	135	16	16	14	12	10	25	122	294	132	194	151
7	117	17	14	14	13	11	24	147	288	151	174	176
8	111	14	b 15	14	13	10	24	206	237	161	167	181
9	104	12	14	b 13	13	10	23	255	208	175	185	179
10	102	12	14	12	12	10	22	265	219	202	182	216
11	99	12	17	12	12	10	22	215	255	215	157	222
12	95	13	b 18	b 11	13	10	24	158	227	173	165	208
13	93	14	b 18	b 11	b 12	10	24	151	204	163	180	166
14	64	14	b 18	b 12	13	10	20	140	304	129	181	171
15	38	14	b 18	b 13	b 12	10	12	147	361	118	182	187
16	34	14	b 23	b 14	12	10	11	158	264	115	170	210
17	30	14	b 23	16	12	10	26	142	127	115	207	200
18	30	15	b 25	18	12	10	11	142	121	115	187	184
19	22	15	27	15	12	11	96	134	156	158	168	165
20	22	16	27	14	13	12	12	127	136	205	173	146
21	29	16	27	14	b 13	12	12	124	167	207	180	155
22	21	16	26	16	14	11	95	121	367	214	178	195
23	18	15	b 23	14	13	10	176	111	109	211	145	180
24	18	16	22	14	12	10	154	105	52	193	196	185
25	17	15	20	14	b 12	11	159	113	59	167	210	196
26	16	16	19	14	b 12	11	182	125	41	152	207	176
27	16	15	20	14	13	11	231	134	92	163	207	152
28	16	15	18	13	b 12	11	313	148	146	143	197	153
29	16	16	18	13	b 12	11	255	192	162	153	170	144
30	16	16	17	13	-----	10	182	257	178	160	166	140
31	15	-----	19	13	-----	20	-----	510	-----	170	161	-----
Total	2,596	443	593	432	366	342	2,160.2	4,843	7,919	5,119	5,793	5,180
Mean	83.7	14.8	19.1	13.9	12.6	11.0	72.0	156	264	165	187	173
Ac-ft	5,150	879	1,180	857	726	678	4,280	9,610	15,710	10,150	11,490	10,270

Calendar year 1963: Max 2,290 Min 12 Mean 180 Ac-ft 130,500
Water year 1963-64: Max 1,180 Min 9.6 Mean 97.8 Ac-ft 70,980

a No gage-height record on main channel.

b Stage-discharge relation affected by ice on main channel.

Note.--No gage-height record on secondary channel Nov. 8-21, May 18 to June 4, June 11, June 17 to July 6.

PLATTE RIVER BASIN

6-7640. South Platte River at Julesburg, Colo.

Location.--Lat 40°58'46", long 102°15'15", in NE¼ sec.33, T.12 N., R.44 W., on left bank 215 ft downstream from bridge on U. S. Highway 385, 0.9 mile southeast of Julesburg, 3 miles upstream from Colorado-Nebraska State line, and 8 miles downstream from Lodgepole Creek.

Drainage area.--23,138 sq mi.

Records available.--April 1902 to September 1964. Monthly discharge only for some periods, published in WSP 1310. Published as "near Julesburg" 1903-8, 1915-16 and as "at Ovid" 1922-24.

Gage.--Water-stage recorder. Datum of gage is 3,446.76 ft above mean sea level, datum of 1929. Apr. 1, 1902, to May 10, 1922, staff or chain gages, and Oct. 1, 1924, to Sept. 30, 1956, water-stage recorder on channel 1,600 ft to right at several sites within 1,800 ft of present site at various datums. May 11, 1922, to Sept. 30, 1924, water-stage recorder and supplemental chain gages at site about 8½ miles upstream at Ovid at different datum. Oct. 1, 1956, to Dec. 10, 1958, water-stage recorder at site 135 ft downstream at present datum (used as a supplemental gage Oct. 1, 1941, to Sept. 30, 1956). Since Oct. 1, 1956, supplemental water-stage recorder on channel 1,600 ft to right at site 85 ft downstream.

Average discharge.--62 years, 456 cfs (330,100 acre-ft per year).

Extremes.--Maximum discharge during year, 572 cfs July 9; minimum daily, 7.5 cfs Sept. 19.

1902-64: Maximum discharge, 31,300 cfs June 2, 1935, from rating curve extended above 16,000 cfs; no flow Aug. 18-20, 1902, July 25 to Aug. 7, 1903.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Discharge measurements generally made once a week. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals, diversions for irrigation of about 1,220,000 acres above station, and return flow from irrigated areas.

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	412	129	261	314	273	245	131	136	27	29	17	8.6
2	384	125	256	315	273	244	130	125	a 26	31	15	7.8
3	363	127	252	313	268	246	156	128	a 25	26	16	8.4
4	341	127	252	301	271	243	195	122	a 31	25	16	9.1
5	308	127	249	286	272	250	209	107	26	27	14	9.3
6	283	125	246	277	268	246	216	93	24	29	13	8.1
7	265	126	240	266	256	240	241	100	23	33	13	10
8	236	135	a 211	260	246	243	224	93	24	40	14	11
9	222	162	a 180	248	246	238	209	87	26	326	15	9.2
10	206	188	a 164	a 262	246	234	205	87	27	212	13	9.4
11	193	204	a 139	a 218	233	229	214	89	30	90	14	9.4
12	176	212	a 117	a 159	233	217	234	82	29	68	13	9.8
13	164	227	107	a 116	245	211	251	70	29	39	16	8.9
14	156	230	110	a 106	253	203	252	61	35	26	16	7.7
15	146	237	117	a 139	243	206	250	46	41	24	15	8.8
16	139	242	122	a 161	240	202	246	39	44	22	17	9.5
17	141	244	127	181	243	200	241	35	59	23	18	9.4
18	144	248	139	217	251	172	220	32	74	24	14	7.6
19	144	248	151	248	259	158	211	29	80	25	13	7.5
20	151	250	181	262	272	145	203	28	71	24	15	8.3
21	160	253	212	278	262	143	211	28	60	21	13	8.7
22	167	256	241	282	250	146	195	27	64	20	12	9.2
23	162	256	260	305	248	152	160	27	58	21	13	12
24	158	262	271	291	248	151	169	27	71	21	14	14
25	151	268	277	272	248	149	158	27	108	22	14	14
26	146	267	304	283	242	145	143	27	124	20	12	11
27	140	270	314	284	244	173	144	27	106	20	14	11
28	136	265	314	284	242	163	160	27	80	18	14	10
29	133	265	314	286	250	146	156	27	44	16	14	9.3
30	131	262	298	274	-----	139	146	27	30	19	11	9.2
31	129	-----	302	273	-----	129	-----	27	-----	18	10	-----
Total	6,187	6,337	6,728	7,761	7,325	6,008	5,880	1,887	1,496	1,359	438	286.2
Mean	200	211	217	250	253	194	196	60.9	49.9	43.8	14.1	9.54
Ac-ft	12,270	12,570	13,340	15,390	14,530	11,920	11,660	3,740	2,970	2,700	869	568

Calendar year 1963: Max 1,030 Min 16 Mean 222 Ac-ft 160,700
 Water year 1963-64: Max 412 Min 7.5 Mean 141 Ac-ft 102,500

a No gage-height record.

6-8220, North Fork Republican River near Wray, Colo.

Location.--Lat 40°04'24", long 102°17'06", in NE¼NE¼ sec.9, T.1 N., R.44 W., on right bank 150 ft upstream from bridge or State Highway 29, 3½ miles upstream from Chief Creek, and 3.2 miles west of Wray.

Records available.--March 1937 to September 1946, October 1951 to September 1957, October 1962 to September 1964 (discontinued).

Gage.--Water-stage recorder. Prior to Aug. 2, 1940, staff gage and Aug. 2, 1940, to Sept. 30, 1946, water-stage recorder, at site ¼ mile upstream at different datum. Oct. 31, 1951, to Sept. 30, 1957, at present site and datum.

Average discharge.--17 years, 22.1 cfs (16,000 acre-ft per year).

Extremes.--Maximum discharge during year, 107 cfs June 7 (gage height, 4.85 ft), from rating curve extended above 26 cfs; minimum daily, 15 cfs Aug. 3, 4, 19.
1937-46, 1951-57, 1962-64: Maximum discharge, 283 cfs Aug. 11, 1956 (gage height, 5.43 ft), from rating curve extended above 80 cfs; minimum daily, 6.9 cfs Apr. 4, 1938.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Diversions above 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	*22	23	23	24	23	22	*25	22	a22	*19	16	18
2	22	23	23	*24	23	22	27	22	*a22	19	16	18
3	22	23	*23	24	23	23	32	22	21	19	*15	*17
4	22	23	24	24	23	23	36	22	20	19	15	17
5	22	23	23	24	23	23	37	22	21	18	16	17
6	22	23	23	23	23	23	37	21	22	18	18	17
7	22	24	22	23	23	23	35	22	24	18	18	17
8	22	24	22	23	23	23	33	26	29	19	18	18
9	22	24	23	22	23	23	30	25	27	19	18	19
10	22	25	23	22	23	23	29	26	22	18	18	18
11	22	24	23	22	23	24	27	25	21	18	17	18
12	22	24	23	22	23	23	26	24	20	18	17	19
13	22	24	22	21	23	23	26	24	23	18	17	19
14	*22	24	22	21	23	23	25	23	35	18	18	19
15	22	24	22	21	23	23	25	22	36	18	18	20
16	22	24	*22	20	23	23	24	22	27	18	18	21
17	*22	23	23	20	23	23	23	20	23	18	19	20
18	22	*24	23	20	23	23	23	20	22	18	18	20
19	22	25	23	21	23	a28	23	20	21	18	15	20
20	22	24	23	22	23	35	23	20	20	18	16	21
21	23	24	23	22	23	26	24	20	24	18	19	21
22	23	24	23	23	22	26	24	20	26	17	19	20
23	23	23	23	23	22	30	24	20	25	17	19	20
24	23	23	23	23	22	30	24	19	23	17	19	20
25	22	23	23	23	23	28	25	18	21	17	19	20
26	22	23	24	23	23	26	25	18	20	17	18	20
27	22	23	24	23	*23	26	25	a18	19	17	17	20
28	22	23	24	23	23	26	24	a19	19	16	19	20
29	22	23	24	23	22	26	24	a22	18	17	18	20
30	22	23	24	*23	-----	25	*23	a24	18	16	18	20
31	*22	-----	24	23	-----	25	-----	a25	-----	17	18	-----
Total	686	707	714	695	663	770	808	673	731	552	544	574
Mean	22.1	23.6	23.0	22.4	22.9	24.8	26.9	21.7	24.4	17.8	17.5	19.1
Ac-ft	1,360	1,400	1,420	1,380	1,320	1,530	1,600	1,330	1,450	1,090	1,080	1,140

Calendar year 1963: Max 30 Min 17 Mean 22.5 Ac-ft 16,280
Water year 1963-64: Max 64 Min 15 Mean 22.2 Ac-ft 16,100

Peak discharge (base, 100 cfs).--June 7 (0800) 107 cfs (4.85 ft).

* Discharge measurement made on this day.

a No gage-height record.

KANSAS RIVER BASIN

6-8250. South Fork Republican River near Idalia, Colo.

Location.--Lat 39°37'00", long 102°14'30", in SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.13, T.5 S., R.44 W., on left bank 0.7 mile east of State Highway 51, 1 $\frac{1}{2}$ miles upstream from Landsman Creek, 4 miles upstream from Bonny Dam, and 6 $\frac{1}{2}$ miles southeast of Idalia.

Drainage area.--1,300 sq mi, approximately.

Records available.--May 1950 to September 1964.

Gage.--Water-stage recorder. Prior to Aug. 10, 1951, at site 4 miles upstream at different datum. Aug. 10, 1951, to Sept. 30, 1955, at site 2 $\frac{1}{2}$ miles upstream at different datum.

Average discharge.--14 years, 33.2 cfs (24,040 acre-ft per year).

Extremes.--Maximum discharge during year, 456 cfs June 13 (gage height, 7.22 ft), from rating curve extended above 46 cfs on basis of slope-area measurement at gage height 8.40 ft and contracted-opening measurement at gage height 10.21 ft; no flow July 14-18, July 23 to Sept. 10.

1950-64: Maximum discharge, 14,300 cfs May 16, 1957; maximum gage height, 10.21 ft June 25, 1962; no flow at times in 1952-54, 1959-61, 1963-64.

Maximum flood known since at least 1865, 103,000 cfs May 31, 1935, by slope-area measurement three-quarters of a mile upstream.

Remarks.--Records poor. Discharge measurements or observations of no flow generally made two or more times a month. Diversions above station for irrigation.

Cooperation.--Three discharge measurements 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	26	29	27	42	33	38	36	34	37	11		0
2	26	29	27	38	35	39	36	33	35	6.7		0
3	26	29	27	35	38	38	51	32	38	10		0
4	26	29	27	31	31	34	51	31	53	7.4		0
5	26	28	27	30	35	37	51	33	47	6.7		0
6	26	29	28	28	35	35	45	32	41	8.8		0
7	26	29	25	27	31	36	38	32	39	7.4		0
8	26	29	18	28	33	33	36	41	36	4.4		0
9	26	29	19	30	30	35	34	40	33	13		0
10	26	29	21	31	30	35	33	40	35	3.6		0
11	26	29	20	31	31	35	32	40	35	.2		.7
12	26	29	18	29	31	37	32	37	33	.1		2.8
13	26	29	18	27	31	35	30	36	92	.1		5.2
14	25	29	20	27	38	35	30	35	80	0		7.4
15	26	29	22	30	38	36	30	32	27	0		15
16	27	29	20	33	30	36	30	30	22	0		15
17	27	34	27	39	34	35	30	31	21	0		12
18	27	30	27	45	32	35	31	34	21	0		15
19	27	30	27	50	32	36	32	30	24	3.8		15
20	28	34	30	48	30	32	33	29	25	17		18
21	29	30	32	47	28	34	30	27	29	1.3		17
22	29	29	32	46	30	38	30	26	27	1.0		19
23	29	28	33	46	28	34	30	25	26	0		18
24	29	30	35	42	32	32	30	25	22	0		18
25	29	32	39	46	32	29	30	24	18	0		17
26	29	30	44	38	34	34	36	25	15	0		15
27	29	32	41	34	35	33	31	26	13	0		18
28	29	32	40	34	36	31	30	26	12	0		14
29	29	28	40	34	37	31	32	52	12	0		13
30	29	28	39	33	33	33	34	58	12	0		13
31	29	-----	41	33	-----	34	-----	42	-----	0		-----
Total	843	890	891	1,112	950	1,075	1,034	1,038	960	136.7	0	268.1
Mean	27.2	29.7	28.7	35.9	32.8	34.7	34.5	33.5	32.0	4.41	0	8.94
Ac-ft	1,670	1,770	1,770	2,210	1,880	2,130	2,050	2,060	1,900	271	0	532

Calendar year 1963: Max 411 Min 0 Mean 29.0 Ac-ft 21,020
 Water year 1963-64: Max 92 Min 0 Mean 25.1 Ac-ft 18,240

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

Note.--No gage-height record Nov. 15 to Dec. 4. Stage-discharge relation affected by ice Dec. 9-26, Jan. 6-18, Feb. 4, 7, 16, 21-23, 26, 28, Mar. 4, 8, 20, 21, 25.

6-8255. Landsman Creek near Hale, Colo.

Location.--Lat 39°34'40", long 102°14'50", in SW¼ sec.36, T.5 S., R.44 W., on right bank 300 ft downstream from bridge on State Highway 51, 3 miles upstream from mouth, 5 miles southwest of Bonny Dam, and 7 miles southwest of Hale.

Drainage area.--268 sq mi.

Records available.--May 1950 to September 1964.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 3,720 ft (from topographic map). Prior to Oct. 21, 1950, and June 6 to Aug. 10, 1951, at datum 0.68 ft lower. Oct. 21, 1950, to June 5, 1951, at datum 0.79 ft higher.

Average discharge.--14 years, 4.59 cfs (3,320 acre-ft per year).

Extremes.--Maximum discharge during year, 1,650 cfs June 13 (gage height, 7.99 ft), from slope-area measurement of peak flow; minimum daily, 0.1 cfs Sept. 13, 17-30.

1950-64: Maximum discharge, 4,570 cfs July 24, 1957 (gage height, 8.84 ft), from rating curve extended above 940 cfs on basis of slope-area measurement at gage height 7.69 ft; no flow Aug. 20-28, 1955.

Maximum stage known, about 10 ft May 30, 31, 1935, present datum, from information by local resident.

Remarks.--Records poor. Discharge measurements generally made two or more times a month. Small diversions above 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	0.9	0.8	1.0	1.5	1.6	1.5	1.3	1.3	1.8	0.4	0.5	0.3
2	.8	.9	1.0	1.5	1.4	1.5	1.7	1.4	1.9	.5	.4	.2
3	1.0	.9	1.0	1.4	1.3	1.4	3.6	1.1	1.8	.4	.4	.2
4	1.0	.9	1.1	1.4	1.4	1.4	2.2	1.0	2.6	.5	.6	.2
5	1.0	.9	1.2	1.4	1.5	1.5	2.4	1.0	2.5	.6	.5	.2
6	1.0	.9	1.2	1.4	1.3	1.5	2.5	.8	2.0	.6	.5	.2
7	.9	.9	1.1	1.5	1.4	1.5	2.2	.8	1.6	.5	.4	.2
8	.9	1.0	1.0	1.3	1.4	1.5	2.0	.9	2.0	.5	.5	.2
9	.9	.9	1.2	1.3	1.4	1.6	2.0	1.1	2.5	.4	.5	.2
10	.9	.9	1.1	1.4	1.4	1.6	2.0	1.0	2.6	.4	.5	.2
11	.9	1.0	1.0	1.3	1.4	1.6	2.0	1.0	2.7	.4	.5	.2
12	.9	1.0	1.0	1.3	1.3	1.6	2.0	1.2	2.4	.3	.5	.2
13	.8	1.0	1.1	1.2	1.3	1.6	2.0	1.1	2.2	.3	.5	.1
14	.8	1.0	1.1	1.2	1.3	1.5	2.0	1.1	3.6	.3	.6	.2
15	.8	1.0	1.1	1.2	1.1	1.5	1.9	1.0	7.3	.3	.5	.2
16	.8	1.1	1.1	1.3	1.4	1.5	1.8	1.1	5.7	.4	.4	.2
17	.8	1.0	1.1	1.3	1.4	1.5	1.7	.9	4.0	.4	.4	.1
18	.8	1.0	1.1	1.3	1.4	1.5	1.7	.8	2.1	.7	.5	.1
19	.8	1.0	1.1	1.3	1.3	1.3	1.4	.8	1.6	.7	.3	.1
20	.8	1.0	1.1	1.3	1.3	1.6	1.5	.6	2.2	.7	.3	.1
21	.8	1.1	1.2	1.3	1.3	1.1	1.5	.7	1.3	.7	.3	.1
22	.8	1.0	1.2	1.3	1.3	2.0	1.4	.8	1.0	.8	.4	.1
23	.8	1.1	1.3	1.3	1.3	1.7	1.4	.6	.9	.9	.3	.1
24	.8	1.1	1.3	1.3	1.5	1.2	1.3	1.1	.8	1.0	.3	.1
25	.8	1.0	1.3	1.3	1.4	1.2	1.3	1.6	.8	1.0	.3	.1
26	.8	1.0	1.3	1.4	1.5	1.3	1.3	2.1	.7	.9	.3	.1
27	1.0	1.3	1.3	1.4	1.5	1.2	1.4	2.7	.6	.9	.3	.1
28	1.0	1.0	1.3	1.5	1.4	1.1	1.2	3.0	.5	.9	.3	.1
29	1.0	.9	1.3	1.5	1.4	1.0	1.2	3.1	.5	.8	.3	.1
30	1.0	1.0	1.3	1.6	-----	1.0	1.4	4.7	.4	.7	.3	.1
31	.9	-----	1.4	1.6	-----	.8	-----	2.2	-----	.6	.3	-----
Total	27.2	29.6	35.9	42.3	39.9	42.8	53.3	42.6	324.8	18.5	12.7	4.6
Mean	0.88	0.99	1.16	1.36	1.38	1.38	1.78	1.37	10.8	0.60	0.41	0.15
Ac-ft	54	59	71	84	79	85	106	84	644	37	25	9.1

Calendar year 1963: Max 233 Min 0.1 Mean 3.48 Ac-ft 2,520
 Water year 1963-64: Max 232 Min 0.1 Mean 1.84 Ac-ft 1,340

Peak discharge (base, 350 cfs)--June 13 (1915) 1,650 cfs (7.99 ft).

Note.--Stage-discharge relation indefinite June 23-30, July 8-14, July 30 to Aug. 2.

KANSAS RIVER BASIN

6-8260. Bonny Reservoir near Hale, Colo.

Location.--Lat 39°38'00", long 102°10'40", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.9, T.5 S., R.43 W., in stair well to outlet conduit of Bonny Dam on South Fork Republican River, 2 miles west of Hale and 3 miles downstream from Landsman Creek.

Records available.--October 1950 to September 1964.

Gage.--Mercury manometer gage. Datum of gage is at mean sea level (levels by Bureau of Reclamation).

Extremes.--Maximum contents observed during year, 42,990 acre-ft Mar. 27 (elevation, 3,672.80 ft); minimum observed, 35,500 acre-ft Oct. 25-28 (elevation, 3,669.00 ft).

1950-64: Maximum contents observed, 55,030 acre-ft May 17, 1957 (elevation, 3,678.10 ft); minimum observed since appreciable contents was attained, 22,520 acre-ft Oct. 6-14, 1952 (elevation, 3,661.20 ft).

Remarks.--Reservoir is formed by earth-fill dam. Storage began July 6, 1950; dam completed May 4, 1951. Capacity of reservoir, 170,200 acre-ft below elevation 3,710 ft (crest of spillway) of which 128,800 acre-ft is for flood control and 39,900 acre-ft for irrigation. Dead storage, 1,420 acre-ft below elevation 3,635.50 ft (sill of trashrack at outlet conduit). Figures given herein represent total contents.

Cooperation.--Records furnished by Bureau of Reclamation.

Capacity table (elevation, in feet, and total contents, in acre-ft)
(Furnished by Bureau of Reclamation)

3,665.0	28,460
3,670.0	37,390
3,675.0	47,760

Contents, in acre-feet, between 0500 and 0700, water year October 1963 to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33,740	35,630	36,990	33,460	40,120	41,650	42,370	41,340	41,140	41,300	39,450	37,370
2	33,740	35,650	37,010	33,540	40,120	41,650	42,120	41,440	41,140	41,260	39,370	37,310
3	33,740	35,690	37,050	33,600	40,320	41,650	41,960	41,440	41,180	41,240	39,350	37,260
4	33,740	35,740	37,100	33,660	40,320	41,650	41,880	41,440	41,240	41,200	39,290	37,160
5	33,740	35,780	37,160	33,700	40,320	41,750	41,960	41,440	41,260	41,180	39,210	37,200
6	33,740	35,820	37,220	33,780	40,320	41,750	41,860	41,340	41,340	41,160	39,170	37,180
7	33,740	35,860	37,260	33,920	40,320	41,860	41,650	41,340	41,340	41,100	39,110	37,160
8	33,740	35,880	37,280	33,960	40,520	41,960	41,440	41,340	41,340	40,970	39,040	37,100
9	33,740	35,910	37,300	39,000	40,520	41,960	41,340	41,340	41,320	40,910	38,980	37,070
10	33,600	35,970	37,300	39,020	40,520	42,060	41,340	41,340	41,240	40,910	38,940	36,970
11	33,430	36,010	37,300	39,080	40,520	42,060	41,340	41,340	41,160	40,850	38,840	36,900
12	33,230	36,050	37,300	39,090	40,730	42,160	41,240	41,340	41,120	40,730	38,700	36,870
13	37,990	36,080	37,330	39,110	40,730	42,160	41,240	41,340	41,100	40,650	38,620	36,840
14	37,700	36,120	37,370	39,170	40,830	42,270	41,140	41,340	41,770	40,560	38,530	36,820
15	37,540	36,160	37,450	39,230	40,830	42,270	41,140	41,340	42,000	40,540	38,440	36,780
16	37,200	36,230	37,490	39,270	40,930	42,330	41,140	41,340	42,060	40,500	38,430	36,820
17	36,990	36,290	37,540	39,330	40,930	42,370	41,140	41,340	42,160	40,420	38,350	36,800
18	36,800	36,360	37,580	39,330	40,930	42,370	41,140	41,300	42,160	40,340	38,290	36,780
19	36,630	36,460	37,640	39,330	41,030	42,470	41,140	41,240	42,060	40,280	38,250	36,740
20	36,440	36,520	37,680	39,430	41,030	42,470	41,240	41,140	42,000	40,340	38,180	36,690
21	36,250	36,590	37,740	39,530	41,140	42,580	41,240	41,100	42,000	40,320	38,120	36,690
22	36,060	36,610	37,770	39,530	41,140	42,680	41,240	41,050	42,020	40,240	38,020	36,670
23	35,860	36,660	37,850	39,630	41,240	42,790	41,240	40,950	41,940	40,140	37,950	36,650
24	35,670	36,670	37,930	39,730	41,240	42,790	41,340	40,910	41,880	40,020	37,910	36,610
25	35,500	36,720	37,990	39,730	41,340	42,790	41,340	40,830	41,810	39,900	37,830	36,570
26	35,500	36,780	38,060	39,730	41,340	42,890	41,340	40,750	41,730	39,840	37,770	36,520
27	35,500	36,860	38,140	39,920	41,440	42,990	41,340	40,630	41,550	39,770	37,740	36,440
28	35,500	36,900	38,220	39,920	41,440	42,890	41,340	40,590	41,550	39,730	37,620	36,350
29	35,540	36,930	38,250	39,920	41,550	42,790	41,340	40,670	41,420	39,650	37,540	36,250
30	35,590	36,950	38,310	39,920	- - - - -	42,680	41,340	40,930	41,340	39,590	37,450	36,160
31	35,610	- - - - -	38,370	40,120	- - - - -	42,580	- - - - -	41,030	- - - - -	39,550	37,390	- - - - -
(+)	3,669.06	3,669.77	3,670.51	3,671.40	3,672.10	3,672.60	3,672.00	3,671.85	3,672.00	3,671.11	3,670.00	3,669.35
(-)	-3,130	+1,340	+1,420	+1,750	+1,430	+1,030	-1,240	-310	+310	-1,790	-2,160	-1,230

Calendar year 1963..... † +190
Water year 1963-64..... †-2,580

† Elevation, in feet, at end of month.
‡ Change in contents, in acre-ft.

6-8265. South Fork Republican River near Hale, Colo.

Location.--Lat 39°37'25", Long 102°09'45", in SW 1/4 sec.15, T.5 S., R.43 W., on right bank half a mile downstream from Bonny Dam and 1 mile west of Hale.

Records available.--October 1946 to September 1948, May 1951 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 3,610 ft (from topographic map). Oct. 1, 1946, to Sept. 30, 1948, at site 4 miles downstream at different datum.

Average discharge.--13 years (1951-64), 24.4 cfs (17,660 acre-ft per year).

Extremes.--Maximum discharge during year, 130 cfs Apr. 1 (gage height, 4.69 ft); minimum daily, 5.2 cfs Oct. 6. 1946-48, 1951-64: Maximum discharge, 3,790 cfs May 28, 1947; maximum gage height, 4.87 ft Apr. 28, 1947, site and datum then in use; no flow Aug. 11-13, 1947. Greatest flood known occurred May 13, 1935, stage and discharge not determined. A discharge of 103,000 cfs was determined at a site near Newton, 5½ miles upstream, with a drainage area of approximately 1,270 sq mi.

Remarks.--Records good. Discharge measurements generally made twice a month. Flow regulated by Bonny Reservoir since July 6, 1950 (see preceding page). Many diversions above station for irrigation. Water diverted by Hale ditch from Bonny Reservoir bypasses station (2,360 acre-ft diverted in 1964).

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

3.9	3.2	4.3	35
4.0	6.5	4.5	80
4.1	12	4.6	112
4.2	21	4.7	158

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	6.2	5.8	6.2	7.0	5.8	117	22	7.0	7.0	6.2	5.8
2	5.8	6.2	5.8	6.2	7.0	5.8	117	27	7.0	7.0	6.2	5.8
3	5.8	6.2	5.8	6.2	6.5	6.2	112	28	7.0	7.0	6.2	5.8
4	5.8	6.2	5.8	6.5	6.5	6.2	112	28	7.0	6.5	6.2	5.8
5	5.5	6.2	5.8	6.5	6.5	5.8	112	27	6.5	6.5	6.2	6.2
6	5.2	6.2	5.8	6.5	7.0	6.5	112	27	16	7.0	6.2	6.2
7	5.5	6.2	5.8	6.5	6.5	6.5	112	27	24	7.0	6.2	6.2
8	5.5	6.2	6.2	6.5	6.5	6.5	112	27	22	7.0	6.2	6.2
9	6.5	6.2	6.2	6.5	6.5	6.5	75	27	22	7.6	6.2	6.2
10	112	6.2	5.8	6.5	6.5	6.5	61	27	16	7.6	6.2	6.2
11	112	6.2	5.8	6.5	6.2	6.5	61	27	8.2	7.6	6.2	6.5
12	117	6.2	6.2	6.5	6.2	6.5	61	27	6.2	7.6	6.2	6.5
13	117	6.2	6.5	6.5	6.2	6.5	61	27	7.0	7.0	6.2	6.2
14	117	6.2	6.5	6.5	6.2	6.5	52	27	7.0	7.0	6.2	6.2
15	117	6.2	6.5	6.5	6.2	6.5	30	28	7.0	6.5	6.2	7.0
16	117	6.2	6.5	6.5	6.2	6.5	16	28	6.5	6.5	6.2	6.5
17	117	6.5	6.5	6.5	6.2	6.5	16	28	6.5	7.0	5.5	6.5
18	117	6.2	6.5	6.5	6.2	6.5	16	28	6.5	7.0	5.5	6.5
19	121	5.8	6.5	6.5	6.2	7.0	17	28	6.5	7.0	5.5	6.5
20	121	5.8	6.5	6.5	5.8	8.2	17	20	6.5	7.0	5.5	6.5
21	121	5.8	6.5	6.5	5.8	7.0	18	11	6.5	7.0	5.5	6.5
22	121	5.8	6.5	6.5	5.8	6.5	18	8.7	6.5	7.0	5.5	6.5
23	121	5.8	6.5	6.5	5.8	6.5	18	8.7	6.5	7.0	5.5	6.5
24	121	5.8	6.5	7.0	5.5	6.5	18	8.7	6.5	7.0	5.5	6.5
25	40	5.8	6.2	7.0	5.5	6.5	20	8.7	6.5	7.0	5.8	6.5
26	8.2	5.8	6.2	7.0	5.5	6.5	24	8.7	6.5	6.5	5.8	6.5
27	7.6	5.8	6.2	6.5	5.5	56	24	8.2	6.5	6.5	5.8	6.5
28	7.0	5.5	6.2	7.0	5.8	112	22	8.2	6.5	6.2	5.8	6.5
29	6.5	5.8	6.2	7.0	5.8	117	22	11	7.0	6.2	5.8	6.5
30	6.2	5.8	6.2	7.0	-----	117	22	8.7	6.5	6.2	5.8	6.5
31	6.2	-----	6.2	7.0	-----	117	-----	7.6	-----	6.2	5.8	-----
Total	1,958.6	181.2	192.2	204.1	179.1	688.0	1,595	633.2	267.9	213.2	183.8	190.3
Mean	63.2	6.04	6.20	6.58	6.18	22.2	53.2	20.4	8.93	6.88	5.93	6.34
Ac-ft	3,880	359	381	405	355	1,360	3,160	1,260	531	423	365	377

Calendar year 1963: Max 121 Min 5.2 Mean 19.0 Ac-ft 13,790
 Water year 1963-64: Max 121 Min 5.2 Mean 17.7 Ac-ft 12,860

ARKANSAS RIVER BASIN

7-820. Lake Fork above Sugar Loaf Reservoir, Colo.

Location--Lat 39°16'11", long 106°23'40", in NW¼ sec.13, T.9 S., R.81 W., on left bank 1,000 ft upstream from water line of Sugar Loaf Reservoir (Turquoise Lake) at elevation 9,780 ft and 5.7 miles west of Leadville.

Drainage area--18 sq mi.

Records available--May 1946 to September 1964. Monthly discharge only for some periods, published in WSP 1241 and 1311.

Gage--Water-stage recorder. Altitude of gage is 9,800 ft (from topographic map).

Average discharge--18 years, 41.3 cfs (29,900 acre-ft per year).

Extremes--Maximum discharge recorded during year, 337 cfs May 21, 22 (gage height, 3.51 ft); minimum not determined.

1946-64: Maximum discharge, 610 cfs June 28, 1957 (gage height, 5.22 ft), from rating curve extended above 320 cfs; minimum daily recorded, 1.0 cfs Sept. 10-15, 1959.

Remarks--Records fair except those for periods of no gage-height record, which are poor. No diversion above station. Transmountain diversions from Colorado River basin to Busk Creek above station through Busk-Ivanhoe tunnel (see elsewhere in this report).

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

0.6	5.0	1.3	39
.7	7.5	2.0	110
1.0	21	3.0	250

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	9.1									178	53	22
2	8.7									170	52	21
3	8.7		(*)							160	65	20
4	* 8.7									151	67	18
5	8.3									148	72	18
6	8.3							11		140	60	17
7	8.3									125	51	18
8	25									110	53	17
9	55									105	49	17
10	45									* 99	* 45	17
11	29								175	98	43	*16
12	7.2								(*)	92	43	15
13	7.0									87	46	14
14	7.0							17		86	40	14
15	5.8	(*)								83	38	15
16	6.8	8	5	4	4	4	7			86	38	16
17	6.8									89	38	13
18	7.0									78	32	12
19	7.2							90		67	35	14
20	15									59	57	15
21	15							(*)	155	53	39	14
22	11								135	52	33	15
23	10								130	*54	31	12
24	9.9								145	76	28	12
25	9.1	(*)							*169	67	27	11
26	9.1							240		181	55	12
27	9.1									193	51	* 32
28	9.1									199	47	33
29	9.1									199	46	37
30	8.7									190	49	33
31	8.7									54	28	12
Total	393.7	240	155	124	116	124	210	3,285	5,196	2,815	1,324	462
Mean	12.7	8	5	4	4	4	7	106	173	90.8	42.7	15.4
Ac-ft	781	476	307	246	230	246	417	6,520	10,310	5,580	2,630	916

Calendar year 1963: Max 218 Min - Mean 33.9 Ac-ft 24,570
Water year 1963-64: Max - Min - Mean 39.5 Ac-ft 28,660

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 8-12, Oct. 31 to June 25 (stage-discharge relation affected by ice during part of period), July 1-3, 6-9.

ARKANSAS RIVER BASIN

7-830. Halfmoon Creek near Malta, Colo.

Location.--Lat 39°11'10", long 106°22'55", in NW¼ sec.18, T.10 S., R.80 W., on right bank 118 ft upstream from culvert, 2 miles upstream from mouth, and 3½ miles southwest of Malta.

Drainage area.--23 sq mi.

Records available.--July 1946 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 9,740 ft (from topographic map). Prior to Dec. 1, 1960, at site 185 ft downstream; at datum 3.18 ft lower prior to May 13, 1948, and 3.00 ft lower thereafter.

Average discharge.--18 years, 28.8 cfs (20,850 acre-ft per year).

Extremes.--Maximum discharge during year, 166 cfs June 15 (gage height, 3.35 ft); minimum not determined.
1946-64: Maximum discharge, 450 cfs June 30, 1957 (gage height, 3.48 ft, site and datum then in use); minimum not determined.

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

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

2.2	6.0
2.3	12
2.6	42
3.1	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	10	8							20	93	46	26
2	10	8							16	93	43	23
3	9.6	7	(*)						16	94	60	22
4	9.6	6.5							21	94	*65	20
5	9.6	*6			(*)	(*)		(*)	39	97	68	18
6	9.0	7							5	47	96	60
7	9.0	6.5		(*)			(*)		72	*88	58	18
8	*8.4	6							74	82	55	17
9	8.4	5.5							*59	77	50	*17
10	8.4	5.5							91	76	45	16
11	7.8	5.5							107	74	42	15
12	7.8	6							102	71	47	14
13	7.2	6						9	99	67	52	13
14	7.2	6						13	105	67	43	14
15	6.6	6						21	115	76	39	16
16	6.6	5.5	4	3.5	3.5	3.5	5	33	115	77	40	16
17	6.0	5.5						50	104	72	41	14
18	6.6	5.5						53	89	62	36	12
19	7.2	*5.5						*54	74	59	41	13
20	12	5						55	72	55	52	12
21	11	5						56	71	54	43	13
22	9.6	5						58	70	55	39	13
23	8.4	5						58	*54	55	35	13
24	8.4	5						66	65	71	33	11
25	7.8	5						67	86	60	31	10
26	7.8	5						70	93	54	31	11
27	7.8	5						63	99	48	33	12
28	6.6	4.5						52	101	45	31	11
29	6.6	4.5						46	94	45	31	11
30	6.0	4.5						36	88	47	29	11
31	7.8							27		47	26	
Total	254.8	171.0	124	108.5	101.5	108.5	150	947	2,258	2,151	1,345	450
Mean	8.22	5.70	4	3.5	3.5	3.5	5	30.5	75.3	69.4	43.4	15.0
Ac-ft	505	339	246	215	201	215	298	1,880	4,480	4,270	2,670	893

Calendar year 1963: Max 94 Min - Mean 20.2 Ac-ft 14,650
Water year 1963-64: Max 115 Min - Mean 22.3 Ac-ft 16,210

Peak discharge (base, 150 cfs).--June 15 (2100) 166 cfs (3.35 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 1-18. No gage-height record Nov. 19 to May 22 (stage-discharge relation affected by ice during most of period).

ARKANSAS RIVER BASIN

7-845. Lake Creek above Twin Lakes Reservoir, Colo.

Location.--Lat 39°03'45", long 106°24'20", in SE½ sec.26, T.11 S., R.81 W., on left bank 1.6 miles upstream from water line of Twin Lakes Reservoir at elevation 9,190 ft and 1.8 miles southwest of village of Twin Lakes.

Drainage area.--75 sq mi.

Records available.--April 1946 to September 1962, October 1963 to September 1964. Monthly discharge only for some periods, published in WSP 1241, 1311, and 1731.

Gage.--Water-stage recorder. Altitude of gage is 9,280 ft (from topographic map). Prior to May 20, 1950, at site 190 ft downstream at different datum. May 20, 1950, to Apr. 7, 1953, at site 10 ft upstream at present datum.

Average discharge.--17 years, 160 cfs (115,800 acre-ft per year).

Extremes.--Maximum discharge during year, 1,060 cfs June 7; maximum gage height, 4.10 ft June 15; minimum discharge not determined. 1946-62, 1963-64: Maximum discharge, 3,150 cfs June 10, 1952 (gage height, 5.74 ft), from rating curve extended above 1,400 cfs; minimum not determined.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. No diversion above station. Records include inflow from Roaring Fork in Colorado River basin through Twin Lakes tunnel (see elsewhere in this report).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Nov. 12-15, June 15 to July 26, Aug. 25-29)

0.9	24	2.0	175
1.2	48	2.5	310
1.4	70	3.0	500
1.7	118	4.0	1,040

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	50	35							436	540	218	86
2	46	30							412	510	205	80
3	46	37	(*)						416	480	220	73
4	45	37							428	476	265	69
5	45	32							* 524	484	280	66
6	45	30							585	432	280	66
7	45	38							836	352	256	65
8	45	35						35	842	456	240	64
9	44	33							615	420	218	64
10	* 43	36							716	* 388	* 202	* 64
11	42	31							776	342	190	59
12	42	30							806	324	185	56
13	41	30							800	331	232	54
14	40	31							806	310	202	55
15	39	* 30							842	362	175	57
16	38		18	14	15	14	18		872	396	171	59
17	38								812	388	178	53
18	38							300	770	331	159	49
19	38								635	298	155	51
20	46								595	271	212	50
21	43								* 890	615	265	50
22	37								974	605	280	51
23	36	28							944	448	277	50
24	* 37								956	508	* 362	140
25	36	(*)							986	* 630	359	134
26	36								1,020	660	301	131
27	36								944	630	265	* 134
28	33								788	640	242	104
29	33								680	576	205	104
30	32								508	540	215	96
31	33								460		210	91
Total	1,248	915	558	434	435	434	540	11,175	19,376	10,872	5,708	1,696
Mean	40.3	30.5	18	14	15	14	18	360	646	351	184	56.5
Ac-ft	2,480	1,810	1,110	861	863	861	1,070	22,170	38,430	21,560	11,320	3,360

Calendar year 1963: Max - Min - Mean - Ac-ft -
Water year 1963-64: Max 1,020 Min - Mean 146 Ac-ft 105,900

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 16 to May 20 (stage-discharge relation affected by ice during most of period), July 1-3.

7-860. Arkansas River at Granite, Colo.

Location.--Lat 39°02'38", long 106°15'55", in SW¼ sec.31, T.11 S., R.79 W., on right bank at Granite, 100 ft east of U. S. Highway 24, 100 ft downstream from county bridge, and 200 ft upstream from Cache Creek.

Drainage area.--427 sq mi.

Records available.--April to October 1895, May to December 1897, August to September 1898, March to October 1899, April to May 1901 (gage heights and discharge measurements only in 1895, 1899, and 1901), April 1910 to September 1964. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 8,914.86 ft above mean sea level, datum of 1929. Prior to Apr. 6, 1910, staff gages near present site at different datums. Apr. 6, 1910, to Oct. 25, 1917, water-stage recorder or staff gage at site 83? ft upstream at different datum. Oct. 26, 1917, to Oct. 26, 1960, water-stage recorder at site 168 ft downstream at present datum.

Average discharge.--54 years (1910-64), 352 cfs (254,800 acre-ft per year).

Extremes.--Maximum discharge during year, 2,140 cfs May 22 (gage height, 4.55 ft); minimum daily, 76 cfs Mar. 3-11. 1895, 1897-99, 1910-64: Maximum discharge, 5,360 cfs June 28, 1957 (gage height, 7.20 ft); minimum not determined.

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 above station for irrigation of about 6,700 acres. Sugar Loaf and Twin Lakes Reservoirs are on tributaries above station (combined capacity, 70,680 acre-ft). Transmountain diversions from Colorado River basin to Arkansas River basin enter above this station (see elsewhere in this report).

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

1.7	68	3.0	480
1.9	96	3.5	840
2.1	142	4.0	1,310
2.5	262	4.6	2,090

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	142	118	b 86	93	77	78	78	225	1,010	1,320	694	207
2	142	116	b 86	93	77	78	78	225	984	1,330	670	201
3	142	120	86	93	77	76	78	183	1,010	1,230	813	189
4	142	120	86	93	77	76	78	168	984	1,070	576	174
5	145	116	86	93	77	76	78	180	912	1,080	455	165
6	145	114	86	93	81	76	78	186	686	1,090	440	163
7	155	114	86	93	81	76	78	163	948	1,080	49?	158
8	225	109	86	93	81	76	78	168	1,180	1,120	395	163
9	163	107	86	93	81	76	78	160	1,150	849	410	140
10	152	109	86	93	81	76	78	210	1,040	600	440	195
11	152	105	86	93	81	76	78	273	1,050	516	486	195
12	150	100	83	93	81	84	78	248	1,030	486	425	177
13	147	100	83	83	81	84	78	198	975	475	455	158
14	145	105	83	83	81	84	84	222	939	492	470	163
15	135	100	83	83	81	84	90	277	1,060	564	750	168
16	130	103	83	83	81	84	96	360	1,230	614	718	174
17	128	107	83	83	81	84	102	420	1,190	607	686	316
18	128	103	83	83	81	84	108	498	1,180	552	656	266
19	130	103	83	83	81	78	114	621	1,020	552	649	145
20	189	103	83	83	78	78	120	939	831	849	726	155
21	160	100	83	83	78	78	126	1,180	813	813	718	150
22	160	100	83	83	78	78	137	2,000	1,250	813	686	150
23	155	b 102	83	83	78	78	147	1,860	1,150	813	656	142
24	155	105	83	83	78	78	165	1,760	1,030	957	649	137
25	152	96	83	77	78	78	163	1,760	1,080	930	656	137
26	152	b 94	83	77	78	78	163	1,810	1,170	849	635	128
27	150	b 94	93	77	78	78	161	1,810	1,280	795	702	130
28	147	b 92	93	77	78	78	158	1,660	1,290	734	718	128
29	186	b 90	93	77	78	78	158	1,460	1,320	702	621	123
30	142	b 88	93	77	78	78	180	858	1,330	702	332	118
31	135	-----	93	77	-----	78	-----	1,060	-----	718	210	-----
Total	4,681	3,133	2,656	2,651	2,299	2,442	3,286	23,142	32,122	25,302	17,995	5,015
Mean	151	104	85.7	85.5	79.3	78.8	110	747	1,071	816	580	167
Ac-ft	9,280	6,210	5,270	5,260	4,560	4,840	6,520	45,900	63,710	50,190	35,690	9,950

Calendar year 1963: Max 1,340 Min - Mean 288 Ac-ft 208,800
 Water year 1963-64: Max 2,000 Min 76 Mean 341 Ac-ft 247,400

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 3 to Apr. 21 (stage-discharge relation affected by ice during most of period), Apr. 26-28.

ARKANSAS RIVER BASIN

7-865. Clear Creek above Clear Creek Reservoir, Colo.

Location (revised).--Lat 39°01'05", long 106°16'40", in SE¼ sec.12, T.12 S., R.80 W., on right bank 0.5 mile upstream from water line of Clear Creek Reservoir at elevation 8,878 ft, 0.4 mile downstream from unnamed tributary, and 1.9 miles southwest of Granite.

Drainage area.--59 sq mi.

Records available.--May 1946 to September 1964. Monthly discharge only for some periods, published in WSP 1241 and 1311.

Gage (revised).--Water-stage recorder. Altitude of gage is 8,890 ft (from topographic map). May 7, 1946, to Apr. 20, 1954, water-stage recorder at site 133 ft upstream at different datum. Apr. 21, 1954, to May 28, 1958, water-stage recorder 333 ft upstream at different datum. Datum raised 2.19 ft Apr. 21, 1954.

Average discharge.--18 years, 69.7 cfs (50,460 acre-ft per year).

Extremes.--Maximum discharge during year, 330 cfs June 15 (gage height, about 2.35 ft); minimum not determined.

1946-64: Maximum daily discharge, 1,300 cfs June 29, 1957; maximum gage height recorded, 4.34 ft (site and datum then in use) June 16, 1952; minimum discharge not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 250 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 July 10)

0.4	11	1.4	102
.5	15	1.8	184
.6	20	2.2	290
.9	44		

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	20	14					10	94	156	61	54
2	31	19	14					10	88	153	64	53
3	31	20	*14	(*)				10	95	145	102	52
4	31	20	14					10	89	145	91	50
5	30	*20	14					10	124	145	87	48
6	30	20						11	151	140	104	45
7	29	20						*11	213	130	113	45
8	29	20						11	218	118	102	45
9	29	20						12	140	112	89	44
10	*28	20						13	194	*110	*80	*44
11	27	18						16	*211	107	78	43
12	26	18						16	206	101	98	40
13	26	17						19	194	92	124	37
14	25	18						25	182	88	101	36
15	23	*18						32	218	94	87	39
16	21	18		5.5	5	5	6.5	44	256	108	79	40
17	22	b18						65	229	104	78	36
18	22	b18	7.5					96	201	85	73	34
19	23	b18						118	158	75	73	36
20	29	b17						174	158	70	101	36
21	26	b17						*240	167	66	91	36
22	24	16						259	158	70	79	34
23	23	16						237	118	70	71	33
24	*22	15						229	142	*70	66	30
25	22	*15						251	*165	63	63	26
26	21	15						284	165	62	61	25
27	21	15						242	158	58	*62	25
28	21	15						184	172	54	59	24
29	21	15						167	165	56	57	*24
30	21	14						124	153	56	57	24
31	21	-----						102	-----	56	57	-----
Total	786	530	265.0	170.5	145	155	195.0	3,032	4,982	2,959	2,508	1,138
Mean	25.4	17.7	8.55	5.5	5	5	6.5	97.8	166	95.5	80.9	37.9
Ac-ft	1,560	1,050	526	338	288	307	387	6,010	9,880	5,870	4,970	2,260

Calendar year 1963: Max 270 Min - Mean 48.9 Ac-ft 35,400

Water year 1963-64: Max 284 Min - Mean 46.1 Ac-ft 33,450

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

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 23 to May 8 (stage-discharge relation affected by ice during most of period).

7-890. Cottonwood Creek below Hot Springs, near Buena Vista, Colo.

Location.--Lat 38°48'46", long 106°13'18", in SE½SE¼ sec.21, T.14 S., R.79 W., on left bank a quarter of a mile downstream from Cottonwood Hot Springs, 1 mile downstream from confluence of Middle Cottonwood and South Cottonwood Creeks, 3 miles upstream from North Cottonwood Creek, and 5½ miles southwest of Buena Vista.

Drainage area.--65 sq mi.

Records available.--October 1910 to September 1923, August 1949 to September 1964. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 8,532 ft (river-profile survey). Prior to Oct. 1, 1923, staff gage near present site at different datum.

Average discharge.--28 years, 58.3 cfs (42,210 acre-ft per year).

Extremes.--Maximum discharge during year, 279 cfs June 8 (gage height, 2.76 ft); minimum, 14 cfs Jan. 24 (gage height, 1.36 ft).
1910-23, 1949-64: Maximum discharge, 1,180 cfs July 1, 1957 (gage height, 4.52 ft, from floodmarks), from rating curve extended above 690 cfs; minimum observed, 10 cfs Mar. 20-23, 25, Apr. 9, 19, 1914.

Remarks.--Records good. Several small diversions above station for irrigation.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Feb. 11 to May 4, May 22 to June 18)

1.3	16	1.9	81
1.5	29	2.2	138
1.7	49	2.5	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	33	30	23	23	16	18	17	22	56	106	55	44
2	32	30	23	23	17	18	17	23	55	106	54	44
3	32	31	*23	23	17	18	17	20	61	100	61	41
4	31	31	23	22	*18	*18	17	19	60	98	*61	40
5	31	*31	23	21	18	18	17	*18	76	98	79	39
6	30	30	23	21	18	18	17	17	104	94	67	39
7	30	30	22	*21	17	18	*17	18	158	*87	62	38
8	*30	30	23	20	17	18	16	18	202	83	85	38
9	30	29	22	20	18	18	16	18	*121	79	67	*37
10	29	29	22	20	18	18	16	19	163	76	60	37
11	30	29	22	21	17	18	17	20	199	76	56	36
12	30	29	22	21	17	18	17	20	172	71	64	35
13	32	29	21	20	18	17	17	22	163	67	78	35
14	31	28	21	19	18	17	17	26	146	67	67	35
15	31	28	21	18	18	17	17	33	172	71	61	35
16	31	26	21	18	18	17	18	37	182	79	58	38
17	31	25	21	18	18	17	20	42	177	78	61	37
18	32	23	21	19	18	17	20	52	169	67	55	35
19	32	*23	21	20	18	17	20	*61	144	61	52	35
20	32	23	21	20	18	17	20	74	146	58	74	36
21	33	23	21	17	18	17	18	108	138	55	67	36
22	33	23	21	17	18	17	19	132	136	61	56	36
23	33	23	21	17	18	17	19	138	*111	60	52	35
24	34	23	21	16	18	17	21	138	111	60	49	34
25	35	24	22	17	18	17	22	156	117	61	47	32
26	34	25	23	17	17	17	20	169	117	66	46	31
27	33	25	23	17	17	17	20	154	117	60	48	31
28	31	25	23	17	18	17	19	125	117	56	49	30
29	31	25	23	17	18	17	21	117	113	55	45	29
30	30	24	23	16	-----	17	21	81	111	55	44	28
31	30	-----	23	16	-----	17	-----	64	-----	56	44	-----
Total	977	804	683	592	512	539	550	1,961	3,914	2,267	1,824	1,076
Mean	31.5	26.8	22.0	19.1	17.7	17.4	18.3	63.3	130	73.1	58.8	35.9
Ac-ft	1,940	1,590	1,350	1,170	1,020	1,070	1,090	3,890	7,760	4,500	3,620	2,130

Calendar year 1963: Max 123 Min 21 Mean 39.9 Ac-ft 28,910
Water year 1963-64: Max 202 Min 16 Mean 42.9 Ac-ft 31,130

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

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 17 to Nov. 4, Nov. 23 to Dec. 2.

ARKANSAS RIVER BASIN

7-915. Arkansas River at Salida, Colo.

Location.--Lat 38°32'45", long 106°00'36", in NE½ sec.31, T.50 N., R.9 E., on right bank at Salida, 450 ft upstream from bridge (relocated) on State Highway 291 and 2.7 miles upstream from South Arkansas River.

Drainage area.--1,218 sq mi.

Records available.--April to October 1895, May to December 1897, August 1898 to September 1899, April to October 1900, April 1901 to October 1903, October 1909 to September 1964. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 7,050.45 ft above mean sea level, datum of 1929. Apr. 11, 1895, to Nov. 18, 1903, staff gage and Nov. 3, 1909, to Dec. 2, 1936, water-stage recorder, at site 1½ miles downstream at different datum. Dec. 3, 1936, to Dec. 5, 1957, water-stage recorder at same site at datum 1.00 ft higher.

Average discharge.--58 years (1898-99, 1901-3, 1909-64), 621 cfs (449,600 acre-ft per year).

Extremes.--Maximum discharge during year, 4,180 cfs Aug. 7 (gage height, 4.47 ft); minimum daily, 158 cfs Apr. 14. 1895-1903, 1909-64: Maximum discharge, 9,220 cfs June 29, 1957 (gage height, 7.82 ft, present datum); minimum observed, 100 cfs Oct. 4, 6, 7, 1898.

Remarks.--Records good. Discharge measurements generally made twice a month. Natural flow of stream affected by transmountain diversions (see elsewhere in this report), storage reservoirs (combined capacity, 81,890 acre-ft), diversions for irrigation of about 18,000 acres above station, and return flow from irrigated areas.

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

Oct. 1 to May 20		May 21 to Sept. 30	
0.4	130	0.5	265
.9	340	1.0	530
1.5	720	2.0	1,240
2.1	1,240	3.0	2,120
		4.0	3,430

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	277	295	264	259	218	198	214	300	1,040	1,600	996	404
2	268	295	259	259	218	190	210	318	1,040	1,580	961	392
3	268	295	264	264	218	186	214	304	1,040	1,520	1,070	376
4	264	295	268	259	226	182	198	259	1,070	1,300	1,090	404
5	264	295	272	259	226	170	194	246	1,110	1,300	807	392
6	277	300	268	238	222	174	198	254	989	1,310	793	370
7	272	290	250	250	218	174	198	246	1,260	1,270	940	354
8	331	295	242	230	222	178	186	234	1,750	1,300	884	354
9	304	295	246	214	234	174	226	238	1,610	1,170	814	365
10	268	300	272	230	246	178	282	238	1,420	919	786	370
11	264	295	242	218	234	174	272	331	1,460	835	772	376
12	254	272	234	210	242	178	198	355	1,470	807	751	398
13	254	264	234	194	238	190	174	322	1,500	758	772	382
14	254	268	234	198	238	202	158	313	1,390	702	744	365
15	259	259	234	202	230	202	170	345	1,420	814	940	370
16	259	268	242	206	238	210	190	375	1,710	877	982	360
17	254	277	242	206	238	210	210	450	1,690	961	940	392
18	246	286	250	206	242	222	210	566	1,610	884	877	464
19	250	282	254	206	234	230	210	685	1,420	842	842	409
20	268	272	246	214	242	214	218	1,180	1,280	1,020	912	365
21	313	268	242	202	230	210	210	1,720	1,120	996	933	360
22	290	272	238	202	230	214	210	2,440	1,390	975	919	326
23	295	264	234	206	234	214	210	2,380	1,380	975	877	316
24	295	264	238	206	226	214	226	2,140	1,210	1,140	842	316
25	300	277	238	206	234	214	246	2,200	1,300	1,260	863	310
26	300	272	238	226	218	210	234	2,270	1,400	1,210	814	296
27	304	272	234	226	226	210	226	2,320	1,560	1,110	835	301
28	304	277	234	218	202	206	226	2,050	1,660	1,050	877	296
29	313	268	242	222	202	210	226	1,800	1,650	933	884	292
30	318	268	234	222	-----	210	250	1,160	1,680	1,010	695	283
31	295	-----	259	218	-----	210	-----	1,120	-----	1,040	420	-----
Total	8,682	8,400	7,648	6,876	6,626	6,158	6,394	29,159	41,629	33,468	26,632	10,758
Mean	280	280	247	222	228	199	213	941	1,388	1,080	859	359
Ac-ft	17,220	16,660	15,170	13,640	13,140	12,210	12,680	57,840	82,570	66,380	52,820	21,340

Calendar year 1963: Max 1,880 Min 150 Mean 522 Ac-ft 378,200
 Water year 1963-64: Max 2,440 Min 158 Mean 526 Ac-ft 381,700

7-937. Arkansas River near Wellsville, Colo.

Location.--Lat 38°30'10", long 105°56'21", in NE¼ sec.14, T.49 N., R.9 E., on right bank 50 ft upstream from Chaffee-Fremont County line, 2 miles northwest of Wellsville, 2.8 miles downstream from South Arkansas River, and 3.5 miles southeast of Salida.

Drainage area.--1,485 sq mi.

Records available.--April 1961 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 6,883.4 ft (corrected) above mean sea level (river-profile survey).

Extremes.--Maximum discharge during year, 2,740 cfs May 27 (gage height, 6.19 ft); minimum daily, 164 cfs Apr. 14.
1961-64: Maximum discharge, 3,620 cfs June 14, 1962 (gage height, 6.71 ft); minimum daily, 110 cfs Jan. 12, 1963.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions for irrigation of about 26,000 acres, and return flow from irrigated areas.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Feb. 17-20, Sept. 18-23)

2.6	150	5.0	1,340
3.0	250	6.0	2,450
3.5	420	6.5	3,260
4.0	630		

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	286	307	268	292	265	226	247	268	1,140	1,550	1,030	416
2	280	301	271	295	271	229	244	294	1,140	1,510	989	404
3	280	295	277	289	259	* 229	241	277	1,130	1,480	1,100	384
4	277	292	*274	274	*265	220	223	241	1,150	1,250	* 1,130	404
5	280	*292	274	274	259	220	212	220	1,180	1,240	807	408
6	292	295	271	244	262	229	212	*229	1,120	1,260	788	380
7	292	286	271	*280	a 240	226	212	229	1,440	1,220	961	366
8	295	283	253	271	a 260	232	*200	210	1,960	*1,270	940	373
9	* 324	283	271	a 260	a 260	215	226	218	1,780	1,150	842	* 376
10	286	286	304	265	a 270	223	304	220	*1,570	877	800	384
11	280	280	a 260	262	a 260	218	289	310	1,600	776	800	388
12	268	277	271	a 250	a 260	232	202	352	1,630	740	788	412
13	265	271	274	a 210	a 250	238	178	307	1,660	692	814	404
14	262	265	a 280	a 220	a 250	235	164	304	1,520	645	788	373
15	265	259	286	a 230	a 240	232	170	352	1,560	728	940	404
16	265	268	298	a 250	a 250	244	200	359	1,880	794	1,000	424
17	259	268	*298	a 260	a 250	238	226	436	1,840	891	954	412
18	256	271	301	a 260	a 250	247	223	536	1,730	968	*891	520
19	256	271	314	a 250	* 241	250	223	621	1,520	1,030	856	468
20	274	*271	304	a 270	268	223	223	*996	1,370	940	905	396
21	317	268	307	268	238	226	202	1,550	1,170	1,150	940	384
22	* 295	277	295	271	250	229	195	2,340	1,400	a 1,110	919	362
23	298	271	280	262	250	223	192	2,420	1,410	a 1,120	870	*342
24	298	265	295	235	232	229	200	2,300	*1,230	a 1,150	828	324
25	298	286	292	253	250	218	226	2,380	1,300	a 1,250	842	320
26	301	277	286	298	215	218	215	2,500	1,380	1,190	794	310
27	304	280	283	286	226	229	202	2,600	1,520	1,170	800	307
28	301	286	286	271	212	226	195	2,310	1,630	1,110	856	301
29	304	271	289	274	232	232	190	2,030	1,620	1,060	788	289
30	324	271	274	268	-----	238	220	1,300	1,650	1,050	704	274
31	301	-----	286	265	-----	244	-----	1,230	-----	1,070	432	-----
Total	8,883	8,373	8,793	8,157	7,235	7,118	6,456	29,939	44,230	33,441	26,896	11,309
Mean	287	279	284	263	249	230	215	966	1,474	1,079	868	377
Ac-ft	17,620	16,610	17,440	16,180	14,350	14,120	12,810	59,380	87,730	66,330	53,350	22,430

Calendar year 1963: Max 1,840 Min 110 Mean 470 Ac-ft 340,500
Water year 1963-64: Max 2,600 Min 164 Mean 549 Ac-ft 398,400

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

ARKANSAS RIVER BASIN

7-950. Grape Creek near Westcliffe, Colo.

Location.--Lat 38°11'10", long 105°28'59", in NW¼NW¼ sec.31, T.21 S., R.72 W., on left bank 0.5 mile upstream from water line of De Weese Reservoir at elevation 7,665 ft, 0.5 mile downstream from Swift Creek, and 3.6 miles northwest of Westcliffe.

Drainage area.--320 sq mi.

Records available.--October 1924 to September 1961, October 1962 to September 1964. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,690 ft (from topographic map). Prior to Mar. 17, 1939, at site 30 ft upstream at same datum.

Average discharge.--39 years, 31.2 cfs (22,590 acre-ft per year).

Extremes.--Maximum discharge recorded during year, 275 cfs Apr. 2 (gage height, 2.03 ft); minimum daily, 1.8 cfs Oct. 17, 18. 1924-61, 1962-64: Maximum discharge, 1,960 cfs Apr. 23, 1942 (gage height, 5.26 ft), from rating curve extended above 830 cfs; minimum daily, 0.1 cfs June 19-22, 1936.

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 15,000 acres.

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

0.3	0	0.9	51
.4	2.5	1.3	110
.5	8.0	1.8	232
.6	17		

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	3.2					190	12	28	2.5	15	4.7
2	4.2	4.2		(*)			*214	12	52	2.5	15	4.7
3	4.2	5.2					140	98	35	2.2	25	4.7
4	4.2	4.7					100	80	*22	2.0	26	4.7
5	3.6	*3.6	(*)				80	7.4	12	2.0	24	4.7
6	4.2	3.6					75	*7.4	8.9	2.0	17	4.7
7	*4.2	3.6					65	7.4	8.0	2.0	16	4.7
8	3.6	3.6					60	7.4	7.4	2.2	35	5.2
9	3.6	3.6					55	6.9	6.4	*2.2	24	*5.2
10	3.6	4.2					45	7.4	4.2	5.8	16	4.7
11	3.6	4.7			(*)		44	6.9	4.2	8.0	*19	4.7
12	3.6	5.8					42	6.9	3.6	7.4	28	5.2
13	3.6	*5.8					*41	6.9	2.5	3.6	46	4.7
14	3.6	5.8					35	*5.8	2.5	3.0	45	4.7
15	3.0	5.8					37	6.4	3.6	3.0	38	5.2
16	2.2	5.8	5.0	5.2	5.0	15	36	5.8	4.2	3.0	27	5.8
17	1.8	5.8					29	5.8	4.7	4.2	24	5.2
18	1.8	5.6					25	4.7	*4.2	3.0	19	4.2
19	2.0	5.6					29	4.7	4.2	3.0	16	5.2
20	3.0	5.4		(*)			20	4.7	3.0	3.0	16	6.9
21	4.2	*5.2					17	4.7	3.0	3.0	14	6.4
22	*4.2						16	4.7	2.5	*4.7	13	5.8
23	3.6						15	5.2	2.5	4.7	11	5.2
24	2.5						12	4.2	2.2	12	11	6.4
25	2.2	4.8					12	3.6	2.2	9.8	8.9	5.8
26	2.2				(*)		11	5.2	2.2	11	8.0	6.4
27	2.5						11	26	2.2	7.3	*6.9	7.4
28	2.2						11	12	2.5	20	6.4	6.4
29	2.2						17	*7.4	2.2	18	5.2	*6.4
30	2.2						*12	36	2.2	18	4.7	5.2
31	2.2							40		18	4.7	
Total	98.0	144.0	155.0	161.2	145.0	465	1,496	293.3	244.3	258.8	584.8	161.2
Mean	3.16	4.80	5.0	5.2	5.0	15	49.9	9.46	8.14	8.35	18.9	5.37
Ac-ft	194	286	307	320	288	922	2,970	582	485	513	1,160	320

Calendar year 1963: Max - Min 1.5 Mean 6.20 Ac-ft 4,480
 Water year 1963-64: Max 214 Min 1.8 Mean 11.5 Ac-ft 8,350

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 1, 2, 17-20, 22, 23. No gage-height record Nov. 24 to Apr. 12 (stage-discharge relation affected by ice during most of period).

7-960. Arkansas River at Canon City, Colo.

Location.--Lat 38°26'02", long 105°15'24", in SE½SE¼ sec.31, T.18 S., R.70 W., on right bank 800 ft upstream from Sand Creek, 0.7 mile downstream from Grape Creek, and 0.7 mile upstream from First Street Bridge in Canon City.

Drainage area.--3,117 sq mi.

Records available.--January 1888 to September 1964. Monthly discharge only for some periods, published in WSP 1311. Published as "near Canyon" 1900-1906.

Gage.--Water-stage recorder. Datum of gage is 5,342.13 ft above mean sea level, datum of 1929, supplementary adjustment of 1960. Prior to Mar. 27, 1922, staff gage, chain gage, or water-stage recorder at sites about a quarter of a mile upstream at various datums. Mar. 27, 1922, to Sept. 30, 1957, water-stage recorder at present site at datum 2.49 ft higher. Oct. 1, 1957, to Nov. 15, 1962, water-stage recorder at present site at datum 1.49 ft higher.

Average discharge.--76 years, 716 cfs (518,400 acre-ft per year).

Extremes.--Maximum discharge during year, 4,350 cfs July 29 (gage height, 6.67 ft), from rating curve extended above 2,700 cfs; minimum daily discharge, 76 cfs Apr. 29.

1888-1964: Maximum discharge, 19,000 cfs Aug. 2, 1921 (gage height, 10.7 ft, site and datum then in use, from floodmark), from rating curve extended above 5,000 cfs; minimum daily, 69 cfs May 13, 1959.

Remarks.--Records good except those for periods of ice effect, which are fair. Discharge measurements generally made once a week. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions for irrigation of about 56,000 acres, and return flow from irrigated areas.

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

1.7	60	4.0	1,150
1.9	100	5.0	2,090
2.4	220	6.0	3,260
3.0	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	163	241	214	361	250	229	285	114	1,230	1,650	1,020	297
2	163	220	220	341	264	235	313	149	1,200	1,580	1,010	274
3	156	241	247	325	244	229	285	163	1,190	1,560	1,020	257
4	154	235	271	274	238	220	289	133	1,210	1,380	1,310	244
5	151	214	268	278	235	223	268	104	1,210	1,280	926	293
6	160	180	257	244	232	217	257	96	1,250	1,290	774	274
7	168	182	260	250	188	214	278	86	1,370	1,290	781	264
8	168	175	250	301	229	211	260	90	1,900	1,290	1,150	254
9	188	175	247	223	232	196	257	82	2,060	1,310	966	254
10	188	182	260	229	247	214	274	86	1,670	982	862	282
11	163	185	220	289	244	214	305	94	1,630	774	809	301
12	158	182	226	232	235	211	264	208	1,680	658	816	289
13	151	175	228	210	226	211	220	202	1,720	619	802	305
14	149	170	230	190	238	208	202	151	1,670	543	823	264
15	147	180	240	200	208	214	196	199	1,570	560	834	285
16	149	168	290	220	202	235	208	220	1,800	670	1,100	301
17	149	182	280	225	214	226	238	247	1,930	760	1,070	250
18	147	196	290	230	232	232	250	337	1,830	816	998	351
19	144	202	310	215	238	244	244	510	1,690	781	926	383
20	149	205	280	200	229	229	223	774	1,450	716	902	321
21	178	205	260	230	220	211	208	1,410	1,290	982	1,010	271
22	193	214	260	240	217	214	180	2,140	1,280	894	966	257
23	182	211	260	260	229	214	154	2,700	1,520	886	926	232
24	185	202	290	250	223	214	131	2,520	1,310	942	862	214
25	180	205	330	260	226	208	120	2,570	1,270	1,310	830	202
26	180	226	310	270	214	205	135	2,700	1,370	1,250	830	208
27	178	232	300	270	211	208	114	2,960	1,510	1,110	788	202
28	182	229	310	270	202	214	98	2,730	1,670	1,050	830	193
29	182	226	310	293	214	226	76	2,390	1,690	1,230	816	185
30	196	205	321	293	244	244	90	1,940	1,720	1,180	718	178
31	232	-----	353	271	-----	271	-----	1,180	-----	1,050	491	-----
Total	5,233	6,045	8,392	7,944	6,581	6,841	6,422	29,285	45,890	32,393	27,966	7,885
Mean	169	202	271	256	227	221	214	945	1,530	1,045	972	263
Ac-ft	10,380	11,990	16,650	15,760	13,050	13,570	12,740	58,090	91,020	64,250	55,470	15,640

Calendar year 1963: Max 1,810 Min 114 Mean 426 Ac-ft 308,600
 Water year 1963-64: Max 2,960 Min 76 Mean 522 Ac-ft 378,600

Note.--Stage-discharge relation affected by ice Dec. 13-29, Jan. 13-28.

ARKANSAS RIVER BASIN

7-995. Arkansas River near Pueblo, Colo.

Location.--Lat 38°16'02", long 104°39'26" (revised), in SE¼NW¼ sec.34, T.20 S., R.65 W., on right bank at intake of south-side waterworks, 1.6 miles (revised) upstream from Dry Creek and 2.5 miles west of city hall in Pueblo.

Drainage area.--4,686 sq mi.

Records available.--May to June 1885, January 1886 to December 1887, May to August 1889, September 1894 to September 1964. Monthly discharge only for some periods, published in WSP 1311. Published as "at Rock Canyon" 1889 and as "at Pueblo" 1885-87, 1894-1924.

Gage.--Water-stage recorder and concrete control on river; water-stage recorder and Parshall flume at north-side waterworks intake. Datum of river gage is 4,689.74 ft above mean sea level, datum of 1929, supplementary adjustment of 1960. May 16, 1885, to Sept. 12, 1886, staff gage at site 2½ miles downstream, at different datum; June 1, 1887, to Aug. 31, 1889, staff gage at site 6½ miles upstream, at different datum. Sept. 19, 1894, to May 25, 1925, staff gage, chain gage, or water-stage recorder about 2½ miles downstream at various sites and datums.

Average discharge.--71 years (1886-87, 1894-1964), 709 cfs (513,300 acre-ft per year).

Extremes.--Maximum discharge during year, 2,840 cfs May 27; minimum daily, 46 cfs May 12. 1885-87, 1889, 1894-1964: Maximum discharge, 103,000 cfs June 3, 1921 (gage height, 24.66 ft, site and datum then in use), from rating curve extended above 6,800 cfs on basis of float measurement at gage height 11.2 ft and slope-area measurement of peak flow; minimum daily, 18 cfs (including 13 cfs diverted into intake of north-side waterworks) Apr. 7, 1935.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair and those for Apr. 16 to May 6, May 12, 15, which are poor. Discharge measurements made at least twice a month during winter and once a week during summer. Records include water diverted above station into intake of north-side waterworks for municipal supply of Pueblo, but not water diverted by south-side waterworks. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions above station for irrigation of about 88,000 acres, and return flow from irrigated areas.

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	88	142	184	212	237	164	161	93	1,110	1,600	948	277
2	73	112	183	230	182	180	218	159	1,210	1,470	867	198
3	67	144	166	223	182	159	218	170	1,220	1,430	823	175
4	67	153	202	236	166	149	200	154	1,220	1,350	1,120	162
5	61	143	208	193	152	124	182	101	1,180	1,150	1,300	174
6	59	123	213	225	194	164	121	91	1,230	1,150	812	199
7	84	115	196	204	208	198	206	82	1,180	1,180	1,140	156
8	105	102	201	189	127	228	182	82	1,470	1,130	1,070	174
9	100	110	240	188	151	189	125	64	1,790	1,170	984	180
10	146	113	180	167	161	154	129	77	1,480	1,070	757	186
11	152	141	160	165	200	121	257	91	1,280	788	680	198
12	109	148	140	157	219	139	363	46	1,340	633	691	229
13	98	132	140	140	201	140	182	101	1,400	568	702	217
14	83	121	140	127	161	122	125	84	1,540	468	813	217
15	83	113	140	150	203	130	93	50	1,360	405	810	247
16	74	117	150	165	142	135	96	104	1,370	480	898	286
17	74	141	160	190	150	171	155	140	1,660	614	985	235
18	86	170	170	195	136	135	226	201	1,590	769	925	198
19	86	171	185	200	122	155	244	380	1,440	835	813	292
20	89	183	200	238	150	193	219	507	1,270	625	768	307
21	104	207	185	236	157	154	157	921	1,320	812	867	235
22	126	195	170	279	131	120	129	1,590	1,140	823	868	229
23	125	226	160	293	119	112	77	2,220	1,400	801	834	211
24	115	207	185	238	152	116	163	2,160	1,330	823	757	186
25	113	188	215	213	151	126	152	2,350	1,150	1,190	658	156
26	106	183	200	223	172	116	132	2,460	1,230	1,240	669	144
27	118	197	210	323	152	115	122	2,640	1,320	1,100	592	138
28	135	178	226	300	166	129	125	2,350	1,510	948	636	144
29	123	201	216	236	140	116	91	2,100	1,610	890	702	138
30	104	202	223	224	-----	120	51	1,740	1,710	1,230	636	116
31	131	-----	187	212	-----	177	-----	1,180	-----	900	570	-----
Total	3,084	4,678	5,735	6,571	4,784	4,551	4,901	24,488	41,060	29,642	25,695	6,004
Mean	99.5	156	185	212	165	147	163	790	1,369	956	829	200
Ac-ft	6,120	9,280	11,380	13,030	9,490	9,030	9,720	48,570	81,440	58,790	50,970	11,910
Calendar year 1963:	Max 1,870	Min 29	Mean 358	Ac-ft 259,500								
Water year 1963-64:	Max 2,640	Min 46	Mean 440	Ac-ft 319,700								

Note.--No gage-height record Oct. 19-24, Dec. 11-13. Stage-discharge relation affected by ice Dec. 10-27, Jan. 9-21.

7-1037. Fountain Creek near Colorado Springs, Colo.

Location.--Lat 38°51'17", long 104°52'39", in SE¼SW¼ sec.3, T.14 S., R.67 W., on left bank 200 ft upstream from diversion to city of Colorado Springs, half a mile east of bridge on U. S. Highway 24 near west city limits of Colorado Springs, and 1 mile downstream from Sutherland Creek.

Drainage area.--102 sq mi.

Records available.--April 1958 to September 1964.

Gage.--Water-stage recorder and Parshall flume with overflow weirs. Altitude of gage is 6,110 ft (from topographic map).

Average discharge.--5 years, 10.3 cfs (7,460 acre-ft per year).

Extremes.--Maximum discharge during year, 2,630 cfs Aug. 4 (gage height, 5.27 ft), from rating curve extended above 50 cfs on basis of slope-area measurements at gage heights 3.87, 4.52, and 5.27 ft; minimum daily, 3.3 cfs Jan. 24, July 6.
1958-64: Maximum discharge that of Aug. 4, 1964; minimum daily, 2.4 cfs July 15, 1963.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Discharge measurements generally made twice a month. Natural flow of stream affected by storage reservoirs, power developments, diversions for irrigation and municipal use, and at times, transbasin diversion from Beaver Creek drainage and transmountain diversions from Colorado River basin.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Nov. 8-30, July 11 to Aug. 4, Aug. 7 to Sept. 30)

0.4	2.9	2.0	35
.6	5.4	2.4	50
.8	8.5	2.7	89
1.0	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	5.0	7.3	6.3	6.1	5.0	5.7	6.6	9.0	16	5.0	8.6	7.0
2	5.1	7.8	5.2	6.3	5.5	5.4	7.0	8.3	21	4.4	7.5	7.3
3	4.8	7.5	6.0	6.1	a 5.0	5.1	6.4	8.0	20	4.0	9.0	7.3
4	4.4	7.2	6.3	4.8	5.7	4.4	5.7	7.5	17	4.2	7.7	8.1
5	4.6	7.0	6.1	a 4.8	5.5	5.1	5.7	7.2	18	3.4	1.2	8.6
6	4.6	6.9	6.7	a 4.6	5.2	5.4	6.0	6.6	22	3.3	9.6	7.8
7	4.6	7.0	6.7	a 4.5	a 5.4	a 4.8	5.4	6.1	21	4.7	4.0	7.0
8	4.3	7.0	a 6.4	a 5.0	a 5.6	a 4.8	5.7	7.6	20	5.0	1.4	7.2
9	4.3	7.2	a 5.4	a 5.2	5.7	a 5.0	6.6	7.5	21	4.7	1.7	7.8
10	4.0	7.0	a 5.0	a 5.4	5.5	a 5.0	7.6	6.7	23	4.0	1.2	1.1
11	4.7	7.0	a 5.4	a 5.6	5.4	a 5.2	7.8	7.0	19	7.9	1.1	1.0
12	5.7	7.0	a 5.6	a 5.6	5.2	a 6.1	8.6	6.6	18	7.0	1.3	9.0
13	5.4	7.5	a 5.8	a 5.4	4.0	5.1	7.8	7.2	17	6.6	1.0	8.6
14	5.5	7.2	a 6.0	a 5.4	4.8	4.4	7.6	7.0	18	5.8	1.0	8.3
15	5.4	6.9	a 6.2	a 5.4	a 4.7	4.6	8.3	7.3	17	6.1	1.0	1.1
16	5.2	7.0	a 5.8	a 5.4	a 4.5	4.7	1.1	1.1	14	8.5	8.6	1.1
17	5.1	7.2	a 5.6	5.5	a 4.3	5.5	1.1	8.5	13	9.1	1.1	8.6
18	5.2	6.9	5.5	5.4	a 4.3	6.4	1.1	7.8	11	8.6	1.0	8.0
19	5.2	6.9	5.5	5.0	a 4.3	6.4	1.2	5.4	10	7.6	1.0	8.0
20	6.0	7.2	5.5	5.1	a 4.0	4.6	1.1	4.8	9.3	7.3	1.0	8.8
21	7.6	8.1	5.1	5.0	a 4.2	4.7	1.0	4.8	9.1	6.3	1.0	8.6
22	7.5	7.8	5.1	4.7	a 4.0	5.1	9.0	4.8	8.0	5.8	9.6	8.1
23	5.7	6.6	5.1	4.4	a 4.5	5.1	9.5	5.1	7.5	6.6	9.6	9.3
24	4.8	7.0	5.2	3.3	a 4.0	5.0	1.0	6.3	6.6	7.5	8.8	8.8
25	5.0	6.7	5.4	4.6	a 3.5	4.8	9.3	4.7	5.4	8.8	8.6	9.1
26	5.4	6.4	5.4	5.2	a 3.9	4.8	8.5	5.5	5.8	8.1	1.0	1.1
27	6.0	7.3	5.5	5.1	a 4.5	5.0	8.1	9.5	5.5	7.5	9.8	9.1
28	6.6	7.3	a 5.0	5.2	a 4.8	5.0	9.6	1.0	6.1	6.7	9.1	8.3
29	7.2	6.1	a 4.7	5.4	a 5.0	5.4	8.8	4.2	6.3	9.3	7.6	7.5
30	5.5	5.4	a 5.4	5.7	-----	6.4	9.3	1.3	6.6	8.6	8.0	7.3
31	8.1	-----	a 5.8	5.1	-----	6.6	-----	1.3	-----	8.5	7.8	-----
Total	168.5	211.4	174.7	160.3	138.0	161.6	250.9	265.8	412.2	200.9	409.2	257.5
Mean	5.44	7.05	5.64	5.17	4.76	5.21	8.36	8.57	13.7	6.48	13.2	8.58
Ac-ft	334	419	347	318	274	321	498	527	818	398	812	511

Calendar year 1963: Max 34 Min 2.4 Mean 7.09 Ac-ft 5,140
Water year 1963-64: Max 77 Min 3.3 Mean 7.68 Ac-ft 5,580

Peak discharge (base, 150 cfs)

a No gage-height record.

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-29	1330	4.52	672	8-7	1415	4.68	800
8-4	1545	5.27	2,630				

ARKANSAS RIVER BASIN

7-1039. West Monument Creek near Pikeview, Colo.

Location.--Lat 38°58'17", long 104°53'56", in SW $\frac{1}{4}$ sec.28, T.12 S., R.67 W., on right bank in Air Force Academy Reservation, 4 miles upstream from mouth and 11 $\frac{1}{2}$ miles northwest of Pikeview.

Drainage area.--15.4 sq mi.

Records available.--October 1957 to September 1964.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 7,080.78 ft (City of Colorado Springs bench mark).

Average discharge.--7 years; 0.55 cfs (398 acre-ft per year).

Extremes.--Maximum discharge during year, 8.8 cfs Apr. 21 (gage height, 0.72 ft); no flow for many days.
1957-64: Maximum discharge, 27 cfs about May 14, 1958 (gage height, 1.59 ft); no flow for many days in each year.

Remarks.--Records fair except those for periods of no gage-height record and those computed from once-daily staff-gage readings, which are poor. Discharge measurements or observations of no flow generally made twice a month. Natural flow of stream affected by storage reservoirs (combined capacity, 1,520 acre-ft) and diversions for municipal use.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 20, 21)

0.0	0
.1	.4
.2	1.0
.3	1.8
.5	4.0

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	a0	0.2	0.3	0	0	0	0	0.7	1.0	2.7	a0	0.2
2	a0	.3	0	0	0	0	.1	.5	1.6	2.9	a0	.3
3	a0	.2	0	0	0	0	0	.6	1.7	.7	a0	.4
4	a0	.2	.1	0	**1	0	0	.1	1.4	.2	0	a0
5	a0	.3	.1	0	0	0	0	.5	1.0	.1	a0	a0
6	a0	.3	.1	0	0	0	.2	.4	1.0	.1	a0	.1
7	a0	.3	0	0	0	0	0	.1	.7	.1	.4	.1
8	0	.3	0	0	0	0	0	.4	.7	.1	a0	.4
9	a0	.3	.1	0	0	0	0	.3	.6	0	a0	.1
10	a0	.2	.1	0	0	0	0	.5	.7	a0	a0	a0
11	a0	.2	.1	0	0	0	.1	.2	.8	a0	2.6	a0
12	a0	.2	.1	0	0	0	.3	.1	.7	a0	2.9	a0
13	.1	.1	0	0	0	0	.3	.5	.7	a0	.3	a0
14	3.3	.1	.1	0	0	0	.6	.3	.7	a0	.1	a0
15	1.4	.1	0	0	0	0	.7	1.0	.5	a0	a0	.1
16	.4	.1	0	0	0	0	.8	.8	.5	a0	a0	0
17	.1	.2	0	0	0	0	1.0	.6	.3	a0	a0	a0
18	a0	.2	0	0	0	0	.5	.2	.4	a0	0	a0
19	a0	.5	.1	0	0	0	.7	.4	.4	a0	.2	a0
20	a0	0	0	0	0	0	3.6	.2	.5	a0	.4	.1
21	a0	.4	0	0	0	.1	3.3	a0	.6	a0	a0	a0
22	.2	.3	0	0	0	0	.8	.1	.2	0	a0	a0
23	.1	.4	0	0	0	0	.7	a0	a0	a0	a0	a0
24	0	.3	0	0	0	.1	1.0	a0	a0	a0	a0	a0
25	0	.2	0	.1	0	0	.9	a0	a0	a0	.2	a0
26	a0	.1	0	0	0	0	.7	.1	a0	a0	a0	0
27	a0	.1	0	0	0	.1	.6	.8	a0	a0	a0	.2
28	a0	0	0	0	0	0	.5	.1	a0	a0	a0	.1
29	a0	.1	0	0	0	0	.5	.3	a0	a0	a0	a0
30	a0	.2	0	0	0	0	.9	.2	a0	a0	a0	0
31	.2	-----	0	0	-----	.1	-----	.3	-----	a0	.1	-----
Total	5.8	7.2	1.2	0.1	0.1	0.5	18.8	10.3	16.7	6.9	7.2	2.1
Mean	0.19	0.24	0.04	0.003	0.003	0.02	0.63	0.33	0.56	0.22	0.23	0.07
Ac-ft	12	14	2.4	0.2	0.2	1.0	37	20	33	14	14	4.2

Calendar year 1963: Max 3.3 Min 0 Mean 0.19 Ac-ft 135
Water year 1963-64: Max 3.6 Min 0 Mean 0.21 Ac-ft 152

** Field estimate made on this day.

a No gage-height record.

Note.--Discharge computed from once-daily staff-gage readings Oct. 23-25, Nov. 14-16, Dec. 2 to Apr. 10.

7-1045. Templeton Gap Floodway at Colorado Springs, Colo.

Location.--Lat 38°53'17", long 104°49'01", in SE¼ sec.30, T.13 S., R.66 W., on left bank 75 ft upstream from mouth of concrete flume, 400 ft upstream from bridge on U. S. Highways 85 and 87, and three-quarters of a mile north of Colorado Springs.

Drainage area.--8.46 sq mi.

Records available.--July 1951 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 6,200 ft (from topographic map).

Average discharge.--13 years, 0.10 cfs (72 acre-ft per year).

Extremes.--Maximum discharge during year, 30 cfs May 29 (gage height, 1.55 ft), from rating curve based on computatior as explained below; no flow for most of year.

1951-64: Maximum discharge, 458 cfs July 2, 1956 (gage height, 2.63 ft), from rating curve based on computatior of flow at critical depth at gage heights, 1.3, 1.4, 1.8, and 3.0 ft; no flow for most of time.

Remarks.--Records excellent except those for period of no gage-height record, which are fair. Observation of no flow generally made once a month. This is an artificial channel constructed to divert flood flows from normally dry channels around Colorado Springs during periods of heavy rainfall.

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

May 29..... 6 May 30 0.1

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
May.....	6.1	6	0	0.20	12
Calendar year 1963....	5.8	5.6	0	.02	11
Water year 1963-64....	6.1	6	0	.02	12

Note.--Flow occurred only on days listed above. No gage-height record May 18 to June 9.

7-1065. Fountain Creek at Pueblo, Colo.

Location.--Lat 38°16'28", long 104°36'00", in SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.30, T.20 S., R.64 W., on left bank at downstream side of Eighth Street Bridge in Pueblo, 1.6 miles upstream from mouth.

Drainage area.--926 sq mi.

Records available.--January 1922 to September 1925, October 1940 to September 1964. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 4,663.45 ft above mean sea level, datum of 1929. Prior to Feb. 13, 1923, staff gage at site half a mile upstream at different datum. Feb. 13 to July 11, 1923, staff gage and July 12, 1923, to Sept. 30, 1925, water-stage recorder, within 200 ft of present site at various datums.

Average discharge.--27 years, 49.5 cfs (35,840 acre-ft per year).

Extremes.--Maximum discharge during year, 6,110 cfs Aug. 6 (gage height, 6.37 ft, from floodmark), from rating curve extended above 2,300 cfs on basis of float-area measurements at gage heights 8.00 and 9.00 ft; minimum daily, 0.6 cfs Aug. 26 to Sept. 1, Sept. 14. 1922-25, 1940-64: Maximum discharge, 17,800 cfs July 10, 1945 (gage height, 9.50 ft), from rating curve extended above 2,400 cfs on basis of slope-area measurement at gage height 8.05 ft; no flow at times.

Flood of June 4, 1921, discharge, 34,000 cfs, by slope-area measurement of peak flow. Flood of May 30, 1935, discharge, 35,000 cfs, by slope-area measurement of peak flow.

Remarks.--Records poor. Discharge measurements generally made twice a month. Diversions above station for irrigation of about 14,000 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	18	6.2	7.4	3.3	2.6	b 4.5	1.9	3.8	1.3	1.0	1.2	0.6
2	16	5.8	7.0	3.4	2.4	4.6	1.4	3.8	6.0	1.0	1.2	.7
3	14	5.5	9.2	3.1	2.1	3.9	1.3	3.6	4.8	1.0	1.2	.8
4	14	5.2	1.0	3.0	2.5	3.4	1.2	3.8	3.8	1.0	1.2	.7
5	11	5.0	9.6	2.8	2.6	3.3	1.2	3.6	3.2	1.0	1.0	.7
6	8.8	5.5	9.6	2.8	2.5	4.6	1.1	3.4	2.6	1.0	a 5.2	.7
7	7.4	6.0	9.2	2.9	1.9	5.0	1.0	3.4	2.4	1.0	a 6.0	.8
8	7.0	6.2	8.8	2.7	2.0	4.6	9.2	3.2	2.8	.9	a 2.0	.8
9	6.5	6.2	9.2	2.4	2.1	4.9	8.8	3.2	1.8	.9	a 1.8	.8
10	6.0	6.2	1.1	2.6	2.4	b 5.2	8.8	3.2	1.6	.9	a 1.0	.7
11	5.5	6.2	b 1.1	2.8	2.4	b 5.8	7.8	3.4	1.3	.8	a 7	.8
12	5.5	6.2	b 1.3	2.5	2.0	b 5.4	7.0	3.2	1.2	.8	5.0	.7
13	5.0	6.2	b 1.7	2.2	1.7	b 6.6	6.5	3.0	1.1	.8	4.0	.7
14	4.8	6.0	b 2.5	2.4	2.0	b 6.2	6.0	2.8	1.0	.8	3.2	.6
15	4.8	6.0	b 4.2	2.9	1.9	b 6.1	5.8	2.6	1.0	.8	2.6	.8
16	4.5	6.2	b 3.8	3.0	3.6	6.1	5.8	2.6	1.0	.8	2.2	2.6
17	4.5	9.2	4.4	3.3	5.7	6.1	5.2	2.6	1.0	.8	1.8	2.4
18	4.2	8.3	3.7	3.7	3.7	6.2	5.0	2.6	1.0	1.0	1.6	1.9
19	4.0	8.3	3.4	3.7	2.9	6.1	5.0	2.4	1.0	1.0	1.4	1.6
20	3.8	8.3	3.3	3.5	b 2.7	5.4	4.8	2.2	1.0	.9	1.2	1.4
21	3.6	8.3	3.3	3.5	b 2.5	5.1	4.5	2.2	1.0	.9	1.2	1.1
22	3.4	1.0	2.7	3.5	b 2.5	4.9	4.2	2.0	1.0	1.0	1.0	1.0
23	3.2	8.8	2.8	3.0	b 2.5	4.4	4.2	1.9	1.1	1.0	.9	.8
24	3.0	8.8	3.6	2.4	b 2.4	4.2	4.0	1.9	1.1	1.0	.8	.8
25	3.0	8.8	3.9	2.8	b 2.2	4.1	3.8	2.0	1.1	1.0	.7	.7
26	2.8	7.8	3.9	2.8	b 2.3	4.0	4.0	2.0	1.1	1.0	.6	.7
27	2.6	7.8	3.5	3.0	b 3.1	3.6	3.8	2.2	1.1	1.0	.6	.7
28	2.8	7.4	3.4	2.9	b 4.0	3.3	4.0	3.0	1.1	1.0	.6	.8
29	2.8	7.0	3.0	2.7	b 4.3	2.8	3.8	3.6	1.1	1.2	.6	.8
30	3.0	7.4	2.8	2.7	-----	2.7	3.8	1.26	1.0	1.3	.6	.8
31	5.8	-----	2.9	2.7	-----	2.5	-----	64	-----	1.3	.6	-----
Total	191.3	210.8	74.3	91.0	77.5	1,456	216.8	273.2	62.5	29.9	672.0	29.0
Mean	6.17	7.03	24.0	29.4	26.7	47.0	7.23	8.81	2.08	0.96	21.7	0.97
Ac-ft	379	418	1,470	1,800	1,540	2,890	430	542	124	59	1,330	58

Calendar year 1963: Max 857 Min 0.3 Mean 28.0 Ac-ft 20,300
 Water year 1963-64: Max 520 Min 0.6 Mean 15.2 Ac-ft 11,040

Peak discharge (base, 1,700 cfs)--Aug. 6 (about 2,330) 6,110 cfs (6.37 ft).

a No gage-height record.

b Stage-discharge relation affected by ice.

7-1110. Huerfano River at Manzanares Crossing, near Redwing, Colo.

Location.--Lat 37°43'40", long 105°21'00" (revised), in sec.5, T.27 S., R.71 W., on left bank at Manzanares Crossing, 500 ft downstream from private bridge, a quarter of a mile downstream from Manzanares Creek, and 3½ miles southwest of Redwing.

Drainage area.--73 sq mi.

Records available.--July 1923 to September 1964. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Altitude of gage is 8,270 ft, revised (from topographic map). Prior to Sept. 8, 1934, at sites about 500 ft upstream at different datums. Sept. 8, 1934, to Mar. 15, 1937, at datum 1.36 ft higher, Mar. 16, 1937, to Sept. 30, 1945, at datum 0.86 ft higher, and Oct. 1, 1945, to Apr. 25, 1946, at datum 0.36 ft higher than present datum.

Average discharge.--41 years, 32.5 cfs (23,530 acre-ft per year).

Extremes.--Maximum discharge during year, 53 cfs May 27 (gage height, 1.09 ft), from rating curve extended above 39 cfs; minimum daily, 4.6 cfs Jan. 9-21.

1923-64: Maximum discharge, 10,200 cfs Aug. 2, 1951 (gage height, 8.14 ft), from rating curve extended above 270 cfs on basis of slope-area measurement of peak flow; minimum daily determined, 4 cfs Jan. 22, 1937.

Remarks.--Records good except those for December to March, which may be 50% low. Discharge measurements generally made twice a month. Diversions above station for irrigation of about 1,800 acres.

Note.--Records for June to August 1957 are in error. Revised records for this period are on file in District Office and will be published in a later water supply paper.

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

Oct. 1 to Mar. 31		Apr. 1 to Sept. 30	
0.2	4.0	0.4	7.0
.5	21	.6	16
		1.1	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	19	14	5.3	5.0	5.0	5.7	10	11	27	18	19	10
2	19	14	5.3	5.0	5.0	5.7	9.0	11	26	15	35	9.0
3	20	15	5.3	5.0	5.0	5.7	9.0	9.8	26	15	29	9.8
4	19	15	5.3	5.0	5.0	5.7	7.0	12	25	14	31	12
5	19	15	5.3	5.0	5.0	5.7	7.8	11	24	13	26	12
6	18	15	5.3	5.0	5.1	5.7	7.8	10	26	12	22	11
7	18	15	5.3	5.0	5.1	5.7	8.6	12	26	12	26	12
8	17	15	5.3	5.0	5.1	5.7	8.6	11	31	13	31	9.8
9	17	16	5.3	4.6	5.1	5.7	8.6	12	28	14	25	9.4
10	17	16	5.3	4.6	5.1	5.7	11	12	28	21	22	9.4
11	16	16	5.3	4.6	5.1	15	12	14	28	18	21	11
12	16	16	5.3	4.6	5.1	15	12	15	28	17	23	9.4
13	15	16	5.3	4.6	5.1	15	11	16	28	16	30	9.0
14	15	16	5.3	4.6	5.1	15	12	18	27	14	26	14
15	16	16	5.3	4.6	4.8	15	16	23	28	12	24	14
16	15	15	5.3	4.6	4.8	15	19	37	27	13	22	15
17	15	b14	5.3	4.6	4.8	15	20	41	26	14	21	14
18	15	b13	5.3	4.6	4.8	15	17	41	24	22	18	14
19	14	12	5.0	4.6	4.8	13	16	36	23	17	19	16
20	16	12	5.0	4.6	4.8	13	15	35	22	16	22	17
21	15	12	5.0	4.6	4.8	13	14	36	21	14	23	16
22	15	12	5.0	5.0	4.8	12	15	42	19	16	21	16
23	15	9.2	5.0	5.0	5.2	12	16	43	17	15	18	15
24	16	9.2	5.0	5.0	5.2	12	16	44	17	16	15	15
25	14	9.2	5.0	5.0	5.2	12	14	44	15	28	14	16
26	14	9.2	5.0	5.0	5.2	11	12	47	16	24	14	16
27	14	9.2	5.0	5.0	5.2	11	11	49	15	22	14	18
28	15	9.2	5.0	5.0	5.7	11	10	42	14	21	12	17
29	14	9.2	5.0	5.0	5.7	10	12	35	15	20	12	16
30	14	9.2	5.0	5.0	-----	10	9.8	31	21	19	11	15
31	14	-----	5.0	5.0	-----	10	-----	28	-----	17	9.8	-----
Total	496	393.6	160.4	149.8	146.7	327.0	367.2	828.8	698	518	655.8	397.8
Mean	16.0	13.1	5.17	4.83	5.06	10.5	12.2	26.7	23.3	16.7	21.2	13.3
Ac-ft	984	781	318	297	291	649	728	1,640	1,380	1,030	1,300	789

Calendar year 1963: Max 42 Min - Mean 16.2 Ac-ft 11,750
 Water year 1963-64: Max 49 Min 4.6 Mean 14.0 Ac-ft 10,190

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

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 19 to Apr. 2 (stage-discharge relation affected by ice during most of period).

ARKANSAS RIVER BASIN

7-1140. Cucharas River at Boyd Ranch, near La Veta, Colo.

Location (revised).--Lat 37°27'12", long 105°03'08", in SE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.24, T.30 S., R.69 W., on left bank at Boyd Ranch, 29 ft. downstream from private bridge, 1.4 miles downstream from Chaparral Creek, and 6.5 miles southwest of La Veta.

Drainage area.--56 sq mi.

Records available.--October 1934 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,781 ft (from topographic map).

Average discharge.--30 years, 24.7 cfs (17,880 acre-ft per year).

Extremes.--Maximum discharge during year, 87 cfs May 26 (gage height, 2.11 ft); minimum not determined.

1934-64: Maximum discharge, 444 cfs May 23, 1955 (gage height, 4.05 ft); minimum daily, 2 cfs for several days November 1934 to January 1935, Sept. 29, 1950.

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 500 acres above station.

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

1.0	4.0	1.7	44
1.2	10	2.1	89
1.4	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	5.2	6.1					14	29	55	20	12	7.0
2	5.2	5.8					13	30	52	19	14	6.4
3	5.2	6.1					12	28	51	19	15	6.4
4	4.9	5.8					11	27	51	18	15	6.7
5	4.6	5.8					9.8	27	49	18	13	7.4
6	4.6	5.8					9.1	26	47	18	12	7.4
7	4.6	5.8					8.8	26	47	18	12	6.7
8	4.6	5.8				5.2	9.4	26	50	18	13	6.4
9	4.3	5.8					8.8	26	46	18	10	7.0
10	4.3	5.8					10	25	45	18	9.8	7.4
11	4.6	6.1					13	24	41	17	11	7.7
12	4.9	6.1					14	26	43	18	13	7.4
13	4.9	5.8					13	29	44	17	11	6.7
14	4.9	5.8					15	32	40	16	11	7.7
15	4.9	5.5					21	33	40	15	11	11
16	4.6	5.5	6.0	5.8	5.0		33	37	40	18	9.1	11
17	5.2	b 5.9					36	41	38	18	9.1	9.1
18	4.9	b 6.3					36	47	37	17	8.4	7.7
19	4.6	b 6.7					39	47	35	16	8.0	8.8
20	6.4	b 7.1					38	44	33	15	8.8	10
21	6.1	7.4				8.0	32	46	32	15	8.4	9.1
22	5.5	b 7.4					34	49	30	14	8.4	9.1
23	5.5	b 7.4					35	52	29	13	8.4	8.0
24	5.5	b 6.9					38	52	28	15	8.0	8.0
25	5.2	b 6.9					38	52	27	16	7.7	7.4
26	5.2	6.9				9.0	32	63	25	15	7.7	7.4
27	4.9	6.9				10	27	72	24	14	7.7	7.7
28	4.9	6.9				10	24	69	23	15	7.4	7.4
29	4.9	6.9				10	27	61	21	15	7.0	7.4
30	4.9	6.9				11	26	62	21	15	7.4	6.4
31	5.5					12		58		13	7.0	
Total	155.5	189.9	186.0	179.8	145.0	220.0	676.9	1,266	1,144	511	311.3	233.8
Mean	5.02	6.33	6.0	5.8	5.0	7.10	22.6	40.8	38.1	16.5	10.0	7.79
Ac-ft	308	377	369	357	288	436	1,340	2,510	2,270	1,010	617	464

Calendar year 1963: Max 16 Min - Mean 6.66 Ac-ft 4,830
 Water year 1963-64: Max 72 Min - Mean 14.3 Ac-ft 10,350

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

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 26 to Mar. 30 (stage-discharge relation affected by ice during most of period).

7-1160. Huerfano River below Huerfano Valley Dam, near Undercliffe, Colo.

Location.--Lat 38°00', long 104°28', in S½ sec.32, T.23 S., R.63 W., at left end of diversion dam for Huerfano Valley ditch, 8 miles southwest of Undercliffe.

Drainage area.--1,673 sq mi.

Records available.--October 1939 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 4,886.29 ft above mean sea level, datum of 1929. Prior to July 26, 1950, at site 0.3 mile downstream at datum 14.27 ft lower and July 26, 1950, to Dec. 15, 1954, at site 0.3 mile downstream at datum 16.27 ft lower.

Average discharge.--25 years, 37.5 cfs (27,150 acre-ft per year).

Extremes.--Maximum discharge during year, 1,500 cfs Aug. 4 (gage height, 3.43 ft), from rating curve extended above 380 cfs as explained below; no flow for many days.

1939-64: Maximum discharge, 16,800 cfs July 5, 1958 (gage height, 14.5 ft), from rating curve extended above 380 cfs on basis of computation of flow over dam at gage heights 11.04 and 14.5 ft; no flow at times in nearly every year.

Maximum stage and discharge known since at least 1900, that of July 5, 1958, from information by local residents.

Remarks.--Records poor. Discharge measurements or observations of no flow generally made twice a month. Diversions above station for irrigation of about 43,000 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	0	1.8	0.8	0	0.6	1.4	3	0	1.7	0	0	0	
2	0	1.3	.9	.7	.3	8.2		0	1.1	0	0	0	
3	0	1.4	1.2	.6	0	9.4		0	1.2	0	0	0	
4	0	1.4	.6	.5	0	4.2		0	.7	0	110	0	
5	0	1.1	.6	.3	0	3.8		0	0	0	6.4	0	
6	0	1.3	.8	.1	0	5.4	0	0	0	47	0		
7	0	1.1	.7		0	0	4.2	5	0	0	118	0	
8	0	.8	.3		0	0	3.3	90	0	0	43	0	
9	0	.6			0	0	5.9	4.6	0	0	0	.2	0
10	0	.5			1.1	3.2	3.2	5.9	2.2	0	0	0	0
11	0	.4		2.4	3.4	5.1	.1	0	0	.3	0	0	
12	0	.5		3.2	5.9	5.1	.2	0	0	.2	0	0	
13	0	.6	2.4	5.1	6.2	.1	0	0	0	0	0		
14	0	.7	1.5	6.2	5.4	.1	0	0	0	0	0		
15	0	.6	1	5.4	.1	0	0	0	0	0	55		
16	0	.5	.1	.2	1	6.0	0	0	0	0	0	8.1	
17	0	1.5		.3	2	5.9	0	0	0	0	0	3	
18	0	.5		.4	2.0	4.3	0	0	0	0	0	0	
19	0	.3		.5	1.9	4.5	0	0	0	7.2	0	0	
20	26	.8		.7	1.5	5.9	0	0	0	8.5	0	0	
21	18	.7	.1	.8	3.1	4.5	0	0	0	.5	3	0	
22	2.4	.5		1.0	1.7	0	0	0	0	.1	6	0	
23	1.0	1.2		1.1	.7	3	0	0	0	0	1.1	0	
24	.6	.4		1.2	2.1	0	0	0	0	0	0	0	
25	.3	.5		1.2	.9	0	0	0	0	.2	0	0	
26	.2	.3	0	1.0	.9	4	0	0	0	0	0		
27	.3	.5	0	.8	1.0	0	0	0	0	0	0		
28	.3	.6	0	.6	1.1	0	0	0	0	0	0		
29	.4	.6	0	.6	1.3	3	0	0	0	0	0		
30	.4	.5	0	.9	-----	0	0	.3	0	0	0		
31	.9	-----	0	.6	-----	-----	4.0	-----	0	0	-----		
Total	50.8	22.5	9.0	15.0	33.7	137.1	40.2	4.3	4.7	81.8	33.47	66.1	
Mean	1.64	0.75	0.29	0.48	1.16	4.42	1.34	0.14	0.16	2.64	10.8	2.20	
Ac-ft	101	45	18	30	67	272	80	8.5	9.3	162	664	131	

Calendar year 1963: Max - Min 0 Mean 6.62 Ac-ft 4,790
 Water year 1963-64: Max 118 Min 0 Mean 2.19 Ac-ft 1,590

Note.--Discharge estimated Oct. 1-19, Dec. 8 to Jan. 1, Jan. 4-21, Feb. 2-9, 14-17, 26, 28, Mar. 22 to Apr. 7, Aug. 4-17, 21-23, Sept. 15-17.

7-1170, Arkansas River near Nepesta, Colo.

Location.--Lat 38°10'54", long 104°09'40", in NW¼ sec.31, T.21 S., R.60 W., on right bank 185 ft (revised) downstream from diversion dam of Oxford Farmers Co. canal, 1.3 miles northwest of Nepesta, and 7.3 miles downstream from Huerfano River.

Drainage area.--9,345 sq mi, of which 54 sq mi is probably noncontributing.

Records available.--April to October 1903, April to November 1912, October 1913 to September 1964. Monthly discharge only for some periods, published in WSP 1311. Records originally published for October 1933 to June 1936 did not include diversion to Oxford Farmers Co. canal, but monthly figures only for this period have been adjusted for diversion and published in WSP 1311.

Records for river below Oxford Farmers Co. canal (diversion to canal not included), published as "at Nepesta," September 1897 to October 1902 (irrigation seasons only), April to October 1904, June 1906 to September 1908 (irrigation seasons only), September 1909 to December 1910, February to September 1911 (gage heights and discharge measurements only), October 1911 to November 1912, March to August 1913 (discharge measurements only), October 1913 to September 1936. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorders on river and on Oxford Farmers Co. canal. Datum of river gage is 4,378.68 ft above mean sea level, datum of 1929. Prior to June 5, 1921, staff gages or water-stage recorders at various sites within 5 miles upstream and 2 miles downstream at different datums. June 5, 1921, to Oct. 1, 1952, water-stage recorders at sites on river or river and canal within 300 ft at approximately present datum.

Average discharge.--51 years (1913-64), 688 cfs (498,100 acre-ft per year).

Extremes.--Maximum discharge during year, 5,850 cfs Aug. 7; minimum daily, 55 cfs May 16.

1897-1904, 1906-12, 1913-64: Maximum discharge, 180,000 cfs June 4, 1921 (gage height not determined), by slope-area measurement of peak flow at point 9 miles upstream; no flow at times in 1902, 1910, 1931, 1934.

Remarks.--Records fair except those for periods of no gage-height record on river, which are poor. Discharge measurements generally made three or more times a month. Discharge computed by combining discharge of river below canal with that of Oxford Farmers Co. canal. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 230,000 acres, and return flow from irrigated areas.

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	178	238	248	342	293	269	286	102	687	1,240	505	235
2	157	249	231	378	283	301	258	75	976	1,100	444	220
3	141	304	266	398	268	308	276	92	1,050	1,060	466	152
4	136	327	243	399	324	284	313	123	1,000	1,050	560	135
5	144	322	280	357	290	267	266	135	1,070	809	1,420	142
6	128	292	256	305	278	280	248	105	1,010	737	615	133
7	117	300	248	359	223	347	265	76	1,040	758	2,140	137
8	137	276	193	344	214	356	287	65	1,500	712	1,250	129
9	137	298	200	325	215	318	261	69	1,540	707	1,130	145
10	114	275	190	295	309	324	232	69	1,340	721	861	147
11	133	184			337	332	211	60	1,430	737	735	187
12	135	231			362	336	251	85	1,450	661	718	235
13	97	219			350	328	291	67	1,460	579	695	222
14	94	219			324	344	267	81	1,600	496	674	193
15	107	216			304	303	239	90	1,510	406	1,050	270
16	115	198		180	312	309	190	55	1,420	390	618	501
17	112	204			300	321	187	66	1,670	486	518	331
18	116	234			323	332	256	121	1,440	612	536	249
19	123	270			308	353	276	212	1,580	692	439	163
20	102	263			303	371	275	364	1,310	601	336	165
21	178	256			347	305	344	488	1,380	490	380	284
22	170	291			311	349	306	252	1,110	1,220	351	447
23	197	252			323	307	289	206	2,010	1,080	301	372
24	157	270			265	323	330	142	1,690	991	307	306
25	141	258			236	355	315	130	1,910	777	326	268
26	128	251	380	247	307	292	113	2,090	712	759	228	125
27	134	209	438	283	319	294	110	2,260	800	706	228	127
28	181	250	443	324	276	279	162	1,920	932	552	193	140
29	199	243	457	300	281	266	136	2,110	1,070	540	194	146
30	190	285	408	286		268	126	1,770	1,210	702	191	116
31	195		379	282		275		867		593	166	
Total	4,393	7,684	7,710	8,506	8,742	9,641	6,797	20,337	36,255	20,161	18,683	6,089
Mean	142	256	249	274	301	311	227	656	1,208	650	603	203
Ac-ft	8,710	15,240	15,290	16,870	17,340	19,120	13,480	40,340	71,910	39,990	37,060	12,080

Calendar year 1963: Max 1,900 Min 43 Mean 343 Ac-ft 248,100
 Water year 1963-64: Max 2,260 Min 55 Mean 423 Ac-ft 307,400

Note.--No gage-height record on river Dec. 9-26, Jan. 9-20 (stage-discharge relation affected by ice during most of periods), May 16, 17, Aug. 31, Sept. 4-9 and on canal Dec. 10-26, Jan. 9-19 (stage-discharge relation affected by ice during most of periods).

7-1195. Apishapa River near Fowler, Colo.

Location.--Lat 38°05'28", long 103°58'52", in SE¼NW¼ sec.35, T.22 S., R.59 W., near right bank on downstream side of county highway bridge, 4 miles southeast of Fowler and 5.4 miles upstream from mouth.

Drainage area.--1,125 sq mi.

Records available.--April 1922 to September 1925, May 1939 to September 1964. Monthly discharge only for some periods, published in WSP I311.

Gage.--Water-stage recorder. Datum of gage is 4,317.05 ft above mean sea level, datum of 1929. Prior to Aug. 29, 1923, at site 3 miles downstream at different datum. Aug. 29, 1923, to Sept. 30, 1925, at present site at different datum.

Average discharge.--28 years, 34.4 cfs (24,900 acre-ft per year).

Extremes.--Maximum discharge during year, 1,460 cfs May 27 (gage height, 5.98 ft), from rating curve extended above 270 cfs on basis of slope-area measurement of peak flow; minimum daily, 0.6 cfs July 6, 7, Sept. 9, 10.

1922-25, 1939-64: Maximum discharge, 83,000 cfs Aug. 22, 1923, by slope-area measurement 2 miles upstream from present station, caused by failure of Apishapa Dam 31 miles upstream; no flow Feb. 5, 1951.

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. Waste water from Oxford Farmers Co. and Rocky Ford Highline canals enters river above station. Diversions above station for irrigation of about 4,700 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	7	4	4.7	4.4	5.3	5.3	2.3	1.0	4	8.5	1.0	0.7
2	6	4	6.0	5.6	b9	4.1	3.2	.9	3.8	9.7	1.0	.7
3	5	4	6.4	5.6	b21	5.3	3.2	.9	4.7	4.4	1.0	.7
4	4	4.4	6.4	b 6.5	1.8	4.1	2.9	.9	6.8	2.4	1.2	.9
5	3	3.2	6.4	4.4	1.9	8.5	2.0	.9	10	1.6	6.7	1.0
6	2.5	2.3	5.6	4	b16	14	2.1	.9	18	.6	1.8	.9
7	2.1	3.8	b5.5	4.7	1.7	14	2.0	.9	6.4	.6	6.8	.7
8	2.0	6.4	b6	4.5	1.7	1.5	1.5	.8	14	.7	2.6	.7
9	3.5	6.8	b7	4	b18	14	1.3	.9	1.9	.7	2.3	.6
10	3.5	5.3	1.3	4	b10	12	1.3	1.2	1.9	.8	1.5	.6
11	3.5	5.3	2.0	4	5.6	12	1.2	1.2	1.7	1.0	.8	.7
12	3.2	6.0	10	3.5	8.9	14	1.8	.9	11	1.5	.7	.7
13	3.2	5.0	9	3	7.2	11	1.6	.9	10	.9	.7	.7
14	2.3	4.7	8.5	3	6.0	9.3	1.8	.9	4.4	.8	1.8	.9
15	2.0	6.8	8	3.5	b7	5.3	1.8	.9	8.5	.7	2.4	1.0
16	2.1	9.3	9	3.5	b18	4.4	1.0	1.0	8.9	.7	1.5	1.6
17	2.6	14	8.5	2.9	b12	2.9	.9	.8	6.4	.8	1.6	2.1
18	2.4	9.7	8.5	2.4	7.2	3	1.2	.8	4.7	.8	1.0	4.7
19	2.0	6.4	8	2.3	7.2	2.9	.9	1.0	3.8	.7	1.0	2.1
20	2.9	3.5	7	2.9	8.1	2	.8	.9	3.2	.9	1.0	2.1
21	2.9	2.3	4.7	4.1	7.2	2.5	8	.9	4.7	1.2	1.2	2.0
22	1.5	4.7	4	4.4	10	2.5	8	.9	5.0	1.2	1.2	1.6
23	7.2	7.2	4.5	1.8	6.8	2.5	8	.9	6.0	1.0	1.2	1.2
24	6.0	8.9	5.5	1.8	5.3	2	.9	1.3	5.6	.9	1.3	1.2
25	5.5	6.0	6.5	4.1	4.7	2	.9	1.8	5.0	1.0	1.5	1.0
26	5	8.5	6	5.3	6.4	2	.9	1.8	3.8	1.0	1.5	.9
27	4.5	6.4	5.6	5.3	5.6	2	1.5	3.59	3.8	.9	.9	1.2
28	4.5	3.8	4.4	5.6	5.6	2	1.5	14	4.4	1.2	8	1.8
29	4	3.5	4.1	5.3	5.0	2	.9	7	5.3	4.1	.8	2.0
30	4	3.2	5.0	5.6	-----	2	1.0	5	5.3	1.6	.8	.8
31	4.5	-----	4.7	5.6	-----	2.5	-----	4.5	-----	1.8	.8	-----
Total	154.0	169.4	218.5	127.6	294.1	187.1	44.8	415.7	232.5	54.7	128.9	71.1
Mean	4.97	5.65	7.05	4.12	10.1	6.04	1.49	13.4	7.75	1.76	4.16	2.37
Ac-ft	305	336	433	253	583	371	89	825	461	108	256	141

Calendar year 1963: Max 603 Min 0.9 Mean 13.6 Ac-ft 9,820
 Water year 1963-64: Max 359 Min 0.6 Mean 5.73 Ac-ft 4,160

Peak discharge (base, 3,000 cfs).--No peak above base.

b Stage-discharge relation affected by ice.
 Note.--No gage-height record Oct. 1-6, Oct. 25 to Nov. 3, Dec. 10-20, 22-26, Jan. 6, 8-15, Feb. 4, 5, 7, 8 (stage-discharge relation affected by ice during part of periods), Mar. 9, 10, 18, 20-31, May 28 to June 1, Aug. 6.

7-1230. Arkansas River at La Junta, Colo.

Location.--Lat 37°59', long 103°32' (revised), in NE¼ sec.2, T.24 S., R.55 W., on downstream side near middle of bridge on State Highway 109 in La Junta, 500 ft upstream from King Arroyo.

Drainage area.--12,210 sq mi, of which 115 sq mi is probably noncontributing.

Records available.--May to August 1889, September 1893 to December 1895 (gage heights, discharge measurements, and flood data only), April to October 1903, June to November 1908 (gage heights and discharge measurements only), April 1912 to September 1964. Monthly discharge only for some periods, published in WSP 1311. Published as "near La Junta" in 1903.

Gage.--Water-stage recorder, and chain gage read twice daily. Datum of gage is 4,039.60 ft above mean sea level, datum of 1929. Prior to Apr. 11, 1912, staff gages at several sites within 2 miles at various datums. Apr. 11, 1912, to June 12, 1940, water-stage recorder and staff or chain gages at several sites within 1 mile at various datums.

Average discharge.--52 years (1912-64), 254 cfs (183,900 acre-ft per year).

Extremes.--Maximum discharge during year, 2,630 cfs May 27 (gage height, 5.94 ft); minimum daily, 2.8 cfs Feb. 10. 1889, 1893-95, 1903, 1908, 1912-64: Maximum discharge, 200,000 cfs June 4, 1921 (gage height, 18.4 ft, at present site, datum then in use), from rating curve extended above 15,000 cfs on basis of slope-area measurement of peak flow; no flow Jan. 20-23, Mar. 20-22, 1915.

Remarks.--Records poor. Discharge measurements generally made once a week. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 400,000 acres, and return flow from irrigated areas.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-8, Dec. 11 to Jan. 16, May 20-23, June 1-3, June 28 to July 5, Sept. 27-30)

3.3	0	4.1	106
3.4	4.0	4.4	230
3.5	10	4.7	400
3.7	29	5.0	660
3.9	58	5.3	1,040

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	6.5	38	32	23	4.6	21	15	36	17	542	130	93
2	12	37	32	28	14	14	42	36	33	610	62	83
3	8.2	56	23	22	15	11	41	33	29	488	90	144
4	8.2	71	14	8.8	1.8	8.8	44	41	42	407	140	109
5	12	80	14	19	13	7.0	73	41	47	479	255	73
6	22	73	14	26	4.0	29	69	34	52	310	533	103
7	21	55	b14	20	5.8	32	22	34	60	148	414	113
8	23	33	b14	20	4.6	25	9.4	34	76	160	421	60
9	36	34	b14	24	3.2	30	9.4	37	101	133	156	38
10	38	42	b14	27	2.8	26	34	34	141	96	240	29
11	41	42	14	23	3.2	37	52	34	101	116	230	50
12	41	36	14	18	7.0	30	30	41	98	156	168	60
13	38	39	14	17	6.4	33	25	42	103	176	152	80
14	39	38	14	17	5.8	29	28	41	116	83	130	78
15	41	34	15	19	15	32	23	36	140	58	116	113
16	39	38	19	20	11	36	33	37	120	44	428	133
17	41	52	21	27	8.8	28	20	42	168	69	185	152
18	39	42	25	19	13	17	8.2	36	185	56	53	126
19	48	34	30	14	9.4	20	15	41	144	101	80	120
20	48	45	35	14	7.0	60	32	36	106	156	45	73
21	50	33	45	7.6	6.4	67	27	36	101	103	56	78
22	20	34	40	5.2	8.2	55	15	33	103	41	78	73
23	27	36	38	4.6	7.0	67	15	320	145	50	103	76
24	44	44	38	6.4	5.8	52	15	560	382	53	120	71
25	36	48	38	5.2	11	37	15	630	382	65	113	71
26	30	52	26	5.2	8.2	58	16	1,020	260	69	98	76
27	34	58	22	5.2	14	55	27	935	144	96	85	69
28	36	48	22	5.8	7.6	28	34	710	164	109	85	52
29	39	32	25	5.2	12	21	38	580	235	130	85	48
30	34	38	25	4.6	-----	15	37	435	421	103	93	52
31	38	-----	26	4.6	-----	15	-----	22	-----	56	101	-----
Total	1,048.4	1,342	731	465.4	251.8	995.8	864.0	6,027	4,216	5,263	5,045	2,496
Mean	33.8	44.7	23.6	15.0	8.68	32.1	28.8	194	141	170	163	83.2
Ac-ft	2,080	2,660	1,450	923	499	1,980	1,710	11,950	8,360	10,440	10,010	4,950

Calendar year 1963: Max 1,170 Min 1.9 Mean 78.9 Ac-ft 57,140
Water year 1963-64: Max 1,020 Min 2.8 Mean 78.5 Ac-ft 57,010

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 11-24, Jan. 10-16 (stage-discharge relation affected by ice during most of periods). Discharge computed from twice-daily chain-gage readings Oct. 1 to Dec. 10, Dec. 25 to Jan. 9, Jan. 17 to May 22, May 31, June 1, Aug. 1 to Sept. 14.

7-1240. Arkansas River at Las Animas, Colo.

Location.--Lat 38°05'08", long 103°12'50", in SW¼ sec.35, T.22 S., R.52 W., on left bank 0.4 mile downstream from bridge on U. S. Highway 50, 1.5 miles north of courthouse in Las Animas, and 3½ miles upstream from Purgatoire River.

Drainage area.--14,417 sq mi, of which 441 sq mi is probably noncontributing.

Records available.--May to November 1898 (gage heights only), August to November 1909 (gage heights and discharge measurements only), May 1939 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 3,874.97 ft above mean sea level, datum of 1929. May 13 to Nov. 12, 1898, and Aug. 1 to Nov. 10, 1909, staff gage within half a mile of present site at different datum.

Average discharge.--25 years, 223 cfs (161,400 acre-ft per year).

Extremes.--Maximum discharge during year, 1,600 cfs Aug. 7 (gage height, 10.02 ft); minimum daily, 0.9 cfs July 31, Aug. 1, 3. 1939-64: Maximum discharge, 44,000 cfs May 20, 1955 (gage height, 15.03 ft), from rating curve extended above 24,000 cfs on basis of slope-area measurement of peak flow; minimum daily, that of July 31, Aug. 1, 3, 1964.

Remarks.--Records good except those for periods of ice effect or no gage height record, which are fair. Discharge measurements generally made once a week. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 412,000 acres, and return flow from irrigated areas.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Feb. 18-29, May 31 to June 5, July 6-13, 21, Aug. 6-8, Aug. 30 to Sept. 30)

6.8	0	7.1	28	7.8	280
6.9	3.0	7.2	52	8.3	540
7.0	13	7.4	111	9.0	950

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	5.0	7.0	13	34	9.0	13	10	8.0	123	280	0.9	35
2	4.0	7.0	13	35	10	13	9.0	7.0	72	400	2.4	40
3	4.0	5.0	13	27	11	13	10	7.0	33	410	.9	50
4	3.0	7.0	12	25	13	13	14	8.0	16	320	35	74
5	2.7	7.0	10	24	19	12	16	9.0	12	271	134	38
6	2.7	8.0	10	23	12	12	22	8.0	16	262	230	11
7	3.0	7.0	11	22	18	12	42	19	16	142	646	24
8	4.0	7.0	10	20	18	12	14	12	12	60	258	52
9	4.0	7.0	6.0	18	18	20	11	8.0	9.0	58	105	40
10	5.0	6.0	3.0	15	18	19	11	8.0	12	28	52	24
11	5.0	6.0	12	13	16	16	12	9.0	38	2.4	105	22
12	6.0	6.0	8.0	12	19	13	12	9.0	14	13	92	26
13	5.0	7.0	10	12	19	11	10	9.0	13	33	72	33
14	4.0	7.0	18	13	19	11	9.0	7.0	13	52	58	47
15	5.0	9.0	18	13	16	12	13	8.0	13	7.0	30	42
16	8.0	10	16	14	20	13	7.0	10	16	7.0	45	33
17	11	13	14	16	16	12	6.0	12	11	10	134	25
18	8.0	9.0	15	18	11	12	6.0	13	13	13	42	24
19	7.0	9.0	18	20	11	11	5.0	12	16	14	16	14
20	6.0	9.0	9	22	11	11	5.0	60	6.0	11	10	25
21	6.0	8.0	5	24	11	12	12	69	5.0	38	13	22
22	7.0	7.0	8	24	11	10	16	13	4.0	3.0	22	22
23	6.0	7.0	12	22	16	9.0	9.0	7.0	6.0	1.5	28	19
24	6.0	6.0	20	18	18	12	9.0	300	40	1.8	38	19
25	8.0	5.0	30	18	11	12	8.0	335	208	2.7	63	20
26	6.0	7.0	30	18	13	12	7.0	524	190	10	63	14
27	5.0	7.0	31	18	13	13	6.0	628	123	9.0	55	14
28	5.0	7.0	32	18	14	13	6.0	573	66	3.0	42	20
29	6.0	7.0	32	14	14	11	7.0	512	63	2.4	35	19
30	5.0	13	33	11	-----	10	8.0	740	127	5.0	33	12
31	6.0	-----	33	10	-----	10	-----	340	-----	.9	33	-----
Total	168.4	227.0	505.0	591	425.0	385.0	332.0	4,284.0	1,306.0	2,470.7	2,493.2	860
Mean	5.43	7.57	16.3	19.1	14.7	12.4	11.1	138	43.5	79.7	80.4	28.7
Ac-ft	334	450	1,000	1,170	843	764	659	8,500	2,590	4,900	4,950	1,710

Calendar year 1963: Max 540 Min 2.7 Mean 51.1 Ac-ft 36,970
Water year 1963-64: Max 740 Min 0.9 Mean 38.4 Ac-ft 27,870

Note.--Stage-discharge relation affected by ice Dec. 15 to Jan. 21 (no gage-height record Jan. 2-6, 11-14).

ARKANSAS RIVER BASIN

7-1245. Purgatoire River at Trinidad, Colo.

Location.--Lat 37°10'15", long 104°30'31", in SW 1/4 sec.13, T.33 S., R.64 W., on left bank 90 ft downstream from railroad bridge, 680 ft downstream from Animas Street Bridge in Trinidad.

Drainage area.--795 sq mi.

Records available.--October 1895 to September 1899, August to December 1905, November 1906 to March 1907, October 1907 to November 1908, May to August 1909 (gage heights and discharge measurements only), September 1909 to November 1912, October 1915 to September 1960, October 1962 to September 1964. Monthly discharge only for some periods, published in WSP 1311. Prior to October 1915, published as "Purgatory River."

Gage.--Water-stage recorder. Datum of gage is 5,979.76 ft above mean sea level, datum of 1929. May 1, 1896, to July 31, 1899, staff gage on downstream side of Animas Street Bridge 680 ft upstream at datum 1.7 ft higher. Aug. 25, 1905, to Nov. 30, 1912, chain gage on upstream side of Animas Street Bridge at present datum. Apr. 1, 1916, to Nov. 10, 1921, inclined gage painted on concrete bank protection wall at site 410 ft downstream at right bank and 200 ft upstream from Commercial Street Bridge at datum 0.99 ft lower. Nov. 11, 1921, to Nov. 30, 1922, water-stage recorder at site about three-quarters of a mile upstream and 150 ft downstream from former Main Street Bridge at different datum. Dec. 1, 1922, to Mar. 19, 1934, water-stage recorder at site about half a mile upstream at different datum. Mar. 20, 1934, to Dec. 10, 1950, water-stage recorder at site 1,490 ft upstream at foot of State Street at datum 7.00 ft higher. Dec. 11, 1950, to Sept. 30, 1955, water-stage recorder at site 180 ft upstream at datum 2.00 ft higher. Since May 30, 1955, supplemental chain gage at site 90 ft upstream on downstream side of railroad bridge; at datum 3.00 ft lower prior to Oct. 1, 1962, and at present datum thereafter.

Average discharge.--55 years (1895-99, 1907-8, 1909-12, 1915-60, 1962-64), 88.6 cfs (64,140 acre-ft per year).

Extremes.--Maximum discharge during year, 5,800 cfs Aug. 7 (gage height, 5.63 ft), from rating curve extended above 1,900 cfs; minimum daily, 3.7 cfs Sept. 2.

1895-99, 1905-12, 1915-60, 1962-64: Maximum discharge, 28,000 cfs May 19, 1955 (gage height, 14.35 ft, site and datum then in use), from rating curve extended above 2,800 cfs on basis of indirect measurements of peak flow above and below station; no flow for several days during summer of 1896, June 11, 1950, Sept. 20, 25, 28, 29, Oct. 3-5, 7, 8, 1956.

Maximum discharge known since at least 1859, 45,400 cfs Sept. 30, 1904 (gage height, 16.6 ft, at site 680 ft upstream), by slope-area measurement of peak flow.

Remarks.--Records fair except those for July to September and those for periods of no gage-height record, which are poor. Discharge measurements made two or more times a month. Diversions above station for irrigation of about 6,500 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	28	22	14	20	16	13	28	27	79	66	26	4.6
2	26	23	14	21	14	13	30	28	314	38	49	3.7
3	28	27	14	19	10	11	32	27	142	26	71	14
4	27	28	14	18	11	12	28	27	63	17	1020	15
5	24	26	80	17	13	13	28	27	63	15	55	24
6	23	23	18	17	11	12	40	28	36	16	31	63
7	23	22	14	17	10	9	42	30	66	16	1190	24
8	21	22	14	15	10	8	38	30	116	21	553	19
9	20	22	14	12	11	7	42	26	112	145	109	16
10	22	22	13	13	12	11	44	26	60	77	24	17
11	23	21	12	13	11	14	47	30	63	46	21	20
12	20	21	12	11	10	23	46	26	142	36	20	20
13	17	21	12	10	10	22	36	30	109	36	28	17
14	17	20	12	10	9	13	32	35	90	35	23	16
15	19	17	12	11	10	17	33	42	74	36	27	44
16	20	15	13	12	10	19	38	40	97	31	31	49
17	18	16	14	13	10	15	53	38	175	40	33	32
18	16	23	15	13	10	19	63	53	175	202	33	30
19	14	23	16	14	10	33	60	101	120	71	35	24
20	31	27	16	17	9	26	51	79	105	38	36	27
21	28	26	15	15	9	19	47	32	112	33	35	28
22	24	27	13	13	10	22	38	55	93	99	30	24
23	23	27	15	12	12	22	38	101	79	49	22	27
24	23	27	19	12	12	22	36	97	82	46	14	26
25	23	24	24	13	12	24	38	86	97	169	13	63
26	21	27	22	14	11	16	35	806	86	31	12	32
27	20	14	21	14	11	16	30	270	66	40	5.0	30
28	20	14	19	15	12	15	26	116	53	20	4.8	26
29	23	14	18	16	12	17	23	149	51	110	5.0	23
30	17	14	17	17	12	20	23	126	82	36	4.6	21
31	18	---	18	17	---	26	---	82	---	26	4.4	---
Total	677	655	472.0	451	318	529	1,145	2,670	3,002	1,667	3,564.8	779.3
Mean	21.8	21.8	15.2	14.5	11.0	17.1	38.2	86.1	100	53.8	115	26.0
Ac-ft	1,340	1,300	936	895	631	1,050	2,270	5,300	5,950	3,310	7,070	1,550

Calendar year 1963: Max 1,230 Min 1.9 Mean 30.4 Ac-ft 22,030
 Water year 1963-64: Max 1,190 Min 3.7 Mean 43.5 Ac-ft 31,600

Peak discharge (base, 2,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-26	1430	5.44	5,370	8-7	2230	5.63	5,800
8-4	1645	5.43	5,350				

Note.--No gage-height record Dec. 8, Dec. 10 to Mar. 9 (stage-discharge relation affected by ice during most of period).

7-1250. Purgatoire River near Hoehne, Colo.

Location.--Lat 37°14'50", long 104°23'50", in sec.13, T.32 S., R.63 W., on left bank 5 ft downstream from bridge on county road, 40 ft upstream from diversion dam for Hoehne ditch, 2½ miles southwest of Hoehne, and 8 miles northeast of city hall in Trinidad.

Drainage area.--857 sq mi.

Records available.--September 1954 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 5,740.99 ft above mean sea level, datum of 1929.

Average discharge.--10 years, 26.2 cfs (18,970 acre-ft per year).

Extremes.--Maximum discharge during year, 17,100 cfs Aug. 7 (gage height, 10.26 ft), from rating curve extended above 6,900 cfs; no flow for many days.

1954-64: Maximum discharge, 35,000 cfs May 19, 1955 (gage height, 13.97 ft), from rating curve extended above 180 cfs by logarithmic plotting on basis of flow-over-dam computations at gage heights, 3.2, 4.5, and 7.34 ft; no flow for many days in each year.

Greatest flood known since at least 1859 occurred Sept. 30, 1904.

Remarks.--Records poor. Discharge measurements or observations of no flow generally made twice a month. Flow partly regulated by off-stream reservoirs and a flood control dam on unnamed creek in Pinon Canyon. Diversions above station for irrigation of about 10,500 acres. Diversion by Hoehne ditch 40 ft below gage is not included in these records.

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	0	0	0	0	0	0	1.2	0	0
2	0		0	0	0	0	0	0	1.2	.4	.2	0
3	0		0	0	0	0	0	0	1.0	0	1.4	0
4	0		0	0	0	0	0	0	.1	0	3.24	0
5	0		.1	0	0	.1	0	0	0	0	2.7	0
6	0		0	0	2.4	0	0	0	0	0	2.2	3.2
7	0		0	0	2	0	.1	0	.2	0	1,250	.1
8	0		0	0	2	0	0	0	.7	0	1,540	0
9	0		0	.1	0	0	.2	0	.2	0	30	0
10	0		0	0	0	0	0	0	1.1	.8	10	0
11	0		0	0	0	0	0	0	0	.4	0	0
12	0		0	0	0	0	.1	0	0	0	0	0
13	0		0	0	0	0	0	0	.3	0	0	0
14	0		0	0	0	0	0	0	0	0	0	0
15	0		0	0	0	0	0	0	.4	0	.3	0
16	0		0	0	0	0	0	0	0	0	.2	1.0
17	0		0	0	0	0	0	0	.4	0	.1	0
18	0		1.6	0	0	.2	0	0	.6	.6	C	0
19	0		0	0	0	0	0	.3	.1	1.2	1.8	0
20	0		0	0	.1	0	.6	.8	0	.3	.6	0
21	0		0	0	0	0	0	.1	0	0	.4	0
22	0		0	0	0	0	0	.1	.5	1.3	1.0	0
23	1.3		0	0	0	.1	0	.2	.7	.7	C	0
24	0		0	0	0	0	0	.2	0	0	C	0
25	0		0	0	0	0	0	.2	.3	2.0	C	0
26	0		0	0	0	0	0	21.5	.4	.5	C	0
27	0		0	0	0	0	0	16	.5	.3	C	0
28	0		0	0	0	0	0	4.8	0	0	C	0
29	0		0	0	0	0	0	3.0	0	.3	C	0
30	0		0	0	0	0	0	1.5	0	1.5	C	0
31	0		0	0	0	0	0	.1	0	0	C	0
Total	1.6	0	1.7	0.1	6.5	0.4	1.0	242.3	8.7	11.5	3,164.9	4.3
Mean	0.05	0	0.05	0.003	0.22	0.01	0.03	7.82	0.29	0.37	102	0.14
Ac-ft	3.2	0	3.4	0.2	13	0.8	2.0	481	17	23	6,280	8.5

Calendar year 1963: Max 1,590 Min 0 Mean 6.90 Ac-ft 5,000
 Water year 1963-64: Max 1,540 Min 0 Mean 9.41 Ac-ft 6,830

Peak discharge (base, 2,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-26	1645	4.50	2,550	8-7	2230	10.26	17,100
8-4	1815	4.63	2,800				

Note.--No gage-height record Dec. 5 to Mar. 2 (stage-discharge relation affected by ice during part of period), Mar. 5-18, Aug. 6, 9-18.

7-1251. Frijole Creek near Alfalfa, Colo.

Location.--Lat 37°12'00", long 104°11'40", in NW¼ sec.2, T.33 S., R.61 W., on right bank at downstream side of bridge on U. S. Highway 160, 1 mile upstream from mouth, 4 miles west of Alfalfa, and 16 miles east of city limits of Trinidad.

Drainage area.--80 sq mi.

Records available.--March 1957 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 5,400 ft (from topographic map).

Average discharge.--7 years, 2.10 cfs (1,520 acre-ft per year).

Extremes.--Maximum discharge during year, 2,440 cfs Aug. 7 (gage height, 8.97 ft), from rating curve extended above 180 cfs as explained below; no flow for many days.

1957-64: Maximum discharge, 4,370 cfs Sept. 20, 1963 (gage height, 11.05 ft), from rating curve extended above 180 cfs on basis of slope-area measurement at gage height 8.81 ft; no flow for many days in each year.

Flood of June 22, 1954, reached a stage of 17.23 ft, from floodmarks (discharge, 13,500 cfs, from rating curve extended above 8,800 cfs on basis of contracted-opening measurements of peak flow).

Remarks.--Records poor. Discharge measurements or observations of no flow generally made twice a month. Minor diversions above 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	0	8.9	0.2	0.1	0.2	0.3	0.4	0	11	0	0	0
2	0	7.5	.1	.2	.1	.5	.4	0	22	0	0	0
3	0	5.8	0	.1	0	.4	.4	0	14	0	0	0
4	0	4.0	0	0	0	.6	.4	0	3.8	0	60	0
5	0	2.1	0	0	0	1.5	.5	0	2.4	0	6.7	.6
6	0	.4	0	0	0	1.0	.7	0	.7	0	.4	2.9
7	0	0	0	0	0	.7	2.9	0	0	0	15.9	2.8
8	0	0	0	0	0	.5	6.1	0	0	0	82	1.9
9	0	0	0	0	0	.6	6.1	0	0	0	.3	.2
10	.1	0	0	0	0	.7	5.3	0	0	0	0	0
11	.2	0	0	0	.2	.9	3.1	0	0	0	0	0
12	1.4	0	0	0	.1	1.0	2.3	0	0	0	0	0
13	.4	0	0	0	.1	.7	1.5	0	2.0	0	0	0
14	0	0	0	0	.1	.4	.8	0	0	0	0	0
15	0	0	0	0	0	.3	.4	0	0	0	0	6.2
16	0	0	0	0	0	.2	.2	0	0	2.5	0	14
17	0	0	0	0	.1	.2	.1	0	0	6.4	0	4.7
18	0	0	0	0	.1	.2	0	0	0	2.5	0	2.7
19	.2	0	0	0	.1	.6	0	0	0	.1	0	1.5
20	6.4	0	0	0	.1	.6	0	0	0	0	0	1.9
21	4.5	0	0	.1	.1	.6	0	0	0	0	0	1.0
22	1.7	0	0	.3	.1	.6	0	0	0	0	0	.4
23	0	0	.1	1.4	.1	.6	0	0	0	0	0	.1
24	0	0	.3	0	.1	.5	0	0	0	0	0	0
25	0	.3	.5	.1	.1	.6	0	0	0	0	0	0
26	0	0	.3	.1	.1	.6	0	9.7	0	0	0	0
27	0	0	.1	.1	.1	.6	0	12	0	0	0	0
28	0	.2	0	.1	.1	.6	0	12	0	0	0	0
29	0	.3	0	.2	.2	.7	0	12	0	0	0	0
30	.1	.4	0	.2	-----	.6	0	9.6	0	0	0	0
31	3.2	-----	.1	.2	-----	.5	-----	7.5	-----	0	0	-----
Total	18.2	29.9	1.7	3.2	2.2	18.4	31.6	150.1	55.9	11.5	308.4	40.9
Mean	0.59	1.00	0.05	0.10	0.08	0.59	1.05	4.84	1.86	0.37	9.95	1.36
Ac-ft	36	59	3.4	6.3	4.4	36	63	298	111	23	612	81

Calendar year 1963: Max 481 Min 0 Mean 4.41 Ac-ft 3,200
 Water year 1963-64: Max 159 Min 0 Mean 1.84 Ac-ft 1,330

Peak discharge (base, 200 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-26	1500	6.87	975	8-7	2145	8.97	2,440
8-4	1745	6.25	665				

Note.--No gage-height record Dec. 5 to Jan. 21, Jan. 24 to Mar. 17, Apr. 16 to May 25, June 3-10, July 19 to Aug. 3, Aug. 9-18, Sept. 9-14.

7-1255. San Francisco Creek near Alfalfa, Colo.

Location.--Lat 37°11'10", long 104°07'50", in sec.8, T.33 S., R.60 W., on downstream side of right abutment of bridge on U. S. Highway 160, half a mile upstream from mouth, 1½ miles south of Alfalfa, and 20 miles east of Trinidad.

Drainage area.--160 sq mi.

Records available.--October 1954 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 5,320 ft (from topographic map).

Average discharge.--10 years, 8.67 cfs (6,280 acre-ft per year).

Extremes.--Maximum discharge during year, 6,680 cfs Aug. 7 (gage height, 9.25 ft), by slope-area measurement of peak flow; no flow for many days.

1954-64: Maximum discharge, 15,500 cfs May 19, 1955 (gage height, 13.00 ft), from rating curve extended above 250 cfs on basis of slope-area measurement of peak flow; no flow for many days in each year.

Flood of July 22, 1954, reached a stage of 14.40 ft, from floodmarks (discharge, 26,300 cfs, by contracted-opening measurement of peak flow).

Remarks.--Records good above 65 cfs and poor below. Discharge measurements or observations of no flow generally made twice a month. Diversions above station for irrigation of about 500 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	0.1	0.1	0	0.1	0.1	0.1	29	1.4	149	0.1	0	0
2	.1	.1	0	.1	0	.2	39	.9	27	0	0	0
3	.1	.1	0	.1	0	.1	26	.2	25	0	0	0
4	0	0	0	0	0	.1	15	.1	1.1	0	322	0
5	0	0	.1	0	0	.2	14	.1	.4	0	24	0
6	0	0	.1	0	0	.1	19	.1	.3	0	.5	0
7	0	0	0	0	0	.1	15	0	.2	0	336	0
8	0	0	0	0	0	0	17	0	.1	0	455	0
9	0	0	0	0	0	.1	24	0	.1	0	.6	0
10	0	0	0	0	0	.1	23	0	.1	0	.3	0
11	.1	0	0	0	.1	.5	32	0	.1	0	.1	0
12	0	0	0	0	.1	.8	32	0	.1	0	0	0
13	0	0	0	0	0	1.7	10	0	39	0	0	0
14	0	0	0	0	0	1.0	6.2	0	.5	0	0	0
15	0	0	0	0	0	.5	17	0	.2	0	0	0
16	0	0	0	.1	.1	.4	21	0	.1	0	0	.1
17	0	0	0	.2	.1	.2	37	0	.1	0	0	.1
18	0	0	0	.2	.1	.2	24	0	.1	.4	0	0
19	.1	0	0	.2	.1	1.3	11	.1	.1	2.0	0	0
20	.1	0	0	.2	.1	1.4	37	.1	.1	.8	0	0
21	0	0	.1	.2	0	.8	7.6	0	.1	.5	0	0
22	0	0	0	.1	0	.7	6.6	.1	.1	.4	0	0
23	0	0	0	.1	0	2.2	2.0	0	.1	.2	0	0
24	0	0	.1	0	0	3.6	1.8	0	.1	.1	0	0
25	0	.1	.1	0	0	2.2	1.3	0	.1	0	0	0
26	0	.1	.1	.1	0	2.2	.8	2.5	.1	.1	0	0
27	.1	.1	.1	.1	0	2.2	.6	4.2	.1	0	0	0
28	.1	0	0	.1	0	2.0	.3	2.3	.1	.4	0	0
29	.1	0	0	.1	.1	3.8	.8	1.8	.1	.2	0	0
30	.1	0	0	.1	-----	3.8	1.7	18	.1	.2	0	0
31	.1	-----	0	.1	-----	12	-----	26	-----	.1	0	0
							20	-----	0	0	0	-----
Total	1.1	0.6	0.7	2.2	0.9	44.6	471.7	76.1	244.7	44.9	1,138.5	0.2
Mean	0.04	0.02	0.02	0.07	0.03	1.44	15.7	2.45	8.16	1.45	36.7	0.007
Ac-ft	2.2	1.2	1.4	4.4	1.8	88	936	151	485	89	2,260	0.4

Calendar year 1963: Max 795 Min 0 Mean 5.88 Ac-ft 4,260
 Water year 1963-64: Max 455 Min 0 Mean 5.54 Ac-ft 4,020

Peak discharge (base, 1,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-1	2100	4.28	1,250	8-7	2300	9.25	6,680
8-4	1715	5.15	1,820				

Note.--No gage-height record Dec. 3 to Jan. 15, Jan. 21 to Mar. 11, June 4-10, 14-24, Aug. 6, Aug. 9 to Sept. 30.

ARKANSAS RIVER BASIN

7-1260. Purgatoire River near Alfalfa, Colo.

Location.--Lat 37°11'30", long 104°07'30", in NW¼ sec.9, T.33 S., R.60 W., on right bank 700 ft downstream from San Francisco Creek, ½ miles southeast of Alfalfa, and 20 miles east of Trinidad.

Drainage area.--1,320 sq mi.

Records available.--March 1905 to September 1907 (published as "Purgatory River"), March 1924 to September 1928, October 1951 to September 1964. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Altitude of gage is 5,280 ft. (from topographic map). Mar. 22, 1905, to Sept. 30, 1907, staff gage 650 ft downstream at different datum. Feb. 27, 1924, to Sept. 30, 1928, water-stage recorder 1 mile downstream at different datum. Oct. 1, 1951, to July 5, 1955, water-stage recorder at site 150 ft upstream at datum 3.0 ft higher.

Average discharge.--19 years, 53.6 cfs (38,800 acre-ft per year).

Extremes.--Maximum discharge during year, 8,540 cfs Aug. 7 (gage height, 15.54 ft), from rating curve extended above 2,700 cfs as explained below; minimum daily, 0.1 cfs July 24, Sept. 13, 14.

1905-7, 1924-28, 1951-64: Maximum discharge, 41,900 cfs May 19, 1955 (gage height, 31.9 ft, from floodmarks, present site and datum), from rating curve extended above 2,700 cfs on basis of slope-area measurements at gage heights 9.79, 13.35, 15.75, 30.60, and 31.9 ft; no flow at times in most years.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Discharge measurements generally made twice a month. Diversions above station for irrigation of about 29,000 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	18	11	8.0	8	8	13	38	3.7	212	0.4	0.2	0.3
2	16	10	6.8	9	7	14	50	2.0	62	.3	.2	.3
3	13	10	6.8	8	7.5	15	35	1.0	51	.3	.2	.3
4	13	9.8	6.5	7.5	8	17	23	.9	15	.2	501	.2
5	12	9.8	7.2	6.5	8	18	25	.6	10	.2	132	16
6	11	10	7.5	7	8.5	18	26	.4	8	.2	6.8	15
7	10	11	7.5	6	7.5	18	27	.4	6	.2	490	13
8	10	11	6	7	8	18	29	.4	6	.2	705	7.0
9	10	11	5	7	8.5	18	40	1.1	6	.2	14	2.0
10	9.8	11	4	7	9	18	44	1.0	6	.2	12	.3
11	9.5	11	3.5	6	9.5	18	48	1.0	5.5	.2	10	.2
12	9.5	11	3.5	5	8.5	21	45	.9	5.1	.3	8	.2
13	9.2	11	4	5.5	7.5	21	22	.9	41	.3	6	.1
14	9.2	11	4	6.5	6.5	15	18	.8	7.5	.2	4	.1
15	9.5	10	5	7	7.0	13	25	.6	3.4	.2	2	15
16	9.5	10	6.5	8	7.5	13	28	.4	2.2	2.6	2	62
17	9.5	10	7.5	8	8	13	42	.4	1.7	5.5	1	6.8
18	9.2	11	8	8.5	9	14	30	.6	1.5	5.0	1	5.0
19	9.5	11	8.5	9	8.5	15	20	1.8	1.1	2.2	.9	4
20	10	11	9	9.5	8	15	40	1.0	1.2	.6	1.5	4
21	11	11	8	10	8.5	13	15	.7	1.1	.4	1.8	4
22	12	10	7.5	9.5	9	13	12	1.0	.9	.3	.9	4
23	12	10	8	9	9.5	14	6.5	.6	.7	.2	.6	4
24	12	9.8	9	8	10	14	5.0	.6	.6	.1	.5	3.7
25	10	10	10	8	10	14	4.1	.6	.6	.2	.5	3.2
26	10	9.8	9.5	8.5	11	15	3.6	284	1.4	.9	.5	1.4
27	10	9.5	8.5	9.0	12	16	3.4	92	.8	.5	.7	.9
28	10	8.9	8	9.0	13	16	3.7	50	.6	1.1	.5	1.7
29	10	7.8	7.5	9.5	13	17	3.9	63	.6	.9	.3	1.4
30	9.8	8.3	7	10	-----	19	4.4	68	.6	.3	.2	1.1
31	9.8	-----	6.5	10	-----	20	-----	38	-----	.2	.2	-----
Total	334.0	306.7	214.3	246.5	256.0	496	716.6	618.4	460.1	24.6	1,904.5	177.2
Mean	10.8	10.2	6.91	7.95	8.83	16.0	23.9	19.9	15.3	0.79	61.4	5.91
Ac-ft	662	608	425	489	508	984	1,420	1,230	913	49	3,780	351

Calendar year 1963: Max 1,940 Min 0 Mean 25.6 Ac-ft 18,570
 Water year 1963-64: Max 705 Min 0.1 Mean 15.7 Ac-ft 11,420

Peak discharge (base, 2,000 cfs).--Aug. 4 (1900) 2,620 cfs (8.54 ft); Aug. 7 (about 2330) 8,540 cfs (15.54 ft).

Note.--No gage-height record Dec. 8 to Mar. 9 (stage-discharge relation affected by ice during most of period), Mar. 23 to Apr. 8, June 4-10, July 20-23, Aug. 8-18, Sept. 17-23.

7-1265. Purgatoire River at Ninemile Dam, near Higbee, Colo.

Location--Lat 37°44', long 103°29', in NW¼ sec.7, T.27 S., R.54 W., on left bank 850 ft upstream from Ninemile Dam, 4 miles southwest of Higbee, and 5½ miles upstream from Smith Canyon.

Drainage area--2,900 sq mi.

Records available--October 1924 to September 1964. Monthly discharge only for some periods, published in WSP 1311.

Gage--Water-stage recorder. Datum of gage is 4,240.59 ft above mean sea level, datum of 1929. Prior to Oct. 28, 1934, water-stage recorder at site 550 ft downstream at datum 0.60 ft higher. Oct. 28, 1934, to May 19, 1955, water-stage recorder (destroyed by flood) at present site and datum. May 25, 1955, to June 13, 1956, staff or chain gages at nearby sites at different datums. June 14 to Dec. 5, 1956, chain gage at present site and datum.

Average discharge--40 years, 100 cfs (72,400 acre-ft per year).

Extremes--Maximum discharge during year, 11,000 cfs Aug. 8 (gage height, 7.12 ft), from rating curve extended above 200 cfs; no flow for many days.
1924-64: Maximum discharge, 80,000 cfs May 19, 1955 (gage height, 17.7 ft), from rating curve extended above 21,000 cfs on basis of computation of peak flow over dam; no flow at times.

Remarks--Records poor. Discharge measurements or observations of no flow made two or more times a month. Diversions for irrigation of about 32,000 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	4.2	2.8	8.8		3.5	2.3	4.0	4.9	2.7	0	7.5	0
2	2.7	2.8	7.9		4.6	2.3	0	3.6	4.2	0	4.4	0
3	2.0	3.2	8.2		3.1	2.5	0	2.2	2.4	0	2.5	0
4	1.8	3.2	8.8		1.4	2.3	1.4	1.7	1.0	0	2.9	0
5	1.8	3.4	8.8		1.2	2.8	3.4	1.5	8.5	0	4.9	0
6	1.7	3.6	7.9			2.8	3.4	1.0	2.8	0	4.7	0
7	2.6	3.8	7.3			2.8	3.0	.8	1.8	0	1.7	0
8	2.2	3.8	7.9			2.9	3.2	.7	9.0	0	1,990	0
9	8.2	3.8	7.6			3.0	3.5	.7	5.4	0	1,200	0
10	6.1	3.8	8.2			2.8	3.8	.7	3.4	0	2.2	0
11	4.3	4.6	5.5		19	2.8	4.6	.8	2.4	0	8.8	0
12	4.6	4.9	7.6			2.5	4.2	.7	1.7	0	7.0	0
13	3.6	5.2	8.2			2.6	4.4	.6	1.2	0	3.0	0
14	3.4	6.1	7.6			2.7	4.6	.4	1.0	0	2.5	0
15	3.2	6.4	7.9			2.9	3.9	.1	9.0	0	1.8	0
16	3.2	7.3	7.9	11	1.7	2.8	3.2	0	3.0	0	9.5	2.5
17	3.4	9.4	7.6		1.8	2.3	2.9	0	1.0	0	3.6	1.9
18	3.4	9.4	7.4		2.0	2.0	4.3	0	4.1	5.0	2.5	8.0
19	3.6	9.4	7.0		2.0	1.7	4.2	0	2.2	1.3	1.7	5.7
20	3.6	9.1	6.4		1.9	1.8	4.1	2.9	1.4	8.7	1.2	3.4
21	3.6	8.2				1.7	4.0	1.8	.7	8.8	1.0	2.4
22	3.8	7.3				1.5	5.2	2.4	.4	2.4	.8	1.8
23	3.6	7.3				1.3	4.2	.7	.1	7.5	.6	0
24	3.0	7.3				1.2	3.2	0	0	2.7	.5	0
25	4.0	7.0				1.1	2.6	0	0	2.9	.3	0
26		7.6	8.0			1.1	2.2	0	0	2.7	.3	0
27	9.7	7.9				1.0	1.8	9.7	0	2.2	.2	0
28	1.5	7.6				1.2	1.1	2.1	0	1.4	.1	0
29	1.7	7.3				1.2	7.6	4.8	0	2.0	0	0
30	1.5	8.5				1.1	5.5	3.5	0	1.8	0	0
31	1.7					1.0		5.8		5.0	0	
Total	308.2	182.0	242.5	341	620	640	881.1	1,401.5	628.0	1,245.7	4,819.6	290.3
Mean	9.94	6.07	7.82	11	21.4	20.6	29.4	45.2	20.9	40.2	155	9.68
Ac-ft	611	361	481	676	1,230	1,270	1,750	2,780	1,250	2,470	9,560	576

Calendar year 1963: Max 5,740 Min 0 Mean 65.0 Ac-ft 47,040
Water year 1963-64: Max 1,990 Min 0 Mean 31.7 Ac-ft 23,020

Peak discharge (base, 3,000 cfs)--Aug. 8 (2200) 11,000 cfs (7.12 ft).

Note--Stage-discharge relation affected by ice Dec. 20 to Jan. 31, Feb. 5-17, 20-29, Mar. 4, 7, 8.

ARKANSAS RIVER BASIN

7-1285. Purgatoire River near Las Animas, Colo.

Location.--Lat 38°02'02", long 103°12'00", in sec.23, T.23 S., R.52 W., near left bank on downstream side of pier of bridge on State Highway 101, 2.3 miles southwest of courthouse in Las Animas and 4.5 miles upstream from mouth.

Drainage area.--3,503 sq mi.

Records available.--May to September 1889, July to October 1909 (gage heights and discharge measurements only), January 1922 to September 1931, July 1948 to September 1964. Monthly discharge only for some periods, published in WSP 1311. Published as Purgatoire Creek at Las Animas in 1889 and as Purgatory River near Las Animas in 1909.

Gage.--Water-stage recorder. Datum of gage is 3,877.94 ft above mean sea level, datum of 1929. May 22 to Sept. 30, 1889, staff gage, July 31 to Oct. 9, 1909, chain gage, and Apr. 1, 1922, to June 30, 1924, water-stage recorder, at railroad bridge 4 miles downstream at various datums. July 1, 1924, to Sept. 30, 1931, water-stage recorder at present site at various datums and July 23, 1948, to Sept. 30, 1955, at datum 2.00 ft higher.

Average discharge.--25 years (1922-31, 1948-64), 129 cfs (93,390 acre-ft per year).

Extremes.--Maximum discharge during year, 3,240 cfs Aug. 9 (gage height, 5.18 ft); minimum daily, 0.3 cfs Aug. 3. 1889, 1922-31, 1948-64: Maximum discharge, 70,000 cfs May 20, 1955 (gage height, 17.00 ft, present datum), from rating curve extended above 38,000 cfs by logarithmic plotting; no flow at times in 1924-25, 1927, 1949. Greatest flood known occurred Oct. 1, 1904.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Discharge measurements generally made once a week. Diversions for irrigation of about 36,000 acres above station.

Note.--The figures of peak discharge for water year 1963, which were inadvertently omitted from last year's report, are given herewith: Peak discharge (base, 6,000 cfs).--1963: July 27 (2230) 6,930 cfs (6.97 ft); Sept. 22 (1030) 6540 cfs (6.80 ft).

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-31, Sept. 18-30)

Nov. 1 to May 26		May 27 to Sept. 30	
0.3	0.8	0.2	0
.4	3.0	.3	.8
.5	7.0	.4	3.0
.6	12	.5	7.0
.8	26	.6	13
		.7	21
		.9	47
		1.2	107
		1.5	190
		2.0	365
		2.5	600
		3.0	910
		4.0	1,720

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	1.3	3.0	7.5	14	8.0	7.5	5.4	5.0	69	2.3	0.5	0.8
2	9.8	3.0	7.0	18	7.0	7.5	5.0	5.0	41	2.6	.4	.7
3	7.4	3.0	7.5	28	10	6.2	9.5	4.2	22	2.3	.3	.7
4	6.2	3.4	7.0	22	13	6.2	10	4.2	140	2.3	.8	.7
5	4.7	3.8	6.6	20	11	5.4	14	4.6	75	1.9	1.0	.7
6	4.2	3.4	6.6	22	9.5	5.0	13	4.2	65	1.9	182	.8
7	4.2	3.4	7.5	35	11	5.0	10	3.8	31	1.5	143	.6
8	4.2	3.4	12	19	10	6.2	12	3.0	15	1.7	39	.6
9	4.0	3.0	10	18	13	6.2	6.2	3.0	9.4	1.7	1,300	.6
10	3.3	3.4	17	16	15	8.0	5.8	3.0	8.8	1.7	266	.7
11	3.3	4.2	14	12	12	5.0	7.5	3.0	7.0	1.5	169	1.2
12	3.0	4.2	12	9.2	11	5.0	9.5	3.0	6.2	1.9	96	1.2
13	2.5	4.2	8.0	8.2	12	5.4	8.0	2.8	5.4	1.5	51	1.2
14	2.5	4.2	5.6	7.6	13	4.2	10	2.8	5.0	1.2	26	1.2
15	2.8	4.2	3.1	8.4	12	4.2	8.0	2.8	4.2	1.2	13	1.5
16	2.8	7.0	3.1	10	11	3.4	5.8	2.8	3.4	1.5	7.0	1.2
17	2.8	8.5	3.2	14	18	4.2	5.0	2.8	2.8	1.9	5.4	4.0
18	3.3	8.5	3.5	17	10	5.0	6.6	2.6	3.4	1.5	3.4	3.1
19	3.7	7.5	3.8	21	14	6.2	5.8	2.3	2.8	1.0	2.3	5.8
20	4.2	8.0	3.0	25	10	7.0	6.6	4.6	2.8	2.48	1.9	2.8
21	4.2	8.0	3.5	28	11	8.0	12	5.4	2.8	112	1.9	2.1
22	4.0	8.5	4.1	29	18	5.0	8.0	1.9	2.8	15	1.5	1.9
23	4.0	8.0	4.6	26	14	2.2	8.0	1.7	2.8	4.2	1.5	1.7
24	3.5	7.5	5.0	19	12	9.5	9.0	1.7	2.6	1.9	1.0	1.5
25	3.5	8.0	5.6	18	13	5.0	6.2	2.1	2.3	1.5	1.0	1.0
26	3.0	5.8	5.0	20	1.9	4.6	5.4	6.2	2.3	6.2	.8	.7
27	2.8	5.8	4.7	22	18	4.2	6.2	11.1	2.3	1.5	.8	.8
28	2.5	5.8	6.0	19	17	5.4	5.0	3.45	2.1	.7	.8	1.0
29	2.3	5.8	8.0	14	12	4.2	4.6	3.21	2.1	.8	.8	1.0
30	2.3	7.5	11	9.5	-----	4.2	4.6	2.02	2.3	.6	.8	1.0
31	2.5	-----	13	9.0	-----	3.8	-----	96	-----	.4	.8	-----
Total	126.5	164.0	218.5	557.9	364.5	188.7	232.7	1,163.5	543.6	425.9	2,319.7	106.7
Mean	4.08	5.47	7.05	18.0	12.6	6.09	7.76	37.5	18.1	13.7	74.8	3.56
Ac-ft	251	325	433	1,110	723	374	462	2,310	1,080	845	4,600	212

Calendar year 1963: Max 4,370 Min 0.1 Mean 48.6 Ac-ft 35,180
Water year 1963-64: Max 1,300 Min 0.3 Mean 17.5 Ac-ft 12,720

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

Note.--Stage-discharge relation affected by ice Dec. 10-30, Jan. 1-29 (no gage-height record Dec. 10-30, Jan. 6-21), Feb. 4, 5.

7-1300. John Martin Reservoir at Caddoa, Colo.

Location.--Lat 38°04'05", long 102°56'13", in NE¹/₄NW¹/₄ sec.8, T.23 S., R.49 W., at dam on Arkansas River at Caddoa, 3.2 miles southeast of Hasty and 58 miles upstream from Colorado-Kansas State line.

Drainage area.--18,915 sq mi, of which 785 sq mi if probably noncontributing.

Records available.--January 1943 to September 1964.

Gage.--Water-stage recorder for elevations above about 3,785 ft (revised) and reference point and tape gage read once daily for those below. Datum of gage is 3,760.00 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark); gage readings have been reduced to elevations above mean sea level. Prior to 1953 water-stage recorder and staff gage at same datum.

Extremes.--Maximum contents during year, 13,010 acre-ft June 17 (elevation, 3,792.50 ft); no contents for several months. 1943-64: Maximum contents, 360,300 acre-ft July 27, 1958 (elevation, 3,850.44 ft); no contents at times in 1943, 1945-47, 1952-57, 1959-64.

Remarks.--Reservoir is formed by concrete and earth-fill dam. Storage began while dam was under construction prior to 1943, and record of contents began Jan. 1, 1943. Capacity (from revised table), 642,400 acre-ft at elevation 3,870.00 ft (top of spillway gates), of which 366,600 acre-ft (between elevations 3,766.8 ft, elevation of no contents, and 3,851.18 ft) is for conservation and 275,800 acre-ft (between elevations 3,851.18 and 3,870.00 ft) is reserved for flood control. No dead storage. Figures given herein represent total contents.

Cooperation.--Record of contents 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.....	-	0	-
Oct. 31.....	-	0	0
Nov. 30.....	-	0	0
Dec. 31.....	3,783.50	1,410	+1,410

Calendar year 1963.....	-	-	-

Jan. 31.....	3,787.35	4,990	+3,580
Feb. 29.....	3,789.05	7,220	+2,230
Mar. 31.....	3,790.28	9,110	+1,890
Apr. 30.....	-	0	-9,110
May 31.....	3,790.60	9,630	+9,630
June 30.....	-	0	-9,630
July 31.....	-	0	0
Aug. 31.....	-	0	0
Sept. 30.....	-	0	0
Water year 1963-64.....	-	-	0

† Elevation at 2400.

ARKANSAS RIVER BASIN

7-1305. Arkansas River below John Martin Reservoir, Colo.

Location.--Lat 38°05'02", long 102°55'10", in NW¼ sec.4, T.23 S., R.49 W., on left bank 1.1 miles upstream from Caddoa Creek, 1.7 miles downstream from John Martin Dam, and 2.9 miles southeast of Hasty.

Drainage area.--18,917 sq mi, of which 785 sq mi is probably noncontributing.

Records available.--March 1938 to September 1964. Published as "at Caddoa" prior to October 1947.

Gage.--Water-stage recorder. Datum of gage is 3,737.40 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark). Prior to Feb. 22, 1940, at site 3 miles upstream at datum 22.83 ft higher. Feb. 22, 1940, to Feb. 4, 1943, at site 700 ft upstream at datum 3.64 ft higher than present datum.

Average discharge.--26 years, 336 cfs (243,300 acre-ft per year), adjusted for storage in John Martin Reservoir.

Extremes.--Maximum discharge during year, 1,570 cfs Aug. 9 (gage height, 3.50 ft); minimum daily, 1.6 cfs Feb. 15, 16, 18, 19. 1938-64: Maximum discharge, 40,000 cfs Apr. 24, 1942 (gage height, 10.46 ft, site and datum then in use), from rating curve extended above 12,000 cfs on basis of flow-over-dam and critical-depth measurement of peak flow; no flow at times in 1945-47; minimum daily prior to construction of John Martin Reservoir, 5 cfs July 16, 1939.

Remarks.--Records excellent. Discharge measurements generally made twice a month during winter and once a week during summer. Storage and diversions above station for irrigation of about 438,000 acres and for flood control. Flow regulated by John Martin Reservoir (see preceding page).

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 21-24, June 24-26, July 20-22, Aug. 10-13)

0.2	0.2	0.8	43
.3	1.8	1.1	100
.4	4.3	1.5	220
.5	9.0	2.0	440
.6	18	3.0	1,110

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	65	42	39	2.8	2.6	2.6	2.3	36	4.3	202	12	34
2	59	40	38	2.8	2.6	2.6	2.3	38	4.0	327	9.9	31
3	56	40	35	2.3	2.6	2.8	2.6	38	3.8	376	12	43
4	49	40	34	2.3	2.6	2.8	3.0	39	3.6	332	9.0	48
5	39	46	33	2.3	2.3	2.6	2.6	42	3.3	260	5.3	61
6	34	42	34	2.6	3.3	2.6	2.6	39	3.0	272	226	39
7	33	40	19	2.8	4.8	3.6	626	43	3.0	206	820	29
8	34	39	3.8	2.8	4.0	3.8	982	46	2.8	110	562	40
9	33	35	3.8	2.6	3.0	2.8	990	40	2.8	71	990	53
10	31	35	3.8	2.8	2.3	2.8	990	39	2.6	63	634	39
11	31	34	3.6	2.8	2.3	3.3	1010	36	2.6	51	244	33
12	33	33	3.3	2.8	2.3	3.3	145	35	2.3	29	168	33
13	34	33	3.0	2.8	2.0	3.3	56	34	2.3	31	125	36
14	34	33	2.8	2.8	1.8	3.3	49	33	2.6	48	125	45
15	31	33	2.8	2.8	1.6	3.0	49	33	2.6	36	133	65
16	31	34	2.6	2.8	1.6	3.0	49	34	2.8	23	138	63
17	33	42	2.8	4.0	2.0	2.8	45	35	2.8	20	213	75
18	34	43	2.6	4.0	1.6	2.6	43	33	644	17	165	105
19	35	46	2.8	3.8	1.6	2.6	43	33	990	18	63	73
20	36	48	3.0	3.8	1.8	2.6	43	54	966	1,000	33	56
21	35	51	3.3	3.6	1.8	2.8	42	136	950	288	26	54
22	36	46	3.3	3.0	2.3	2.6	49	92	958	83	28	51
23	34	43	3.3	2.8	2.0	2.6	46	57	966	30	34	46
24	31	43	3.0	2.6	2.8	2.8	42	130	806	19	33	43
25	39	42	3.0	2.6	2.8	2.8	39	340	125	15	46	43
26	42	39	3.0	2.6	2.8	2.6	38	440	188	61	56	40
27	38	36	3.0	2.6	2.8	2.8	36	556	138	56	57	38
28	31	36	3.0	2.6	2.6	2.8	34	838	108	23	46	38
29	35	34	3.0	2.3	2.6	2.8	40	604	81	16	36	43
30	38	35	3.0	2.6	-----	2.6	36	16	90	14	36	40
31	40	-----	2.8	2.6	-----	2.6	-----	5.7	-----	14	34	-----
Total	1,164	1,183	3,064	884	712	886	5,537.4	3,974.7	7,061.2	4,111	5,166.9	1,437
Mean	37.5	39.4	9.88	2.85	2.46	2.86	185	128	235	133	167	47.9
Ac-ft	2,310	2,350	608	175	141	176	10,980	7,880	14,010	8,150	10,250	2,850

Calendar year 1963: Max 1,100 Min 2.6 Mean 121 Ac-ft 87,600
Water year 1963-64: Max 1,010 Min 1.6 Mean 82.5 Ac-ft 59,880

7-1330. Arkansas River at Lamar, Colo.

Location.--Lat 38°06'15", long 102°37'08", in SE¼ sec.30, T.22 S., R.46 W., on right bank 450 ft upstream from bridge on U. S. Highways 50 and 287 and 1.2 miles north of city hall in Lamar.

Drainage area.--19,780 sq mi, of which 950 sq mi is probably noncontributing.

Records available.--May 1913 to September 1955, April 1959 to September 1964. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 3,599.81 ft above mean sea level, datum of 1929. Prior to June 4, 1941, at site 450 ft downstream on highway bridge at datum 5.07 ft higher. June 4, 1941, to Apr. 3, 1946, at site 1,250 ft downstream and Apr. 4, 1946, to Sept. 30, 1955, at site 600 ft downstream, both at datum 4.07 ft higher.

Average discharge.--47 years, 228 cfs (165,100 acre-ft per year).

Extremes.--Maximum discharge during year, 6,780 cfs May 30 (gage height, 11.08 ft); minimum daily, 0.5 cfs Aug. 2, 4, Sept. 9. 1913-55, 1959-64: Maximum discharge, 130,000 cfs June 5, 1921 (gage height, 17.0 ft, present datum), from rating curve extended above 10,000 cfs by logarithmic plotting and confirmed by relationship of discharges at La Junta 60 miles upstream and Syracuse 52 miles downstream; no flow at times in 1913-15, 1953.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Discharge measurements made two or more times a month. Flow regulated by John Martin Reservoir (see elsewhere in this report). Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 487,000 acres, and return flow from irrigated areas.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Feb. 5-19, Apr. 9-12)

Oct. 1 to May 29				May 30 to Sept. 30			
2.9	0.7	3.6	52	3.0	0	4.0	97
3.0	2.3	4.0	123	3.2	5.0	5.0	375
3.1	5.0	5.0	376	3.3	8.5	6.0	710
3.2	10	6.0	710	3.4	13	7.0	1,260
3.3	17			3.6	28	9.0	3,000
3.4	26			3.8	50	10.0	4,450

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	15	1.8	2.3	a 2.2	a 1.8	1.3	2.8	5.5	172	7.1	1.0	1.0
2	16	1.8	2.3	2.8	2.0	2.1	2.8	5.5	59	20	.5	1.0
3	17	1.8	2.6	2.8	2.3	2.6	3.1	5.5	25	16	.8	1.0
4	9.0	1.8	2.6	2.3	2.8	2.6	3.9	7.5	15	8.2	.5	1.2
5	9.0	2.0	2.6	2.3	2.3	2.3	3.9	6.0	13	12	.8	2.2
6	9.0	1.8	2.6	2.0	2.3	2.6	3.1	6.5	12	22	.8	7.1
7	9.0	2.0	2.6	2.0	a 2.2	2.6	4.9	4.7	10	13	54	2.0
8	8.0	2.0	2.6	2.6	a 2.1	2.8	412	4.2	8.2	8.2	80	.8
9	11	2.0	2.3	4.2	a 2.0	2.3	486	5.5	12	5.7	47	.5
10	3.9	2.0	2.0	3.6	a 1.9	2.3	499	4.2	8.2	11	234	2.8
11	3.4	1.8	2.0	2.8	1.8	2.3	499	3.9	7.8	14	27	2.2
12	3.6	1.8	2.0	2.6	1.8	2.6	267	3.6	7.8	23	16	1.8
13	2.8	1.8	2.0	2.3	2.8	2.6	10	2.8	7.4	13	9.8	1.2
14	2.6	2.1	2.0		11	2.6	7.5	2.6	6.8	12	4.8	1.5
15	2.3	2.1	2.1		10	2.6	3.6	2.6	6.0	20	4.0	8.5
16	2.0	2.0	2.3	a 2.6	10	2.3	2.1	2.6	5.4	13	7.1	16
17	2.1	2.6	2.4		11	2.6	1.8	2.6	4.8	11	7.8	16
18	2.1	2.3	2.5		11	3.4	5.5	3.1	23	10	8.5	27
19	1.8	2.3	2.5		14	2.8	11	2.8	369	6.4	25	32
20	1.8	2.6	2.5	2.6	16	3.1	14	2.3	399	16	5.4	18
21	1.8	2.6	2.2	2.0	16	2.3	14	2.1	396	32	2.8	16
22	1.7	2.6	2.4	1.7	16	2.3	11	13	408	5.0	2.2	13
23	1.5	2.6	2.5	1.7	7.5	2.3	9.5	8.0	424	3.2	1.5	11
24	1.5	2.6	2.5	1.5	3.1	2.3	4.2	4.7	424	3.0	1.2	8.5
25	1.5	2.3	2.5		3.1	2.8	4.5	27	115	2.0	1.5	6.4
26	1.5	2.3	2.6		3.1	3.1	5.0	6.1	9.4	1.5	1.5	5.7
27	1.3	2.6	2.3	a 1.5	2.3	2.8	5.5	117	7.8	1.0	4.0	1.8
28	1.5	2.3	2.3		2.0	3.1	5.5	158	6.8	1.2	5.4	1.2
29	1.5	2.3	2.1		1.8	3.1	5.5	528	6.4	1.5	2.2	1.2
30	1.5	2.3	2.0			3.4	4.5	3,840	6.0	1.5	1.8	1.0
31	1.7		1.8			2.8		464		1.2	1.8	
Total	148.4	64.9	72.0	70.1	166.0	80.7	2,356.3	5,306.8	2,974.8	314.7	560.7	209.6
Mean	4.79	2.16	2.32	2.26	5.72	2.60	78.5	171	99.2	10.2	18.1	6.99
Ac-ft	294	129	143	139	329	160	4,670	10,530	5,900	624	1,110	416

Calendar year 1963: Max 1,100 Min 1.3 Mean 36.6 Ac-ft 26,500
Water year 1963-64: Max 3,840 Min 0.5 Mean 33.7 Ac-ft 24,440

a No gage-height record.

Note.--Stage-discharge relation affected by ice Dec. 4-25.

ARKANSAS RIVER BASIN

7-1370. Frontier ditch near Coolidge, Kans.

Location.--Lat 38°02'18", long 102°02'19", in NE¼ sec.21, T.23 S., R.43 W., on left bank 0.3 mile east of Colorado-Kansas State line, 0.5 mile downstream from Holly drain diversion, 1.5 miles west of Coolidge, and 2.3 miles downstream from diversion from Arkansas River.

Records available.--October 1950 to September 1964.

Gage.--Water-stage recorders and Parshall flume. Datum of gage is 3,353.14 ft above mean sea level, datum of 1929.

Extremes.--1950-64: Maximum daily discharge, 70 cfs May 7, 1959; no flow for many days.

Remarks.--Records good. This ditch diverts water from Arkansas River in Colorado for use in Kansas. These records and records for Arkansas River near Coolidge represent total flow of Arkansas River at the Colorado-Kansas State line.

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	12					0	27	1.7	40	16	11
2	15	13					0	34	1.2	38	14	9.0
3	12	17					0	26	1.1	37	14	8.4
4	15	16					0	26	1.1	35	21	11
5	12	15					0	24	0	30	22	25
6	12	12					0	26	0	27	21	23
7	22	14					0	23	0	26	21	28
8	28	12					0	15	0	27	21	22
9	23	9.2					0	25	0	25	19	16
10	18	11					0	25	0	27	20	16
11	13	8.7					0	26	0	25	58	13
12	12	7.9					0	29	0	24	41	14
13	11	7.7					0	26	0	20	31	19
14	12	9.0					5.7	27	0	22	26	20
15	11	11					23	27	0	21	25	14
16	11	11					45	26	0	18	20	16
17	14	15					41	23	0	18	20	15
18	15	12					42	22	0	39	17	15
19	15	16					39	23	0	17	16	13
20	14	15					36	21	0	19	17	17
21	13	5.					39	16	0	36	15	20
22	11	0					31	41	0	28	16	17
23	9.8	0					29	24	0	23	16	16
24	9.8	0					28	30	0	21	15	16
25	12	0					28	*23	0	19	15	15
26	12	0					28	20	0	30	13	14
27	10	0					34	23	0	23	*15	15
28	12	0					30	26	0	20	14	16
29	12	0					28	42	14	31	12	16
30	13	0					29	54	40	20	17	16
31	8.7							39		18	12	
Total	419.3	249.5	0	0	0	0	535.7	839	59.1	804	61.7	486.4
Mean	13.5	8.32	0	0	0	0	17.9	27.1	1.97	25.9	19.8	16.2
Ac-ft	832	495	0	0	0	0	1,060	1,660	117	1,590	1,220	965

Calendar year 1963: Max 47 Min 0 Mean 12.3 Ac-ft 8,910

Water year 1963-64: Max 58 Min 0 Mean 10.9 Ac-ft 7,940

* Discharge measurement made on this day.

ARKANSAS RIVER BASIN

7-1375. Arkansas River near Coolidge, Kans.

Location.--Lat 38°01'33", long 102°01'00", in NW¼ sec.26, T.23 S., R.43 W., on right bank 1,560 ft upstream from highway bridge, 1 mile south of Coolidge, and 1½ miles downstream from Colorado-Kansas State line.

Drainage area.--25,410 sq mi, of which 1,708 sq mi is probably noncontributing.

Records available.--May to October 1903, March to May 1921, October 1950 to September 1964. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 3,333.94 ft above mean sea level, datum of 1929. May 5 to Oct. 31, 1903, staff gage on upstream side of bridge 1,560 ft downstream at different datum. Mar. 1 to May 31, 1921, water-stage recorder at bridge 1,560 ft downstream at different datum.

Average discharge.--14 years, 174 cfs (126,000 acre-ft per year).

Extremes.--Maximum discharge during year, 15,800 cfs May 30 (gage height, 8.60 ft); minimum daily, 0.1 cfs Sept. 1-3. 1903, 1921, 1950-64: Maximum discharge, 60,000 cfs May 15, 1951 (gage height, 10.67 ft), from rating curve extended above 11,000 cfs by logarithmic plotting; no flow for many days in 1903, 1954, 1960.

Remarks.--Records good except those for periods of ice effect, which are fair. Discharge measurements generally made twice a week. Combined flow of river and Frontier ditch (see preceding page) represents entire flow that enters Kansas. Flow regulated by John Martin Reservoir (see elsewhere in this report). Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals and diversion for irrigation of about 500,000 acres, and return flow from irrigated areas.

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	51	20	51	52	51	51	30	6.9	1,110	16	1.7	0.1
2	28	21	46	60	51	51	33	6.5	672	16	1.6	.1
3	24	22	46	55	44	48	35	6.1	505	14	1.7	.1
4	22	23	44	59	37	48	44	7.7	418	13	1.8	.2
5	20	22	37	51	30	48	44	12	338	11	1.6	.4
6	19	23	37	44	48	62	33	6.9	289	10	1.7	.5
7	22	23	38	46	65	65	33	4.9	251	10	2.0	.2
8	22	23	38	48	46	67	33	19	209	10	2.0	.2
9	19	22	37	40	62	70	191	8.1	181	8.5	2.0	.2
10	14	22	35	35	67	53	270	7.3	154	8.0	2.0	.2
11	14	21	30	30	79	44	297	55	151	8.5	1.8	1.1
12	14	20	28	30	84	38	336	6.5	151	8.5	4.5	1.4
13	14	20	27	29	87	38	275	4.0	130	8.0	1.8	1.4
14	15	21	28	35	91	40	107	3.0	121	7.5	1.7	1.4
15	15	21	30	40	81	40	51	2.8	127	7.5	1.7	1.8
16	15	20	32	45	65	44	17	3.0	98	7.5	1.4	1.4
17	16	21	28	50	65	42	13	3.5	82	8.0	1.4	1.0
18	16	19	24	55	73	37	9.2	3.8	74	3.99	1.4	1.2
19	16	18	29	60	62	42	8.5	3.0	67	1.75	1.2	1.8
20	17	18	32	62	59	38	8.1	2.5	178	3.8	1.1	1.8
21	16	23	30	70	51	33	7.3	2.2	273	8.0	1.1	1.7
22	15	33	29	76	57	40	7.3	1.77	286	6.0	1.1	1.6
23	15	37	28	73	65	44	6.5	62	296	5.0	1.0	1.6
24	16	40	28	65	62	51	6.9	9.8	322	4.0	1.0	1.7
25	16	48	29	57	62	53	6.5	4.2	315	3.5	1.0	1.7
26	20	57	30	57	55	51	4.9	3.0	190	5.0	.8	1.7
27	18	51	34	59	65	51	3.8	3.5	109	4.0	.5	1.7
28	19	55	38	55	53	48	3.8	2.5	93	3.0	.6	1.8
29	19	59	42	57	59	46	4.9	7.14	50	7.0	.4	1.7
30	20	53	46	57	-----	42	6.5	11,900	18	3.0	.2	1.7
31	22	-----	44	57	-----	35	-----	6,890	-----	1.8	.2	-----
Total	589	876	1,075	1,609	1,776	1,460	1,926.2	19,940.7	7,258	834.3	60.2	33.4
Mean	19.0	29.2	34.7	51.9	61.2	47.1	64.2	643	242	26.9	1.94	1.11
Ac-ft	1,170	1,740	2,130	3,190	3,520	2,900	3,820	39,550	14,400	1,650	119	66

Calendar year 1963: Max 986 Min 0.5 Mean 71.7 Ac-ft 51,890
 Water year 1963-64: Max 11,900 Min 0.1 Mean 102 Ac-ft 74,260

Note.--Stage-discharge relation affected by ice Dec. 7 to Jan. 20, Feb. 4.

RIO GRANDE BASIN

8-2135. Rio Grande at Thirtymile Bridge, near Creede, Colo.

Location.--Lat 37°43'30", long 107°15'20", in NE¼ sec.13, T.40 N., R.4 W., on right bank 70 ft below bridge, 500 ft upstream from Squaw Creek, three-quarters of a mile downstream from Rio Grande Reservoir, and 20 miles southwest of Creede.

Drainage area.--163 sq mi.

Records available.--June 1909 to September 1923, May 1925 to September 1964. No winter records 1910, 1926. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 9,300 ft (from topographic map). June 1, 1909, to Apr. 7, 1912, chain gage at site about a quarter of a mile downstream at different datum. Apr. 8, 1912, to Sept. 30, 1923, staff or chain gage 500 ft upstream at different datum. May 16, 1925, to Sept. 30, 1934, water-stage recorder at present site at datum 0.40 ft higher.

Average discharge.--51 years (1910-23, 1926-64), 216 cfs (156,400 acre-ft per year).

Extremes.--Maximum discharge during year, 1,180 cfs May 20 (gage height, 3.98 ft); minimum not determined. 1909-23, 1925-64: Maximum discharge, 7,500 cfs June 28, 1927 (gage height, 7.03 ft, present datum), from rating curve extended above 1,200 cfs; minimum daily, 0.1 cfs Nov. 2-4, 1960.

Remarks.--Records good except those for Nov. 21 to May 13, which are poor. Flow regulated by Rio Grande Reservoir (capacity, 51,110 acre-ft) since 1912. Natural flow of stream affected by transmountain diversions from Colorado River basin to drainage area above station through Raber-Lohr and Fuchs ditches (see elsewhere in this report). No known diversion above station.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(shifting-control method used Apr. 20-30)

Oct. 1 to Apr. 30				May 1 to Sept. 30			
0.2	1.0	0.7	18	1.0	40	2.2	440
.3	2.0	1.0	38	1.1	54	2.6	650
.4	5.0	1.3	67	1.4	133	3.0	925
.5	9.0	1.7	130	1.8	270	3.6	1,480

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	71	40						86	724	197	118	59
2	68	42						94	925	183	127	71
3	67	51						99	925	173	133	50
4	67	52						116	505	160	139	47
5	66	47					3.5	142	622	160	136	46
6	65	44						113	612	145	130	46
7	63	50						66	794	130	130	47
8	62	45						54	724	*127	124	48
9	60	43						54	515	127	116	46
10	58	44					13	136	692	136	113	50
11	57	41					25	240	*745	148	110	51
12	56	*37					44	167	692	151	*113	47
13	55	38					44	*151	634	145	136	44
14	53	40					45	338	551	148	116	46
15	51	36					51	500	562	142	107	*73
16	50	37	1.8	2.0	2.5	3.0	67	692	525	142	96	76
17	50	27					94	895	440	142	96	61
18	*51	29					102	850	377	142	86	54
19	54	33					90	957	382	127	78	53
20	68	32					71	1,400	354	113	86	56
21	67	18					53	1,340	326	104	81	61
22	63	2.0					53	1,250	286	101	71	73
23	58	1.5					53	1,380	*270	99	66	96
24	57	1.5					*77	1,410	278	94	61	73
25	53	1.5					100	1,300	270	107	56	71
26	52	1.5					70	*1,150	236	101	51	73
27	51	1.5					55	1,070	243	88	66	73
28	47	1.5					56	902	236	83	61	71
29	50	1.5					56	895	236	83	51	68
30	48	1.5					65	836	218	91	51	71
31	49							724		101	50	
Total	1,787	840.0	55.8	62.0	72.5	93.0	1,315.5	19,413	14,899	3,990	2,955	1,801
Mean	57.6	28.0	1.8	2.0	2.5	3.0	43.8	626	497	129	95.3	60.0
Ac-ft	3,540	1,670	111	123	144	184	2,610	38,510	29,550	7,910	5,860	3,570

Calendar year 1963: Max 1,560 Min - Mean 135 Ac-ft 98,100
Water year 1963-64: Max 1,410 Min - Mean 129 Ac-ft 93,780

* Discharge measurement made on this day.
Note.--No gage-height record Nov. 21 to Apr. 11.

8-2145. North Clear Creek below Continental Reservoir, Colo.

Location.--Lat 37°53'18", long 107°12'10", in NE¼SW¼ sec.21, T.42 N., R.3 W , on left bank 100 ft below bridge, 1,000 ft downstream from Continental Reservoir, and 15 miles west of Creede.

Drainage area.--51.7 sq mi.

Records available.--May 1929 to September 1964. Monthly discharge only for some periods, published in WSP 1312. Prior to October 1960, published as Clear Creek below Continental Reservoir.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 10,200 ft (from topographic map). Prior to Oct. 2, 1951, at site 150 ft upstream at different datum.

Average discharge.--35 years, 30.8 cfs (22,300 acre-ft per year).

Extremes.--Maximum discharge during year, 316 cfs May 16 (gage height, 3.10 ft), from rating curve extended above 120 cfs; minimum not determined.

1929-64: Maximum discharge, 362 cfs May 8, 1952 (gage height, 3.66 ft), from rating curve extended above 120 cfs; no flow June 22, 23, 1935.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Flow regulated by Continental Reservoir (capacity, 26,720 acre-ft). No diversion above station.

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

0.6	0	1.8	52
.8	1.0	2.1	93
.9	2.0	2.3	130
1.0	3.5	2.7	220
1.2	9.5	3.1	316
1.5	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	12	10						24	48	126	19	13
2	12	12						26	53	56	21	12
3	11	13						26	57	21	22	9.5
4	10	12						29	58	21	19	10
5	14	12					0.8	31	67	19	18	12
6	12	12						31	53	18	24	14
7	12	13						31	52	19	25	12
8	12	12						31	83	*19	21	12
9	12	12					3	31	113	19	18	14
10	11	12					5	31	42	19	18	12
11	10	9.5					5	34	*32	19	22	12
12	11	*9.2					5	38	32	21	*26	10
13	10	9.2					5	*49	36	22	25	10
14	10	9.5					5	95	41	27	21	14
15	10	8.0					5	161	43	28	19	*15
16	10	b7	0.3	0.4	0.5	0.7	7	244	43	28	19	14
17	10	b6					10	299	43	25	17	12
18	*10	b6					12	256	43	22	18	12
19	13	6					17	194	83	21	16	12
20	14	7					19	191	126	19	18	14
21	14	4					20	210	122	19	14	16
22	13	1					20	225	97	20	14	17
23	14	1.4					20	232	*80	26	12	14
24	14	b10.4					*20	184	77	32	12	13
25	14						20	115	74	26	12	14
26	14	b10					20	88	72	19	12	14
27	12	b10					20	95	56	18	18	14
28	10	b10					20	93	45	19	13	13
29	13	b10					21	69	44	19	12	12
30	12	b10					21	48	49	19	11	12
31	12							44		18	12	
Total	368	204.2	9.3	12.4	14.5	21.7	306.4	3,255	1,864	804	548	384.5
Mean	11.9	6.81	0.3	0.4	0.5	0.7	10.2	105	62.1	25.9	17.7	12.8
Ac-ft	730	405	18	25	29	43	608	6,460	3,700	1,590	1,090	763

Calendar year 1963: Max 113 Min - Mean 18.0 Ac-ft 13,010
 Water year 1963-64: Max 299 Min - Mean 21.3 Ac-ft 15,460

* Discharge measurement made on this day.
 b Stage-discharge relation affected by ice.
 Note.--No gage-height record Nov. 19 to Apr. 17 (stage-discharge relation affected by ice during part of period).

RIO GRANDE BASIN

8-2165. Willow Creek at Creede, Colo.

Location.--Lat 37°51'20", long 106°55'40", in SE¼ sec.25, T.42 N., R.1 W., on left bank at north city limits of Creede, 8 ft upstream from entrance to paved channel just downstream from Windy Gulch, half a mile downstream from confluence of East and West Willow Creeks, and 2½ miles upstream from mouth.

Drainage area.--35.3 sq mi.

Records available.--May 1951 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 8,880 ft (from topographic map). Prior to Sept. 2, 1953, at site 17 ft upstream at same datum.

Average discharge.--13 years, 20.9 cfs (15,130 acre-ft per year).

Extremes.--Maximum discharge during year, 198 cfs May 23 (gage height, 3.16 ft); minimum not determined.

1951-64: Maximum discharge, 430 cfs June 5, 1957; maximum gage height, 4.16 ft May 23, 1958; minimum daily discharge, 0.2 cfs Mar. 25, 1956, probably caused by snowslide upstream.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Diversions above station for municipal supply of Creede.

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

1.2	1.7	1.8	27
1.3	3.5	2.0	42
1.4	6.5	2.5	95
1.6	16	3.0	166

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					3.0	1.0	41	22	22	16
2	* 11	6.2	(*)				* 3.0	12	43	20	24	14
3	10	7.0					3.0	9.6	42	20	25	14
4	10	7.0			(*)		3.0	10	43	18	* 29	13
5	9.6	* 6.2					3.0	* 9.6	46	19	36	14
6	9.2	5.9		(*)			3.0	7.8	46	18	48	14
7	8.8	5.6					2.8	7.8	56	* 18	48	14
8	8.3	5.6					2.6	8.3	49	18	45	13
9	8.3	5.3					2.7	12	* 47	18	39	* 14
10	7.8	5.3				(*)	2.8	18	51	18	38	14
11	7.4	4.7					3.0	22	47	20	39	12
12	7.0	4.1					3.6	24	45	21	45	11
13	7.0	4.4					4.0	28	42	22	60	11
14	6.5	4.7					5	36	41	20	49	14
15	6.5	4.1					7	49	40	20	44	14
16	6.2	4.4	3.4	3.0	2.8	3.0	8.5	90	38	18	40	13
17	5.9	2.8					9	110	36	19	37	11
18	5.9	3.0					7	* 108	35	18	33	11
19	6.5	3.3					5.5	11.2	34	16	30	12
20	8.8	4.4					4.7	11.6	31	15	32	12
21	7.8						5.0	124	30	16	27	12
22	7.4						6.5	120	27	17	25	13
23	7.0						7.4	114	24	17	23	12
24	7.0						8.3	106	24	27	20	12
25	6.5						7.4	11.2	23	39	20	12
26	6.5	4.2					5.6	* 99	23	25	20	12
27	6.5						5.9	80	22	22	22	12
28	6.2						7.0	69	22	20	19	11
29	6.5						9.2	57	22	22	18	11
30	6.5						7.4	45	23	22	16	11
31	7.0							42		22	16	
Total	236.6	141.3	105.4	93.0	81.2	93.0	155.9	1,768.1	1,093	627	989	379
Mean	7.63	4.71	3.4	3.0	2.8	3.0	5.20	57.0	36.4	20.2	31.9	12.6
Ac-ft	469	280	209	184	161	184	309	3,510	2,170	1,240	1,960	752

Calendar year 1963: Max 49 Min - Mean 10.0 Ac-ft 7,270
 Water year 1963-64: Max 124 Min - Mean 15.7 Ac-ft 11,430

Peak discharge (base, 120 cfs)--May 17 (2000) 184 cfs (3.09 ft); May 23 (1930) 198 cfs (3.16 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 21 to Apr. 1, Apr. 8-19 (stage-discharge relation affected by ice during part of period).

8-2175. Rio Grande at Wagonwheel Gap, Colo.

Location.--I-: 37°46'00", long 106°49'50", in NE¼ sec.35, T.41 N., R.1 E., on right bank 250 ft upstream from private bridge, 0.2 mile upstream from Goose Creek, and 0.3 mile west of town of Wagonwheel Gap.

Drainage area.--780 sq mi.

Records available.--May 1951 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 8,431.26 ft above mean sea level, datum of 1929.

Average discharge.--13 years, 480 cfs (347,500 acre-ft per year).

Extremes.--Maximum discharge during year, 3,470 cfs May 24 (gage height, 4.85 ft); minimum daily, 65 cfs Jan. 14.
1951-64: Maximum discharge, 4,870 cfs July 26, 1957 (gage height, 5.38 ft); minimum daily, 46 cfs Dec. 9, 1956.

Remarks.--Records good except those for period of ice effect, which are poor. Flow regulated by Santa Maria, Rio Grande, and Continental Reservoirs (total capacity, 121,400 acre-ft). Diversions above station for irrigation. Transmountain diversions to drainage area above station from Colorado River basin (see elsewhere in this report).

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

1.1	110	2.5	710
1.3	144	3.0	1,100
1.6	232	4.0	2,200
2.0	415	4.5	2,920

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	201	149	110	110	85	80	140	280	1,160	465	370	192
2	* 195	138	* 110	110	85	80	* 120	347	1,360	498	430	208
3	192	149	100	110	85	85	110	288	1,480	390	428	198
4	189	158	100	100	* 85	75	110	284	1,140	356	* 450	180
5	183	* 161	95	110	80	85	100	* 293	1,240	342	415	174
6	180	154	90	* 85	80	80	100	271	1,240	342	415	180
7	180	151	85	90	80	90	100	254	1,490	* 320	465	189
8	177	151	80	90	80	90	100	215	1,520	306	405	195
9	174	144	90	85	80	75	100	241	* 1,140	306	365	* 183
10	168	142	100	85	90	* 80	110	275	1,260	352	352	215
11	166	140	100	80	85	80	120	395	1,330	338	352	195
12	166	132	100	80	90	80	120	509	1,240	380	370	174
13	163	136	90	75	90	90	140	628	1,160	390	450	166
14	161	136	70	65	85	80	200	906	994	410	445	180
15	156	140	80	70	80	95	280	1,310	1,050	390	380	241
16	156	140	90	75	85	100	370	1,940	1,090	415	342	243
17	154	118	90	80	90	100	390	2,410	954	390	329	218
18	156	116	100	80	85	100	360	* 2,390	858	385	311	192
19	161	117	100	85	85	100	306	2,190	801	338	288	189
20	189	124	100	85	90	95	280	2,600	815	316	299	201
21	195	126	110	90	90	100	232	2,740	731	298	302	208
22	183	121	100	95	85	100	254	2,700	668	288	262	236
23	174	114	90	95	90	95	275	2,870	592	288	241	249
24	168	110	100	95	85	100	293	2,900	568	320	225	245
25	166	120	100	80	85	90	338	2,760	556	415	218	241
26	161	120	100	85	90	85	280	* 2,510	526	334	212	236
27	158	120	110	90	90	90	249	2,300	509	280	222	245
28	154	120	100	90	85	95	225	1,830	492	271	227	241
29	151	110	110	90	85	100	293	1,730	470	298	209	225
30	154	110	100	85	-----	110	249	1,470	476	324	192	225
31	154	-----	100	85	-----	130	-----	1,270	-----	342	187	-----
Total	5,285	3,967	3,000	2,730	2,470	2,835	6,344	43,106	28,910	10,887	10,230	6,270
Mean	170	132	96.8	88.1	85.2	91.5	211	1,391	964	351	330	209
Ac-ft	10,480	7,870	5,950	5,410	4,900	5,620	12,580	85,500	57,340	21,590	20,290	12,440

Calendar year 1963: Max 2,240 Min 65 Mean 317 Ac-ft 229,500
Water year 1963-64: Max 2,900 Min 65 Mean 344 Ac-ft 250,000

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 26 to Apr. 15.

8-2185. Goose Creek at Wagonwheel Gap, Colo.

Location.--Lat 37°45'07", long 106°49'46", in SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.35, T.41 N., R.1 E., on left bank a quarter of a mile downstream from Pierce Creek, 1 mile upstream from mouth, 1 mile south of Wagonwheel Gap, and 8.8 miles southeast of Creede.

Drainage area.--90 sq mi, approximately.

Records available.--June 1954 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,460 ft (from topographic map).

Average discharge.--10 years, 54.2 cfs (39,240 acre-ft per year).

Extremes.--Maximum discharge during year, about 300 cfs May 24 (gage height not determined); minimum daily, 10 cfs Jan. 13, 24, 25. 1954-64: Maximum discharge, 645 cfs July 27, 1957 (gage height, 4.44 ft); minimum daily, 9.6 cfs Nov. 15, 16, Dec. 5, 1956. Flood in June 1927 is the greatest known including those in October 1911 and June 18, 1949. Flood in October 1911 probably exceeded that of June 18, 1949, from information by local residents.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Several small diversions above station for irrigation. Lake Humphreys (capacity, 842 acre-ft) above station with a fixed spillway and no gates has slight effect on flow.

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

2.3	8.0	2.8	46
2.5	17	2.9	64
2.6	23	3.2	134
2.7	33	3.5	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	23	16	17	15	12	13	22	50	91	45	41	28
2	23	18	17	15	12	13	21	53	86	41	51	26
3	23	19	17	15	11	13	20	40	82	36	57	22
4	23	19	17	14	12	13	20	45	79	33	46	21
5	22	18	17	12	13	13	20	46	108	33	45	22
6	22	18	16	12	13	13	20	40	122	32	40	23
7	22	19	16	13	13	13	19	40	150	32	40	24
8	*22	18	15	13	13	12	22	36	139	32	40	21
9	22	17	16	13	13	12	26	46	110	34	37	21
10	21	18	*17	13	13	12	25	55	122	64	37	22
11	21	17	18	13	14	13	27	66	*127	42	37	20
12	22	*16	13	11	13	13	29	88	117	51	*37	19
13	22	17	11	10	12	13	28	*115	112	50	48	19
14	21	18	11	11	12	14	34	124	105	*53	41	22
15	21	17	12	11	11	14	48	144	103	50	34	27
16	20	18	12	11	12	15	60	164	96	53	32	*26
17	21	13	13	11	12	15	62	181	86	57	31	22
18	21	13	13	12	12	16	50	170	79	48	31	21
19	22	14	14	13	12	17	42	164	77	42	30	21
20	24	14	14	12	12	16	37	167	73	40	37	22
21	22	17	13	12	12	17	37	192	66	38	32	22
22	21	16	13	11	11	17	43	206	59	37	29	26
23	21	14	13	11	11	18	53	212	*59	34	28	27
24	20	16	14	10	11	16	*59	220	57	36	26	24
25	20	18	14	10	11	16	51	212	55	34	26	26
26	19	15	14	11	12	15	37	*209	51	31	27	26
27	19	17	14	*12	12	17	37	198	48	30	28	29
28	19	18	14	12	12	18	41	167	40	31	26	29
29	19	16	14	12	12	19	51	147	41	34	26	24
30	19	16	15	12	-----	*20	42	117	50	36	25	24
31	20	-----	15	12	-----	21	-----	100	-----	37	26	-----
Total	65.7	500	449	375	351	467	1,083	3,814	2,590	1,246	1,091	706
Mean	21.2	16.7	14.5	12.1	12.1	15.1	36.1	123	86.3	40.2	35.2	23.5
Ac-ft	1,300	992	891	744	696	926	2,150	7,560	5,140	2,470	2,160	1,400

Calendar year 1963: Max 134 Min 11 Mean 31.4 Ac-ft 22,740
 Water year 1963-64: Max 220 Min 10 Mean 36.4 Ac-ft 26,430

Peak discharge (base, 200 cfs)--May 24 (time unknown) about 300 cfs.

* Discharge measurement made on this day.

Note.--No gage-height record Dec. 2-10, Dec. 12 to Mar. 29 (stage-discharge relation affected by ice during most of periods), Apr. 3-8, May 23-25.

8-2195. South Fork Rio Grande at South Fork, Colo.

Location.--Lat 37°39'40", long 106°38'50", in sec.4, T.39 N., R.3 E., on left bank near U. S. Highway 160, a quarter of a mile downstream from Church Creek, 1½ miles upstream from mouth, and 1½ miles southwest of village of South Fork.

Drainage area.--216 sq mi.

Records available.--August 1910 to September 1922, May 1936 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 8,221.79 ft above mean sea level, datum of 1929. Aug. 9, 1910, to Mar. 28, 1915, staff or chain gage and Mar. 29, 1915, to Sept. 30, 1922, water-stage recorder, at bridges 1 mile downstream at different datums.

Average discharge.--40 years, 210 cfs (152,000 acre-ft per year).

Extremes.--Maximum discharge during year, 1,410 cfs May 24 (gage height, 4.80 ft); minimum daily, 17 cfs Jan. 13, 14, 23-26. 1910-22, 1936-64: Maximum discharge, 8,000 cfs Oct. 5, 1911 (gage height, 9.7 ft, from floodmarks, present site and datum), from rating curve extended above 1,500 cfs; minimum daily, 14 cfs Nov. 28, 29, 1960. Maximum stage known since at least 1873, that of Oct. 5, 1911. Flood of June 29, 1927, reached a stage about 1 ft lower than that of Oct. 5, 1911, from information by local resident.

Remarks.--Records good except those for periods of ice effect, which are poor. Transmountain diversions from Colorado River basin to drainage area above station through Treasure Pass ditch (see elsewhere in this report). Natural flow of stream affected by a few small diversions for irrigation, slight regulation by Beaver Creek Reservoir (capacity, 4,760 acre-ft) and several smaller storage reservoirs.

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

1.0	26	3.0	420
1.5	74	4.0	900
2.0	150	4.8	1,410
2.5	265		

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	38	34	25	24	19	26	69	186	448	174	136	66
2	38	36	25	24	19	26	68	205	420	160	164	56
3	38	41	25	23	19	26	66	166	428	158	235	54
4	38	44	25	23	21	26	65	170	428	160	176	52
5	37	43	24	21	22	26	65	176	500	150	152	55
6	36	* 41	23	19	22	26	64	156	563	134	136	65
7	36	40	23	20	22	26	71	158	595	134	136	64
8	* 36	39	22	21	22	25	78	146	590	136	127	57
9	35	38	22	21	22	25	90	168	492	143	129	57
10	34	38	*23	21	23	25	88	208	476	136	127	72
11	34	38	23	20	23	26	99	260	* 460	99	124	61
12	34	35	21	19	22	26	105	347	428	126	132	56
13	37	37	20	17	22	27	110	484	399	113	250	49
14	36	38	19	17	21	27	* 120	558	378	164	* 190	59
15	34	36	19	18	21	28	170	590	364	129	174	85
16	33	39	20	18	22	30	220	755	350	122	146	*85
17	32	26	21	18	23	32	215	858	317	* 121	134	66
18	33	23	21	19	24	33	186	912	288	105	119	56
19	38	23	22	20	24	34	182	876	265	95	108	55
20	57	24	22	19	24	* 34	174	852	245	91	129	60
21	47	26	21	19	23	35	166	852	228	84	112	65
22	43	27	21	18	22	36	186	1,030	265	98	98	78
23	40	24	21	* 17	22	40	215	1,040	* 242	98	89	84
24	39	24	22	17	22	41	240	1,080	222	99	82	71
25	37	26	22	17	23	40	215	1,070	230	121	78	77
26	35	24	22	17	24	40	166	*984	220	88	75	91
27	35	25	22	19	24	42	154	942	192	82	74	126
28	35	26	22	19	25	45	176	852	188	88	67	112
29	35	25	23	19	26	50	230	710	184	116	65	92
30	35	25	24	19	-----	56	182	581	182	126	61	85
31	38	-----	24	19	-----	63	-----	488	-----	122	59	-----
Total	1,153	965	689	602	648	1,042	4,235	17,860	10,587	3,772	3,884	2,111
Mean	37.2	32.2	22.2	19.4	22.3	33.6	141	576	353	122	125	70.4
Ac-ft	2,290	1,910	1,370	1,190	1,290	2,070	8,400	35,420	21,000	7,480	7,700	4,190

Calendar year 1963: Max 558 Min - Mean 100 Ac-ft 72,380
 Water year 1963-64: Max 1,080 Min 17 Mean 130 Ac-ft 94,310

Peak discharge (base, 900 cfs).--May 17 (2300) 1,180 cfs (4.46 ft); May 24 (2100) 1,410 cfs (4.80 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18 to Apr. 17 (no gage-height record Dec. 13 to Apr. 9).

RIO GRANDE BASIN

8-2200. Rio Grande near Del Norte, Colo.

Location.--Lat 37°41'20", long 106°27'40", in NW¼ sec.29, T.40 N., R.5 E., on right bank 20 ft downstream from county highway bridge, 5 miles upstream from Pinos Creek, and 6 miles west of Del Norte.

Drainage area.--1,320 sq mi, approximately.

Records available.--June 1889 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 7,980.25 ft above mean sea level, datum of 1929. Prior to May 16, 1908, staff gage at site 4 miles downstream at different datum. May 16, 1908, to Nov. 8, 1910, staff or chain gage on bridge at present site and datum.

Average discharge.--75 years, 911 cfs (659,500 acre-ft per year).

Extremes.--Maximum discharge during year, 4,710 cfs May 25 (gage height, 4.22 ft); minimum daily, 80 cfs Jan. 15, 16. 1889-1964: Maximum discharge, 18,000 cfs Oct. 5, 1911 (gage height, 6.80 ft), from rating curve extended above 12,900 cfs; minimum daily, 69 cfs Aug. 21, 1902. Maximum stage known since at least 1873, that of Oct. 5, 1911, from information by local residents.

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. Small diversions above station for irrigation. Flow regulated by Beaver Creek Reservoir since 1910, Santa Maria Reservoir since 1912, Rio Grande Reservoir since 1913, and Continental Reservoir since 1925 (total capacity, 126,100 acre-ft), and by several smaller reservoirs. Transmountain diversions to drainage area above station from Colorado River basin (see elsewhere in this report).

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

0.4	76	2.0	1,010
.8	180	2.5	1,570
1.1	335	3.0	2,320
1.5	588	4.0	4,240

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	264	208	130	130	115	130	250	488	1,740	713	574	258
2	253	174	125	130	115	135	240	581	1,780	729	603	269
3	253	185	122	130	105	135	230	500	1,970	618	754	258
4	248	212	125	120	110	135	210	474	1,770	561	688	226
5	237	226	130	115	110	135	200	494	1,730	527	634	221
6	231	212	130	115	110	140	190	449	1,870	507	618	237
7	226	203	130	115	110	145	195	443	2,110	488	641	242
8	221	208	125	120	105	145	198	395	2,260	474	603	248
9	221	198	130	110	110	150	203	413	1,770	474	547	231
10	221	194	135	110	115	150	231	494	1,740	554	507	258
11	221	189	125	110	120	150	253	649	1,840	474	520	269
12	217	177	120	100	115	155	318	919	1,760	547	534	226
13	217	171	115	90	110	155	335	1,220	1,660	568	729	208
14	217	174	120	85	110	160	365	1,570	1,510	618	721	226
15	203	180	125	80	110	160	455	2,000	1,470	596	618	296
16	198	189	130	80	115	170	603	2,950	1,530	574	540	359
17	198	174	135	85	120	185	688	3,640	1,400	574	507	318
18	198	137	135	100	120	190	656	3,840	1,250	547	443	269
19	208	185	140	110	120	200	568	3,320	1,160	494	425	242
20	258	174	140	110	120	180	540	3,700	1,130	437	443	264
21	280	180	145	105	125	185	455	3,860	1,050	401	455	280
22	264	185	135	105	130	190	488	4,050	1,030	395	395	330
23	248	160	130	105	130	190	527	4,070	928	395	359	341
24	242	140	135	100	130	180	588	4,140	874	407	335	347
25	226	140	140	110	135	175	618	4,140	874	527	313	347
26	217	140	140	110	130	175	494	3,760	830	468	302	347
27	212	135	135	115	120	170	462	3,520	788	383	302	383
28	203	135	130	115	115	170	413	2,950	762	359	308	383
29	194	130	140	115	115	190	547	2,680	737	401	286	347
30	194	130	135	115	-----	220	488	2,240	745	449	258	324
31	198	-----	130	115	-----	230	-----	1,920	-----	468	248	-----
Total	6,988	5,245	4,062	3,355	3,395	5,180	12,008	65,869	42,068	15,727	15,210	8,554
Mean	225	175	131	108	117	167	400	2,125	1,402	507	491	285
Ac-ft	13,860	10,400	8,060	6,650	6,730	10,270	23,820	130,600	83,440	31,190	30,170	16,970

Calendar year 1963: Max 3,020 Min 115 Mean 455 Ac-ft 329,500

Water year 1963-64: Max 4,140 Min 80 Mean 513 Ac-ft 372,200

Note.--Stage-discharge relation affected by ice Nov. 23 to Apr. 7 (no gage-height record Jan. 12 to Mar. 30).

8-2205. Pinos Creek near Del Norte, Colo.

Location.--Lat 37°35'30", long 106°26'50", in sec.29, T.39 N., R.5 E., on left bank just downstream from Bennett Creek, 8 miles southwest of Del Norte.

Drainage area.--53 sq mi, approximately.

Records available.--April 1919 to September 1924, May 1936 to September 1964. No winter records prior to 1950 except water years 1941, 1944-47. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder and rectangular box flume. Altitude of gage is 8,350 ft (from topographic map). May 1, 1919, to Sept. 30, 1924, staff gages at sites about 1,000 ft downstream at different datums.

Average discharge.--20 years (1940-41, 1943-47, 1949-64), 22.6 cfs (16,360 acre-ft per year).

Extremes.--Maximum discharge during year, 144 cfs May 22 (gage height, 1.71 ft); minimum not determined.
 1919-24, 1936-64: Maximum discharge not determined, occurred June 3, 1922, caused by failure of private fish-lake dam; maximum discharge determined, 720 cfs Aug. 3, 1936 (gage height, 4.19 ft), by slope-area measurement of peak flow; minimum daily recorded, 1.8 cfs Sept. 26-28, 1951.
 Maximum stage known since at least 1903, that of June 3, 1922, from information by local residents.

Remarks.--Records good except those for periods of ice effect, which are poor. One small diversion above station.

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

Oct. 1 to May 21				May 22 to Sept. 30	
0.2	3.0	0.8	35	0.3	6.0
.3	5.5	1.3	88	.5	15
.5	13	1.7	136	.8	39
				1.4	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	6.2	3.5						18	63	18	15	10
2	5.5	4.0						22	63	16	14	9.6
3	5.2	4.5						18	61	14	23	8.4
4	5.2	4.5						18	59	14	18	8.4
5	5.2	4.2						22	58	13	23	8.8
6	5.0	*4.2					6.4	21	58	12	18	11
7	5.0	4.5						25	57	12	20	10
8	*5.0	4.5					(*)	26	62	12	20	9.2
9	5.0	4.2						32	52	14	16	8.8
10	5.0	4.2	(*)					42	49	21	14	9.2
11	4.8	4.0					9.0	46	44	17	24	8.0
12	4.8	4.0					11	*56	41	18	32	7.6
13	5.5	4.2					14	72	39	15	52	7.6
14	5.2	4.8					17	70	37	*17	*30	8.8
15	5.0	4.2					20	75	36	15	27	12
16	4.8	4.2	3.2	3.0	3.0	3.8		25	90	35	14	*14
17	4.8	3.5						28	92	33	13	10
18	4.8	3.2						26	82	32	12	8.8
19	5.5	3.2						20	73	28	14	18
20	7.2	3.5				(*)	15	73	26	12	24	8.0
21	5.8						13	78	24	11	18	7.6
22	5.5						17	94	*22	12	16	8.4
23	5.5			(*)			22	100	22	10	15	8.0
24	5.2						29	98	21	16	14	8.0
25	5.2	3.3					30	102	20	19	14	7.6
26	5.0						23	98	20	12	14	8.0
27	5.0						18	92	19	12	13	12
28	5.0						18	*80	18	11	12	10
29	5.0						22	73	18	14	12	8.8
30	4.8						18	70	20	24	11	8.0
31	5.0							66		15	10	
Total	161.7	114.1	99.2	93.0	87.0	117.8	459.0	1,924	1,137	449	604	273.0
Mean	5.22	3.80	3.2	3.0	3.0	3.8	15.3	62.1	37.9	14.5	19.5	9.10
Ac-ft	321	226	197	184	173	234	910	3,820	2,260	891	1,200	541

Calendar year 1963: Max 36 Min - Mean 8.53 Ac-ft 6,180
 Water year 1963-64: Max 102 Min - Mean 15.1 Ac-ft 10,960

Peak discharge (base, 120 cfs).--May 16 (2000) 122 cfs (1.58 ft); May 22 (2200) 144 cfs (1.71 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18 to Apr. 13 (no gage-height record Nov. 26 to Apr. 8).

RIO GRANDE BASIN

8-2215. Rio Grande near Monte Vista, Colo.

Location.--Lat 37°36'30", long 106°08'50", at west line of sec.19, T.39 N., R.8 E., on left bank 25 ft downstream from bridge on U. S. Highway 285, 2 miles north of Monte Vista, and 12 miles downstream from San Francisco Creek.

Drainage area.--1,590 sq mi, approximately.

Records available.--May 1926 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 7,654.16 ft above mean sea level, datum of 1929. May 1, 1926, to July 5, 1927, staff or slope gage near present site at datum 0.50 ft lower. July 6-22, 1927, chain gage and July 23, 1927, to Feb. 22, 1934, water-stage recorder, near present site at datum 0.50 ft higher. Feb. 23, 1934, to Aug. 19, 1936, water-stage recorder at present site and datum. Aug. 20 to Dec. 30, 1936, water-stage recorder at site 75 ft downstream at present datum. Dec. 31, 1936, to Apr. 2, 1937, water-stage recorder at present site and datum. Apr. 3, 1937, to June 14, 1938, water-stage recorder at site 75 ft downstream at present datum.

Average discharge.--38 years, 321 cfs (232,400 acre-ft per year).

Extremes.--Maximum discharge during year, 1,700 cfs May 22 (gage height, 4.91 ft); minimum daily, 10 cfs Nov. 13.
1926-64: Maximum discharge, 18,500 cfs June 30, 1927 (gage height, 7.35 ft, present datum, from floodmarks); minimum daily, 1.5 cfs Apr. 14, 1959.

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 90,000 acres. Flow regulated by Beaver Creek, Santa Maria, Rio Grande, and Continental Reservoirs (total capacity, 126,100 acre-ft), and by several smaller reservoirs. Transmountain diversions to drainage area above station from Colorado River basin (see elsewhere in this report).

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

1.5	6.0	2.6	285
1.6	13	3.2	590
1.7	24	4.0	1,060
1.9	58	5.0	1,760
2.2	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	* 95	58	14				90	100	662	224	128	105
2	85	47	14				85	143	634	204	128	117
3	78	32	14				40	98	724	232	131	111
4	71	38	14				26	78	662	200	102	100
5	69	37	14		(*)		22	140	700	236	98	95
6	65	32	14				22	162	712	224	*98	95
7	65	21	16				29	134	748	220	140	100
8	76	18	14				32	140	808	204	137	102
9	78	17	14				40	156	694	190	111	*100
10	78	15	*15				82	131	662	190	137	95
11	58	14	16				82	*128	634	162	140	111
12	47	*13	17				92	162	618	186	143	85
13	40	10	22			125	92	330	718	168	150	80
14	40	17	21				*88	628	634	*182	90	88
15	42	16	21		75		82	742	*612	122	90	111
16	*40	15	67	70			82	970	596	134	54	128
17	42	17	140				159	994	496	165	54	108
18	47	14	159				156	1010	380	146	102	78
19	58	13	159				92	730	280	168	98	80
20	76	16	162			(*)	82	1200	224	128	98	95
21	71	21	156				69	1400	182	125	131	100
22	42	22	148				114	1210	150	137	100	111
23	32	16	148				176	1120	165	143	102	100
24	37	17	150				165	1130	200	140	111	92
25	44	18	150				162	1060	228	168	95	88
26	42	16	140				110	131	1120	208	128	80
27	40	15	135				100	150	1010	179	114	82
28	49	16	130				95	153	880	182	125	92
29	47	16	140				98	176	904	*204	131	117
30	44	14	125				117	117	754	236	134	102
31	49		120				102		645		122	102
Total	1,747	631	2,469	2,170	2,175	3,747	2,888	19,409	14,132	5,152	3,384	2,875
Mean	56.4	21.0	79.6	70	75	121	96.3	626	471	166	109	95.8
Ac-Ft	3,470	1,250	4,900	4,300	4,310	7,430	5,730	38,500	28,030	10,220	6,710	5,700

Calendar year 1963: Max 1,010 Min 10 Mean 147 Ac-ft 106,800
Water year 1963-64: Max 1,400 Min 10 Mean 166 Ac-ft 120,600

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 22 to Jan. 7, Feb. 4 to Mar. 26. No gage-height record Nov. 24 to Dec. 9, Jan. 8 to Feb. 3 (stage-discharge relation affected by ice during part of period).

8-2230. Rio Grande at Alamosa, Colo.

Location.--Lat 37°29', long 105°53', in SE¼ sec.4, T.37 N., R.10 E., on right bank a quarter of a mile northwest of city limits of Alamosa and 9 miles upstream from Alamosa Creek.

Drainage area.--1,710 sq mi, approximately.

Records available.--May 1912 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 7,532.66 ft above mean sea level, datum of 1929. Prior to Apr. 7, 1915, staff or chain gage and Apr. 7, 1915, to Nov. 5, 1935, water-stage recorder, at railroad and highway bridges in Alamosa 1 to 2½ miles downstream at different datums. Nov. 6, 1935, to June 30, 1942, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge.--52 years, 260 cfs (188,200 acre-ft per year).

Extremes.--Maximum discharge during year, 228 cfs May 22 (gage height, 2.74 ft); minimum not determined.
 1912-64: Maximum discharge, 14,000 cfs July 1, 1927 (gage height, 8.37 ft, site and datum then in use); maximum gage height, 10.62 ft June 20, 1949; minimum daily discharge, 1.0 cfs May 19, 1950.
 Flood in October 1911 (stage, 0.2 ft lower than July 1, 1927, from floodmark) probably exceeded that of July 1, 1927, and is probably the greatest known since at least 1884, from information by local resident.

Remarks.--Records poor prior to May 2 and good thereafter. Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
 (Shifting-control method used Nov. 1-30, Apr. 2 to May 1)

Oct. 1 to May 1				May 2 to Sept. 30			
0.9	6.0	1.5	55	0.9	10	2.0	107
1.1	17	2.0	131	1.2	29	2.5	180
1.3	33	2.5	230	1.6	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	15	23					136	66	35	40	35	23
2	16	24					121	49	30	40	37	21
3	18	28					103	44	51	38	39	21
4	20	30					82	42	35	40	39	22
5	20	28					68	41	34	35	37	23
6	20	28					61	*40	65	35	*36	23
7	20	28					55	47	65	40	36	20
8	20	27					48	43	55	40	35	15
9	20	23	20				45	42	50	42	40	14
10	20	21	(*)				35	43	42	41	43	14
11	19	20					36	45	43	39	43	14
12	16	*19					43	42	50	38	44	13
13	20	19					51	43	43	*38	48	13
14	21	18					*41	55	60	39	50	14
15	21	18					47	*73	*79	38	41	14
16	21	18		80	80	135						
17	21	18		(*)			32	66	52	39	31	14
18	21	18					24	86	52	43	28	15
19	21	18					22	62	48	42	26	17
20	21	18					44	56	40	35	24	17
						(*)	23	28	39	37	24	20
21	21	18					31	68	43	36	23	23
22	21	18					42	*160	40	35	22	21
23	*21	18	120				41	135	39	36	22	17
24	21	20					45	72	32	38	21	17
25	21	22					50	76	*31	40	21	15
26	21	21					49	58	35	35	22	14
27	21	20					49	68	35	34	23	14
28	21	20					50	67	35	31	23	14
29	21	20					58	40	34	31	23	15
30	21	20					60	68	37	31	23	*19
31	22					*140		50		32	22	
Total	623	641	2,220	2,480	2,320	4,190	1,592	1,875	1,329	1,158	981	516
Mean	20.1	21.4	71.6	80	80	135	53.1	60.5	44.3	37.4	31.6	17.2
Ac-ft	1,240	1,270	4,400	4,920	4,600	8,310	3,160	3,720	2,640	2,300	1,950	1,020

Calendar year 1963: Max - Min 5.1 Mean 66.4 Ac-ft 48,100
 Water year 1963-64: Max - Min - Mean 54.4 Ac-ft 39,530

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 1-9. No gage-height record Dec. 10 to Mar. 30 (stage-discharge relation affected by ice during most of period). Discharge computed from once-daily staff-gage readings Mar. 31 to May 1.

RIO GRANDE BASIN

Closed basin in San Luis Valley, Colo.

8-2245. Kerber Creek at Ashley Ranch, near Villa Grove, Colo.

Location.--Lat 38°15', long 106°08', in sec.7, T.46 N., R.8 E., on left bank at Ashley Ranch, 5 miles upstream from Little Kerber Creek and 10 miles west of Villa Grove. Prior to Dec. 10, 1963, at site 150 ft upstream.

Drainage area.--38 sq mi, approximately.

Records available.--June 1923 to September 1926 (published as Kerber Creek near Villa Grove), May 1936 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is about 9,300 ft (from topographic map). Prior to Dec. 10, 1963, water-stage recorder at site 150 ft upstream at datum 1.50 ft higher.

Average discharge.--31 years, 12.8 cfs (9,270 acre-ft per year).

Extremes.--Maximum discharge recorded during year, 93 cfs May 27 (gage height, 1.55 ft); maximum gage height recorded, 2.62 ft Apr. 16 (backwater from ice); minimum not determined.
 1923-26, 1936-64: Maximum discharge, 407 cfs May 14, 1941, from rating curve extended above 140 cfs; maximum gage height, 5.04 ft (site and datum then in use) May 11, 1947 (backwater from beaver dam); minimum daily discharge, 0.2 cfs Sept. 3, 1950, July 30 to Aug. 2, 1963, but may have been less during periods of no gage-height record.
 Maximum discharge known since at least 1872, that of May 14, 1941, from information by local residents.

Remarks.--Records fair except those for periods of ice effect or no gage-height record and those for Apr. 23 to May 26, 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)
 (Shifting-control method used Oct. 1 to Nov. 30, Apr. 23 to May 26)

Dec. 10 to Sept. 30

0.3	1.7	0.8	23
.4	3.8	1.0	44
.6	10	1.3	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	2.8	2.8	}	}	}	}	}	18	39	17	10	3.6					
2	2.8	2.5						15	37	16	9.7	3.4					
3	2.8	5.2						16	38	15	10	3.2					
4	2.8	3.4						17	36	14	11	3.2					
5	2.8	3.0						14	32	15	10	3.6					
6	2.8	3.5	}	}	}	}	}	2.0	15	36	14	9.3	4.1				
7	2.8	*4.3						15	40	13	14	4.4					
8	2.8	4.0						17	43	12	11	3.6					
9	2.8	4.0						(*)	15	43	12	8.9	3.8				
10	2.8	4.3						15	42	11	8.2	3.8					
11	2.8	3.4						16	42	11	9.3	3.4					
12	2.8	2.8						20	*38	13	*10	3.4					
13	2.8	2.8						19	36	10	9.7	3.0					
14	2.8	4.3						30	*26	33	9.7	8.9	4.4				
15	3.1	3.1						4.5	37	32	9.3	8.2	5.8				
16	3.1	3.4	}	}	}	}	7.5	46	31	*10	7.8	6.0					
17	3.1	3.7					b 13	40	31	9.7	7.4	4.4					
18	3.1	2.4					b 25	43	30	8.6	6.6	*3.6					
19	3.1	2.5					b 25	38	28	7.8	6.3	5.8					
20	5.2	3.1					b 25	36	27	7.0	6.3	5.8					
21	*3.7	3.4	}	}	}	}	}	b 22	47	25	7.0	5.8	6.0				
22	3.4	3.0						(*)	b 23	68	24	7.0	5.5	5.8			
23	3.1	2.2						*24	64	22	7.0	5.5	4.9				
24	3.1	1.9						20	75	*21	11	4.9	4.4				
25	2.8	2.1						15	85	21	14	4.6	4.4				
26	2.8	1.8	}	}	}	}	}	9.7	76	21	9.3	4.9	4.6				
27	2.5	1.9						(*)	6.3	*64	20	8.6	5.8	5.8			
28	2.8	1.8						7.8	61	20	8.2	4.6	4.6				
29	2.5	1.6						8.6	56	20	8.6	4.4	4.4				
30	2.5	1.5						12	49	19	7.8	4.1	4.1				
31	3.7	-----						-----	-----	-----	40	-----	9.3	4.1	-----	-----	
Total	92.8	89.7						40.3	37.2	34.8	46.5	289.4	1,165	927	332.9	236.8	131.3
Mean	2.99	2.99						1.3	1.2	1.2	1.5	9.65	37.6	30.9	10.7	7.64	4.38
Ac-ft	184	178						80	74	69	92	574	2,310	1,840	660	470	260

Calendar year 1963: Max - Min 0.2 Mean 5.90 Ac-ft 4,270
 Water year 1963-64: Max 85 Min - Mean 9.35 Ac-ft 6,790

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

Note.--No gage-height record Nov. 5, 6, Nov. 22 to Apr. 16 (stage-discharge relation affected by ice during most of period), May 6.

Closed basin in San Luis Valley, Colo.

8-2270. Saguache Creek near Saguache, Colo.

Location.--Lat 38°10', long 106°17', in SE¼ sec.10, T.45 N., R.6 E., on left bank just upstream from Ford Creek, 10 miles northwest of Saguache.

Drainage area.--595 sq mi.

Records available.--August 1910 to September 1912, June 1914 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is about 8,050 ft (estimated from nearby U. S. Coast and Geodetic Survey level line). Prior to Apr. 9, 1934, at sites three-quarters of a mile downstream at different datums.

Average discharge.--52 years, 70.5 cfs (51,040 acre-ft per year).

Extremes.--Maximum discharge during year, 790 cfs Aug. 3 (gage height, 2.85 ft), from rating curve extended above 83 cfs; minimum not determined.

1910-12, 1914-64: Maximum discharge, that of Aug. 3, 1963; minimum daily recorded, 8.2 cfs Dec. 22, 1950, Aug. 17, 1951.

Greatest flood known occurred in 1869. Flood in 1884 or 1886 exceeded that of Aug. 3, 1964, from information by local residents.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by transmountain diversions from Colorado River basin to drainage area above station through Tarbell ditch (see elsewhere in this report) and diversions above station for irrigation.

Revisions.--Records for May and June 1951 are in error. Revised records for this period are on file in District Office and will be published in a later water supply paper.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 28-31)

Oct. 1 to Nov. 30		Dec. 1 to May 31		June 1 to Sept. 30	
0.2	17	0.8	23	0.6	24
.4	32	1.0	38	.8	38
		1.3	72	1.1	69
		1.7	147	1.5	135
		2.1	254	2.0	265

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	27					26	46	123	53	93	30
2	26	23					24	57	121	45	93	32
3	26	26					23	51	135	49	208	29
4	26	27					23	37	123	42	162	28
5	26	26					23	36	106	42	180	29
6	26	23					23	36	108	44	84	32
7	25	* 24					28	*46	108	42	73	37
8	24	24					23	46	119	40	67	36
9	26	21					24	46	123	40	52	32
10	26	21					26	47	105	43	44	35
11	26	21					30	55	103	43	50	33
12	26	19				20	30	57	93	52	68	28
13	25	19					26	71	87	47	* 90	25
14	26	20					28	85	84	49	105	26
15	27	21					38	86	*85	54	70	37
16	27	21	15	13	15		56	104	81	* 53	59	42
17	27	20					* 71	125	78	57	58	38
18	27	19					74	147	77	51	54	29
19	27						82	134	70	38	49	31
20	29						62	132	67	34	46	42
21	* 31						42	152	63	34	49	* 42
22	31						49	175	58	39	44	43
23	30						55	178	54	38	40	39
24	29	19					26	180	* 50	45	38	39
25	28						25	57	*178	50	34	36
26	28						* 24	38	193	48	77	38
27	28						24	32	221	47	54	38
28	29						25	29	183	46	56	37
29	29						26	40	152	45	65	36
30	29						27	46	129	49	98	36
31	28						28		112	90	31	
Total	845	630	465	403	435	665	1,183	3,297	2,506	1,584	2,226	1,035
Mean	27.3	21.0	15	13	15	21.5	39.4	106	83.5	51.1	68.6	34.5
Ac-ft	1,680	1,250	922	799	863	1,320	2,350	6,540	4,970	3,140	4,220	2,050

Calendar year 1963: Max 132 Min - Mean 28.6 Ac-ft 20,720
Water year 1963-64: Max 221 Min - Mean 41.5 Ac-ft 30,100

Peak discharge (base, 210 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-26	2000	2.02	236	8-3	2100	2.85	790
7-25	2330	1.83	223				

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 19 to Mar. 23 (no gage-height record Nov. 21, 22), Mar. 28 to Apr. 5.

Closed basin in San Luis Valley, Colo.

8-2275. North Crestone Creek near Crestone, Colo.

Location.--Lat 38°00'49", long 105°41'32", on right bank in canyon, 1½ miles northeast of Crestone, Saguache County, and 3½ miles upstream from South Crestone Creek.

Drainage area.--10.7 sq mi.

Records available.--May 1936 to September 1964 (no winter records prior to 1948).

Gage.--Water-stage recorder. Altitude of gage is 8,360 ft (from topographic map).

Average discharge.--17 years (1947-64), 10.2 cfs (7,380 acre-ft per year).

Extremes.--Maximum discharge during year, 92 cfs May 26 (gage height, 1.98 ft); minimum not determined.

1936-64: Maximum discharge, 735 cfs Aug. 6, 1936 (gage height, 4.33 ft), from rating curve extended above 160 cfs on basis of slope-area measurement of peak flow; minimum daily recorded, 0.4 cfs Apr. 3, 1945.

Maximum stage known probably since at least 1884 occurred in October 1911. No flood since that in October 1911 has exceeded the flood of Aug. 6, 1936, from information by local residents.

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

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

Oct. 1 to Feb. 29				Mar. 1 to Sept. 30			
0.8	1.0			0.8	0.8	1.2	9.0
.9	2.3			.9	1.3	1.4	20
1.0	4.2			1.0	3.0	1.6	39
1.1	7.1			1.1	5.5	2.0	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	4.8	3.8					1.3	6.2	22	12	14	6.9
2	4.8	3.8					1.2	5.8	24	12	16	6.6
3	4.8	3.8					1.1	5.5	26	10	36	5.8
4	4.8	3.6					1.0	5.2	26	10	30	5.8
5	4.8	3.8					1.0	5.0	31	10	24	5.8
6	4.8	3.6					1.0	4.8	43	9.5	20	5.8
7	5.1	*3.4					1.0	*4.2	49	9.0	19	5.5
8	5.1	3.4					1.0	4.2	42	8.6	18	5.5
9	4.8	3.2	(*)				1.0	5.0	35	8.6	16	5.8
10	4.5	3.2					1.0	7.2	38	8.6	15	5.8
11	4.2	3.6					1.0	6.9	38	9.5	15	5.5
12	3.8	3.4					1.5	8.6	*32	8.3	17	5.2
13	3.8	3.2					1.6	16	31	8.3	*24	5.0
14	3.8	3.1					1.8	19	30	8.0	23	5.5
15	3.8	2.9					2.8	29	32	8.0	22	7.2
16	3.8	2.3	1.6	1.1	1.0	1.2						
17	3.8	2.0					*4.0	44	34	*8.0	18	8.6
18	3.6	2.9					4.0	53	30	8.6	17	7.2
19	3.8	2.5					3.2	51	26	8.0	15	*7.2
20	5.4	2.3					3.2	43	23	7.2	14	8.0
21							3.8	46	22	6.9	16	8.3
22	*5.1	2.2					3.2	51	19	8.0	14	8.3
23	5.1	3.1					4.2	58	18	8.0	13	8.3
24	4.8	2.9					5.2	55	16	6.9	12	8.3
25	4.5	2.3					5.8	52	*15	8.6	10	8.0
26	4.5	2.2					5.8	51	15	12	9.5	8.3
27	4.2											
28	4.2						5.0	59	15	11	9.0	8.6
29	4.0	2.1					4.2	*6.3	14	10	9.0	11
30	3.8						4.2	52	14	10	8.3	10
31	3.8						5.5	40	14	10	7.6	10
	3.8						5.0	30	13	13	7.2	10
	3.8							24		13	6.9	
Total	135.9	87.0	49.6	34.1	29.0	37.2	85.6	904.6	787	289.6	495.5	217.8
Mean	4.38	2.90	1.6	1.1	1.0	1.2	2.85	29.2	26.2	9.34	16.0	7.26
Ac-ft	270	173	98	68	58	74	170	1,790	1,560	574	983	432

Calendar year 1963: Max 23 Min - Mean 4.61 Ac-ft 3,340
 Water year 1963-64: Max 63 Min - Mean 8.61 Ac-ft 6,250

Peak discharge (base, 60 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-17	2000	1.84	74	5-26	2000	1.98	92
5-22	1900	1.85	74	6-7	1900	1.79	60

* Discharge measurement made on this day.
 Note.--No gage-height record Nov. 25 to Apr. 8 (stage-discharge relation affected by ice during most of period).

Closed basin in San Luis Valley, Colo.

8-2305. Carnero Creek near La Garita, Colo.

Location.--Lat 37°52', long 106°19', in sec.28, T.42 N., R.6 E., on left bank 4 miles northwest of La Garita and 5½ miles downstream from North Fork.

Drainage area.--117 sq mi.

Records available.--April 1919 to September 1964. No winter records prior to water year 1945 except water years 1926, 1941. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 8,200 ft (from topographic map). Prior to Aug. 6, 1925, staff gage or water-stage recorder at site 300 ft downstream at different datum. Aug. 6, 1925, to Apr. 20, 1929, staff gage or water-stage recorder at present site and datum.

Average discharge.--22 years (1925-26, 1940-41, 1944-64), 10.4 cfs (7,530 acre-ft per year).

Extremes.--Maximum discharge during year, 93 cfs Aug. 7 (gage height, 1.32 ft); minimum not determined.

1919-64: Maximum discharge, 1,600 cfs July 21, 1945 (gage height, 5.75 ft), from rating curve extended above 160 cfs; no flow for several days during summer months in 1951, 1955-56, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions above 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	1.8	2.4						17	16	7.2	5.5	3.8
2	3.0	2.2						17	16	5.2	8.3	3.5
3	3.5	2.6						12	18	4.2	7.2	2.8
4	3.2	2.8						12	16	3.2	6.9	2.6
5	4.0	2.6						14	14	2.6	1.5	2.6
6		2.6					2.5					
7	3.8	*2.6	(*)					12	14	2.2	1.4	4.5
8	4.0							*15	12	2.2	1.5	4.5
9	5.2	2.4						14	12	2.4	1.2	3.8
10	6.2	2.4						15	12	2.2	1.0	*3.2
	4.8	2.4						16	11	2.4	*9.0	3.2
11	3.8	2.4					2.5	17	10	2.8	9.0	3.0
12	2.2	2.2					3.0	18	10	4.2	1.2	2.8
13	2.6	2.0					3.5	21	9.5	4.5	2.0	2.2
14	2.0	2.4					1.0	25	9.0	4.2	1.5	2.6
15	2.8	2.6					*2.4	25	*8.6	3.2	1.2	4.2
16	2.4	2.4	1.0	1.0	1.2	1.6						
17	2.4	2.2					3.7	29	7.6	4.2	1.1	6.2
18	2.4	1.6					3.3	29	7.2	*4.0	1.0	4.8
19	2.4	1.5					2.7	29	6.6	3.0	1.0	4.0
20	2.6	1.5					2.6	22	6.6	4.0	9.0	4.2
							3.5	21	6.2	2.2	8.6	4.5
21	*2.6	1.5					2.2	*28	5.5	1.8	8.6	4.8
22	2.4			(*)			*2.2	24	5.0	1.6	7.6	5.5
23	2.4						2.7	24	5.0	2.6	6.9	5.2
24	2.4						3.6	21	5.0	2.6	6.2	5.2
25	2.4						3.3	20	5.2	7.2	5.2	4.5
26	2.2	1.4				(*)	2.2	20	5.5	5.5	5.0	3.8
27	2.2						1.4	25	5.2	3.5	5.2	4.0
28	2.4						1.2	20	5.0	2.4	4.5	4.2
29	2.4						2.0	17	5.2	2.2	4.0	4.2
30	2.4						1.4	16	6.6	5.8	4.0	5.0
31	2.6							16		6.9	4.0	
Total	91.5	59.9	31.0	31.0	34.8	49.6	448.0	611	275.5	112.2	280.7	119.4
Mean	2.95	2.00	1.0	1.0	1.2	1.6	14.9	19.7	9.18	3.62	9.05	3.98
Ac-ft	181	119	61	61	69	98	889	1,210	546	223	557	237

Calendar year 1963: Max 56 Min 0 Mean 3.49 Ac-ft 2,530
 Water year 1963-64: Max 37 Min - Mean 5.86 Ac-ft 4,250

Peak discharge (base, 110 cfs).--No peak above base.

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 19-28. No gage-height record Nov. 29 to Apr. 14 (stage-discharge relation affected by ice during most of period).

RIO GRANDE BASIN

Closed basin in San Luis Valley, Colo.

8-2310. La Garita Creek near La Garita, Colo.

Location--Lat 37°48'50", long 106°19'10", in sec.9, T.41 N., R.6 E., on right bank 4 miles southwest of La Garita and 4 1/2 miles downstream from Little La Garita Creek.

Drainage area--61 sq mi, approximately.

Records available--April 1919 to September 1964. No winter records prior to water year 1948 except water years 1926, 1941, 1945-46. Monthly discharge only for some periods, published in WSP 1312.

Gage--Water-stage recorder. Altitude of gage is 8,030 ft (from topographic map). Apr. 1, 1919, to June 23, 1927, staff gages and June 24, 1927, to Nov. 13, 1935, water-stage recorder, at sites within a quarter of a mile downstream at different datums.

Average discharge--21 years (1925-26, 1940-41, 1944-46, 1947-64), 12.0 cfs (8,690 acre-ft per year).

Extremes--Maximum discharge during year, 267 cfs Aug. 7 (gage height, 1.97 ft), from rating curve extended above 37 cfs; minimum not determined.

1919-64: Maximum discharge, 530 cfs July 9, 1957 (gage height, 3.00 ft), from rating curve extended above 140 cfs; minimum daily recorded, 0.2 cfs Sept. 28, 29, 1956.

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

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. 4)

0.1	0	0.6	13
.2	1.0	.8	29
.3	2.4	1.0	54
.4	4.6	1.5	155

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	3.9					3.0	13	25	9.9	5.4	8.6
2	2.6	3.9					4.0	17	24	7.8	5.4	8.6
3	2.3	2.6					3.8	12	28	7.4	7.8	8.2
4	2.0	3.1					3.5	15	23	6.2	5.4	7.8
5	2.1	2.8					4.0	17	22	5.8	19	7.8
6	2.3	2.6					4.3	13	21	5.8	23	8.2
7	2.3	*2.6	(*)				4.8	*13	22	5.0	37	9.0
8	2.0	2.6					5.4	13	23	5.0	33	7.4
9	1.7	2.4					5.8	14	21	5.0	25	*7.4
10	1.7	1.8					6.2	19	19	5.8	*23	7.4
11	2.0	2.0					6.2	28	19	5.0	37	6.6
12	2.3	1.8					5.8	44	18	7.4	54	5.8
13	2.6	1.1					5.4	57	17	5.8	81	5.4
14	2.6	2.9					6.2	60	16	5.0	53	5.8
15	2.8	1.1					7.4	59	*16	4.6	41	7.8
16	2.6	1.6	0.7	0.5	0.5	1.5	9.5	65	14	7.0	36	9.0
17	2.8	1.0					12	60	15	*6.6	34	7.0
18	2.8	1.0					11	62	14	6.2	30	5.8
19	2.8	1.1					14	36	14	4.6	24	6.2
20	3.7	1.6					13	38	13	3.3	25	6.6
21	*3.5	1.7					9.0	*44	12	3.7	21	6.2
22	3.1	2.0		(*)			*10	46	11	5.8	19	7.4
23	3.1	1.6					12	46	9.5	5.8	16	7.4
24	3.3	1.7					14	41	11	7.4	14	5.4
25	3.3	1.7					15	41	9.9	1.2	13	6.2
26	3.1	1.6				(*)	8.6	37	9.9	6.2	12	6.2
27	3.7	b 1.3					9.5	39	9.9	4.6	12	7.0
28	3.3	b 1.2					9.5	32	9.0	4.6	11	6.2
29	3.1	1.1					1.8	28	9.0	4.4	10	5.4
30	3.3	1.0					11	24	10	10	9.0	5.8
31	2.8							24		7.0	8.6	
Total	84.2	56.4	21.7	15.5	14.5	46.5	251.9	1057	485.2	190.7	744.6	209.6
Mean	2.72	1.88	0.7	0.5	0.5	1.5	8.40	34.1	16.2	6.15	24.0	6.99
Ac-ft	167	112	43	31	29	92	500	2,100	962	378	1,480	416

Calendar year 1963: Max 29 Min - Mean 4.10 Ac-ft 2,970
Water year 1963-64: Max 81 Min - Mean 8.68 Ac-ft 6,310

Peak discharge (base, 80 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-13	2300	1.37	125	8-11	1900	1.29	107
8-7	1600	1.97	267				

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--No gage-height record Nov. 29 to Apr. 7 (stage-discharge relation affected by ice during most of period).

8-2360. Alamosa Creek above Terrace Reservoir, Colo.

Location.--Lat 37°23', long 106°21', in sec.8, T.36 N., R.6 E., on left bank 3 miles upstream from Terrace Reservoir Dam and 15 miles northwest of Capulin.

Drainage area.--107 sq mi.

Records available.--September 1911 to September 1912 (published as Rio Alamosa near Monte Vista), May to June 1914, April 1915 to September 1927, October 1934 to September 1964. No winter records water years 1919-23. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 8,600 ft (from topographic map). Sept. 29, 1911, to Sept. 30, 1912, staff gage at ranger station 1.8 miles upstream at different datum. Apr. 25, 1914, to May 6, 1915, staff gage and May 7, 1915, to Sept. 30, 1927, water-stage recorder, near present site at different datums. Datum lowered 0.27 ft Mar. 28, 1925.

Average discharge.--38 years (1911-12, 1915-18, 1923-27, 1934-64), 114 cfs (82,530 acre-ft per year).

Extremes.--Maximum discharge during year, 1,040 cfs May 22 (gage height, 3.24 ft); minimum not determined.

1911-12, 1914-27, 1934-64: Maximum discharge, 5,200 cfs Oct. 5, 1911 (gage height, 11.0 ft, site and datum then in use, from floodmark), from rating curve extended above 1,000 cfs on basis of computation of peak flow over dam about 8 miles upstream; minimum not determined.

Maximum stage known since at least 1854, that of Oct. 5, 1911, from information by local residents.

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

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 24 to June 10)

Oct. 1 to Apr. 16		Apr. 17 to Sept. 30	
0.7	6.0	0.8	15
.8	9.0	1.0	29
.9	15	1.3	60
1.1	33	1.6	109
		1.9	190
		2.3	350
		2.6	520
		3.0	800

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	13						68	246	88	79	33	
2	19	11						76	242	79	85	32	
3	19	12						63	253	73	137	27	
4	18	13						60	256	70	103	25	
5	17	13						64	310	66	101	26	
6	16	13						60	360	63	92	30	
7	*15	*13	(*)					66	370	58	*105	29	
8	15	13					50	*66	350	55	118	*27	
9	15	13						90	*276	63	120	26	
10	14	12						118	284	61	127	29	
11	13	11						148	280	61	125	24	
12	14	11						214	268	74	156	22	
13	14	11						310	256	*66	253	20	
14	15	10						385	239	79	181	23	
15	14	10						424	236	67	159	29	
16	14	11	11	9.5	9	9.5		80	538	218	60	127	34
17	13	11						*77	682	194	67	107	29
18	13	11						70	720	174	70	92	25
19	16	9.6						54	*652	168	59	82	24
20	19	8.7		(*)				48	562	159	56	92	24
21	18	9.5						44	638	143	52	76	23
22	18	10						54	712	130	52	67	29
23	17	10						66	728	123	52	60	34
24	17	10						82	675	118	52	54	27
25	16	10						82	626	114	85	48	25
26	17	10						63	586	101	63	45	28
27	16	10						54	568	96	58	43	28
28	16	10						60	508	94	55	39	29
29	15	10						80	424	92	61	37	27
30	15	10						66	345	98	67	34	27
31	15								276		71	32	
Total	492	329.8	341	294.5	261	294.5	1,730	11,452	6,248	2,003	2,976	815	
Mean	15.9	11.0	11	9.5	9	9.5	57.7	369	208	64.6	96.0	27.2	
Ac-ft	976	654	676	584	518	584	3,430	22,710	12,390	3,970	5,900	1,620	

Calendar year 1963: Max 365 Min - Mean 49.3 Ac-ft 35,650
Water year 1963-64: Max 728 Min - Mean 74.4 Ac-ft 54,010

Peak discharge (base, 670 cfs).--May 17 (2330) 1,000 cfs (3.24 ft); May 22 (2200) 1,040 cfs (3.24 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 11-17, 21, Nov. 24 to Dec. 11. No gage-height record Dec. 12 to Apr. 16 (stage-discharge relation affected by ice during most of period).

RIO GRANDE BASIN

8-2380. La Jara Creek at Gallegos Ranch, near Capulin, Colo.

Location.--Lat 37°12'30", long 106°11'20", in NE¼ sec.10, T.34 N., R.7 E., on left bank 2.7 miles downstream from Canyon Del Rancho, 7 miles southwest of Capulin, and 16½ miles downstream from La Jara Reservoir.

Drainage area.--98 sq mi, approximately.

Records available.--April 1916 to November 1917, April 1919 to November 1923, May 1936 to September 1964. No winter records prior to 1950 except water year 1944. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 8,130 ft (from topographic map). Apr. 1, 1916, to Nov. 30, 1917, and Apr. 1, 1919, to Nov. 30, 1923, near present site at different datums.

Average discharge.--16 years (1943-44, 1949-64), 15.4 cfs (11,150 acre-ft per year).

Extremes.--Maximum discharge during year, 91 cfs Aug. 4 (gage height, 3.39 ft); minimum not determined. 1916-17, 1919-23, 1936-64: Maximum discharge, 653 cfs Apr. 22, 1919, Apr. 15, 1937 (gage height, 5.94 ft, present site and datum); minimum daily recorded, 2.2 cfs Nov. 6, 1951.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Small diversions above station for irrigation. Flow regulated by La Jara Reservoir (capacity, 14,040 acre-ft).

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

2.1	3.0
2.2	6.0
2.4	17
2.8	44
3.5	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	5.4	5.7						30	21	8.0	5.7	5.1
2	5.4	6.0						31	21	5.7	6.0	5.1
3	4.8	6.0						27	21	5.4	6.0	4.5
4	4.5	6.0						23	20	5.1	7.5	4.5
5	4.8	6.0						21	19	4.8	*5.7	4.8
6	5.1	6.0					9	20	13	5.1	5.7	5.7
7	*5.4	5.7	(*)					26	12	5.4	6.0	5.4
8	5.4	*6.0						*21	13	6.0	6.5	5.1
9	5.7	5.4						26	*13	9.5	6.0	*5.1
10	5.7	5.7						34	12	7.5	6.0	5.1
11	5.7	5.7					14	36	11	7.0	6.0	4.8
12	5.7	6.0					14	39	10	9.5	7.5	4.5
13	6.0	6.0					18	42	9.5	7.0	1.6	4.8
14	6.5	5.7					23	50	9.0	6.0	8.5	5.1
15	6.0	5.7					*28	48	8.5	7.0	7.5	5.7
16	5.4	6.0	4.8	3.5	3.6	5.0	31	45	8.5	7.5	6.0	8.5
17	5.1	5.6					34	39	8.0	12	5.7	6.5
18	5.1	5.0					36	34	8.0	8.0	5.4	5.4
19	5.7	5.0					33	31	7.5	7.5	5.4	5.7
20	6.5	5.2		(*)			37	*26	7.5	7.0	5.4	6.0
21	6.0						24	26	5.7	6.5	5.4	6.0
22	6.5						34	24	5.4	6.0	5.4	6.5
23	6.5						36	21	5.7	6.5	5.1	6.0
24	6.5					(*)	39	20	5.7	6.5	5.1	6.0
25	6.0	5.2					34	20	5.7	6.0	4.8	6.0
26	5.7						28	39	5.7	6.0	5.1	5.7
27	5.4						35	38	5.7	6.0	4.8	6.5
28	5.7						38	31	5.4	6.0	4.8	6.0
29	5.7						39	26	5.7	7.0	4.5	5.7
30	5.7						28	22	*10	7.0	4.5	5.7
31	5.7							21		6.0	4.5	
Total	175.3	166.4	148.8	108.5	104.4	155.0	693	937	313.2	210.5	188.5	167.5
Mean	5.65	5.55	4.8	3.5	3.6	5.0	23.1	30.2	10.4	6.79	6.08	5.58
Ac-ft	348	330	295	215	207	307	1,370	1,860	621	418	374	332

Calendar year 1963: Max 38 Min - Mean 7.50 Ac-ft 5,430
 Water year 1963-64: Max 50 Min - Mean 9.20 Ac-ft 6,680

* Discharge measurement made on this day.
 Note.--Stage-discharge relation affected by ice Nov. 17 to Dec. 11. No gage-height record Dec. 12 to Apr. 14 (stage-discharge relation affected by ice during most of period), Apr. 29 to May 5, May 11, 12, May 31 to June 2.

8-2400. Rio Grande above mouth of Trinchera Creek, near La Sauses, Colo.

Location.--Lat 37°19', long 105°45', in sec.35, T.36 N., R.11 E., on right bank a quarter of a mile upstream from Trinchera Creek, 3½ miles north of La Sauses, and 13 miles southeast of Alamosa.

Drainage area.--5,740 sq mi, approximately (includes 2,940 sq mi in closed basin in northern part of San Luis Valley, Colo.).

Records available.--May 1936 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,500 ft (estimated from nearby level lines).

Average discharge.--28 years, 236 cfs (170,900 acre-ft per year).

Extremes.--Maximum discharge during year, 409 cfs Mar. 24 (gage height, 3.10 ft); minimum daily, 0.9 cfs Aug. 14.
1936-64: Maximum discharge, 5,470 cfs June 21, 1949 (gage height, 9.50 ft), from rating curve extended above 3,600 cfs; minimum daily, 0.4 cfs July 4, 1940.

Remarks.--Records good except those above 250 cfs and those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 24 to Sept. 19)

0.3	0	1.1	32
.4	1.5	1.5	70
.5	4.0	2.0	138
.7	10	2.5	240
.9	18	3.0	370

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	8.4						196	16	5.5	3.0	1.0	7.7
2	8.8						180	14	5.8	3.0	1.0	7.0
3	9.1						158	14	5.5	3.0	1.0	6.1
4	9.1						142	15	5.5	2.8	1.0	4.6
5	8.8						125	15	5.8	2.8	*1.0	3.2
6	8.8	27					110	15	5.5	2.8	1.0	2.8
7	16						94	13	5.2	2.8	1.0	3.2
8	14					150	88	13	4.6	2.8	1.0	3.5
9	17						86	12	4.6	3.0	1.0	1.8
10	21						79	12	*4.6	3.0	1.0	1.8
11	23	*26	(*)				70	12	4.3	3.2	1.0	3.2
12	23	23					66	10	4.3	3.2	1.0	3.0
13	21	22					*67	9.8	4.9	2.2	1.0	2.8
14	23	22					62	9.4	4.3	2.5	1.0	*3.5
15	*26	21	38	90	110		59	*9.4	4.9	2.5	4.5	4.6
16	26	21				250	59	9.4	7.4	3.2	5.7	3.5
17	25	25				260	45	11	5.5	2.0	1.7	3.2
18	26	30				270	23	12	2.8	2.0	1.1	3.2
19	26	34				*281	19	8.0	2.8	1.8	8.8	3.2
20	27	36				276	19	4.9	3.5	1.8	1.6	8.4
21		24		(*)		283	18	6.7	3.5	1.5	4.4	8.8
22		32				291	17	6.7	*3.5	1.5	4.7	8.8
23		33				271	18	6.7	3.5	1.5	3.2	7.7
24		34				264	18	6.4	3.5	1.5	2.1	7.4
25		44				211	18	6.4	3.5	1.4	5.1	7.0
26	26	38				227	19	6.7	3.5	1.4	4.9	7.0
27		45				229	18	6.7	3.5	1.4	3.1	7.0
28		42				211	16	6.1	3.5	1.2	1.6	7.0
29		38				209	15	6.1	3.5	1.2	1.7	7.0
30		44				188	18	5.8	3.5	1.2	1.1	7.0
31						194		5.8		1.2	8.4	
Total	653.0	904	1,178	2,790	3,190	6,165	1,922	3,050	1,323	684	4,881	1,550
Mean	21.1	30.1	38	90	110	199	64.1	9.84	4.41	2.21	15.7	5.17
Ac-ft	1,300	1,790	2,340	5,530	6,330	12,230	3,810	605	262	136	968	307

Calendar year 1963: Max - Min 1.5 Mean 63.9 Ac-ft 46,270
Water year 1963-64: Max 291 Min 0.9 Mean 49.0 Ac-ft 35,610

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 1-4. No gage-height record Oct. 20 to Nov. 10, Dec. 5 to Mar. 18 (stage-discharge relation affected by ice during most of period).

RIO GRANDE BASIN

8-2405. Trinchera Creek above Turners Ranch, near Fort Garland, Colo.

Location.--Lat 37°22', long 105°17', in Sangre de Cristo Grant, on right bank just downstream from confluence of North and South Forks, 1 mile upstream from Turners Ranch and 7 miles southeast of Fort Garland, Costilla County.

Drainage area.--45 sq mi, approximately.

Records available.--April 1923 to September 1964. No winter records prior to 1935 except water year 1928. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Prior to Apr. 12, 1929, at site 200 ft upstream at different datum.

Average discharge.--31 years (1927-28, 1934-64), 24.0 cfs (17,380 acre-ft per year).

Extremes.--Maximum discharge during year, 75 cfs May 27 (gage height, 2.81 ft); maximum gage height recorded, 2.84 ft Dec. 8 (backwater from ice); minimum daily discharge, 3.9 cfs Dec. 13, 15.

1923-64: Maximum discharge, 689 cfs May 27, 1942, from rating curve extended above 240 cfs; maximum gage height, 3.73 ft May 10, 1947; minimum daily discharge recorded, 3.0 cfs Oct. 3, 1942.

Outstanding floods occurred in 1886 and in October 1911. The flood in 1886 probably exceeded that in October 1911 and the flood in October 1911 probably exceeded all subsequent floods, from information by local residents.

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

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

1.8	2.2
1.9	4.5
2.1	11
2.3	24
2.6	52
3.0	110

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	6.9	6.3	b4.7	5.8	6.0	6.0	9.6	19	48	18	12	8.2
2	6.9	6.6	b5.0	5.9	5.9	6.2	8.2	18	44	16	11	7.5
3	7.5	6.9	b5.0	5.5	5.8	6.2	b7.8	17	43	16	10	7.2
4	7.5	6.9	b5.0	5.2	6.0	5.8	b7.5	18	39	15	13	7.5
5	7.2	6.9	b5.0	4.8	6.2	5.9	b7.2	18	37	16	11	8.9
6	7.2	6.6	b5.0	5.1	6.0	6.2	7.8	18	36	18	*10	9.2
7	6.9	6.6	b5.0	5.2	5.6	6.4	7.8	20	36	17	11	8.9
8	6.9	6.6	b4.7	5.2	5.4	6.4	6.9	*20	39	16	11	8.6
9	6.9	6.6	*4.6	5.2	5.6	6.3	7.2	21	36	16	11	11
10	6.6	6.9	5.0	5.3	5.9	6.2	7.8	22	34	15	10	10
11	6.6	6.9	5.1	5.3	6.4	6.1	8.6	21	33	15	11	8.9
12	6.9	6.9	4.5	4.7	6.5	6.2	8.9	22	*34	14	13	8.2
13	6.3	6.6	3.9	4.5	6.3	6.2	9.2	26	34	14	13	8.2
14	*6.3	6.9	4.0	4.7	6.0	6.4	10	29	34	13	14	*9.2
15	6.6	6.9	3.9	4.8	5.8	6.6	15	30	32	*12	17	12
16	6.6	*6.9	4.3	5.0	6.0	6.5	21	33	30	12	14	13
17	6.3	5.4	4.6	5.2	6.2	6.9	21	35	30	14	13	10
18	6.3	4.5	5.0	5.5	6.2	7.3	18	36	29	14	11	8.9
19	6.6	5.7	5.6	5.8	6.3	6.8	16	36	29	12	10	9.2
20	7.5	5.4	6.2	6.4	6.5	6.2	17	36	27	12	13	10
21	7.5	5.7	5.8	6.3	6.3	6.4	*15	*37	26	13	11	11
22	7.5	5.7	5.8	6.2	6.3	6.4	19	40	25	11	10	11
23	7.5	4.3	5.4	5.8	6.2	6.4	21	41	24	10	9.6	10
24	7.5	b5.0	5.4	*5.6	6.2	6.3	23	44	23	10	9.2	9.2
25	7.2	5.7	5.6	5.9	6.4	*6.0	23	44	*23	10	8.9	10
26	6.9	4.8	5.6	6.0	6.2	b6.0	18	53	22	10	8.9	10
27	6.9	b5.2	5.6	6.2	6.0	b6.0	16	60	21	12	8.6	10
28	6.9	b5.4	5.6	6.1	5.7	b6.0	16	58	20	12	8.6	10
29	7.2	b5.4	5.6	6.0	5.6	b6.4	19	57	20	11	8.2	10
30	6.9	b4.7	5.6	6.1	-----	b8.0	17	54	19	12	7.8	10
31	6.9	-----	5.6	6.0	-----	b9.0	-----	51	-----	12	7.8	-----
Total	215.4	180.9	157.7	171.3	175.5	199.7	409.5	1034	927	418	337.6	285.8
Mean	6.95	6.03	5.09	5.53	6.05	6.44	13.6	33.4	30.9	13.5	10.9	9.53
Ac-ft	427	359	313	340	348	396	812	2,050	1,840	829	670	567

Calendar year 1963: Max 18 Min - Mean 7.83 Ac-ft 5,670
 Water year 1963-64: Max 60 Min 3.9 Mean 12.3 Ac-ft 8,950

Peak discharge (base, 50 cfs).--May 17 (2300) 57 cfs (2.68 ft); May 27 (0100) 75 cfs (2.81 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 9 to Mar. 24 (stage-discharge relation affected by ice during most of period).

8-2415. Sangre de Cristo Creek near Fort Garland, Colo.

Location.--Lat 37°25', long 105°25', in W½ sec.23, T.30 S., R.72 W., on left bank at road bridge, 1 mile east of Fort Garland and 6 miles upstream from Ute Creek. Prior to Mar. 1, 1964, at site 1 mile upstream.

Drainage area.--190 sq mi, approximately.

Records available.--March to October 1916, May 1923 to September 1930, October 1931 to September 1964. No winter records prior to 1946 except water year 1941. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 7,930 ft (estimated from nearby U. S. Coast and Geodetic Survey level line). Mar. 15 to Oct. 9, 1916, staff gage and Cippoletti weir near present site 600 ft upstream from Garland Canal at different datum. May 7, 1923, to Feb. 29, 1964, water-stage recorder at site 1 mile upstream at different datum.

Average discharge.--20 years (1940-41, 1945-64), 20.8 cfs (15,060 acre-ft per year).

Extremes.--Maximum discharge during year, 49 cfs Apr. 26 (gage height, 1.28 ft), from rating curve extended above 28 cfs by logarithmic plotting; no flow Oct. 1 to Feb. 20.

1916, 1923-64: Maximum discharge, 1,520 cfs Aug. 31, 1936, from rating curve extended above 280 cfs on basis of slope-area measurement at gage height, 6.10 ft (site and datum then in use); maximum gage height, 7.82 ft (site and datum then in use) June 4, 1957; no flow at times in many years.

Outstanding floods occurred in 1886 and in October 1911. The flood in 1886 probably exceeded that in October 1911 and the flood in October 1911 probably exceeded all subsequent floods, from information by local residents.

Remarks.--Records poor prior to Mar. 31 and good thereafter. A few diversions above station for irrigation.

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

Mar. 1 to Sept. 30

0.4	0	0.9	15
.5	.5	1.1	30
.6	2.2	1.3	51
.7	5.5		

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		21	31	10	2.9	0.7	0.5
2					0		21	32	7.8	1.9	.5	.4
3					0		20	29	6.8	1.4	.5	.4
4					0		21	28	11	1.0	.7	.4
5					0		21	28	13	.8	.7	.4
6		(*)			0	1	20	24	12	.7	*.7	.4
7					0		12	24	12	.7	1.2	.4
8					0		12	*22	12	1.9	.8	.5
9			(*)		0		13	24	12	1.4	1.8	.5
10					0		14	24	10	1.7	2.5	.5
11					0		14	25	8.2	1.7	1.4	.5
12					0		18	26	*7.3	1.7	1.9	.5
13					0		17	26	8.2	1.2	1.9	.5
14					0		17	26	9.6	.8	1.7	*.4
15	(*)				0	5	19	24	8.2	*.8	1.9	.5
16					0		30	21	9.1	.8	1.9	.5
17					*0		38	21	7.3	.7	1.0	.4
18					0		32	18	6.4	.8	.5	.4
19					0		27	16	5.5	.5	.4	.4
20					0		34	16	5.2	.7	.4	.4
21								*27	*14	4.2	.5	.4
22								32	14	3.5	.5	.4
23						13		33	14	3.2	.5	.4
24				(*)		(*)		40	16	2.9	.5	.4
25								39	15	*3.2	.5	.4
26					.3		14	34	16	3.5	.8	.7
27							14	32	22	4.2	1.0	.4
28							16	26	19	2.5	.8	.8
29							18	29	15	2.0	1.0	.4
30							21	29	14	2.9	.8	.4
31							22		14		.8	.4
Total	0	0	0	0	2.7	230	742	658	213.7	32.0	25.8	14.1
Mean	0	0	0	0	0.09	7.42	24.7	21.2	7.12	1.03	0.96	0.47
Ac-ft	0	0	0	0	5.4	456	1,470	1,310	424	63	59	28

Calendar year 1963: Max 196 Min 0 Mean 18.9 Ac-ft 13,650
 Water year 1963-64: Max 40 Min 0 Mean 5.25 Ac-ft 3,820

Peak discharge (base, 75 cfs)--No peak above base.

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

Note.--No gage-height record Dec. 4 to Mar. 30.

RIO GRANDE BASIN

8-2425. Ute Creek near Fort Garland, Colo.

Location.--Lat 37°27', long 105°26', in S½ sec.10, T.30 S., R.72 W., on left bank 1½ miles north of Fort Garland and 6 miles upstream from mouth.

Drainage area.--32 sq mi, approximately.

Records available.--March to October 1916, May 1923 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 8,030 ft (from topographic map). Mar. 18 to Oct. 9, 1916, staff gage and Cippoletti weir at different datum.

Average discharge.--41 years, 20.6 cfs (14,910 acre-ft per year).

Extremes.--Maximum discharge during year, 210 cfs Sept. 15 (gage height, 3.30 ft), from rating curve extended above 7.1 cfs; minimum not determined.

1916, 1923-64: Maximum daily discharge, 630 cfs May 15, 1941; no flow July 28-31, Sept. 6-29, 1956.

Outstanding floods occurred in 1886 and in October 1911. The flood in 1886 probably exceeded that in October 1911 and the flood in October 1911 probably exceeded all subsequent floods, from information by local residents.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. A few diversions above station for irrigation.

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

Oct. 1 to June 28		June 29 to Sept. 30	
0.5	0.6	1.0	2.2
.6	2.0	1.1	4.0
.8	6.8	1.3	10
1.0	13	1.5	22
1.2	24	1.7	35
1.4	39		

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	2.2	2.7					3.1	8.8	13	6.7	6.4	3.8
2	1.9	1.7					3.1	9.6	14	5.5	15	3.6
3	1.7	1.3					2.9	8.5	16	4.3	9.8	3.1
4	1.7	1.3					2.9	8.5	14	3.5	10	3.1
5	1.7	1.3					3.1	7.6	12	2.9	8.4	3.6
6	1.7	* 1.3					3.1	7.6	14	2.9	* 7.0	3.8
7	1.9	1.3					3.1	8.8	16	2.9	9.4	3.5
8	1.9	1.3					3.1	* 7.9	1.9	2.9	2.4	3.3
9	1.9	1.3		(*)			3.1	7.9	14	3.5	3.4	3.1
10	1.7	1.3					3.3	7.9	13	8.0	1.8	5.2
11	1.9	1.3					3.3	8.8	13	7.4	1.4	3.8
12	2.2	1.3					3.5	9.0	* 12	6.1	1.2	3.5
13	2.2	1.3					3.5	12	1.2	4.6	1.8	3.1
14	* 2.0	1.3					3.8	1.5	1.1	4.3	1.4	* 3.6
15	2.2	1.3					3.1	1.8	1.1	* 3.6	1.8	2.7
16	2.2	1.3	1.8	1.7	2.0	3.5	2.9	2.7	1.0	3.6	1.2	1.1
17	2.0	1.4					3.1	2.5	9.0	1.0	9.4	8.8
18	2.2	1.4					3.2	2.5	7.6	1.4	8.0	7.0
19	2.2	1.3					3.5	2.1	8.2	7.4	7.0	6.1
20	2.9	1.3					5.2	1.9	8.2	6.1	8.4	9.1
21	3.1						* 8.0	* 2.4	7.9	5.5	9.4	9.4
22	2.9						1.2	3.0	6.0	7.0	8.0	9.1
23	2.7						1.2	3.0	5.0	6.7	7.7	8.0
24	2.9						1.4	2.8	5.2	6.1	6.7	8.4
25	2.7						1.4	2.8	* 5.8	8.8	6.1	1.0
26	2.4	1.5										
27	2.7						1.0	3.0	6.3	6.1	5.8	1.1
28	2.4						9.0	3.3	5.8	6.7	5.8	9.8
29	2.4						8.2	2.4	5.5	7.0	5.5	9.4
30	2.4						9.6	1.8	* 5.5	6.7	4.6	8.0
31	2.4						8.2	1.6	1.0	6.7	4.0	7.7
								1.4		5.8	3.8	
Total	69.3	43.0	55.8	52.7	58.0	108.5	170.9	537.9	310.0	183.3	330.2	209.9
Mean	2.24	1.43	1.8	1.7	2.0	3.50	5.70	17.4	10.3	5.91	10.7	7.00
Ac-ft	137	85	111	105	115	215	339	1,070	615	364	655	416

Calendar year 1963: Max 28 Min - Mean 6.23 Ac-ft 4,510
 Water year 1963-64: Max 34 Min - Mean 5.82 Ac-ft 4,230

Peak discharge (base, 100 cfs)--Sept. 15 (1600) 210 cfs (3.30 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18 to Dec. 3. No gage-height record Nov. 26, Dec. 4 to Mar. 30 (stage-discharge relation affected by ice during most of period), Apr. 17-21.

8-2435. Trinchera Creek below Smith Reservoir, near Blanca, Colo.

Location.--Lat 37°23', long 105°33', in sec.4, T.31 S., R.73 W., (unsurveyed), on right bank 800 ft downstream from bridge, 1 mile downstream from Smith Reservoir, and 5 miles southwest of Blanca.

Drainage area.--396 sq mi.

Records available.--October 1928 to September 1964. No winter records prior to 1944 except water years 1931, 1934-36, 1938. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 7,700 ft (estimated from nearby U. S. Coast and Geodetic Survey level lines). Prior to Apr. 19, 1943, at datum 1.00 ft higher.

Average discharge.--26 years (1930-31, 1933-36, 1937-38, 1943-64), 11.6 cfs (8,400 acre-ft per year).

Extremes.--Maximum discharge during year, 77 cfs Nov. 24 (gage height, 1.57 ft); minimum not determined.

1929-64: Maximum daily discharge, 1,340 cfs May 11, 1942; no flow Sept. 13, 14, 16, 17, 1957.

Outstanding floods occurred in 1886 and October 1911. The flood in 1886 probably exceeded that in October 1911 and the flood in October 1911 probably exceeded all subsequent floods, from information by local residents.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Diversions above station for irrigation. Flow regulated by Smith Reservoir (capacity, 5,335 acre-ft).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 25 to Apr. 1)

0.24	0	0.6	3.8
.3	.3	.7	8.5
.4	.9	.8	15
.5	1.9	1.0	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	2.5	0.7	2.8				0.3	10	8.5	0.8	0.8	0.8
2	2.5	.7	2.8				1.0	10	8.5	1.8	.6	.8
3	2.3	.7	2.8				3.4	10	8.5	1.8	.8	.7
4	2.3	.7	2.8				10	10	8.5	1.7	.8	1.0
5	2.1	.7	3.8				7.1	10	8.5	1.4	.8	1.1
6	.8	*.7					7.6	10	8.5	1.3	*.7	1.1
7	.7	.7					8.0	10	8.5	.7	.7	.8
8	.7	.7					7.1	*12	8.5	1.5	.7	.7
9	.8	.7	(*)				6.6	12	8.5	2.5	.7	.7
10	.9	.7					6.2	12	8.5	2.1	.7	.7
11	1.2	.8				0.3	5.7	12	8.5	.7	.6	.7
12	1.7	.8					6.2	12	*8.5	.5	.5	.6
13	1.7	.7					6.2	12	7.1	.5	.7	.6
14	*1.7	.7					7.6	12	4.7	.4	.8	*.7
15	1.7	.7		3.2	1.8		11	12	3.4	*.3	.7	.7
16	1.7	.4					11	12	3.2	.2	.8	.7
17	1.7	.2					11	12	2.8	.2	.8	.7
18	1.7	.2	3.1				11	12	2.7	.5	1.0	.7
19	1.7	.2					12	12	2.7	.2	1.0	.7
20	1.7	.2					12	12	2.7	.2	1.1	.7
21	1.7	.2				.3	*11	*12	2.5	.2	1.0	.7
22	1.7	.2				.3	10	12	2.1	.2	.8	.7
23	1.7	.2				.3	12	11	1.7	.2	.7	.7
24	1.7	2.3		(*)		.3	15	10	.7	.2	.8	.7
25	1.7	4.3				*.3	15	9.8	*.6	.2	.9	.7
26	1.7	3.8				.3	15	9.2	.6	1	.9	.7
27	1.7	3.2				.3	15	7.1	.5	.2	.9	.7
28	1.7	2.8				.3	12	5.2	.2	.2	.8	.7
29	1.7	2.8				.3	10	7.6	.2	.2	.8	.7
30	1.7	2.8				.3	10	9.2	.3	.5	.8	.7
31	1.4					.3		8.5		.8	.8	
Total	50.5	55.2	95.6	99.2	52.2	9.3	276.0	327.6	140.7	22.3	24.5	22.2
Mean	1.63	1.84	3.08	3.2	1.8	0.30	9.20	10.6	4.69	0.72	0.79	0.74
Ac-ft	100	109	190	197	104	18	547	650	279	44	49	44

Calendar year 1963: Max 23 Min 0.2 Mean 3.52 Ac-ft 2,540
Water year 1963-64: Max 23 Min - Mean 3.21 Ac-ft 2,330

* Discharge measurement made on this day.

Note.--No gage-height record Dec. 5 to Mar. 24 (stage-discharge relation affected by ice during most of period).

RIO GRANDE BASIN

8-2445. Platoro Reservoir at Platoro, Colo.

Location.--Lat 37°21'00", long 106°32'35", in NW¼SW¼ sec.22, T.36 N., R.4 E., on right bank in valvehouse, 400 ft downstream from Platoro Dam on Conejos River, half a mile west of Platoro, 3½ miles downstream from Adams Fork, and 7 miles southwest of Jasper.

Drainage area.--40 sq mi, approximately.

Records available.--November 1951 to September 1964.

Gage.--Mercury manometer. Datum of gage is 9,911.5 ft above mean sea level (Bureau of Reclamation bench mark). Gage readings have been reduced to elevations above mean sea level. Prior to June 9, 1955, mercury manometer at present site and datum. June 9, 1955, to Sept. 30, 1959, water-stage recorder in gate chamber at dam for elevations above 9,921.0 ft at same datum.

Extremes.--Maximum contents observed during year, 10,700 acre-ft May 27 to Sept. 30 (elevation, 9,964.5 ft); minimum, 2,900 acre-ft Apr. 30 to May 16 (elevation, 9,942.0 ft).
1951-64: Maximum contents, 61,420 acre-ft June 9, 11, 1958 (elevation, 10,035.5 ft); no contents for long periods in 1952-56.

Remarks.--Reservoir is formed by an earth- and rock-fill dam and dikes. Dam completed Dec. 9, 1951; storage began Nov. 7, 1951. Capacity of reservoir, 60,000 acre-ft between elevations 9,911.5 (sill of trashrack at outlet) and 10,034.0 ft (crest of spillway). No dead storage. Reservoir is used for irrigation and flood control. Figures given herein represent usable contents.

Cooperation.--Records furnished by Bureau of Reclamation.

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.....	9,952.6	6,000	-
Oct. 31.....	9,952.6	6,000	0
Nov. 30.....	9,942.3	3,000	-3,000
Dec. 31.....	-	a3,000	0
Calendar year 1963.....	-	-	-1,000
Jan. 31.....	9,942.3	3,000	0
Feb. 29.....	-	a3,000	0
Mar. 31.....	9,942.3	3,000	0
Apr. 30.....	9,942.0	2,900	-100
May 31.....	9,964.5	10,700	+7,800
June 30.....	9,964.5	10,700	0
July 31.....	9,964.5	10,700	0
Aug. 31.....	9,964.5	10,700	0
Sept. 30.....	9,964.5	10,700	0
Water year 1963-64.....	-	-	+4,700

† Elevation at 0800 on first day of following month.

a No elevation record; contents estimated.

8-2450. Conejos River below Platoro Reservoir, Colo.

Location.--Lat 37°21'20", long 106°32'35", in NW¼NW¼ sec.22, T.36 N., R.4 E., on left bank 1,500 ft downstream from valve house for Platoro Reservoir and half a mile northwest of Platoro.

Drainage area.--40 sq mi, approximately.

Records available.--May 1952 to September 1964.

Gage.--Water-stage recorder and concrete control. Datum of gage is 9,866.60 ft above mean sea level (levels by Bureau of Reclamation).

Average discharge.--12 years, 81.7 cfs (59,150 acre-ft per year).

Extremes.--Maximum discharge during year, 706 cfs June 7 (gage height, 3.78 ft); minimum daily, 3.8 cfs May 24-26.
1952-64: Maximum discharge, 1,160 cfs Nov. 1, 1957; maximum gage height, 4.29 ft June 15, 1958; no flow Oct. 16-20, 1955.
Maximum stage known since at least 1854 occurred Oct. 5, 1911, from information by local residents.

Remarks.--Records good except those for period of no gage-height record, which are poor. No diversion above station. Flow completely regulated by Platoro Reservoir (see preceding page).

Cooperation.--Four discharge measurements furnished by Bureau of Reclamation.

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

0.9	2.0	1.8	81
1.0	5.0	2.0	116
1.1	8.5	2.5	225
1.2	13	3.0	385
1.4	26	3.5	590
1.6	49	4.0	860

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	20	10						30	205	93	71	20
2	20	10						39	165	58	69	26
3	20	10						30	208	33	88	*36
4	20	10						29	234	28	105	40
5	17	10						29	378	27	122	39
6	15	10						29	527	40	126	39
7	*15	164						28	550	48	128	32
8	15	*630						29	460	*48	114	25
9	14	610						45	385	48	109	15
10	10	328						52	315	46	109	12
11	10	13						86	276	46	120	12
12	10	12						136	276	61	146	11
13	10	12						237	329	66	172	11
14	10	11						*416	364	78	200	14
15	10	11						472	364	84	231	18
16	10	10	10	10	11	11	12	472	*357	93	288	21
17	*10	10						504	270	100	303	21
18	10	*10						400	187	74	322	21
19	10	10						357	176	64	291	21
20	10	10						*492	176	64	153	21
21	10	10						590	178	64	72	27
22	10	10						600	146	52	55	31
23	10	10						261	109	46	55	31
24	10	10						38	98	46	42	31
25	10	10						3.8	111	46	35	31
26	10	10						3.8	116	46	*19	31
27	10	10						306	114	62	18	31
28	10	10						484	114	72	18	31
29	10	10						480	114	72	20	31
30	10	10						436	114	*71	20	*32
31	10	-----						297	-----	71	20	-----
Total	376	2,001	310	310	319	341	360	7,377.4	7,416	1,847	3,641	762
Mean	12.1	66.7	10	10	11	11	12	238	247	59.6	117	25.4
Ac-ft	746	3,970	615	615	633	676	714	14,630	14,710	3,660	7,220	1,510

Calendar year 1963: Max 630 Min - Mean 59.7 Ac-ft 43,240
Water year 1963-64: Max 630 Min 3.8 Mean 68.5 Ac-ft 49,700

* Discharge measurement made on this day.
Note.--No gage-height record Nov. 11 to May 1.

RIO GRANDE BASIN

8-2465. Conejos River near Mogote, Colo.

Location.--Lat 37°03'20", long 106°11'10", in SE¼ sec.34, T.33 N., R.7 E., on right bank 25 ft upstream from bridge on State Highway 174, 0.3 mile downstream from Fox Creek, 5.3 miles west of Mogote, and 10 miles west of Antonito.

Drainage area.--282 sq mi.

Records available.--April 1903 to October 1905, October 1911 to September 1964. Monthly discharge only for some periods, published in WSP 1312. Records for March 1900 at site 5½ miles upstream and May 1905 to September 1911 (some missing periods most years) at site 3½ miles upstream not equivalent to present site owing to inflow.

Gage.--Water-stage recorder. Datum of gage is 8,271.54 ft above mean sea level (State Highway Department bench mark). Apr. 17, 1903, to Oct. 31, 1905, staff gage 500 ft downstream at different datum. Oct. 5, 1911, to early 1915, chain gage at present site and datum.

Average discharge.--55 years, 338 cfs (244,700 acre-ft per year).

Extremes.--Maximum discharge during year, 2,710 cfs May 23 (gage height, 4.89 ft); minimum daily, 20 cfs Jan. 13, 14.

1903-64: Maximum discharge, 9,000 cfs Oct. 5, 1911 (gage height, 8.50 ft, from floodmarks, present site and datum), from rating curve extended above 3,100 cfs; minimum daily determined, 10 cfs July 18, 1904.

Maximum stage known since at least 1854, that of Oct. 5, 1911, from information by local residents.

Remarks.--Records good except those for periods of ice effect, which are poor. Discharge measurements generally made two or more times a month. Diversions for irrigation of about 500 acres of hay meadows above station. Some regulation by Platoro Reservoir (see elsewhere in this report).

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	54	47	35	34	35	49	101	264	720	248	218	a 68
2	52	45	35	36	35	45	95	288	656	208	233	68
3	52	45	35	33	34	46	95	193	740	161	244	68
4	52	45	34	30	32	40	71	200	765	136	244	71
5	52	45	34	28	30	38	61	197	936	122	256	83
6	47	44	36	26	29	38	54	179	1,220	112	248	95
7	45	42	36	30	28	40	68	190	1,430	115	260	95
8	45	395	36	27	28	40	71	161	1,220	125	268	83
9	44	652	36	25	31	40	74	204	990	139	288	74
10	42	652	39	23	28	43	92	292	870	146	236	74
11	39	168	39	27	27	45	89	336	800	157	240	61
12	38	80	39	23	24	46	101	530	755	168	284	52
13	39	63	39	20	24	46	105	740	735	190	400	47
14	39	54	39	20	24	40	115	1,010	770	190	454	47
15	39	47	39	23	22	44	164	1,320	755	193	512	59
16	39	52	38	25	22	45	211	1,520	745	175	494	68
17	40	40	38	27	21	39	233	1,730	678	208	490	66
18	42	36	38	29	21	36	222	1,890	539	197	498	59
19	45	44	38	28	23	34	168	1,320	462	154	485	59
20	59	48	38	26	23	39	157	1,480	449	150	396	61
21	52	45	37	28	a 24	36	136	1,700	420	136	244	61
22	52	40	37	30	a 28	38	175	2,050	396	146	175	80
23	47	38	37	28	a 31	42	197	2,180	328	136	157	83
24	47	41	37	26	a 32	39	244	1,640	284	115	146	71
25	45	40	37	25	a 34	39	260	1,470	272	150	118	66
26	44	36	36	26	a 38	36	186	1,570	276	122	108	66
27	42	37	36	27	a 45	39	161	1,460	260	136	89	80
28	42	36	36	27	a 48	42	172	1,570	252	139	77	89
29	42	36	36	27	51	47	256	1,390	248	164	71	80
30	42	35	36	28	-----	59	215	1,190	260	175	a 68	83
31	44	-----	36	28	-----	71	-----	876	-----	172	a 68	-----
Total	1,403	3,028	1,142	840	872	1,321	4,349	31,140	19,231	4,885	8,069	2,117
Mean	45.3	101	36.8	27.1	30.1	42.6	145	1,005	641	158	260	70.6
Ac-ft	2,780	6,010	2,270	1,670	1,730	2,620	8,630	61,770	38,140	9,690	16,000	4,200
Calendar year 1963:	Max 1,370	Min 32	Mean 165	Ac-ft 119,300								
Water year 1963-64:	Max 2,180	Min 20	Mean 214	Ac-ft 155,500								

a No gage-height record.

Note.--Stage-discharge relation affected by ice Nov. 20, 24, 25, Nov. 27 to Mar. 14, Mar. 20, 21, 25-29.

8-2475. San Antonio River at Ortiz, Colo.

Location.--Lat 37°00', long 106°02', in New Mexico, in NE¼ sec.25, T.32 N., R.8 E., on left bank a quarter of a mile south of New Mexico-Colorado State line, half a mile south of Ortiz, and half a mile upstream from Los Pinos River.

Drainage area.--110 sq mi, approximately.

Records available.--April 1919 to October 1920, October 1924 to September 1964 (no winter records prior to 1941). Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 8,000 ft (from topographic map). Prior to Apr. 7, 1926, staff gage at various locations near present site at different datums. Apr. 7, 1926, to June 24, 1954, water-stage recorder at site 200 ft downstream at present datum.

Average discharge.--24 years (1940-64), 26.0 cfs (18,820 acre-ft per year).

Extremes.--Maximum discharge during year, 288 cfs May 12 (gage height, 2.57 ft); no flow for many days.
1919-20, 1924-64: Maximum discharge, 1,750 cfs Apr. 15, 1937 (gage height, 5.38 ft), from rating curve extended above 1,100 cfs; no flow at times in most years.
Maximum stage known since at least 1854 occurred Oct. 5, 1911, from information by local residents.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements or observations of no flow generally made twice a month. A few small diversions above station for irrigation.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second) (Shifting-control method used Aug. 4-26)

0.6	0	1.0	11
.7	.7	1.3	35
.8	3.4	1.6	75
.9	6.7	2.2	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	0.2	3.7						101	15	0	1.8	0
2	.2	4.4						112	15	0	.7	0
3	.2	3.7						74	15	0	1.5	0
4	.1	3.7						92	12	0	3.1	0
5	.2	3.4					15	101	10	0	1.0	0
6	.2	3.1						85	8.8	0	.7	0
7	.2	2.9						103	7.6	0	.2	0
8	.2	2.9						78	7.6	0	4.1	0
9	.2	2.9						84	9.3	0	6.7	0
10	.3	2.9					39	128	5.7	0	3.1	0
11	.3	2.9					51	140	3.1	0	1.5	0
12	.3	2.9					51	182	2.3	0	1.2	0
13	.3	2.6					51	164	1.8	0	1.1	0
14	.3	2.6					70	146	2.0	0	6.0	0
15	.3	3.1					90	118	1.8	0	1.0	0
16	.4	2.6	1.2	.5	1.0	4.5	110	110	1.0	0	8.0	0
17	.6	2.3					114	89	0	.5	5.4	0
18	.7	2.0					106	82	0	2.0	4.1	0
19	1.2	2.0					70	66	0	4.7	3.1	0
20	3.4	2.6					75	57	0	4.4	2.0	.1
21	4.1	3.1					47	54	0	1.2	1.0	.2
22	2.9	2.6					72	46	0	.3	.3	4.4
23	2.3	2.3					75	40	0	0	.2	5.7
24	2.3	2.0					85	33	0	.3	0	3.1
25	2.6	2.2					80	30	0	2.9	0	2.0
26	2.3	1.7					41	34	0	1.8	0	1.5
27	2.3	1.8					42	29	0	.7	0	1.0
28	2.0	1.8					57	22	0	.3	0	1.0
29	2.3	1.5					89	17	0	2.6	0	1.8
30	2.3	1.3					62	15	0	9.7	0	1.5
31	2.9							17		4.4	0	
Total	38.1	79.5	37.2	15.5	29.0	139.5	1.612	2,449	118.0	35.8	87.5	22.3
Mean	1.23	2.65	1.2	0.5	1.0	4.5	53.7	79.0	3.93	1.15	2.82	0.74
Ac-ft	76	158	74	31	58	277	3,200	4,860	234	71	174	44

Calendar year 1963: Max 185 Min 0 Mean 10.0 Ac-ft 7,270
Water year 1963-64: Max 182 Min 0 Mean 12.7 Ac-ft 9,260

Peak discharge (base, 330 cfs).--No peak above base.

Note.--Stage-discharge relation affected by ice Nov. 24 to Dec. 13. No gage-height record Dec. 14 to Apr. 9 (stage-discharge relation affected by ice during most of period).

RIO GRANDE BASIN

8-2480. Los Pinos River near Ortiz, Colo.

Location.--Lat 36°59', long 106°05', in NE¼ sec.34, T.32 N., R.8 E., in New Mexico, on left bank 1 mile south of New Mexico-Colorado State line, 2 miles southwest of Ortiz, and 2½ miles upstream from mouth.

Drainage area.--167 sq mi.

Records available.--January 1915 to December 1920, October 1924 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 8,100 ft (from topographic map). Prior to Apr. 15, 1955, at site 350 ft upstream at datum 2.52 ft higher.

Average discharge.--45 years, 124 cfs (89,770 acre-ft per year).

Extremes.--Maximum discharge during year, 1,000 cfs May 15 (gage height, 5.08 ft), from rating curve extended above 430 cfs; minimum not determined.

1915-20, 1924-64: Maximum discharge, 3,160 cfs May 12, 1941 (gage height, 5.77 ft, site and datum then in use), from rating curve extended above 1,600 cfs; minimum observed, 4.0 cfs Dec. 17, 1945 (discharge measurement), but may have been less during periods of no gage-height record.

Maximum stage known since at least 1854 occurred Oct. 5, 1911, from information by local residents.

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 above station for irrigation.

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

1.8	9.0	2.8	120
1.9	13	3.3	250
2.1	26	3.7	390
2.4	57	4.4	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	11	17						271	205	32	42	14	
2	10	15						306	190	30	55	14	
3	11	15						226	211	26	62	13	
4	11	14						250	180	24	50	13	
5	11	14					28	260	172	22	55	14	
6	11	14						254	165	22	44	17	
7	11	13						299	165	22	52	18	
8	11	13						235	202	21	80	16	
9	11	13						316	172	25	52	15	
10	11	13					30	414	150	25	36	16	
11	11	13						31	484	140	32	32	14
12	11	12						35	592	128	30	35	14
13	11	12						36	652	118	30	39	14
14	11	12						39	648	109	26	58	13
15	10	12						50	660	100	25	66	15
16	11	12	6.5	6.5	7.5	16		65	652	94	27	52	19
17	11	13						82	628	82	31	42	18
18	11	11						90	600	73	27	35	15
19	12	10						67	492	67	38	30	15
20	16	10						79	464	62	28	29	17
21	15	11						67	460	57	23	30	17
22	14	12						97	484	52	22	25	25
23	13	11						113	500	48	23	22	21
24	13	10						136	468	45	22	20	19
25	13	10						148	442	42	35	19	17
26	12	11						116	528	40	28	18	17
27	12	12						109	460	38	24	17	18
28	12	10						138	362	33	44	17	18
29	12	9						199	302	34	40	16	17
30	13	8						185	250	34	35	15	17
31	14								232	39	14		
Total	367	362	201.5	201.5	217.5	496	2,164	13,191	3,208	878	1,159	490	
Mean	11.8	12.1	6.5	6.5	7.5	16	72.1	426	107	28.3	37.4	16.3	
Ac-ft	728	718	400	400	431	984	4,290	26,160	6,360	1,740	2,300	972	

Calendar year 1963: Max 380 Min - Mean 51.4 Ac-ft 37,240

Water year 1963-64: Max 660 Min - Mean 62.7 Ac-ft 45,480

Peak discharge (base, 900 cfs).--May 15 (2230) 1,000 cfs (5.08 ft).

Note.--Stage-discharge relation affected by ice Nov. 19 to Dec. 7. No gage-height record Dec. 8 to Apr. 10 (stage-discharge relation affected by ice during most of period).

8-2485. San Antonio River at mouth, near Manassa, Colo.

Location.--Lat 37°11', long 105°53', in sec.21, T.34 N., R.10 E., on right bank a quarter of 1 mile downstream from bridge on State Highway 142, 1 mile upstream from mouth, and 3½ miles east of Manassa.

Drainage area.--348 sq mi.

Records available.--April 1923 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 7,680 ft (estimated from nearby U. S. Coast and Geodetic Survey level line). Prior to Apr. 23, 1936, at former bridge site 200 ft upstream at same datum.

Average discharge.--41 years, 82.2 cfs (59,510 acre-ft per year).

Extremes.--Maximum discharge during year, 374 cfs May 14 (gage height, 3.39 ft); no flow Oct. 1 to Apr. 2, July 25 to Sept. 30. 1923-64: Maximum discharge, 2,620 cfs May 14, 1941, from rating curve extended above 2,200 cfs; maximum gage height, 6.42 ft May 6, 1952; no flow at times in most years.

Maximum stage known since at least 1854 occurred Oct. 5, 1911, from information by local residents.

Remarks.--Records good. Natural flow of stream affected by diversions to Cave Lake Reservoir (capacity, 9,700 acre-ft) and diversions for irrigation above station.

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

0.1	0	0.8	5.8
.2	.1	1.0	16
.3	.3	1.3	44
.4	.7	1.6	75
.5	1.1	2.0	126
.6	1.6	2.5	198
.7	3.0	3.0	290

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	56	59	4.7		
2							0	92	68	5.0		
3							.6	96	78	4.7		
4							1.7	88	78	2.9		
5							1.7	98	75	2.6		
6							2.0	*108	73	2.2		
7			(*)				1.6	132	72	2.0		
8							1.2	106	77	1.9		
9							.9	129	80	1.7		
10							.7	185	*62	1.9		
11							.3	179	40	1.7		
12		(*)					.2	219	35	1.6		
13							*.1	254	34	*1.4		
14							.1	280	27	1.3		
15	(*)						.4	*274	23	1.3		(*)
16							5.2	274	19	1.7		
17							19	246	18	1.4		
18							34	228	16	1.2		
19							24	174	14	1.1		
20						(*)	14	143	9.6	.9		
21				(*)			15	129	8.3	.7		
22							7.5	127	*7.9	.5		
23							9.2	125	7.5	.3		
24							18	112	7.5	.1		
25							24	102	6.6	0		
26							19	132	5.2	0		
27							14	158	4.1	0		
28							15	*123	3.6	0		
29							32	87	3.3	0		
30							46	68	4.1	0		
31							62	62	0	0		
Total	0	0	0	0	0	0	307.4	4,586	1,015.7	44.8	0	0
Mean	0	0	0	0	0	0	10.2	148	33.9	1.45	0	0
Ac-ft	0	0	0	0	0	0	610	9,100	2,010	89	0	0

Calendar year 1963: Max 176 Min 0 Mean 15.7 Ac-ft 11,360

Water year 1963-64: Max 280 Min 0 Mean 16.3 Ac-ft 11,810

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

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

8-2490. Conejos River near La Sauses, Colo.

Location.--Lat 37°18', long 105°45', in secs.2 and 11 (two channels), T.35 N., R.11 E., on left bank of main channel 125 ft downstream from bridge on State Highway 158 and on right bank of secondary channel 50 ft downstream from bridge on State Highway 158, half a mile upstream from mouth, 1.8 miles north of La Sauses, and 13 miles southeast of Alamosa.

Drainage area.--887 sq mi.

Records available.--March 1921 to September 1964. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Two water-stage recorders. Datum of gage on main (north) channel is 7,495.02 ft, and on secondary (south) channel is 7,495.89 ft, above mean sea level (levels by Bureau of Reclamation). Main channel: Prior to Oct. 23, 1934, at bridge 125 ft upstream at various datums; Oct. 23, 1934, to Apr. 10, 1937, at site 50 ft upstream, and Apr. 11 to Sept. 30, 1937, at present site, at datum 1.00 ft higher. South channel: Prior to Oct. 23, 1934, at bridge 50 ft upstream at datum 0.44 ft higher; Oct. 23, 1934, to May 3, 1936, at site 30 ft upstream at present datum.

Average discharge.--43 years, 189 cfs (136,800 acre-ft per year).

Extremes.--Maximum discharge during year, 824 cfs May 18; no flow at times.

1921-64: Maximum discharge, 3,890 cfs May 15, 1941; no flow at times in 1934, 1948, 1950-51, 1953-64.

Maximum stage known since at least 1854 occurred Oct. 5, 1911, from information by local residents.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements, field estimates, or observations of no flow generally made twice a month. Diversions for irrigation of about 75,000 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	0.4	21	25	24	36	37	1.7	6.7	0.8		0
2	0	.5	23	27	25	41	34	1.4	6.1	.7		0
3	0	.5	23	26	29	47	30	3.4	9.0	.6		0
4	0	.6	23	26	33	47	30	2.9	8.2	.4		0
5	0	.3	22	27	27	44	27	1.7	7.2	.4		0
6	0	.3	24	23	28	49	24	2.0	6.2	.2		0
7	0	.3	23	23	27	48	24	1.0	6.7	.1		0
8	0	3.5	23	22	25	48	24	.5	1.8	.1		0
9	0	155	24	21	26	48	25	2.0	14	.1		0
10	0	382	24	23	26	47	25	3.1	8.6	.1		0
11	0	351	23	22	27	48	25	3.8	6.2	.2		0
12	0	107	20	21	27	48	22	8.7	6.5	.3		0
13	0	51	20	19	29	48	21	4.2	5.7	0		0
14	0	34	18	19	28	48	23	4.6	5.2	0		0
15	.2	26	18	20	28	49	23	4.9	5.1	0		0
16	.1	23	21	21	29	44	20	5.0	4.7	.2		0
17	.1	20	23	24	29	43	15	5.4	2.6	.2		0
18	.1	20	25	25	29	42	9.5	10.9	1.7	.2		0
19	.2	20	25	29	30	41	7.8	9.4	1.9	.1		0
20	.5	20	26	28	31	42	6.4	3.6	2.1	.1		0
21	.4	21	26	27	31	37	3.9	14	2.1	0		0
22	.4	21	26	27	33	36	1.5	6.6	2.1	.1		0
23	.3	21	27	27	33	37	1.1	10.4	1.9	0		0
24	.3	22	28	26	32	38	1.0	14.2	2.0	.1		0
25	.2	23	27	26	32	40	1.2	3.6	1.9	0		.1
26	.2	22	26	25	34	39	2.5	1.8	1.8	0		.1
27	.2	19	27	23	34	39	2.3	3.6	1.7	0		.1
28	.2	20	27	23	36	40	1.7	5.9	1.5	.1		.1
29	.2	19	27	23	35	40	1.9	2.7	1.3	.3		.1
30	.2	20	25	23	-----	40	1.9	1.3	1.0	.1		.1
31	.4	-----	25	22	-----	37	-----	6.6	-----	.2		-----
Total	4.2	1,423.4	740	743	857	1,331	471.7	974.4	1,497	5.7	0	0.6
Mean	0.14	47.4	23.9	24.0	29.6	42.9	15.7	31.4	4.99	0.18	0	0.02
Ac-ft	8.3	2,820	1,470	1,470	1,700	2,640	936	1,930	297	11	0	1.2

Calendar year 1963: Max 382 Min 0 Mean 24.8 Ac-ft 17,990
 Water year 1963-64: Max 382 Min 0 Mean 18.3 Ac-ft 13,280

Note.--Stage-discharge relation affected by ice on main channel Dec. 2, 3, 7-9, 11-13, 23, Jan. 4, 6-21, 24-26, Feb. 3, 4, 6-8, 14, 15, 21 and on secondary channel Mar. 4, 9. No gage-height record on main channel Dec. 14-17, Dec. 30 to Jan. 1 (stage-discharge relation affected by ice during parts of periods) and on secondary channel Oct. 1-13, Nov. 29 to Mar. 2 (stage-discharge relation affected by ice during part of period), Aug. 4 to Sept. 30.

8-2500. Culebra Creek at San Luis, Colo.

Location.--Lat 37°11', long 105°26', in Beaubien Grant, at bridge on left bank, 1 mile south of San Luis, Costilla County, and 1 mile upstream from Rito Seco.

Drainage area.--220 sq mi.

Records available.--April 1927 to September 1964. Monthly discharge only for some periods, published in WSP 1312. Records for January 1910 to December 1911, published as Culebra River at San Luis in WSP 288 and 308, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 8,000 ft (from topographic map). Prior to May 23, 1931, water-stage recorder at present site at different datum.

Average discharge.--37 years, 50.3 cfs (36,420 acre-ft per year).

Extremes.--Maximum discharge during year, 233 cfs May 27 (gage height, 2.48 ft); minimum daily, 9.0 cfs Dec. 13-15, Jan. 14-16, Feb. 3, 8, 23.
1927-64: Maximum discharge, 654 cfs July 1, 1947 (gage height, 5.09 ft), from rating curve extended above 300 cfs; minimum daily, 4.6 cfs Oct. 31, 1950.

Remarks.--Records good. Diversions above station for irrigation. Flow regulated by Sanchez Reservoir on Ventero Creek (capacity, 103,000 acre-ft).

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

0.2	8.0
.5	24
1.0	59
1.5	107
2.0	165

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	14	10	14	10	10	16	24	25	39	45	22
2	14	12	10	14	9.5	10	14	27	31	37	48	22
3	13	14	11	15	9.0	10	14	26	44	36	53	21
4	13	15	10	12	10	9.5	14	25	38	33	71	25
5	14	16	10	11	10	10	14	25	33	26	54	31
6	13	*16	10	10	10	10	14	23	35	28	52	29
7	13	16	10	11	9.5	10	14	31	45	57	56	31
8	12	16	10	11	9.0	10	14	45	73	60	52	28
9	12	16	*10	10	9.5	10	14	42	70	60	59	26
10	12	14	10	10	9.5	10	15	38	*58	59	31	25
11	12	14	9.5	10	9.5	10	14	29	60	66	30	24
12	12	14	9.5	10	10	10	14	32	71	59	37	23
13	13	14	9.0	9.5	10	10	14	31	75	53	50	20
14	*12	14	9.0	9.0	11	10	14	40	74	57	51	*19
15	12	14	9.0	9.0	10	11	15	53	77	*55	66	19
16	14	14	10	9.0	10	10	14	59	93	52	53	19
17	13	14	10	9.5	10	11	19	64	97	51	48	16
18	12	13	12	9.5	10	13	22	80	98	49	43	15
19	14	13	12	10	10	12	20	75	81	51	39	14
20	16	13	13	10	10	11	24	59	51	55	38	16
21	16	14	12	10	9.5	12	*22	51	50	57	38	19
22	16	14	12	9.5	10	11	20	43	57	53	36	19
23	14	13	11	10	9.0	12	20	46	72	45	33	17
24	13	14	12	*9.5	10	12	23	49	77	44	*38	16
25	14	13	12	9.5	10	*11	19	50	81	52	48	16
26	14	12	12	9.5	10	11	15	*86	80	53	46	16
27	13	12	12	10	10	11	16	115	70	54	36	17
28	12	11	12	10	10	12	19	22	66	58	28	17
29	12	11	12	10	10	13	25	25	57	58	26	15
30	13	11	12	10	-----	16	18	24	45	48	24	15
31	14	-----	14	10	-----	16	-----	25	-----	47	22	-----
Total	412	411	337.0	321.5	285.0	344.5	510	1,364	1,884	1,552	1,351	612
Mean	13.3	13.7	10.9	10.4	9.83	11.1	17.0	44.0	62.8	50.1	43.6	20.4
Ac-ft	817	815	668	638	565	683	1,010	2,710	3,740	3,080	2,680	1,210

Calendar year 1963: Max 64 Min 9.0 Mean 21.6 Ac-ft 15,670
Water year 1963-64: Max 115 Min 9.0 Mean 25.6 Ac-ft 18,620

* Discharge measurement made on this day.

8-2515. Rio Grande near Lobatos, Colo.

Location.--Lat 37°05', long 105°45', in sec.22, T.33 N., R.11 E., on right bank at highway bridge, 6 miles north of Colorado-New Mexico State line, 7 miles downstream from Culebra Creek, 10 miles east of Lobatos, and 14 miles east of Antonito.

Drainage area.--7,700 sq mi, approximately (includes 2,940 sq mi in closed basin in northern part of San Luis Valley, Colo.).

Records available.--June 1899 to September 1964. Monthly discharge only for some periods, published in WSP 1312. Published as "at Genicero" 1899-1901, and as "near Genicero" 1902-4.

Gage.--Water-stage recorder. Datum of gage is 7,427.63 ft above mean sea level, datum of 1929. Prior to Nov. 8, 1910, staff or chain gage at same site and datum.

Average discharge.--65 years, 617 cfs (446,700 acre-ft per year).

Extremes.--Maximum discharge during year, 423 cfs Nov. 11 (gage height, 1.82 ft); maximum gage height, 2.76 ft Mar. 26 (ice jam); minimum daily discharge, 4.0 cfs Aug. 3.
1899-1964: Maximum discharge observed, 13,200 cfs June 8, 1905 (gage height, 9.1 ft), from rating curve extended above 8,000 cfs; no flow at times in 1950-51, 1956.
Maximum stage known, probably since at least 1828, occurred June 8, 1905.

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. Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals, and diversions for irrigation, and return flow from irrigated areas.

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

0.3	2.0	0.8	58
.4	7.0	1.1	134
.5	15	1.5	284
.6	26	2.0	554

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	40	43	135	120	155	227	29	54	15	7.0	11
2	9.4	40	43	145	110	160	223	33	53	14	6.0	10
3	8.6	42	42	140	105	170	196	29	51	13	4.0	8.6
4	11	45	44	130	110	160	170	32	49	13	4.5	8.6
5	12	53	45	120	115	160	166	34	45	10	5.0	11
6	12	60	45	115	110	175	150	33	45	7.8	5.5	11
7	12	58	45	115	105	190	134	40	42	6.5	6.5	10
8	17	53	46	115	110	180	125	36	39	6.0	27	7.0
9	20	53	48	110	120	180	120	33	53	7.0	10	10
10	22	257	50	105	135	180	117	34	49	7.8	9.4	8.6
11	25	406	49	95	125	190	108	40	37	7.0	6.0	7.0
12	27	264	45	95	120	200	95	44	33	7.8	7.0	5.5
13	27	105	45	90	120	195	90	49	30	7.0	8.6	5.0
14	25	76	48	90	120	200	90	73	32	6.0	13	6.5
15	27	62	48	90	120	215	90	82	30	6.0	10	14
16	32	58	49	95	125	240	88	95	29	9.4	15	12
17	33	47	50	105	135	260	82	95	29	12	47	9.4
18	34	42	51	115	135	260	58	102	30	8.6	24	6.5
19	37	45	53	120	145	275	34	184	23	7.0	16	5.5
20	39	53	55	115	150	270	27	120	19	5.0	13	11
21	44	49	57	115	140	265	24	69	18	5.0	13	17
22	42	44	59	120	140	275	23	49	17	4.5	33	20
23	39	40	62	120	140	275	19	40	15	4.5	34	14
24	37	39	68	105	150	265	19	196	15	4.5	30	13
25	37	40	75	105	150	255	20	166	14	8.6	23	11
26	39	45	82	110	145	245	22	98	13	15	39	9.4
27	37	44	90	120	145	235	23	80	13	13	42	8.6
28	37	44	100	120	140	235	23	111	12	9.4	33	8.6
29	37	44	115	125	145	235	22	105	12	6.0	20	8.6
30	39	40	130	125	-----	223	-----	76	15	6.5	15	8.6
31	40	-----	130	120	-----	211	-----	60	-----	12	13	-----
Total	865.8	2,288	1,912	3,525	3,730	6,734	2,609	2,267	916	264.9	539.5	297.0
Mean	27.9	76.3	61.7	114	129	217	87.0	73.1	30.5	8.55	17.4	9.90
Ac-ft	1,720	4,540	3,790	6,990	7,400	13,360	5,170	4,500	1,820	525	1,070	589

Calendar year 1963: Max 410 Min 1.6 Mean 100 Ac-ft 72,570
Water year 1963-64: Max 406 Min 4.0 Mean 70.9 Ac-ft 51,470

Note.--Stage-discharge relation affected by ice Nov. 20, Nov. 22 to Mar. 28 (no gage-height record Jan. 10-18, Jan. 24 to Mar. 15).

8-2520. Rio Grande at Colorado-New Mexico State line

Location.--Lat 37°00', long 105°43', in SE¼ sec.36, T.1 N., R.75 W., in Beaubien Grant, on left bank a quarter of a mile upstream from Colorado-New Mexico State line, 1½ miles upstream from Costilla Creek, and 5¼ miles west of Jaroso.

Records available.--October 1953 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,390 ft (from topographic map).

Average discharge.--11 years, 240 cfs (173,800 acre-ft per year).

Extremes.--Maximum discharge during year, 414 cfs Nov. 11 (gage height, 2.63 ft); minimum daily, 1.6 cfs July 24.

1953-64: Maximum discharge, 4,150 cfs May 29, 1958 (gage height, 7.07 ft); no flow at times in 1956.

Flood of June 8, 1905 (daily discharge, 13,100 cfs at station near Lobatos 5.8 miles upstream) was probably the greatest since at least 1828.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas.

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

Oct. 1 to Mar. 31				Apr. 1 to Sept. 30			
0.9	3.0	1.4	61	0.7	0	1.2	35
1.0	8.0	2.0	222	.8	2.0	1.5	88
1.1	16	3.0	555	.9	6.5	1.9	192
1.2	27			1.0	13		

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	7.5	40	30					33	50	12	7.8	13
2	8.0	39	38					29	* 52	12	9.1	*11
3	8.8	39	40					28	47	9.8	4.7	10
4	8.8	40	40					33	47	8.4	7.8	10
5	10	44	42					34	46	7.2	3.4	12
6							165					
7	11	53	38					33	44	6.0	7.4	14
8	12	57	33					35	40	6.0	5.2	12
9	12	55	39					38	35	5.2	8.4	10
10	18	52	50					38	42	5.2	15	8.4
11	18	167	53					36	54	*5.6	7.8	10
12	19	* 391	* 42				110	41	40	7.2	*7.8	9.1
13	22	340	44				100	44	34	7.8	7.8	7.2
14	22	141	46				* 95	44	31	6.0	10	6.5
15	*22	86	45				92	61	31	5.2	7.8	7.2
16		65	46	110	130	215	90	72	30	5.6	9.8	11
17	26	53					86	86	27	7.2	7.8	15
18	28	50					86	86	21	7.2	35	12
19	30	42					76	92	22	7.2	28	9.8
20	33	38					59	147	21	5.6	19	7.8
21	34	39					42	130	17	2.0	14	7.8
22	38	48		(*)			38	72	17	2.9	12	17
23	40	42					36	46	14	2.9	19	23
24	38	44	70				34	33	15	1.8	37	19
25	36	40					30	105	13	1.6	31	16
26	36	44					30	186	12	2.4	27	14
27	36	46					31	99	12	4.7	27	12
28	38	46					34	78	11	9.1	41	11
29	36	46					34	78	10	7.8	34	10
30	34	46					33	99	9.8	5.6	25	10
31	34	39					31	80	10	4.2	18	11
	38	-----					59	-----	-----	4.2	15	-----
Total	776.1	2,272	1,746	3,410	3,770	6,665	2,817	2,075	854.8	185.6	497.6	346.8
Mean	25.0	75.7	56.3	110	130	215	93.9	66.9	28.5	5.99	16.1	11.6
Ac-ft	1,540	4,510	3,460	6,760	7,480	13,220	5,590	4,120	1,700	368	997	688

Calendar year 1963: Max 391 Min 5.0 Mean 101 Ac-ft 73,140
 Water year 1963-64: Max 391 Min 1.6 Mean 69.4 Ac-ft 50,420

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 14 to Jan. 23. No gage-height record Jan. 24 to Apr. 12 (stage-discharge relation affected by ice during most of period).

9-105. Colorado River below Baker Gulch, near Grand Lake, Colo.

Location.--Lat 40°19'33", long 105°51'22", in sec.12, T.4 N., R.76 W., on left bank 500 ft downstream from Baker Gulch, 1 mile upstream from Bowen Gulch, and 5 miles northwest of town of Grand Lake.

Drainage area.--53.0 sq mi.

Records available.--May 1953 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,750 ft (from topographic map).

Average discharge.--11 years, 54.1 cfs (39,170 acre-ft per year).

Extremes.--Maximum discharge during year, 518 cfs May 27 (gage height, 5.85 ft); minimum daily, 6.0 cfs Feb. 15, 16, 27-29. 1953-64: Maximum discharge, 976 cfs June 30, 1957 (gage height, 7.19 ft); minimum daily, 3.0 cfs Jan. 13, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Transmountain diversion above station by Grand River ditch (see elsewhere in this report).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second) (Shifting-control method used May 9, 10)

3.2	7.0	4.5	156
3.3	11	5.0	260
3.5	23	6.0	550
4.0	76		

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	22	14	10	8.5	7.0	6.5	9.0	20	230	190	50	22
2	22	15	9.5	8.5	7.5	7.0	8.5	22	217	174	53	21
3	21	15	9.5	8.5	7.5	6.5	8.5	25	219	158	64	19
4	*20	16	9.0	8.0	7.5	6.5	8.5	25	215	149	58	18
5	20	17	8.5	8.5	7.5	6.5	8.5	26	230	142	*52	16
6	19	*15	8.5	8.5	7.5	6.5	8.5	29	246	136	53	16
7	19	16	8.5	8.5	7.5	6.5	8.5	32	297	122	52	16
8	19	14	8.5	8.5	7.5	6.5	8.5	35	327	111	43	17
9	19	15	8.0	8.5	7.5	7.0	8.5	*44	*260	106	40	18
10	18	15	8.0	8.5	8.0	7.5	9.0	49	270	*100	36	16
11	19	15	8.5	*8.5	8.0	*7.5	10	51	289	92	32	15
12	19	14	8.5	7.5	7.0	7.5	10	52	272	86	35	14
13	19	13	*8.5	7.5	6.5	7.5	9.5	73	274	84	36	14
14	20	13	8.5	7.5	6.5	7.0	10	122	262	87	32	13
15	19	13	8.5	8.0	6.0	7.5	11	160	253	80	29	15
16	19	13	8.5	8.5	6.0	7.5	12	176	258	75	31	*18
17	18	10	8.5	8.5	6.5	7.5	*12	207	*255	76	32	14
18	18	10	8.5	9.0	6.5	7.5	13	239	253	86	28	14
19	18	10	8.5	9.0	6.5	7.5	16	274	198	71	36	32
20	19	11	8.5	9.0	6.5	7.0	16	350	188	64	41	28
21	21	11	8.5	8.0	*6.5	7.5	18	390	184	58	30	25
22	20	11	8.5	8.0	6.5	8.0	19	399	188	58	28	21
23	19	10	8.0	8.0	6.5	7.5	21	376	172	62	25	18
24	20	10	8.0	8.0	6.5	7.5	20	379	170	68	24	16
25	18	10	8.0	8.0	6.5	7.5	19	432	180	57	21	16
26	16	10	8.5	8.0	6.5	7.0	18	*441	180	50	20	15
27	17	11	8.5	8.0	6.0	7.0	17	475	190	43	38	14
28	16	10	8.5	7.0	6.0	7.0	18	462	202	40	30	15
29	16	10	8.5	7.0	6.0	7.5	19	405	217	41	44	18
30	18	10	8.5	7.0	-----	7.5	18	307	210	57	34	20
31	18	-----	8.5	7.0	-----	9.0	-----	255	-----	63	26	-----
Total	586	377	265.0	251.5	198.0	224.0	392.5	6,332	6,906	2,786	1,153	534
Mean	18.9	12.6	8.55	8.11	6.83	7.23	13.1	204	230	89.9	37.2	17.8
Ac-ft	1,160	748	526	499	393	444	779	12,560	13,700	5,530	2,290	1,060

Calendar year 1963: Max 270 Min 3.0 Mean 42.6 Ac-ft 30,800
 Water year 1963-64: Max 475 Min 6.0 Mean 54.7 Ac-ft 39,690

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16 to Mar. 10, Apr. 12-18. No gage-height record Mar. 11 to Apr. 11, Apr. 19 to May 9 (stage-discharge relation affected by ice during most of periods), June 30, July 1, Sept. 5-15, 21-30.

9-110. Colorado River near Grand Lake, Colo.

Location.--Lat 40°13'08", long 105°51'25", in NE¼SW¼ sec.13, T.3 N., R.76 W., on left bank 200 ft downstream from bridge on U. S. Highway 34, 400 ft upstream from high-water line of Shadow Mountain Lake at elevation 8,367 ft, and 3 miles southwest of town of Grand Lake.

Drainage area.--103 sq mi.

Records available.--July 1904 to September 1918, October 1933 to September 1964. Monthly discharge only for some periods, published in WSP 1313. Published as Grand River (North Fork) near Grand Lake 1904 and as North Fork of Grand River near Grand Lake 1905-18.

Gage.--Water-stage recorder. Altitude of gage is 8,380 ft (from topographic map). Prior to June 15, 1934, staff gage at same site and datum. June 15, 1934, to Sept. 26, 1944, water-stage recorder at site 1,100 ft downstream at different datum.

Average discharge.--45 years, 94.8 cfs (68,630 acre-ft per year).

Extremes.--Maximum discharge during year, 660 cfs May 28 (gage height, about 5.70 ft); minimum daily, 8.5 cfs July 29. 1904-18, 1933-64: Maximum discharge observed, 1,840 cfs June 15, 16, 1918 (gage height, 7.0 ft), from rating curve extended above 1,100 cfs; minimum daily, 1.7 cfs July 18, 19, 1934.

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 200 acres of hay meadows above station and about 2,000 acres below. Transmountain diversion above station by Grand River ditch through La Poudre Pass to Cache la Poudre River basin (see elsewhere in this report).

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

3.1	7.6	4.5	160
3.3	14	5.0	282
3.5	28	5.5	510
3.7	46	5.7	660
4.0	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	29	27	15	11	9.5	11	16	34	256	189	60	31
2	28	23	15	11	10	12	14	37	247	151	60	29
3	28	25	15	11	10	11	14	40	285	123	89	26
4	* 27	27	14	10	10	11	14	40	266	105	74	24
5	26	28	14	11	10	11	15	50	253	99	* 70	24
6	26	* 25	13	11	10	10	15	52	232	92	69	24
7	26	28	10	13	10	10	15	58	289	80	76	24
8	26	27	10	13	10	10	14	66	387	51	66	24
9	25	28	10	13	11	11	14	* 66	292	44	62	26
10	25	28	11	* 13	12	* 12	15	90	* 282	* 38	51	24
11	24	28	11	11	13	12	16	118	324	35	44	22
12	25	25	* 11	9.0	12	13	16	* 104	289	30	43	21
13	24	24	11	9.0	11	12	14	130	269	27	44	20
14	24	24	12	9.0	11	11	15	189	240	28	42	19
15	24	22	11	9.5	10	12	* 16	220	220	29	38	19
16	24	24	12	11	10	12	18	232	* 245	22	37	* 22
17	24	21	12	12	11	12	18	253	* 253	22	40	22
18	24	18	12	12	11	12	21	302	263	29	36	20
19	23	19	11	12	11	12	24	348	187	21	39	46
20	24	20	11	12	11	11	26	400	166	17	58	43
21	28	20	11	12	* 11	12	26	445	156	14	41	33
22	27	20	11	11	11	13	33	480	170	14	38	29
23	25	18	10	11	11	12	40	450	149	14	34	26
24	26	18	10	11	11	12	38	440	146	17	32	24
25	26	18	10	11	11	12	35	498	155	14	30	23
26	25	18	11	11	11	11	31	559	155	11	28	22
27	25	19	12	11	10	11	30	552	156	9.9	43	21
28	24	18	12	9.5	10	11	33	* 552	166	8.8	45	21
29	24	17	11	9.5	10	12	35	456	180	8.5	53	24
30	25	16	12	9.5	-----	12	32	356	191	11	47	28
31	29	-----	11	9.5	-----	15	-----	292	-----	45	36	-----
Total	790	673	362	339.5	309.5	361	663	7,909	6,869	1,399.2	1,525	761
Mean	25.5	22.4	11.7	11.0	10.7	11.6	22.1	255	229	45.1	49.2	25.4
Ac-ft	1,570	1,330	718	673	614	716	1,320	15,690	13,620	2,780	3,020	1,510

Calendar year 1963: Max 336 Min 3.0 Mean 49.4 Ac-ft 35,730
 Water year 1963-64: Max 559 Min 8.5 Mean 60.0 Ac-ft 43,560

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17 to Dec. 8, Dec. 12, 13, Dec. 19-26, Dec. 31 to Feb. 29 (no gage-height record Jan. 2-10, Feb. 4-21). No gage-height record Mar. 1 to May 10 (stage-discharge relation affected by ice during most of period).

GRAND LAKE OUTLET BASIN

9-130. Alva B. Adams tunnel at east portal, near Estes Park, Colo.

Location.--Lat 40°19'40", long 105°34'39", in SW¼ sec.9, T.4 N., R.73 W., on right bank at upstream end of Aspen Creek siphon, 700 ft downstream from east portal and 4½ miles southwest of Estes Park.

Records available.--October 1946 to September 1964 (monthly discharge only for August and September 1947).

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 8,250 ft (from topographic map). Prior to Oct. 1, 1950, water-stage recorder and Parshall flume at different datum. Oct. 1, 1950, to Sept. 30, 1952, water-stage recorder and Cippoletti weir at different datum.

Average discharge.--18 years, 234 cfs (169,400 acre-ft per year).

Extremes.--Maximum discharge during year, 583 cfs Aug. 3 (gage height, 4.24 ft); no flow Nov. 6, July 14. 1946-64: Maximum discharge, 671 cfs Jan. 23, 1962 (gage height, 4.63 ft); no flow at times in most years.

Remarks.--Records excellent. This is a transmountain diversion from Grand Lake and Shadow Mountain Lake for power and irrigation development in the South Platte River basin as part of the Colorado-Big Thompson project. Diversion point is at west portal near town of Grand Lake, 13.35 miles west of east portal.

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	308	506	408	413	531	546	112	545	417	279	429	554
2	303	516	502	476	439	556	110	548	467	318	561	534
3	326	533	516	473	504	554	157	453	431	352	565	487
4	316	518	527	462	510	556	343	518	411	336	477	528
5	225	132	523	439	523	556	88	432	324	259	455	521
6	226	0	525	489	523	554	239	346	361	328	512	455
7	346	*149	479	516	504	554	111	439	351	344	528	488
8	304	554	406	528	529	502	113	453	12	319	490	561
9	287	529	523	516	459	548	189	510	253	317	501	517
10	288	527	523	528	473	548	563	506	263	340	525	516
11	338	531	527	467	469	550	559	548	248	469	534	486
12	412	533	525	461	479	550	423	550	269	189	535	448
13	415	529	531	529	477	552	485	556	340	68	*442	406
14	435	*531	529	538	481	556	483	559	316	0	550	410
15	435	527	453	530	475	512	484	559	320	137	487	414
16	435	527	529	*527	427	556	*472	531	314	431	415	445
17	*435	508	525	515	487	*556	469	493	259	487	519	*394
18	475	491	527	470	525	554	472	408	196	425	563	336
19	477	508	*518	454	525	550	475	398	212	333	565	335
20	445	497	520	521	514	550	469	349	294	289	488	255
21	495	527	518	524	506	554	473	*283	297	358	504	341
22	510	529	497	527	483	512	472	218	306	398	497	322
23	506	531	518	532	431	552	482	260	271	482	461	319
24	493	529	520	511	*502	552	472	258	268	399	542	317
25	506	529	447	495	516	552	474	303	*283	459	567	337
26	506	531	521	431	510	552	432	236	282	391	563	463
27	481	516	526	521	514	529	482	223	213	367	559	412
28	506	463	445	527	518	404	479	270	128	490	556	535
29	506	447	412	531	559	169	481	276	253	411	478	520
30	471	471	513	529	-----	230	507	303	285	525	410	476
31	475	-----	501	523	-----	116	-----	417	-----	304	524	-----
Total	12,686	14,219	15,534	15,503	14,393	15,682	11,570	12,748	8,644	10,604	15,802	13,132
Mean	409	474	501	500	496	506	386	411	288	342	510	438
Ac-ft	25,160	28,200	30,810	30,750	28,550	31,100	22,950	25,290	17,150	21,030	31,340	26,050

Calendar year 1963: Max 564 Min 0 Mean 411 Ac-ft 297,500
 Water year 1963-64: Max 567 Min 0 Mean 439 Ac-ft 318,400

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

9-145. Shadow Mountain Lake near Grand Lake, Colo.

Location.--Lat 40°12'30", long 105°50'20", in SW¼NW¼ sec.19, T.3 N., R.75 W., in gatehouse on left side of outlet gates near center of Shadow Mountain Dam on the Colorado River, 1 mile upstream from Pole Creek and 3¼ miles south of town of Grand Lake.

Drainage area.--190 sq mi.

Records available.--April 1947 to September 1964. Prior to October 1960, published as Shadow Mountain Reservoir near Grand Lake.

Gage.--Water-stage recorder for elevations above 8,364.0 ft and reference points along upstream face of dam for those below. Datum of gage is at mean sea level (Bureau of Reclamation bench mark). Supplementary water-stage recorder at Grand Lake outlet gates about 3 miles from dam.

Extremes.--Maximum contents during year, 17,720 acre-ft July 24 (elevation, 8,366.92 ft); minimum, 16,240 acre-ft July 30 (elevation, 8,366.12 ft).

1947-64: Maximum contents, 17,920 acre-ft May 22, 1955 (elevation, 8,367.03 ft); minimum since appreciable storage was first attained, 2,630 acre-ft May 14, 1948.

Remarks.--Figures given herein are combined figures of usable contents for Shadow Mountain Lake and Grand Lake. Shadow Mountain Lake is used for stabilization of water level in Grand Lake, from which it is separated by gates. Shadow Mountain Lake is formed by earth- and rock-fill dam and dikes. Storage began in April 1947. Capacity, 17,860 acre-ft (including usable capacity of Grand Lake above elevation 8,365 ft) between elevations 8,347 (sill of outlet gate) and 8,367 ft (maximum water surface). Dead storage in Shadow Mountain Lake, 506 acre-ft. Dead storage in Grand Lake not determined. Capacity of Shadow Mountain Lake and Grand Lake usable for diversion through Alva B. Adams tunnel, 3,660 acre-ft between elevations 8,365 (crest of tunnel inlet) and 8,367 ft (maximum water surface). Transmountain diversion from Colorado River basin, including water pumped from Lake Granby, is effected through Grand Lake and Alva B. Adams tunnel, for power and irrigation in South Platte River basin.

Cooperation.--Records furnished by Bureau of Reclamation.

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.....	8,366.53	17,000	-
Oct. 31.....	8,366.47	16,890	-110
Nov. 30.....	8,366.57	17,070	+180
Dec. 31.....	8,366.73	17,370	+300

Calendar year 1963.....	-	-	0

Jan. 31.....	8,366.69	17,290	-80
Feb. 29.....	8,366.72	17,350	+60
Mar. 31.....	8,366.57	17,070	-280
Apr. 30.....	8,366.58	17,090	+20
May 31.....	8,366.55	17,040	-50
June 30.....	8,366.80	17,500	+460
July 31.....	8,366.20	16,390	-1,110
Aug. 31.....	8,366.63	17,180	+790
Sept. 30.....	8,366.64	17,200	+20

Water year 1963-64.....	-	-	+200

† Elevation at 2400.

ARAPAHO CREEK BASIN

9-165. Arapaho Creek at Monarch Lake Outlet, Colo.

Location.--Lat 40°06'45", long 105°44'57", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.24, T.2 N., R.75 W., on left bank a quarter of a mile downstream from Monarch Lake Outlet and 10 miles east of Granby.

Drainage area.--47.1 sq mi.

Records available.--October 1944 to September 1964.

Gage.--Water-stage recorder (digital). Altitude of gage is 8,310 ft (from topographic map).

Average discharge.--20 years, 82.4 cfs (59,660 acre-ft per year).

Extremes.--Maximum discharge during year, 761 cfs June 16 (gage height, 3.87 ft); minimum daily, 4.9 cfs Mar. 16.

1944-64: Maximum discharge, 1,300 cfs June 11, 1952 (gage height, 4.71 ft); minimum daily, 0.2 cfs Nov. 5, 1956 (spillway at Monarch Lake blocked for construction).

Remarks.--Records good except those for April 12 to May 9, Aug. 16 to Sept. 16, which are poor. Natural flow regulated by Monarch Lake. No diversion above station.

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

1.2	2.5	2.0	79
1.3	5.5	2.5	188
1.4	10	3.0	345
1.5	16	3.6	600
1.7	34		

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

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	18	15	11	6.6	5.4	5.2	5.5	25	168	315	137	30
2	17	15	11	6.5	5.4	5.2	5.5	25	173	323	110	25
3	17	15	9.6	6.4	5.4	5.2	5.5	23	212	318	104	20
4	*17	15	9.6	6.4	5.4	5.2	5.5	21	*242	308	105	18
5	18	15	9.6	6.4	5.6	5.2	5.5	21	245	285	104	17
6	18	*15	9.6	6.4	5.6	5.2	5.5	23	251	282	82	17
7	18	15	8.7	6.4	5.6	5.2	5.5	25	370	262	76	17
8	18	14	8.7	6.4	5.6	5.2	5.5	28	412	230	*76	18
9	18	14	8.7	6.4	5.6	b 6.0	5.5	*30	328	204	75	19
10	18	14	8.2	*6.4	*5.4	*5.5	5.5	33	286	*199	71	18
11	17	14	8.2	6.4	5.4	5.5	*5.5	34	*401	207	66	17
12	17	14	8.2	6.4	5.4	5.5	5.8	35	379	200	47	16
13	16	14	*7.8	6.0	5.4	5.5	6.0	*36	360	190	36	16
14	16	14	7.8	5.6	5.4	5.5	6.0	40	307	169	37	16
15	15	14	7.8	5.5	5.4	5.2	6.0	87	227	164	38	15
16	15	14	7.8	5.8	5.3	4.9	7.0	247	455	146	38	15
17	28	14	7.8	6.0	5.3	b 5.0	8.0	281	400	129	37	*15
18	16	14	7.3	6.0	5.3	5.2	9.0	397	*355	121	35	15
19	16	13	7.3	6.0	5.3	5.2	10	413	249	125	40	16
20	16	13	7.3	6.0	5.3	b 5.4	11	560	185	124	45	17
21	15	13	7.3	6.0	5.3	b 5.4	10	536	242	118	40	18
22	15	13	7.3	6.0	5.3	b 5.4	11	514	260	116	35	13
23	15	12	7.3	6.0	5.3	5.2	13	478	237	112	33	19
24	15	12	7.3	6.0	5.3	5.2	15	404	214	121	31	19
25	15	12	6.9	6.0	5.3	5.2	18	412	323	134	30	18
26	15	12	6.9	6.0	*5.3	5.5	17	464	373	114	30	16
27	15	12	6.9	5.8	5.2	5.5	15	*532	379	95	35	18
28	15	12	6.9	5.6	b 5.2	5.5	14	370	361	76	40	18
29	15	12	6.9	5.5	b 5.2	6.0	15	303	362	74	50	18
30	15	11	6.9	5.5	-----	5.5	20	227	344	78	40	16
31	15	-----	6.9	5.5	-----	5.5	-----	183	-----	104	35	-----
TOTAL	514	406	249.5	188.0	155.9	165.8	277.3	6,807	9,100	5,443	1,758	539
MEAN	16.6	13.5	8.05	6.07	5.38	5.35	9.24	220	303	176	56.7	18.0
AC-FT	1,020	805	495	373	309	329	550	13,500	18,050	10,800	3,490	1,070

CALENDAR YEAR 1963 MAX 474 MIN 4.0 MEAN 69.6 AC-FT 50,420
 WATER YEAR 1963-64 MAX 560 MIN 4.9 MEAN 70.0 AC-FT 50,791

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Jan. 10 to Feb. 26, Apr. 1 to May 10 (stage-discharge relation affected by ice during part of periods), Aug. 16 to Sept. 17.

9-185. Lake Granby near Granby, Colo.

Location.--Lat 40°11'00", long 105°52'10", in NW¼NE¼ sec.35, T.3 N., R.76 W., in Granby pumping plant at north shore of lake, 2½ miles north of Granby Dam on Colorado River and 7½ miles northeast of Granby.

Drainage area.--311 sq mi.

Records available.--October 1949 to September 1964. Prior to October 1955, published as Granby Reservoir near Granby.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (Bureau of Reclamation bench mark). Prior to Apr. 9, 1951, staff gage at Granby Dam at same datum.

Extremes.--Maximum contents during year, 310,400 acre-ft Oct. 1 (elevation, 8,256.92 ft); minimum, 122,600 acre-ft May 14 (elevation, 8,221.35 ft).

1949-64: Maximum contents, 465,900 acre-ft July 13, 1962 (elevation, 8,280.05 ft); minimum since appreciable storage was first attained, 22,940 acre-ft Apr. 21, 1956 (elevation, 8,194.37 ft).

Remarks.--Lake is formed by earth-fill dam and dikes. Regulation began Sept. 13, 1949, and usable storage began June 14, 1950, while dam was under construction. Usable capacity, 465,600 acre-ft between elevations 8,186.00 (trashrack sills at outlet structures) and 8,280.00 ft (top of radial spillway gates). Dead storage, 74,190 acre-ft. Lake is used to store water for pumping to Shadow Mountain Lake and transmountain diversion through Alva B. Adams tunnel for power and irrigation in South Platte River basin. Figures given herein represent usable contents.

Cooperation.--Records furnished by Bureau of Reclamation.

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.....	8,257.00	310,800	-
Oct. 31.....	8,253.18	287,700	-23,100
Nov. 30.....	8,248.90	262,600	-25,100
Dec. 31.....	8,243.53	232,200	-30,400
Calendar year 1963.....	-	-	-131,600
Jan. 31.....	8,238.12	203,100	-29,100
Feb. 29.....	8,232.71	175,600	-27,500
Mar. 31.....	8,226.64	146,500	-29,100
Apr. 30.....	8,222.58	128,000	-18,500
May 31.....	8,231.80	171,100	+43,100
June 30.....	8,241.94	223,500	+52,400
July 31.....	8,243.02	229,400	+5,900
Aug. 31.....	8,238.71	206,200	-23,200
Sept. 30.....	8,234.48	184,400	-21,800
Water year 1963-64.....	-	-	-126,400

† Elevation at 2400.

COLORADO RIVER MAIN STEM

9-190. Colorado River below Lake Granby, Colo.

Location.--Lat 40°08'39", long 105°52'00", in SE¼SE¼ sec.11, T.2 N., R.76 W., on right bank 0.3 mile downstream from Granby Dam, 1 mile upstream from Walden Hollow, and 5 miles northeast of Granby.

Drainage area.--311 sq mi.

Records available.--October 1950 to September 1964. Prior to October 1955,published as "below Granby Reservoir."

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 8,050 ft (from topographic map).

Extremes.--Maximum discharge during year, 96 cfs July 1 (gage height, 1.75 ft); minimum daily, 15 cfs Oct. 1, Sept. 1, 5-18. 1950-64: Maximum daily discharge, 1,400 cfs (estimated) July 3, 4, 1962; minimum, 5.6 cfs Sept. 23-28, 1961.

Remarks.--Records excellent. Seepage from Lake Granby, which varies from 2-8 cfs depending on elevation of Lake Granby, is not included in record. Flow completely regulated by Lake Granby (see preceding page). Several diversions for irrigation of hay meadows above station. Transmountain diversions by Eureka and Grand River ditches and Alva B. Adams tunnel (see elsewhere in this report).

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

0.5	13
.8	28
1.3	60
1.8	101

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	20	20	20	19	19	19	30	89	89	89	15
2	20	20	20	20	19	19	19	45	85	87	89	16
3	20	20	20	20	19	19	19	45	80	83	67	16
4	20	20	20	20	20	19	19	50	*82	84	43	16
5	*20	20	20	20	20	20	19	60	84	84	38	15
6	20	*20	20	20	20	20	19	61	87	84	35	15
7	20	20	20	20	20	20	19	61	87	85	36	15
8	20	20	20	20	20	20	20	*61	88	85	38	15
9	20	20	20	20	20	20	20	61	88	*85	38	15
10	20	20	20	*20	*20	*20	20	61	84	89	36	15
11	20	20	20	19	19	20	*20	63	81	94	34	15
12	21	20	*20	19	19	20	20	64	81	94	34	15
13	21	20	20	20	19	20	20	64	81	93	33	15
14	21	20	20	20	19	20	20	64	81	93	33	15
15	21	20	20	20	19	20	20	64	81	94	34	15
16	21	20	20	20	19	20	20	64	80	90	34	*15
17	21	20	20	20	19	20	20	64	79	89	34	15
18	20	20	20	20	19	20	20	61	79	90	33	15
19	20	20	20	19	19	21	20	61	79	90	32	23
20	20	20	20	19	19	21	20	75	79	90	32	30
21	20	20	20	19	19	21	20	85	80	91	32	33
22	20	20	20	19	19	21	20	84	80	92	32	30
23	20	20	20	19	19	20	20	84	80	92	32	22
24	20	20	20	19	19	20	20	84	80	93	32	24
25	20	20	20	19	19	19	20	83	82	93	32	26
26	20	20	20	19	19	19	20	82	85	93	32	27
27	20	20	20	19	19	19	20	82	88	89	32	27
28	20	20	20	19	19	19	20	82	89	89	32	27
29	20	20	20	19	19	19	20	82	89	89	32	27
30	20	20	20	19	19	19	20	82	88	89	32	27
31	20	-----	20	19	-----	19	-----	82	-----	89	-----	-----
Total	621	600	620	605	558	613	593	2,091	2,496	2,771	1,184	596
Mean	20.0	20.0	20.0	19.5	19.2	19.8	19.8	67.5	83.2	89.4	38.2	19.9
Ac-ft	1,230	1,190	1,230	1,200	1,110	1,220	1,180	4,150	4,950	5,500	2,350	1,180

Calendar year 1963: Max 85 Min 9.1 Mean 33.7 Ac-ft 24,370
 Water year 1963-64: Max 94 Min 15 Mean 36.5 Ac-ft 26,490

* Discharge measurement made on this day.

9-195. Colorado River near Granby, Colo.

Location.--Lat 40°07'15", long 105°54'00", in SW¼NW¼ sec.22, T.2 N., R.76 W., on right bank 0.3 mile upstream from bridge on U. S. Highway 34, 1.3 miles upstream from Willow Creek, and 3.2 miles northeast of Granby.

Drainage area.--322 sq mi.

Records available.--October 1907 to September 1911 (published as Grand River near Granby), October 1933 to September 1953, May 1961 to September 1964 (seasonal records only). Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,960 ft (from topographic map). June 10, 1908, to Sept. 30, 1911, staff gage and May 12 to June 10, 1934, chain gage, at site 300 ft upstream at different datums. June 11, 1934, to Sept. 30, 1953, water-stage recorder at same site and datum.

Extremes.--Maximum discharge during season, 95 cfs May 21 (gage height, 1.14 ft); minimum daily, 12 cfs Sept. 19-20. 1907-11, 1933-53, 1961-64: Maximum discharge observed, 4,100 cfs June 20, 1909 (gage height, 5.5 ft, site and datum then in use); minimum daily, 6.6 cfs Jan. 29, 1950; minimum observed prior to starting construction of Shadow Mountain Lake, 20 cfs Apr. 6, 1936 (discharge measurement).

Remarks.--Records good. Flow regulated by Lake Granby since Sept. 13, 1949 (see elsewhere in this report). Several diversions for irrigation of hay meadows above station. Transmountain diversions above station by Eureka and Grand River ditches and Alva B. Adams tunnel (see elsewhere in this report).

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

0.2	11
.4	20
.7	40
1.1	83

Discharge, in cubic feet per second, May to September 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								46	73	62	61	16
2								57	75	64	62	17
3								52	69	59	57	17
4								57	*68	60	59	17
5								68	67	60	58	17
6								68	68	61	55	17
7								69	68	62	54	17
8								*69	71	66	*55	18
9								68	68	*63	56	18
10								68	63	62	54	18
11								69	61	66	54	17
12								69	62	66	54	17
13								69	64	66	54	17
14								69	70	64	54	17
15								70	67	67	54	17
16								76	62	67	54	*17
17								77	60	67	54	17
18								69	63	64	54	15
19								68	62	63	54	12
20								66	59	63	53	12
21								78	62	64	53	16
22								75	63	67	53	22
23								71	61	67	52	14
24								76	58	67	52	15
25								69	57	66	52	16
26								70	60	69	52	18
27								69	62	67	52	18
28								68	62	64	52	18
29								67	62	63	53	18
30								63	62	62	52	18
31								61	62	62	52	18
Total								2,091	1,929	1,990	1,119	503
Mean								67.5	64.3	64.2	36.1	16.8
Ac-ft								4,150	3,830	3,950	2,220	998

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

* Discharge measurement made on this day.

WILLOW CREEK BASIN

9-207. Willow Creek Reservoir near Granby, Colo.

Location.--Lat 40°08'40", long 105°56'30", in SE½ sec.7, T.2 N., R.76 W., in shaft house near right end of Willow Creek Dam on Willow Creek, 3½ miles upstream from mouth, and 4 miles north of Granby.

Drainage area.--134 sq mi.

Records available.--May 1953 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 8,077.00 ft above mean sea level, datum of 1929 (levels by Bureau of Reclamation); gage readings have been reduced to elevations above mean sea level.

Extremes.--Maximum contents during year, 8,990 acre-ft June 15 (elevation, 8,129.75 ft); minimum, 5,630 acre-ft Nov. 22 (elevation, 8,116.47 ft).
1953-64: Maximum contents observed, 9,060 acre-ft Aug. 3, 1953 (elevation, 8,129.99 ft); minimum since first filling to spillway level, 2,380 acre-ft Apr. 2, 1962 (elevation, 8,097.15 ft).

Remarks.--Reservoir is formed by earth- and rock-fill dam. Storage began in March 1953 and dead storage pool filled May 3, 1953. Usable capacity, 9,060 acre-ft between elevations 8,077.00 (trashrack sill at Willow Creek Outlet) and 8,130.00 ft (crest of spillway). Dead storage, 1,490 acre-ft. Reservoir is used to store water for pumping to Lake Granby, Shadow Mountain Lake, and transmountain diversion through Alva B. Adams tunnel for power and irrigation in the South Platte River basin. It is part of the Colorado-Big Thompson project. Figures given herein represent usable contents.

Cooperation.--Records furnished by Bureau of Reclamation.

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.....	8,123.69	7,310	-
Oct. 31.....	8,125.26	7,720	+410
Nov. 30.....	8,116.58	5,650	-2,070
Dec. 31.....	8,116.92	5,720	+70

Calendar year 1963.....	-	-	-420

Jan. 31.....	8,117.51	5,850	+130
Feb. 29.....	8,118.33	6,030	+180
Mar. 31.....	8,119.31	6,250	+220
Apr. 30.....	8,123.67	7,300	+1,050
May 31.....	8,127.21	8,250	+950
June 30.....	8,125.16	7,690	-560
July 31.....	8,126.71	8,110	+420
Aug. 31.....	8,128.60	8,650	+540
Sept. 30.....	8,125.58	7,800	-850

Water year 1963-64.....	-	-	+490

† Elevation at 2400.

9-210. Willow Creek below Willow Creek Reservoir, Colo.

Location.--Lat 40°08'45", long 105°56'22", in SE¼ sec.7, T.2 N., R.76 W., on left bank 1,000 ft downstream from Willow Creek Dam, three-quarters of a mile upstream from Bunte Highline Canal diversion, 3 miles upstream from mouth, and 4 miles north of Granby.

Drainage area.--134 sq mi.

Records available.--August 1953 to September 1964.

Gage.--Water-stage recorder and 10-ft Parshall flume with overflow weirs. Datum of gage is 8,023.64 ft above mean sea level (Bureau of Reclamation bench mark). Supplementary water-stage recorder and Parshall flume on McQueary ditch 500 ft downstream from point of diversion at Willow Creek Dam. Datum of gage is 8,031.68 ft above mean sea level (Bureau of Reclamation bench mark).

Average discharge (combined flow).--11 years, 28.6 cfs (20,710 acre-ft per year).

Extremes (combined flow).--Maximum discharge during year, 55 cfs May 26 (gage height, 3.22 ft); minimum daily, 0.1 cfs Avg. 15 to Sept. 29.

1953-64: Maximum discharge, 867 cfs June 7, 1957 (gage height, 4.84 ft); no flow Sept. 17-24, 1963.

Remarks.--Records good. Records show combined flow of creek and McQueary ditch. Flow completely regulated by Willow Creek Reservoir (see preceding page). Diversions above station for irrigation of hay meadows. McQueary ditch diverts at Willow Creek Dam for irrigation below station. Prior to Oct. 1, 1962, records included priming and waste water from pump canal. Record of diversion from Willow Creek Reservoir by Willow Creek Pump Canal to Lake Granby as part of the Colorado-Big Thompson project is given below:

Month	Diversion in acre-feet	Month	Diversion in acre-feet
October.....	0	April.....	258
November.....	2,280	May.....	13,990
December.....	0	June.....	8,350
	-----	July.....	0
Calendar year 1963....	18,370	August.....	538
	-----	September.....	1,740
January.....	0		
February.....	0		
March.....	0	Water year 1963-64....	27,160

Cooperation.--Records of diversions to Lake Granby 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	3.9	6.4	6.2	8.0	7.0	7.2	7.0	5.5	45	43	23	0.1
2	6.0	6.4	5.4	8.0	7.0	7.2	7.0	5.0	43	43	23	.1
3	6.0	6.2	4.4	8.0	7.0	7.2	7.0	4.5	43	42	29	.1
4	6.0	6.2	4.4	8.0	7.0	7.2	7.0	3.5	*43	42	39	.1
5	*6.0	6.2	4.4	8.0	7.0	7.4	7.0	1.5	45	42	40	.1
6	6.0	*6.2	4.4	8.0	6.8	7.4	7.0	1.0	46	42	40	.1
7	6.0	6.2	4.4	8.0	6.8	7.4	7.0	.5	46	42	40	.1
8	6.0	6.2	4.4	8.0	6.8	7.4	7.0	.5	46	42	*40	.1
9	6.4	6.2	3.6	8.0	6.8	7.4	7.0	*.2	45	*42	40	.1
10	6.4	6.2	2.8	*8.0	*6.8	7.4	7.0	.2	43	42	14	.1
11	6.4	6.2	2.8	8.0	6.8	*7.4	7.0	.2	41	42	.2	.1
12	6.4	6.2	*2.8	8.0	6.8	7.4	7.0	.2	41	42	.2	.1
13	6.4	6.2	2.8	7.6	6.8	7.4	7.0	.2	41	42	.2	.1
14	6.4	6.2	2.8	7.4	6.8	7.2	7.0	.2	41	38	.2	.1
15	6.4	6.2	2.8	7.2	7.0	7.2	*7.0	.2	25	34	.1	.1
16	6.4	6.2	3.6	7.2	7.0	7.2	7.0	.2	37	33	.1	** .1
17	6.4	6.2	5.4	7.0	7.0	7.2	7.0	.2	37	33	.1	.1
18	6.4	6.2	5.4	7.0	7.0	7.2	7.0	.2	37	33	.1	.1
19	6.4	6.2	6.2	7.0	7.0	7.0	7.0	.2	37	33	.1	.1
20	6.4	6.2	6.4	7.0	7.2	7.0	7.0	.2	36	33	.1	.1
21	6.4	6.2	7.0	7.0	7.2	7.0	7.0	.3	36	33	.1	.1
22	6.4	6.2	7.2	7.0	7.2	7.0	7.0	5.2	36	32	.1	.1
23	6.4	6.2	7.4	7.0	7.2	7.0	7.0	7.7	36	32	.1	.1
24	6.4	6.2	7.6	7.0	7.2	7.0	7.0	7.7	36	35	.1	.1
25	6.4	6.2	7.8	7.0	7.2	7.0	7.0	7.7	36	39	.1	.1
26	6.4	6.2	7.8	7.0	7.2	7.0	7.0	3.1	40	39	.1	.1
27	6.4	6.2	8.0	7.0	7.2	7.0	7.0	4.4	44	32	.1	.1
28	6.4	6.2	8.0	7.0	7.2	7.0	7.0	4.3	44	25	.1	.1
29	6.4	6.2	8.0	7.0	7.2	7.0	7.0	4.4	44	23	.1	.1
30	6.4	6.2	8.0	7.0	-----	7.0	6.0	4.5	43	23	.1	.2
31	6.4	-----	8.0	7.0	-----	7.0	-----	4.5	-----	23	.1	-----
Total	193.1	186.4	170.2	230.4	203.2	222.4	209.0	305.0	1,213	1,121	330.5	3.1
Mean	6.23	6.21	5.49	7.43	7.01	7.17	6.97	9.84	40.4	36.2	10.7	0.10
Ac-ft	383	370	338	457	403	441	415	605	2,410	2,220	656	6.1

Calendar year 1963: Max 47 Min 0 Mean 16.3 Ac-ft 11,760
 Water year 1963-64: Max 46 Min 0.1 Mean 12.0 Ac-ft 8,700

* Discharge measurement made on this day.

** Field estimate made on this day.

Note.--No gage-height record Oct. 11 to May 18.

FRASER RIVER BASIN

9-240. Fraser River near Winter Park, Colo.

Location.--Lat 39°54'00", long 105°46'35", in NE¼ sec.4, T.2 S., R.75 W., on left bank 500 ft downstream from bridge on U. S. Highway 40, 1.1 miles northwest of Winter Park, 2 miles upstream from Vasquez Creek, 3½ miles downstream from point of diversion for Moffat water tunnel, and 4 miles southeast of Fraser.

Drainage area.--27.6 sq mi.

Records available.--September 1910 to September 1964. Monthly discharge only for some periods, published in WSP 1313. Published as "near Arrow" 1910-23 and as "near West Portal" 1924-39. Records since June 9, 1936, equivalent to earlier records if transmountain diversions are added to flow past station.

Gage.--Water-stage recorder. Datum of gage is 8,906.23 ft above mean sea level (State Highway Department bench mark). Sept. 23, 1910, to May 12, 1916, staff gage at trail bridge 1 mile upstream at different datum.

Average discharge.--54 years, 40.3 cfs (29,180 acre-ft per year) including diversions to Berthoud Pass ditch and Moffat water tunnel.

Extremes.--Maximum discharge during year, 28 cfs May 15 (gage height, 0.51 ft); maximum gage height recorded, 1.07 ft Dec. 5 (back-water from ice); minimum daily discharge, 2.5 cfs Sept. 30.
1910-64: Maximum discharge, 820 cfs June 13, 1918 (gage height, 2.9 ft); minimum daily determined, 2 cfs Mar. 30, Apr. 9, 1912, Jan. 23, 1915.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Transmountain diversions above station through Berthoud Pass ditch (see elsewhere in this report) and to Moffat water tunnel (see adjustment figures below).

Cooperation.--Record of flow diverted to Berthoud Pass ditch and Moffat water tunnel furnished by State engineer of Colorado.

Revisions.--The figures of adjusted monthly mean discharge and runoff and corresponding yearly figures for May to September 1963 have been revised superseding those previously published. Revised figures are listed below:

Month	Mean (cfs)	Runoff (acre-ft)
May.....	49.0	3,010
June.....	59.0	3,500
July.....	27.4	1,680
August.....	30.9	1,900
September.....	30.8	1,830
Water year 1962-63.....	22.4	16,210

9-240. Fraser River near Winter Park, Colo.--Continued

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	3.0	3.2	3.0	3.0	3.2	3.2	4.4	11	17	7.0	15	9.4
2	3.0	3.5	3.2	3.0	3.2	3.5	*4.4	9.4	17	5.8	15	9.0
3	3.0	3.5	3.2	2.8	3.2	3.7	4.4	8.2	17	5.6	15	8.6
4	3.0	3.4	3.2	3.0	3.2	*3.7	4.4	9.0	15	5.6	14	8.2
5	3.0	3.4	3.0	3.0	3.2	3.5	4.4	9.4	*14	5.4	9.8	7.8
6	*2.8	3.3	3.0	3.2	3.2	3.2	*4.4	*10	13	5.2	*5.4	7.8
7	2.8	3.2	3.0	3.2	3.5	3.5	4.4	13	13	5.0	7.4	6.2
8	2.8	3.2	3.0	3.2	3.5	3.7	4.3	11	13	*18	7.0	5.2
9	2.8	*3.2	3.0	3.2	3.5	3.7	4.5	9.0	12	15	7.8	7.8
10	2.8	3.4	3.0	3.5	3.5	3.7	5.0	12	11	14	8.2	7.8
11	2.8	3.4	3.0	3.5	3.2	3.7	4.8	11	10	13	8.2	7.4
12	2.8	3.2	2.8	3.5	3.2	3.7	5.0	11	10	11	8.2	5.0
13	2.8	3.4	3.0	3.5	3.2	4.0	5.6	13	11	10	8.2	3.0
14	2.8	3.2	*3.0	3.5	3.2	4.0	6.0	16	11	9.8	8.2	*2.8
15	2.8	3.4	3.0	*3.5	3.2	4.0	5.8	18	10	9.4	8.6	3.0
16	3.0	3.4	3.0	3.5	3.2	4.0	7.4	17	9.8	13	11	2.8
17	3.0	3.2	3.0	3.5	3.2	4.0	7.0	17	9.4	12	11	2.7
18	3.0	3.2	3.0	3.5	3.2	4.0	7.4	18	9.8	12	12	2.7
19	3.0	3.2	3.0	3.5	3.2	4.0	8.2	19	9.0	12	11	4.1
20	3.4	3.0	2.8	3.5	*3.2	4.0	7.4	19	9.0	14	13	3.4
21	4.1	3.0	2.8	3.5	3.2	4.0	5.8	19	9.0	14	12	3.0
22	3.4	3.2	2.8	3.5	3.2	4.0	6.2	18	9.4	14	9.8	2.8
23	3.2	3.0	3.0	3.5	3.2	4.2	7.8	18	8.6	14	12	2.7
24	3.2	3.0	3.0	3.5	3.2	4.4	9.8	18	7.8	14	12	3.0
25	3.2	3.0	3.0	3.5	3.2	4.4	7.8	18	7.4	13	12	2.7
26	3.2	3.0	3.0	3.5	3.2	4.4	6.6	*19	7.0	12	12	4.1
27	3.2	3.0	3.0	3.2	3.2	4.4	6.2	17	6.6	13	12	7.0
28	3.2	3.0	3.0	3.2	3.2	4.4	5.8	16	6.6	14	11	5.0
29	3.2	2.8	3.0	3.2	3.2	4.4	7.8	16	7.8	14	11	2.7
30	3.2	2.8	3.0	3.2	3.2	4.4	11	15	8.2	14	10	2.5
31	3.5	- - - -	3.0	3.2	- - - -	4.4	- - - -	15	- - - -	15	9.8	- - - -
Total	95.0	95.7	92.8	103.1	94.0	122.2	184.0	450.0	319.4	353.8	335.6	150.2
Mean	3.06	3.19	2.99	3.33	3.24	3.94	6.13	14.5	10.6	11.4	10.8	5.01
Ac-ft	188	190	184	204	186	242	365	893	634	702	666	298
Adjusted for diversions to Berthoud Pass ditch and Moffat water tunnel												
Mean	15.7	11.2	7.99	7.33	6.74	6.44	9.63	67.2	115	56.9	27.0	14.0
Ac-ft	962	666	491	450	387	396	573	4,130	6,880	3,500	1,710	834
Observed												
Calendar year 1963:	Max 14		Min 2.8	Mean 6.29	Ac-ft 4,560							
Water year 1963-64:	Max 19		Min 2.5	Mean 6.55	Ac-ft 4,750							
Adjusted												
Calendar year 1963:	Max -		Min -	Mean 22.8	Ac-ft 16,480							
Water year 1963-64:	Max -		Min -	Mean 28.9	Ac-ft 20,980							

* Discharge measurement made on this day.

Note.--No gage-height record Jan. 4 to Mar. 4, Mar. 12 to Apr. 6 (stage-discharge relation affected by ice during most of periods), Sept. 12-14. Stage-discharge relation affected by ice Nov. 1, 2, 5-8, 17-21, 23, 24, Nov. 26 to Dec. 6, Dec. 8, 9, 20, 22, 23, 26, Dec. 30 to Jan. 2, Mar. 7-11, Apr. 7, 9, 10, 12-14, 26, 27.

9-250. Vasquez Creek near Winter Park, Colo.

Location.--Lat 39°55'13", long 105°47'05", in NE¼NW¼ sec.33, T.1 S., R.75 W., on right bank 40 ft downstream from bridge on U. S. Highway 40, a quarter of a mile upstream from mouth, 2½ miles northwest of Winter Park, 2½ miles southeast of Fraser, and 4½ miles downstream from Moffat water tunnel diversion.

Drainage area.--27.8 sq mi.

Records available.--June to August 1907, July to October 1909, October 1933 to September 1964. Monthly discharge only for some periods, published in WSP 1313. Records for June to October 1908, published in WSP 269, have been found to be unreliable and should not be used. Published as Vasquez River at lower station, near Fraser 1907, 1909 and as "near West Portal" 1934-39. Records for May 26, 1937, to September 1959 equivalent to earlier records if diversion to Moffat water tunnel is added to flow past station.

Gage.--Water-stage recorder and concrete control. Datum of gage is 8,768.48 ft above mean sea level, unadjusted. June 1, 1907, to Oct. 31, 1909, staff gage at site three-quarters of a mile upstream at different datum.

Extremes.--Maximum discharge during year, 44 cfs June 17 (gage height, 2.09 ft), from rating curve extended above 8.7 cfs; maximum gage height, 2.26 ft Dec. 4 (backwater from ice); minimum daily discharge, 0.1 cfs July 8, 9, Sept. 24-30.
1933-64: Maximum discharge, 470 cfs June 10, 1952 (gage height, 3.13 ft), from rating curve extended above 340 cfs; no flow at times in 1944, 1946, 1956, 1960.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Transmountain diversions above station to Moffat water tunnel not known since 1959.

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

1.3	0	1.7	5.6
1.4	.2	1.8	11
1.5	1.1	1.9	20
1.6	2.8		

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	1.7	1.4	b 2.2	2.0	1.6	1.8	2.2	6.5	6.0	2.0	2.0	0.6
2	1.7	1.8	b 2.2	2.0	1.6	1.8	2.2	6.0	6.5	.7	1.7	.5
3	1.7	2.6	b 2.2	2.0	1.6	1.8	2.2	4.9	6.0	.3	1.8	.5
4	1.7	2.6	b 2.2	2.0	1.6	1.8	2.2	4.9	5.2	.3	2.0	.5
5	1.7	2.6	2.2	2.0	1.6	1.8	2.4	4.9	4.6	.3	1.8	.5
6	*1.7	2.2	2.0	2.2	1.6	2.0	2.4	*5.6	4.6	.2	*2.0	.6
7	1.7	2.8	2.0	2.2	1.6	2.0	2.4	5.6	4.6	.2	2.2	.5
8	1.7	2.8	2.0	2.2	1.6	1.8	2.4	5.6	8.1	*.1	1.8	.6
9	1.5	*3.0	2.0	2.2	1.6	2.0	2.4	4.6	*4.3	.1	1.5	.6
10	1.5	3.0	2.0	2.2	1.8	2.0	2.4	6.0	5.2	.3	1.4	.4
11	1.5	2.8	2.2	2.2	2.2	2.0	2.6	6.5	10	.2	1.2	.3
12	1.7	2.4	2.4	2.0	2.2	*2.0	2.6	*6.0	4.6	.2	1.2	.2
13	1.7	2.4	2.4	2.0	2.2	2.0	2.6	9.3	4.9	.3	1.2	.2
14	1.7	2.6	*2.6	2.0	2.2	2.0	2.8	13	3.7	1.0	1.2	*.2
15	1.7	2.0	2.6	*1.8	2.2	2.2	3.3	17	3.5	1.1	1.2	.2
16	1.7	2.2	2.4	1.8	2.0	2.2	3.7	19	8.7	1.1	1.2	.3
17	1.7	b 2.2	2.2	1.8	1.8	2.2	3.7	20	11	1.1	1.2	.2
18	1.7	b 2.0	2.2	1.8	1.8	2.2	3.3	19	6.0	1.1	1.0	.3
19	1.7	b 2.0	2.2	1.8	1.8	2.2	3.7	18	2.8	1.1	1.1	.8
20	2.0	b 1.8	2.2	2.0	*1.8	2.2	3.7	17	2.8	1.0	1.0	.7
21	2.0	b 1.8	2.2	2.2	2.0	2.2	3.3	16	2.8	1.0	.8	.8
22	1.8	b 2.0	2.2	2.2	2.0	2.2	3.3	16	2.8	1.0	.7	1.1
23	1.7	b 2.0	2.0	2.2	2.0	2.2	5.2	12	2.6	1.0	.6	.8
24	1.7	b 2.0	2.0	2.2	2.0	2.2	5.2	11	2.2	1.4	.7	.1
25	1.7	b 2.0	2.0	2.2	2.0	2.2	4.6	10	2.2	1.1	.7	.1
26	1.7	b 2.0	1.8	2.2	2.0	2.2	3.5	9.3	2.0	1.0	.8	.1
27	1.7	b 1.8	1.8	2.2	2.0	2.2	3.5	*8.7	1.4	.8	1.0	.1
28	1.7	b 1.8	1.8	2.2	2.0	2.2	3.5	7.5	.7	.7	.8	.1
29	1.7	1.8	1.8	2.0	2.0	2.2	4.0	6.5	1.4	.8	1.0	.1
30	1.8	2.0	1.8	1.8	-----	2.2	5.2	6.0	2.6	1.1	.8	.1
31	2.0	-----	1.8	1.6	-----	2.2	-----	5.6	-----	1.5	.6	-----
Total	53.2	66.4	65.6	63.2	54.4	64.2	96.5	308.0	133.8	24.1	38.2	12.1
Mean	1.72	2.21	2.12	2.04	1.88	2.07	3.22	9.94	4.46	0.78	1.23	0.40
Ac-ft	106	132	130	125	108	127	191	611	265	48	76	24

Calendar year 1963: Max 7.1 Min 0.8 Mean 2.43 Ac-ft 1,760
Water year 1963-64: Max 20 Min 0.1 Mean 2.68 Ac-ft 1,940

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 29, 30, Dec. 5 to Mar. 4 (stage-discharge relation affected by ice during most of periods).

9-265. St. Louis Creek near Fraser, Colo.

Location--Lat 39°54'30", long 105°52'45", in sec.34, T.1 S., R.76 W., on left bank 300 ft downstream from West St. Louis Creek and 4 miles southwest of Fraser.

Drainage area--32.8 sq mi.

Records available--October 1933 to September 1964. Prior to August 1934 monthly discharge only, published in WSP 1313. Records for May 1956 to September 1959, equivalent to earlier records if diversion to Moffat water tunnel is added to flow past station.

Gage--Water-stage recorder. Datum of gage is 8,980.17 ft above mean sea level, unadjusted.

Extremes--Maximum discharge during year, 53 cfs July 30 (gage height, 1.38 ft); minimum daily, 2.5 cfs Nov. 13.

1933-64: Maximum discharge, 470 cfs June 15, 1952 (gage height, 2.89 ft); maximum gage height, 3.21 ft June 10, 1952 (backwater from log on control); minimum discharge not determined, probably occurred during January or February 1961.

Remarks--Records good except those for periods of ice effect or no gage-height record, which are fair. Transmountain diversion above station to Moffat water tunnel not known since 1959.

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

Oct. 1 to Jan. 31		Feb. 1 to Sept. 30			
0.5	1.4	0.5	2.0	1.0	17
.7	4.2	.6	3.4	1.2	34
		.7	5.8	1.4	55
		.9	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	3.4	3.3	3.0	3.5	3.0	3.2	3.7	5.1	12	38	43	9.1
2	3.4	3.2	3.0	3.5	3.0	3.2	3.3	5.0	12	38	39	8.8
3	3.2	3.2	3.1	3.5	3.0	3.2	3.3	4.6	14	40	35	8.8
4	3.2	3.2	3.1	3.4	3.0	3.2	3.3	4.7	15	39	28	8.8
5	* 3.2	3.0	3.2	3.5	3.0	3.2	3.5	4.8	22	39	15	8.5
6	3.2	3.0	3.2	3.5	3.0	3.2	3.3	5.0	30	38	*16	8.8
7	3.4	2.8	3.4	3.5	3.0	3.2	3.3	5.3	33	37	17	8.8
8	3.2	2.8	3.4	3.5	3.2	3.2	3.6	*5.2	34	*39	16	8.8
9	3.4	*2.8	3.4	3.4	3.4	3.1	3.6	5.1	*3.2	40	15	8.8
10	3.2	2.9	3.5	3.5	3.4	3.0	3.6	7.0	33	41	15	8.5
11	3.2	2.8	3.5	*3.5	3.4	2.8	4.1	6.4	34	41	14	8.5
12	3.2	2.7	3.6	3.4	3.4	*2.8	3.8	*6.7	33	40	14	8.2
13	3.2	2.5	3.5	3.2	3.0	2.8	3.9	8.5	38	41	13	6.1
14	3.2	2.6	*3.5	3.2	3.0	2.8	4.1	11	43	42	10	4.4
15	3.2	2.7	3.5	3.2	3.0	2.8	4.1	13	43	41	10	4.4
16	3.2	2.7	3.5	3.2	3.0	3.0	4.1	15	44	40	15	4.4
17	3.2	2.8	3.6	3.2	3.0	3.0	*4.1	16	43	40	16	*4.1
18	3.1	2.8	3.6	3.2	3.2	3.0	4.1	17	42	41	17	4.1
19	3.1	2.9	3.6	3.2	3.2	3.0	4.3	16	41	41	19	6.1
20	3.4	2.9	3.6	3.2	*3.2	3.0	4.3	17	40	40	19	4.8
21	3.4	2.9	3.6	3.2	3.2	3.0	4.4	17	39	39	17	3.9
22	3.1	3.0	3.6	3.2	3.2	3.0	4.4	16	40	42	17	3.9
23	3.1	3.0	3.6	3.2	3.2	3.0	4.5	16	38	41	16	3.9
24	3.2	3.0	3.6	3.2	3.0	3.1	4.9	16	39	44	16	3.4
25	3.1	3.1	3.6	3.2	3.0	3.1	4.5	16	39	39	16	3.1
26	3.1	3.1	3.5	3.2	3.0	*3.1	4.5	17	39	40	16	3.4
27	3.1	3.1	3.2	3.2	3.0	3.2	4.6	*16	39	41	17	3.6
28	3.1	3.1	3.4	3.2	3.0	3.2	4.6	14	39	41	16	3.4
29	3.1	3.2	3.5	3.2	3.0	3.2	4.4	13	40	41	16	3.3
30	3.2	3.1	3.4	3.2	-----	3.2	4.5	12	39	43	10	3.3
31	3.4	-----	3.4	3.0	-----	3.7	-----	11	-----	46	9.4	-----
Total	99.7	88.2	106.2	102.3	90.0	95.5	120.7	342.4	1029	1253	552.4	1780
Mean	3.22	2.94	3.43	3.30	3.10	3.08	4.02	11.0	34.3	40.4	17.8	5.93
Ac-ft	198	175	211	203	179	189	239	679	2,040	2,490	1,100	353

Calendar year 1963: Max 44 Min 2.2 Mean 9.89 Ac-ft 7,170
 Water year 1963-64: Max 46 Min 2.5 Mean 11.1 Ac-ft 8,060

* Discharge measurement made on this day.

Note--Stage-discharge relation affected by ice Nov. 1-3, 5-8, 11-25, Nov. 30 to Dec. 11. No gage-height record Jan. 29 to Mar. 26, Mar. 30 to May 8 (stage-discharge relation affected by ice during most of periods).

FRASER RIVER BASIN

9-320. Ranch Creek near Fraser, Colo.

Location.--Lat 39°57'00", long 105°45'54", in NW 1/4 sec.22, T.1 S., R.75 W., on right bank 450 ft downstream from Middle Fork and 2.7 miles east of Fraser.

Drainage area.--19.9 sq mi.

Records available.--August 1934 to September 1964. Records since May 15, 1949, equivalent to earlier records if diversion to Moffat water tunnel is added to flow past station.

Gage.--Water-stage recorder. Altitude of gage is 8,685 ft (from topographic map).

Average discharge.--30 years, 20.6 cfs (14,910 acre-ft per year), including diversion to Moffat water tunnel.

Extremes.--Maximum discharge during year, 21 cfs May 18 (gage height, 1.24 ft), from rating curve extended above 14 cfs; maximum gage height, 1.41 ft Dec. 4 (backwater from ice); minimum daily discharge, 0.6 cfs Nov. 14, Mar. 10-18, 20-22, 24-28.
1934-64: Maximum discharge, 402 cfs June 28, 1957 (gage height, 3.72 ft); minimum daily, 0.4 cfs Sept. 21, Oct. 6, 1960.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Diversion above station for irrigation of hay meadows along Fraser River. Transmountain diversion above station to Moffat water tunnel was 9,400 acre-ft during water year 1964.

Cooperation.--Records of flow diverted to Moffat water tunnel furnished by State engineer.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second) (Shifting-control method used Dec. 14, 15)

0.5	0.4	0.9	5.1
.6	1.0	1.0	7.4
.7	1.9	1.1	11
.8	3.3	1.2	17

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	1.7	1.6	1.0	0.8	0.7	0.8	6.1	9.1	3.1	3.8	1.4
2	1.0	1.8	1.7	1.0	.8	.8	.7	5.1	8.7	2.8	3.3	1.4
3	1.0	1.5	1.8	1.0	.8	.7	.7	4.1	8.3	2.7	3.4	1.4
4	1.3	1.5	1.8	1.0	.8	.7	.7	4.3	7.4	2.8	3.1	1.3
5	2.5	1.4	1.6	.9	.8	*.7	.7	4.9	*6.6	3.3	2.4	1.4
6	*2.0	.9	1.5	.9	.8	.7	.7	*4.9	6.4	3.1	*2.3	1.4
7	1.7	.7	1.5	.9	.8	.7	.7	5.7	8.0	2.8	2.3	1.4
8	1.6	.7	1.4	.9	.7	.7	.7	5.3	8.0	*2.5	2.3	1.5
9	1.6	*.7	1.6	.9	.7	.7	.8	4.9	6.6	2.4	1.9	1.6
10	1.6	.7	1.7	.9	.8	.6	.8	6.6	7.7	2.4	1.3	1.6
11	1.5	.7	1.6	.9	.8	.6	1.0	6.6	7.4	2.3	1.1	1.5
12	1.5	.6	1.7	*.9	.8	*.6	1.0	6.8	6.6	2.4	1.1	1.5
13	1.5	.7	1.9	.8	.8	.6	.9	8.3	6.4	2.3	1.2	1.5
14	1.6	.6	*2.1	.8	.7	.6	1.0	10	6.8	2.1	1.0	.7
15	1.6	1.0	2.0	.8	.7	.6	1.3	12	6.8	2.3	1.0	.7
16	1.5	1.1	1.9	.8	.7	.6	1.5	14	7.1	3.6	1.1	.7
17	1.5	1.2	1.6	.8	.7	.6	*1.6	15	6.6	3.6	1.1	*.7
18	1.5	1.3	1.3	.8	.7	.6	1.7	15	5.7	3.4	1.1	.9
19	1.5	1.4	1.1	.9	.7	.7	2.8	16	5.1	3.0	1.2	1.9
20	1.8	1.5	1.1	.9	.7	.6	2.3	17	4.9	2.8	1.9	1.5
21	2.0	1.4	1.1	.9	.7	.6	1.7	17	4.3	2.5	1.8	1.2
22	1.7	1.3	1.0	.9	.7	.6	2.0	17	4.5	2.5	1.7	1.2
23	1.6	1.2	1.0	.9	.7	.7	3.0	15	3.9	2.7	1.6	1.1
24	1.6	1.3	1.0	.9	.7	.6	5.3	14	3.6	4.9	1.7	1.1
25	1.5	1.5	1.0	.9	.7	.6	3.8	14	3.6	2.8	1.6	1.1
26	1.4	1.6	.9	.9	.7	.6	2.7	15	3.4	3.4	1.5	1.2
27	1.5	1.7	.8	.9	.7	.6	2.3	*14	3.3	1.8	1.7	1.3
28	1.5	1.6	.9	.9	.7	.6	2.7	12	3.1	2.1	1.5	1.3
29	1.5	1.6	1.0	.9	.7	.7	4.1	11	3.4	3.0	1.6	1.3
30	1.5	1.6	1.0	.9	-----	.7	6.4	9.9	3.4	3.3	1.6	1.4
31	1.6	-----	1.0	.8	-----	.9	-----	8.7	-----	3.9	1.5	-----
Total	48.2	36.5	43.2	27.6	21.4	20.3	56.4	320.2	176.7	88.6	55.7	38.2
Mean	1.55	1.22	1.39	0.89	0.74	0.65	1.88	10.3	5.89	2.86	1.80	1.27
Ac-ft	96	72	86	55	42	40	112	635	350	176	110	76

Calendar year 1963: Max 12 Min 0.6 Mean 2.64 Ac-ft 1,910
Water year 1963-64: Max 17 Min 0.6 Mean 2.55 Ac-ft 1,850

* Discharge measurement made on this day.

Note.-- Stage-discharge relation affected by ice Nov. 16 to Dec. 13, Apr. 15-17. No gage-height record Jan. 4-19, Feb. 20 to Mar. 5 (stage-discharge relation affected by ice during most of period).

9-345. Colorado River at Hot Sulphur Springs, Colo.

Location.--Lat 40°05'00", long 106°05'15", in NE¼NE¼ sec.2, T.1 N., R.78 W., on left bank about 1,000 ft north of U. S. Highway 40, 1 mile northeast of Hot Sulphur Springs, and 4½ miles upstream from Beaver Creek.

Drainage area.--825 sq mi.

Records available.--July 1904 to September 1964. Monthly discharge only for some periods, published in WSP 1313. Prior to 1907 and 1914-18, published as Grand River at Hot Sulphur Springs and as Grand River at Sulphur Springs 1907-13.

Gage.--Water-stage recorder. Altitude of gage is 7,670 ft (from railroad elevations). July 28, 1904, to Apr. 16, 1906, staff gage on bridge 1.7 miles downstream at different datum. Apr. 17, 1906, to Sept. 18, 1930, chain gage at bridge 1.4 miles downstream at datum 7,651.26 ft above mean sea level, unadjusted. Supplemental water-stage recorder (staff gage prior to Jan. 1, 1963) at different datum at site 1.7 miles downstream, used for winter records some years.

Extremes.--Maximum discharge during year, 768 cfs May 27 (gage height, 1.66 ft); minimum daily, 45 cfs Dec. 7, 8.
1904-64: Maximum discharge observed, 10,300 cfs June 15, 1921 (gage height, 8.7 ft, site and datum then in use); minimum daily, 33 cfs Sept. 27, 1956.

Remarks.--Records excellent except those for Nov. 17 to Apr. 30, which are fair. Flow affected by transmountain diversions, storage reservoirs, and diversions above station for irrigation of about 13,000 acres.

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

Oct. 1 to Nov. 16 May 1 to Sept. 30		Nov. 16 to Apr. 30	
0.2	44	0.3	42
.4	85	.6	70
.7	180	.8	107
1.0	320	1.2	222
1.3	490	1.7	400
1.6	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	55	74	50	56	60	56	63	375	375	261	194	58
2	67	71	47	56	60	55	64	353	402	243	180	57
3	69	64	47	57	60	54	64	252	424	216	207	55
4	69	74	47	55	60	53	60	198	*430	198	170	55
5	67	72	47	56	60	52	64	*270	375	198	159	55
6	69	71	47	58	60	53	65	248	375	198	142	53
7	69	69	45	60	60	53	66	256	380	176	125	53
8	69	67	45	60	60	53	66	285	430	170	115	53
9	69	*69	54	59	58	*54	*68	243	370	*166	*115	58
10	67	69	52	*60	57	54	70	252	333	166	109	60
11	67	67	50	62	56	54	74	320	*300	173	96	53
12	*67	69	48	59	56	53	82	256	275	176	90	53
13	64	64	*48	59	56	54	72	275	275	176	90	53
14	57	*71	53	58	56	54	74	336	295	176	88	53
15	57	71	54	58	56	54	94	380	310	176	85	53
16	57	76	55	58	56	54	130	442	243	176	88	*49
17	57	72	56	58	56	55	169	508	243	170	88	48
18	57	66	57	56	53	55	170	538	*248	184	88	48
19	57	74	56	56	53	56	230	562	230	176	90	49
20	60	70	55	56	54	55	280	617	220	173	98	53
21	71	68	58	56	54	56	261	666	220	166	96	51
22	69	62	55	56	*54	57	251	673	256	173	88	60
23	64	58	55	57	54	58	261	638	248	170	83	53
24	62	62	56	56	54	59	344	610	220	202	80	51
25	62	58	55	57	54	58	385	*604	220	194	83	49
26	62	54	56	58	54	58	219	598	216	170	85	49
27	64	58	55	58	55	57	172	666	216	170	98	49
28	67	56	55	58	56	58	157	544	225	156	93	49
29	69	52	56	58	56	59	248	496	238	159	93	49
30	67	52	55	60	-----	60	377	424	261	170	85	49
31	76	-----	55	60	-----	62	-----	375	-----	202	69	-----
Total	2,003	1,986	1,624	1,791	1,638	1,723	4,700	13,260	8,853	5,680	3,370	1,578
Mean	64.6	66.2	52.4	57.8	56.5	55.6	157	428	295	183	109	52.6
Ac-ft	3,970	3,940	3,220	3,550	3,250	3,420	9,320	26,300	17,560	11,270	6,680	3,130

Calendar year 1963: Max 484 Min 45 Mean 118 Ac-ft 85,270
Water year 1963-64: Max 673 Min 45 Mean 132 Ac-ft 95,610

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17 to Dec. 7, Apr. 18-20.

LITTLE MUDDY CREEK BASIN

9-348. Little Muddy Creek near Parshall, Colo.

Location.--Lat 39°57'47", long 106°04'08", in NW¼ sec.13, T.1 S., R.78 W., on left bank at bridge 0.4 mile upstream from Sylvian Lake ditch headgate and 11.1 miles southeast of Parshall.

Drainage area.--6.50 sq mi.

Records available.--October 1958 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,580 ft (from topographic map).

Average discharge.--6 years, 2.80 cfs (2,030 acre-ft per year).

Extremes.--Maximum discharge during year, 46 cfs May 16 (gage height, 3.15 ft); maximum gage height recorded, 3.78 ft Apr. 16; minimum daily discharge, 0.1 cfs for many days.

1958-64: Maximum discharge, 93 cfs May 12, 1962 (gage height, 3.71 ft); maximum gage height recorded, 4.89 ft Oct. 10, 1960 (backwater from beaver dam); minimum daily discharge determined, 0.1 cfs for some days in each year.

Remarks.--Records fair 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)
(Shifting-control method used Oct. 1-25, Apr. 21, 22, May 4-16)

2.3	0
2.4	.5
2.5	3.0
2.6	6.5
2.7	11
2.9	22
3.1	35

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	0.2	0.2	0.1	0.1	0.1	0.3	b1.1	1.4	1.8	1.0	0.2
2	.2	.2	.2	.1	.1	.2	.3	b1.5	*1.3	1.5	.4	.1
3	.2	.2	.2	.1	.1	.2	.3	b2.2	1.4	1.2	1.0	.1
4	*.2	.3	.2	.1	.1	.2	.3	2.1	1.2	.8	1.0	.1
5	.1	.3	.2	.1	.1	.2	.3	1.6	*9.6	.8	2.5	.1
6	.1	.4	.2	.1	.1	.2	.3	1.8	9.2	.8	1.8	.1
7	.1	.4	.2	.1	.1	.2	.3	1.8	7.8	.8	.8	.1
8	.1	*.4	.2	.1	.1	.1	.3	4.4	7.8	*.5	.5	.1
9	.1	.4	.1	.1	.2	.1	.3	4.4	7.0	.8	.4	.2
10	.1	.4	.1	.1	.2	.1	.4	5.8	*5.8	1.0	.3	.3
11	.1	.5	.1	.1	.2	.1	.4	6.5	5.1	.8	*.3	.3
12	.1	.3	.1	.1	.1	.2	.4	6.5	5.1	.5	.2	.2
13	.1	.3	.1	.1	*.1	.2	.4	8.8	5.1	.4	.2	.1
14	.1	.2	.2	.1	.1	.2	.5	*1.2	5.1	.3	.2	.1
15	.1	.2	.2	.1	.1	.2	.5	2.0	4.0	.3	.2	*.1
16	.1	.2	.2	.1	.1	.2	*.5	2.7	*3.7	.2	.1	.2
17	.1	.2	.2	.1	.1	.2	b.5	3.0	3.0	.4	.3	.2
18	.1	.1	.2	.1	.1	.2	b.5	2.9	3.0	.3	.3	.2
19	.1	.1	.2	.1	.1	.2	b.5	3.0	2.8	.2	.3	1.2
20	.2	.2	.1	.2	.1	.2	b.4	2.9	2.5	.2	1.0	1.2
21	.4	.2	.1	.2	.1	.2	.3	3.0	2.5	.2	.8	.4
22	.3	.2	.1	.2	.1	.2	.8	3.0	3.4	.2	.4	.3
23	.2	.2	.1	.2	.1	.3	b 1.0	2.7	3.4	.2	.2	.3
24	.2	.2	.1	.2	.1	.3	b 1.1	2.7	2.5	1.2	.2	.3
25	.2	.2	.1	.2	.1	.3	1.1	2.5	2.2	.5	.1	.3
26	.1	.2	.1	.2	.1	.3	1.0	2.6	2.0	.2	.2	.2
27	.1	.2	.1	.1	.1	.3	.9	*2.4	1.8	.2	.5	.3
28	.1	.2	.1	.1	.1	.3	.9	2.1	1.8	.1	.5	.3
29	.1	.2	.1	.1	.1	.3	.9	1.8	1.8	.1	1.0	.3
30	.2	.2	.1	.1	-----	.3	1.0	1.6	1.8	.1	.8	.3
31	.4	-----	.1	.1	-----	.3	-----	1.4	-----	1.0	.3	-----
Total	4.8	7.5	4.5	3.9	3.2	6.6	16.7	483.5	162.8	17.6	17.8	8.2
Mean	0.15	0.25	0.15	0.13	0.11	0.21	0.56	15.6	5.43	0.57	0.57	0.27
Ac-ft	9.5	15	8.9	7.7	6.3	13	33	959	323	35	35	16

Calendar year 1963: Max 7.4 Min 0.1 Mean 1.01 Ac-ft 732
Water year 1963-64: Max 30 Min 0.1 Mean 2.01 Ac-ft 1,460

Peak discharge (base, 15 cfs).--May 16 (1800) 46 cfs (3.15 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 1-4, Nov. 3-8, Nov. 17 to Apr. 16, Apr. 25-30, May 4-6 (stage-discharge relation affected by ice during most of periods), Aug. 7-11, Sept. 11-15.

WILLIAMS FORK BASIN

9-360. Williams Fork near Leal, Colo.

Location.--Lat 39°49'55", long 106°03'20", in sec.31, T.2 S., R.77 W., on right bank at downstream side of private bridge, 100 ft downstream from Kinney Creek and 1.7 miles northwest of Leal.

Drainage area.--89.5 sq mi.

Records available.--July 1933 to September 1964. Records since May 10, 1940, equivalent to earlier records if diversion to Jones Pass tunnel is added to flow past station. Prior to October 1958, published as Williams River near Leal.

Gage.--Water-stage recorder (digital). Altitude of gage is 8,790 ft (from topographic map). Prior to Aug. 16, 1953, at site 15 ft downstream at same datum.

Average discharge.--31 years, 101 cfs (73,120 acre-ft per year), including diversions to Jones Pass tunnel.

Extremes.--Maximum discharge during year, 549 cfs June 15 (gage height, 2.19 ft); minimum daily, 13 cfs Dec. 7, Jan. 13, 14, 1933-64; Maximum discharge, 1,720 cfs June 10, 1952 (gage height, 4.23 ft); minimum daily, 13 cfs Dec. 28, 29, 1939, Dec. 7, 1963, Jan. 13, 14, 1964.

Remarks.--Records good except those for May 29 to Sept. 30, which are poor. Transmountain diversion above station from tributaries of Williams Fork through Jones Pass tunnel, then by way of Vasquez and Moffat water tunnels to South Boulder Creek in South Platte River basin (see table below). Diversions above station for irrigation of about 200 acres of hay meadows above station and about 40 acres below.

Month	Diversion in acre-feet	Month	Diversion in acre-feet
October.....	275	April.....	71
November.....	171	May.....	1,540
December.....	95	June.....	4,520
Calendar year 1963....	5,380	July.....	1,300
January.....	82	August.....	903
February.....	66	September.....	278
March.....	61	Water year 1963-64....	9,360

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

0.0	9.0	1.0	130
.1	14	1.5	256
.2	22	2.0	450
.5	53		

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	20	21	14	15	14	b14	15	37	177	335	70	26
2	19	20	14	15	14	14	15	35	177	238	60	26
3	17	23	14	b14	14	14	15	29	170	206	70	25
4	15	24	14	b14	14	14	15	*29	167	182	70	25
5	15	23	14	b14	14	14	16	33	182	167	80	24
6	15	21	14	14	14	14	16	32	*198	177	75	24
7	15	23	13	*14	14	14	16	37	256	*145	69	23
8	15	*21	14	14	14	14	15	36	317	145	69	23
9	15	22	14	14	14	*b14	15	32	244	163	*61	24
10	15	22	14	14	14	14	15	38	*285	180	58	24
11	*15	20	*15	14	14	14	16	40	306	170	53	24
12	15	20	b15	14	14	14	16	36	391	160	51	23
13	16	19	15	13	14	14	16	42	387	150	50	25
14	16	21	14	13	14	14	16	61	310	150	46	24
15	16	19	14	14	*14	14	*16	82	*347	150	42	*25
16	16	20	14	14	b14	14	18	103	354	140	43	27
17	16	16	15	14	b14	14	19	125	351	140	44	26
18	17	14	15	14	14	14	20	147	317	130	38	26
19	17	15	15	14	14	14	24	175	288	130	38	28
20	18	16	15	14	b14	14	26	201	269	120	42	30
21	23	17	15	15	b14	14	25	253	310	130	36	27
22	24	18	b15	15	14	14	24	262	387	120	33	25
23	23	15	15	15	b14	14	26	250	313	110	30	23
24	24	16	14	14	b14	14	32	266	256	120	28	22
25	23	18	14	14	14	14	34	332	272	110	26	21
26	23	16	14	14	b14	14	25	354	247	100	25	21
27	23	17	14	14	14	14	25	324	235	100	30	22
28	22	15	14	14	b14	14	26	*313	259	90	30	22
29	21	14	15	14	14	14	29	247	358	80	31	21
30	22	14	15	14	-----	15	35	198	347	70	30	21
31	24	-----	15	14	-----	15	-----	177	-----	80	28	-----
TOTAL	575	560	446	437	406	436	621	4,326	5,477	4,488	1,456	727
MEAN	18.5	18.7	14.4	14.1	14.0	14.1	20.7	140	283	145	47.0	24.2
AC-FT	1,140	1,110	885	867	805	865	1,230	8,580	16,810	8,900	2,890	1,440

CALENDAR YEAR 1963	MAX 218	MIN 13	MEAN 43.7	AC-FT 31,599
WATER YEAR 1963-64	MAX 391	MIN 13	MEAN 62.7	AC-FT 45,522

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Jan. 7 to Feb. 15 (stage-discharge relation affected by ice during most of period), July 10 to Aug. 5, Sept. 2-11, 16-25.

WILLIAMS FORK BASIN

9-372. Skylark Creek near Parshall, Colo.

Location.--Lat 39°54'20", long 106°10'10", in NW¼ sec.6, T.2 S., R.78 W., on left bank 4.3 miles upstream from mouth and 10.8 miles south of Parshall.

Drainage area.--2.41 sq mi.

Records available.--October 1958 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,640 ft (from topographic map).

Average discharge.--6 years, 0.70 cfs (507 acre-ft per year).

Extremes.--Maximum discharge during year, 11 cfs about Aug. 4 (gage height, 1.58 ft, from recorded range in stage), from rating curve extended above 7.2 cfs by logarithmic plotting; minimum daily, 0.1 cfs for many days.

1958-64: Maximum discharge, 13 cfs July 20, 1959 (gage height, 1.70 ft), from rating curve extended above 2.1 cfs; no flow for many days in 1963.

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	0.2	b 0.2	0.1	0.2	0.1	0.1	0.3	0.8	1.6	0.6	0.4	0.2
2	.2	b .2	.1	.2	.1	.1	.3	.8	1.8	.6	.4	.2
3	.2	b .2	.1	.2	.1	.1	.2	.8	2.1	.6	.4	.2
4	.2	.2	.1	.2	.1	.1	.2	.8	2.0	.6	.5	.2
5	.2	.2	.1	.2	.1	.1	.2	.9	2.0	.6	.4	.2
6	.2	b .2	.1	.1	.1	.1	.2	.9	* 2.1	.6	.3	.2
7	.2	b .2	.1	.1	.1	.1	.2	.9	2.1	* .6	.3	.2
8	.2	* b .2	.1	.1	.1	.1	.2	* .9	2.2	.4	.3	.2
9	.2	.2	.1	.1	.1	.1	.2	.9	1.8	.4	* .3	.2
10	.2	.2	.1	.1	.1	* .1	.2	1.0	* 1.6	.6	.3	.2
11	* .2	b .2	* .1	.1	.1	.2	.3	1.0	1.5	.5	.3	.2
12	.2	b .2	.1	.1	.1	.2	.3	.8	1.3	.4	.3	.2
13	.2	.2	.1	.1	.1	.2	.3	1.1	1.2	.5	.3	.2
14	.2	.2	.1	.1	.1	.2	.3	1.1	1.2	.6	.3	.2
15	.2	.2	.1	.1	.1	.2	.3	1.2	* 1.2	.6	.2	* .2
16	.2	.2	.2	.1	.1	.2	.5	1.3	1.2	.6	.2	.2
17	.2	b .2	.2	.1	.1	.2	.5	1.6	1.1	.6	.2	.2
18	.2	.2	.2	.1	.1	.2	.5	1.6	1.1	.6	.2	.2
19	.2	.2	.2	.1	.1	.2	.5	1.6	1.0	.5	.3	.4
20	.2	.2	.2	.1	.1	.2	.5	1.7	1.0	.4	.3	.2
21	.2	.2	.2	.2	.1	.2	.5	1.8	1.0	.4	.2	.2
22	.2	.2	.2	.2	.1	.2	.5	2.2	1.1	.4	.2	.2
23	.2	.2	.2	.2	.1	.2	.5	2.2	1.0	.4	.2	.2
24	.2	.2	.2	.2	.1	.2	.6	2.1	1.0	.5	.2	.2
25	.2	.2	.2	.2	.1	.2	.6	2.4	.8	.4	.2	.2
26	.2	.2	.2	.2	.1	.2	.5	2.9	.8	.4	.2	.2
27	.2	.2	.2	.2	.1	.2	.5	2.9	.8	.4	.3	.3
28	.2	.2	.2	.2	.1	.2	.5	* 2.4	.8	.4	.2	.2
29	.2	.2	.2	.2	.1	.2	.6	2.3	.8	.4	.2	.2
30	.2	.2	.2	.2	-----	.2	.7	1.9	.8	.4	.2	.2
31	.2	-----	.2	.2	-----	.2	-----	1.6	-----	.4	.2	-----
Total	6.2	5.9	4.7	4.7	2.9	5.2	11.7	46.4	40.0	15.4	8.4	6.3
Mean	0.20	0.20	0.15	0.15	0.10	0.17	0.39	1.50	1.33	0.50	0.27	0.21
Ac-Ft	12	12	9.3	9.3	5.8	10	23	92	79	31	17	12

Calendar year 1963: Max 0.8 Min 0 Mean 0.25 Ac-ft 181
 Water year 1963-64: Max 2.9 Min 0.1 Mean 0.43 Ac-ft 312

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 19 to May 4 (stage-discharge relation affected by ice during most of period), May 6-8, July 31 to Aug. 9, Aug. 13 to Sept. 15.

9-375. Williams Fork near Parshall, Colo.

Location.--Lat 40°00'01", long 106°10'45", in SW $\frac{1}{2}$ SW $\frac{1}{2}$ sec.31, T.1 N., R.78 W., on right bank 150 ft downstream from bridge on State Highway 286, 3.7 miles downstream from Skylark Creek, 3.9 miles south of Parshall, and 4.2 miles upstream from Williams Fork Reservoir Dam.

Drainage area.--186 sq mi.

Records available.--July 1904 to September 1924, June 1933 to September 1964. Records since May 10, 1940, equivalent to earlier records if diversion to Jones Pass tunnel is added to flow past station. Published as "near (Hot) Sulphur Springs" 1904-12, and as Williams River near Parshall June 1933 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 7,808.95 ft above mean sea level (datum of Denver Board of Water Commissioners). Prior to Oct. 18, 1919, staff gage and Oct. 18, 1919, to Sept. 30, 1924, water-stage recorder, at site $\frac{1}{2}$ miles downstream at different datum. June 19, 1933, to Aug. 8, 1938, water-stage recorder at bridge 150 ft upstream at datum 1.00 ft higher.

Average discharge.--51 years, 144 cfs (104,300 acre-ft per year), including diversion to Jones Pass tunnel.

Extremes.--Maximum discharge during year, 626 cfs May 26 (gage height, 3.43 ft); minimum daily, 14 cfs Sept. 11. 1904-24, 1933-64: Maximum discharge observed, 2,620 cfs June 14, 1918 (gage height, 6.05 ft, site and datum then in use), from rating curve extended above 1,400 cfs; minimum daily, 10 cfs Sept. 15-17, 1934, Sept. 22, 23, 1959.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Transmountain diversion above station from tributaries of Williams Fork through Jones Pass tunnel (see record of diversion published with records for Williams Fork near Leal), then by way of Vasquez and Moffat water tunnels to South Boulder Creek in South Platte River basin. Diversions above station for irrigation of about 1,300 acres above station and about 2,500 acres below. About 150 acres above station irrigated by diversions into the drainage area.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 11 to June 24)

1.2	9.0	2.5	148
1.4	18	2.8	215
1.6	32	3.2	370
2.0	78	3.6	600

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	30	33	30	24	25	21	37	99	127	105	91	39
2	30	32	30	24	25	22	35	98	144	81	86	39
3	28	37	31	24	23	21	33	83	*148	73	91	34
4	26	43	32	23	22	21	32	75	150	74	97	36
5	26	*41	*32	22	22	23	33	*91	136	54	97	37
6	26	34	32	22	22	22	36	84	142	42	84	37
7	27	*39	31	23	23	21	33	91	183	*34	81	31
8	27	37	30	*23	24	21	32	95	280	20	79	16
9	27	39	29	21	25	*20	33	82	181	25	*75	16
10	26	38	28	21	26	22	33	87	*200	23	72	15
11	*26	36	27	20	25	22	38	105	233	26	68	14
12	26	33	27	19	24	24	38	88	218	23	65	30
13	26	32	26	17	23	24	34	88	212	22	58	50
14	26	36	25	19	22	23	37	49	200	22	27	50
15	26	33	26	20	22	24	42	64	212	22	37	*51
16	26	35	26	21	22	24	*51	125	*262	22	37	55
17	26	32	28	22	22	24	52	156	236	22	46	51
18	26	30	30	24	24	27	52	179	376	22	61	51
19	26	29	29	25	24	27	60	188	255	22	46	64
20	28	30	28	26	23	25	65	215	183	22	39	65
21	30	31	27	26	22	27	60	262	167	23	45	58
22	32	31	27	25	*21	30	58	284	169	23	53	55
23	31	31	28	24	21	30	60	262	139	*24	52	53
24	32	32	27	23	21	30	72	273	122	26	51	52
25	34	33	27	25	22	30	88	345	126	24	50	50
26	37	33	27	25	21	30	68	425	119	26	39	50
27	37	33	23	24	20	30	57	381	111	27	36	54
28	34	32	23	22	19	30	57	*288	106	26	35	52
29	34	31	24	22	19	32	72	245	116	27	37	50
30	34	31	25	22	-----	34	91	169	113	36	35	50
31	39	-----	24	24	-----	36	-----	139	-----	64	38	-----
Total	909	1,017	859	702	654	797	1,489	5,215	5,366	1,082	1,808	1,305
Mean	29.3	33.9	27.7	22.6	22.6	25.7	49.6	168	179	34.9	58.3	43.5
Ac-ft	1,800	2,020	1,700	1,390	1,300	1,580	2,950	10,340	10,640	2,150	3,590	2,590

Calendar year 1963: Max 140 Min 12 Mean 35.4 Ac-ft 25,590
Water year 1963-64: Max 425 Min 14 Mean 57.9 Ac-ft 42,050

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17 to Apr. 4, Apr. 8, 9. No gage-height record Jan. 17 to Feb. 22, Apr. 12, 13.

WILLIAMS FORK BASIN

9-380. Williams Fork Reservoir near Parshall, Colo.

Location.--Lat 40°02'06", long 106°12'17", in SE¼ sec.23, T.1 N., R.79 W., at dam on Williams Fork, 2.1 miles upstream from mouth and 2.2 miles southwest of Parshall.

Drainage area.--234 sq mi.

Records available.--April 1939 to September 1964. Prior to October 1948, published in WSP 1313.

Gage.--Mercury manometer gage read once daily. Datum of gage is at mean sea level (levels by city engineer of Denver). Prior to Sept. 2, 1959, tape-weight gage at same site and datum.

Extremes.--Maximum contents observed during year, 45,270 acre-ft July 26 (elevation, 7,769.52 ft); minimum observed, 20,070 acre-ft Apr. 22 (elevation, 7,735.76 ft).
1939-64: Maximum contents observed, 97,130 acre-ft July 9, 1962 (elevation, 7,811.19 ft); no contents Oct. 14 to Dec. 2, 1958, caused by construction operations at dam.

Remarks.--Reservoir is formed by concrete-arch dam. Dam completed in October 1938; storage began in April 1939; dam was enlarged Dec. 5, 1956, to Apr. 22, 1959. Enlarged capacity of reservoir, 96,820 acre-ft between elevations 7,634 (invert of outlet pipes) and 7,811 ft (top of radial gates on spillway). No dead storage. Figures given herein represent usable contents. Reservoir is used for power development and storage for replacement of water diverted through Jones Pass tunnel (see records of diversion published with records for Williams Fork near Leal) during periods when flow of Colorado River is insufficient to supply decreed prior water rights below Williams Fork.

Cooperation.--Records furnished by Denver Board of Water Commissioners.

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.....	7,760.83	37,550	-
Oct. 31.....	7,750.13	29,280	-8,270
Nov. 30.....	7,742.72	24,250	-5,030
Dec. 31.....	7,741.12	23,240	-1,010

Calendar year 1963.....	-	-	-46,600

Jan. 31.....	7,739.55	22,280	-960
Feb. 29.....	7,737.98	21,350	-930
Mar. 31.....	7,736.45	20,460	-890
Apr. 30.....	7,737.54	21,090	+630
May 31.....	7,751.45	30,230	+9,140
June 30.....	7,766.48	42,470	+12,240
July 31.....	7,768.75	44,550	+2,080
Aug. 31.....	7,754.80	32,730	-11,820
Sept. 30.....	7,739.08	22,000	-10,730
Water year 1963-64.....	-	-	-15,550

† Elevation at 0800 on first day of following month.

WILLIAMS FORK BASIN

9-385. Williams Fork below Williams Fork Reservoir, Colo.

Location.--Lat 40°02'07", long 106°12'17", in SE¼ sec.23, T.1 N., R.79 W., on left bank 400 ft downstream from Williams Fork Reservoir, 2.1 miles upstream from mouth, and 2.1 miles southwest of Parshall.

Drainage area.--234 sq mi.

Records available.--October 1948 to September 1954, August 1958 to September 1964. Monthly discharge only for some periods, published in WSP 1313. Prior to October 1958, published as Williams River below Williams Fork Reservoir.

Gage.--Water-stage recorder (digital) and concrete control. Datum of gage is 7,615.0 ft above mean sea level (datum of Denver Board of Water Commissioners). Oct. 1, 1948, to Sept. 30, 1954, at site a quarter of a mile downstream at different datum. Aug. 1, 1958, to Oct. 20, 1959, at site half a mile downstream at different datum.

Average discharge.--12 years, 125 cfs (90,500 acre-ft per year), adjusted for storage in Williams Fork Reservoir.

Extremes.--Maximum discharge during year, 290 cfs Nov. 4 (gage height, 2.50 ft); minimum daily, 16 cfs for many days. 1948-54, 1958-64: Maximum discharge, 2,640 cfs June 20, 1953 (gage height, 8.50 ft, site and datum then in use), from rating curve extended above 1,500 cfs; minimum daily, 0.3 cfs May 14, 1963.

Remarks.--Records excellent. Flow regulated by Williams Fork Reservoir (see preceding page). Transmountain diversion above station from tributaries of Williams Fork through Jones Pass tunnel, then by way of Vasquez and Moffat water tunnels to South Boulder Creek in South Platte River basin (see records of diversion published with records for Williams Fork near Leal). Diversions above station for irrigation of about 3,200 acres above station and about 100 acres below. About 450 acres above station irrigated by diversion into the drainage area.

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

OAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	*280	160	62	45	45	51	45	16	16	16	270	280
2	254	159	63	45	45	51	44	16	16	16	268	280
3	230	159	63	45	45	51	44	16	16	16	268	278
4	232	159	63	45	45	51	44	16	16	16	260	276
5	233	159	*64	45	45	52	45	16	16	16	168	276
6	233	158	63	*51	45	52	45	60	*16	16	16	276
7	233	157	63	52	45	*52	46	*27	16	*16	106	274
8	212	157	63	55	45	51	46	86	16	16	193	274
9	201	157	63	55	45	51	46	78	16	16	193	274
10	201	156	63	55	45	51	46	72	16	16	237	219
11	175	155	63	55	45	51	46	72	16	17	280	270
12	150	155	32	55	48	51	46	42	16	17	280	270
13	150	155	45	55	50	47	46	16	16	17	282	268
14	149	155	45	55	50	46	*46	16	16	16	282	268
15	134	155	45	55	51	46	61	16	16	16	282	267
16	120	155	45	55	*51	46	69	16	16	16	284	*266
17	120	155	45	55	50	46	88	16	16	16	284	266
18	120	155	45	55	50	46	99	16	16	16	284	266
19	121	154	45	55	50	46	99	17	16	16	284	178
20	121	153	45	47	51	46	131	16	16	16	284	135
21	121	79	45	40	51	46	150	16	16	30	284	135
22	121	68	45	40	51	46	94	16	16	43	284	136
23	121	68	45	40	51	45	50	16	16	41	284	136
24	121	68	45	40	51	45	50	16	16	42	284	136
25	149	68	45	40	51	44	39	16	16	42	282	137
26	177	68	45	40	51	44	25	16	16	43	282	138
27	177	68	45	40	51	44	22	16	16	45	282	137
28	177	68	45	40	51	44	16	16	16	46	280	160
29	213	68	45	40	51	44	16	16	16	80	280	185
30	161	62	45	40	-----	45	16	16	16	214	280	186
31	160	-----	45	43	-----	45	-----	16	-----	268	280	-----
TOTAL	5,367	3,813	1,587	1,481	1,405	1,476	1,660	892	480	1,217	7,907	6,647
MEAN	173	127	51.2	47.8	48.4	47.6	55.3	28.8	16.0	39.3	255	222
AC-FT	10,650	7,560	3,150	2,940	2,790	2,930	3,290	1,770	952	2,410	15,680	13,180

CALENDAR YEAR 1963	MAX	334	MIN	.3	MEAN	113	AC-FT	82,133
WATER YEAR 1963-64	MAX	284	MIN	16	MEAN	92.7	AC-FT	67,302

* Discharge measurement made on this day.

TROUBLESOME CREEK BASIN

9-390. Troublesome Creek near Pearmont, Colo.

Location.--Lat 40°13'03", long 106°18'45", in SE¼ sec.14, T.3 N., R.80 W., on left bank 45 ft downstream from small tributary, 3 miles north of Pearmont, 4 miles downstream from Rabbit Ear Creek, 5½ miles upstream from East Fork, and 12 miles northeast of Kremmling.

Drainage area.--44.6 sq mi.

Records available.--October 1953 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,049 ft (from topographic map).

Average discharge.--11 years, 28.2 cfs (20,420 acre-ft per year).

Extremes.--Maximum discharge recorded during year, 139 cfs May 22 (gage height, 1.77 ft); maximum gage height, 2.54 ft Mar. 30 (backwater from ice); minimum daily discharge, 6.6 cfs Nov. 18.

1953-64: Maximum discharge, 503 cfs June 7, 1957 (gage height, 3.48 ft); maximum gage height, 3.72 ft Mar. 26, 1962 (backwater from ice); minimum daily discharge, 6.1 cfs Sept. 8, 1956.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. One diversion above station for irrigation of about 250 acres below. Flow partly regulated during irrigation season by one reservoir (capacity, 1,070 acre-ft) above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Dec. 15-24, Jan. 29 to May 27)

0.5	7.0
.8	20
1.1	43
1.5	86
1.8	126

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	9.4	7.4	9.8	8.6	11	9.4	23	82	33	34	33
2	12	9.4	7.4	9.8	9.0	13	9.4	21	79	31	36	33
3	12	11	7.6	9.0	8.2	12	8.6	18	81	29	37	33
4	12	13	8.0	9.0	8.6	11	8.4	18	82	30	38	33
5	12	12	8.2	9.0	8.6	12	8.1	18	*81	30	38	33
6	12	11	8.4	9.4	8.6	11	7.8	18	85	28	37	33
7	12	*11	8.2	9.4	8.6	11	8.2	19	92	27	34	31
8	12	11	7.6	9.4	8.6	*11	8.5	*19	103	*26	28	31
9	12	12	8.0	9.0	9.0	11	8.7	16	94	25	16	21
10	12	9.4	*8.0	9.0	9.4	11	9.0	18	87	25	*15	20
11	*11	7.4	7.0	*9.8	9.4	11	9.4	23	84	24	15	18
12	11	7.0	6.8	9.4	10	12	9.8	22	76	23	15	14
13	11	7.0	6.8	9.4	*10	12	11	26	72	22	15	14
14	11	7.8	6.8	9.0	10	11	11	33	73	21	14	14
15	11	7.0	7.0	9.0	10	12	13	37	72	21	14	14
16	11	8.2	7.0	9.5	9.4	11	16	38	*65	21	15	*14
17	11	7.4	7.4	9.7	9.0	11	16	43	63	21	16	13
18	11	6.6	7.4	10	9.4	12	13	47	64	21	15	13
19	11	6.8	7.4	10	8.6	12	14	48	59	20	16	16
20	12	6.8	7.4	10	8.2	11	15	54	54	19	16	14
21	12	7.2	7.4	10	9.0	11	14	71	50	18	20	14
22	11	7.0	7.4	10	9.4	13	14	113	49	18	36	14
23	11	7.0	8.0	9.8	9.8	13	*15	a110	46	20	35	13
24	11	7.0	9.0	9.4	10	12	16	a105	41	22	35	13
25	11	7.0	9.0	9.8	11	11	18	a105	38	20	36	13
26	11	7.4	10	9.4	10	11	16	a105	37	18	38	13
27	11	8.0	10	9.4	10	11	14	a110	35	18	41	13
28	13	8.0	10	8.6	10	9.4	14	a110	38	16	39	13
29	11	7.8	10	8.6	10	8.6	16	a100	41	17	38	13
30	11	7.6	10	8.6	-----	9.0	21	a92	36	19	38	12
31	11	-----	10	9.0	-----	9.2	-----	a85	-----	21	37	-----
Total	355	255.2	250.6	291.2	270.4	347.2	372.3	1,665	1,959	704	857	576
Mean	11.5	8.51	8.08	9.39	9.32	11.2	12.4	53.7	65.3	22.7	27.6	19.2
Ac-ft	704	506	497	578	536	689	738	3,300	3,890	1,400	1,700	1,140

Calendar year 1963: Max 92 Min 6.6 Mean 21.2 Ac-ft 15,360
Water year 1963-64: Max 113 Min 6.6 Mean 21.6 Ac-ft 15,680

* Discharge measurement made on this day.

a No gage-height record.

Note.--Stage-discharge relation affected by ice Nov. 17-23, Nov. 25 to Dec. 14, Dec. 19, 20, 22, 23, 25-29, Jan. 14-17, Feb. 13-15, Feb. 27 to Mar. 1, Mar. 17, 20-23, 25, Mar. 29 to Apr. 1, Apr. 4, 5, 7-10.

9-400. East Fork Troublesome Creek near Troublesome, Colo.

Location.--Lat 40°09'27", long 106°16'58", in NW¼ sec.7, T.2 N., R.79 W., on right bank 300 ft upstream from mouth and 6½ miles north of Troublesome.

Drainage area.--76.0 sq mi.

Records available.--April 1937 to September 1943, October 1953 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,670 ft (from topographic map). Apr. 18, 1937, to May 13, 1941, staff gage at site 100 ft upstream at different datum. May 13 to Aug. 8, 1941, staff gage and Aug. 8, 1941, to Sept. 30, 1943, chain gage, at same site at different datum. Datum differences for all sites not more than 0.4 ft.

Average discharge.--17 years, 26.9 cfs (19,470 acre-ft per year).

Extremes.--Maximum discharge during year, 232 cfs May 21 (gage height, 3.63 ft); minimum daily, 1.4 cfs Dec. 12-14. 1937-43, 1953-64: Maximum discharge, 720 cfs May 9, 1962; maximum gage height, 5.19 ft June 6, 1957; minimum daily discharge, 0.2 cfs Oct. 3, 1941, Sept. 2, 3, 26, 27, 1942.

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

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

1.6	1.6	2.2	22
1.7	2.6	2.4	41
1.8	4.2	2.7	76
2.0	10	3.0	118
2.1	15	3.5	201

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	3.4	4.5	1.9	2.4	2.6	3.6	3.8	45	100	19	7.8	3.7
2	3.4	3.9	1.6	2.4	2.6	3.8	3.8	45	93	13	7.4	2.9
3	3.4	3.9	1.6	2.4	2.6	3.8	3.8	29	92	12	9.7	2.4
4	3.4	4.7	1.6	2.2	2.6	3.6	3.8	25	92	12	9.7	2.3
5	3.4	5.5	1.6	2.2	2.6	3.6	3.6	29	*84	13	15	2.3
6	3.4	5.0	1.8	2.4	2.6	*3.6	3.4	23	82	14	12	2.4
7	3.4	*4.7	1.8	2.6	2.6	3.7	3.4	34	85	14	12	2.8
8	3.4	4.5	1.6	2.6	2.6	*3.6	3.6	*40	93	*14	10	2.9
9	3.4	4.7	1.6	2.6	2.8	3.6	3.8	36	81	12	9.4	3.2
10	3.4	4.5	1.6	2.6	3.0	4.0	4.0	45	71	13	*7.4	3.7
11	*3.4	4.5	1.6	*2.6	3.0	3.9	4.4	65	70	12	6.0	3.1
12	3.4	4.2	*1.4	2.5	3.2	2.9	5.0	59	65	12	5.2	2.6
13	3.6	4.0	1.4	2.4	3.2	3.2	6.0	75	59	11	5.0	2.4
14	3.7	4.0	1.4	2.4	*3.2	2.9	7.0	90	60	10	4.2	2.3
15	3.7	4.0	1.5	2.4	3.2	2.9	9.0	104	53	11	3.7	2.4
16	3.7	4.2	1.6	2.4	3.2	3.1	9.0	126	*50	10	3.9	*2.8
17	3.6	4.0	1.6	2.5	3.2	2.9	7.6	144	45	10	4.5	3.1
18	3.6	3.5	1.6	2.6	3.2	3.1	10	161	48	10	4.2	2.9
19	3.6	3.5	1.6	2.6	3.1	3.6	15	153	40	9.7	5.0	6.8
20	4.0	3.5	1.8	2.6	3.0	3.2	15	174	35	8.7	8.1	6.5
21	5.5	3.6	1.8	2.6	3.0	3.4	14	176	31	7.4	6.0	4.7
22	5.2	3.4	1.8	2.6	3.0	3.8	*16	183	33	7.1	5.2	4.0
23	4.5	3.1	1.8	2.6	3.2	3.8	18	163	27	8.4	5.0	3.6
24	4.5	3.1	1.8	2.4	3.4	3.8	20	155	24	11	4.2	3.2
25	4.2	3.1	2.0	2.4	3.6	3.6	25	160	19	9.0	3.9	2.9
26	4.2	3.0	2.0	2.4	3.4	3.6	16	161	17	7.1	3.6	2.8
27	4.0	2.8	2.0	2.4	3.4	3.6	15	*161	15	6.3	6.5	2.8
28	4.0	2.8	2.0	2.6	3.4	3.4	15	139	14	5.8	7.8	2.8
29	3.9	2.6	2.2	2.6	3.4	3.4	18	123	21	6.0	6.5	3.1
30	4.2	2.4	2.2	2.4	-----	3.4	3.7	112	18	6.0	5.8	3.4
31	4.7	-----	2.4	2.4	-----	3.6	-----	102	-----	7.4	4.7	-----
Total	119.2	115.2	54.2	76.8	87.9	108.0	319.0	3,137	1,617	321.9	209.4	96.8
Mean	3.85	3.84	1.75	2.48	3.03	3.48	10.6	101	53.9	10.4	6.75	3.23
Ac-ft	236	228	108	152	174	214	633	6,220	3,210	638	415	192

Calendar year 1963: Max 96 Min 1.4 Mean 12.5 Ac-ft 9,090
 Water year 1963-64: Max 183 Min 1.4 Mean 17.1 Ac-ft 12,420

Peak discharge (base, 170 cfs).--May 21 (2230) 232 cfs (3.63 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 2, 17-23, 25-30, Dec. 3 to Jan. 3. No gage-height record Jan. 4 to Mar. 6, Mar. 21 to Apr. 22 (stage-discharge relation affected by ice during most of periods), Apr. 27, 28.

9-410. Muddy Creek near Kremmling, Colo.

Location.--Lat 40°17'37", long 106°28'59", in SE¼ sec.20, T.4 N., R.81 W., on left bank a quarter of a mile upstream from Lindsey Creek, half a mile upstream from bridge on U. S. Highway 40, 3 miles downstream from Albert Creek, and 17 miles northwest of Kremmling.

Drainage area.--87.4 sq mi.

Records available.--September 1937 to September 1943, October 1955 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,856 ft (from topographic map). September 1937 to Sept. 30, 1943, staff gage at site 3 miles upstream at different datum.

Average discharge.--15 years, 52.5 cfs (38,010 acre-ft per year).

Extremes.--Maximum discharge during year, 533 cfs May 22 (gage height, 4.98 ft); minimum daily, 2.1 cfs Dec. 6. 1937-43, 1955-64: Maximum discharge, 992 cfs May 9, 1957 (gage height, 6.46 ft); maximum gage height, 6.72 ft Apr. 17, 1962 (backwater from ice); minimum daily discharge, 0.1 cfs Aug. 19, 24, 1940.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Some regulation by Barber Reservoir (capacity, 4,290 acre-ft). Diversions for irrigation of about 900 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 Nov. 29, Dec. 2-7)

Oct. 1 to Feb. 29			Mar. 1 to Sept. 30			
2.4	1.1		2.3	2.8	3.0	38
2.5	2.7		2.4	4.3	3.3	73
2.6	5.0		2.5	7.2	3.6	127
2.8	12		2.6	11	4.0	231
			2.7	15	5.0	540
			2.8	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	2.7	4.5	b3.5	3.9	3.4	3.1	5.9	104	293	83	20	5.6
2	2.7	4.3	3.4	3.8	3.5	3.4	5.6	93	332	56	19	4.3
3	2.9	4.5	2.7	3.7	3.4	3.6	5.3	69	332	48	16	3.9
4	*2.9	5.6	2.4	3.4	3.4	3.8	5.2	52	315	36	14	3.5
5	2.9	6.2	2.2	3.3	3.3	4.0	5.0	*54	*321	35	11	3.3
6	2.9	*5.9	2.1	3.4	3.2	3.8	5.0	48	298	33	10	3.2
7	2.9	5.9	*2.2	3.6	3.2	*3.7	5.0	47	332	30	9.1	3.2
8	2.9	5.6	b2.5	*3.8	3.3	3.6	5.0	53	368	*27	8.0	3.2
9	3.2	5.6	b3.0	3.7	3.6	3.5	5.2	54	253	24	7.2	3.5
10	3.4	5.3	b3.5	3.4	4.0	3.4	5.4	79	245	27	*6.2	3.7
11	3.6	5.3	b3.4	3.1	*4.2	3.4	5.8	109	228	23	5.9	3.5
12	3.4	5.6	b3.4	3.0	4.0	3.5	5.8	94	195	19	4.5	3.2
13	3.4	5.3	b3.5	3.0	3.5	3.7	6.0	*123	178	16	4.1	3.0
14	3.4	5.3	b3.7	2.8	3.2	3.9	7.0	172	183	16	3.9	3.0
15	3.4	5.3	b4.0	3.0	3.2	4.1	10	217	*159	15	3.9	3.1
16	3.8	5.6	b4.2	3.2	3.3	4.3	17	281	147	15	3.7	3.9
17	3.6	4.8	b4.3	3.6	3.3	4.5	*14	337	129	14	4.5	*3.9
18	3.4	3.6	b4.3	3.9	3.4	4.5	14	363	149	14	5.9	3.7
19	3.6	3.8	b4.3	4.1	3.4	4.8	16	396	121	16	5.6	4.1
20	3.8	3.8	b4.1	4.0	3.3	4.4	19	435	103	18	9.5	4.5
21	4.3	3.6	4.0	3.9	3.3	4.8	19	463	96	18	8.0	4.5
22	4.3	4.5	3.9	3.9	3.2	5.2	18	470	107	17	6.2	3.9
23	4.3	4.1	3.9	3.7	3.1	5.2	21	449	125	17	5.3	3.7
24	5.0	5.3	3.8	3.6	3.1	5.2	28	396	100	19	4.5	3.3
25	5.6	5.3	3.8	3.5	3.2	5.3	34	425	76	17	3.9	3.2
26	5.6	4.1	4.0	3.5	3.3	5.3	41	415	69	16	3.7	3.1
27	5.3	4.1	4.2	3.6	3.4	*5.3	36	*396	65	16	5.9	3.1
28	4.8	4.1	4.3	3.7	3.0	b5.0	34	383	60	15	9.5	3.1
29	4.8	3.8	4.3	3.5	3.0	b4.6	41	343	103	15	10	3.2
30	4.5	b3.6	4.1	3.4	-----	5.0	70	281	73	16	12	3.3
31	4.8	-----	4.0	3.4	-----	6.0	-----	267	-----	18	8.3	-----
Total	118.1	144.3	111.0	109.4	97.8	133.9	509.2	7,468	5,555	749	249.3	107.7
Mean	3.81	4.81	3.58	3.53	3.37	4.32	17.0	241	185	24.2	8.04	3.59
Ac-ft	234	286	220	217	194	266	1,010	14,810	11,020	1,490	494	214

Calendar year 1963: Max 418 Min 1.9 Mean 37.4 Ac-ft 27,080
Water year 1963-64: Max 470 Min 2.1 Mean 41.9 Ac-ft 30,460

Peak discharge (base, 300 cfs).--May 22 (0415) 533 cfs (4.98 ft); June 8 (0215) 412 cfs (4.63 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 21 to Mar. 25, Mar. 30 to Apr. 25 (stage-discharge relation affected by ice during most of periods).

9-411. Antelope Creek near Kremmling, Colo.

Location.--Lat 40°14'26", long 106°22'23", in N½ sec.8, T.3 N., R.80 W., on right bank 5.8 miles upstream from mouth and 12½ miles north of Kremmling.

Drainage area.--11.5 sq mi.

Records available.--October 1955 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,933 ft (from topographic map).

Average discharge.--9 years, 2.08 cfs (1,510 acre-ft per year).

Extremes.--Maximum discharge during year, 16 cfs May 20 (gage height, 1.57 ft), from rating curve extended above 7.6 cfs; maximum gage height recorded, 2.21 ft Apr. 15 (ice jam); minimum daily discharge, 0.1 cfs for many days in July to September.

1955-64: Maximum discharge, 148 cfs Mar. 27, 1960 (gage height, 2.70 ft, from floodmarks), by slope-area measurement of peak flow; maximum gage height, 3.32 ft Apr. 10, 1962 (backwater from plugged culvert); no flow July 28 to Aug. 1, 1963.

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

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

Oct. 1 to Apr. 14				Apr. 15 to Sept. 30			
1.0	0.2			0.9	0.1	1.3	7.2
1.1	1.1			1.0	.6	1.4	10
				1.1	2.0	1.5	14
				1.2	4.3		

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	0.3	0.4	0.4	0.6	0.5	0.5	0.7	6.0	4.9	1.0	0.4	0.2
2	.3	.4	.4	.6	.5	.5	.7	5.2	4.6	.8	.6	.2
3	*.4	.6	.4	.6	.5	.5	.7	4.0	4.9	.6	.3	.2
4	.3	.7	.4	.6	.5	.5	.8	3.2	4.6	.5	.4	.1
5	.3	.7	.4	.6	.5	.5	.8	*3.0	*3.6	.5	.3	.1
6	.4	*.6	.4	.6	.5	.5	1.0	3.1	*3.8	.5	.3	.1
7	.4	.5	.4	.6	.5	*.5	1.1	3.2	3.8	.4	.3	.1
8	.3	.5	.4	.6	.6	.5	1.3	3.2	4.3	.3	.2	.1
9	.4	.5	.3	*.6	.6	.5	1.5	3.8	*4.3	*.3	.2	.2
10	.4	.5	*.3	.6	.7	.5	1.5	5.1	2.9	.4	*.1	.2
11	.4	.5	.3	.5	*.7	.5	1.4	6.3	2.7	.4	.1	.1
12	.4	.5	.3	.5	.7	.5	1.4	5.1	2.7	.3	.1	.1
13	.4	.5	.4	.5	.6	.5	1.7	6.0	2.0	.2	.1	.1
14	.4	.5	.4	.5	.6	.5	2.0	7.8	2.4	.3	.1	.1
15	.4	.5	.4	.5	.5	.6	b2.5	9.4	*2.0	.3	.1	.2
16	.4	.5	.4	.5	.5	.6	b3.0	11	1.7	.3	.1	.2
17	.4	b.4	.4	.5	.5	.6	*b3.1	12	1.5	.2	.3	*.2
18	.4	b.4	.4	.5	.5	.6	b3.0	12	1.7	.3	.1	.2
19	.4	b.4	.4	.5	.5	.5	b2.9	12	1.5	.2	.2	.3
20	.5	b.5	.4	.5	.5	.5	b2.8	13	1.5	.2	.3	.3
21	.6	.5	.4	.6	.5	.5	b3.0	13	1.0	.2	.2	.3
22	.5	.5	.4	.6	.5	.6	b3.1	11	1.3	.2	.2	.3
23	.5	.5	.4	.6	.5	.6	b3.2	9.8	1.5	.2	.2	.3
24	.5	.5	.4	.6	.5	.6	b3.0	9.1	1.0	.3	.1	.3
25	.5	.5	.5	.6	.5	.6	b2.5	8.8	.8	.2	.1	.3
26	.5	.5	.5	.6	.5	.6	2.2	*8.5	.6	.2	.2	.3
27	.5	.5	.5	.5	.5	.6	2.0	8.8	.9	.1	.6	.3
28	.4	.5	.5	.5	.5	.6	2.4	6.9	1.1	.1	.3	.3
29	.5	.5	.5	.5	.5	.6	3.0	5.7	2.9	.2	.3	.3
30	.5	.4	.5	.5	-----	.6	4.0	4.9	1.3	.5	.3	.3
31	.5	-----	.5	.5	-----	.7	-----	4.3	-----	.3	-----	-----
Total	13.1	15.0	12.7	17.1	15.5	17.0	62.3	225.2	73.8	10.5	7.3	6.3
Mean	0.42	0.50	0.41	0.55	0.53	0.55	2.08	7.26	2.46	0.34	0.24	0.21
Ac-ft	26	30	25	34	31	34	124	447	146	21	14	12

Calendar year 1963: Max 8.6 Min 0 Mean 1.19 Ac-ft 864

Water year 1963-64: Max 13 Min 0.1 Mean 1.30 Ac-ft 944

Peak discharge (base, 15 cfs).--May 20 (2215) 16 cfs (1.57 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 21 to Apr. 14 (stage-discharge relation affected by ice during most of period), Apr. 29 to May 5.

MUDDY CREEK BASIN

9-412. Red Dirt Creek near Kremmling, Colo.

Location.--Lat 40°09'41", long 106°33'32", in NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.10, T.2 N., R.82 W., on left bank three-quarters of a mile upstream from Snow Shoe Ranch, 2 miles downstream from McMahon (Red Dirt) Reservoir, 9 $\frac{1}{2}$ miles upstream from mouth, and 11 $\frac{1}{2}$ miles northwest of Kremmling.

Drainage area.--19.0 sq mi (includes 1.4 sq mi in Yampa River basin).

Records available.--October 1955 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,961 ft (from topographic map).

Average discharge.--9 years, 20.0 cfs (14,480 acre-ft per year).

Extremes.--Maximum discharge during year, 153 cfs June 8 (gage height, 2.28 ft); minimum daily, 0.3 cfs Dec. 8, Jan. 30. 1955-64: Maximum discharge, 343 cfs June 13, 1957 (gage height, 3.01 ft); minimum not determined.

Remarks.--Records good except those for periods of ice effect, backwater from beaver dams, or no gage-height record, which are poor. No diversion above station. Flow regulated by McMahon (Red Dirt) Reservoir (capacity, about 4,500 acre-ft).

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

0.4	1.6	1.3	27
.6	3.4	1.6	53
.8	6.7	2.0	105
1.0	13	2.5	211

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	3.5	2.5	1.0	0.6	0.5	1.2	*1.8	3.1	126	57	21	4.2
2	3.5	2.4	.9	.6	.6	1.3	1.8	3.3	124	57	22	4.2
3	3.4	2.4	.5	.6	.6	1.4	1.8	3.7	*131	55	22	4.2
4	3.2	2.6	.6	.6	.6	1.3	1.8	3.7	131	55	23	4.2
5	3.1	2.7	.6	.5	.6	1.2	1.6	3.6	126	54	22	4.1
6	3.1	*2.7	*.4	.5	.6	1.2	1.6	*3.4	124	54	17	4.1
7	2.9	2.7	.4	.5	.7	1.1	1.6	3.5	*126	54	4.4	4.2
8	2.8	2.7	.3	.6	.8	1.0	1.7	3.6	147	54	4.2	4.2
9	2.7	2.7	.4	.6	1.0	1.0	1.8	3.9	*124	*54	4.2	4.2
10	*2.7	2.8	.4	.5	1.5	1.0	1.9	4.3	115	54	*4.1	4.1
11	2.6	2.8	.5	.5	1.6	1.0	2.0	5.0	107	53	4.1	4.1
12	2.5	2.7	.5	.4	*1.6	1.2	2.1	6.0	92	52	4.1	4.1
13	2.4	2.6	.5	.4	1.5	1.2	2.1	8.0	84	52	4.0	4.0
14	2.4	2.6	.6	.4	1.3	1.4	2.1	9.8	83	52	4.0	4.0
15	2.4	2.5	.7	.4	1.2	1.4	2.2	13	74	51	4.0	4.2
16	2.2	b2.2	.7	.5	1.2	1.5	2.4	16	*66	52	4.0	4.2
17	2.2	b2.1	.8	.6	1.2	1.4	2.5	21	64	50	4.2	*4.2
18	2.2	b2.1	.8	.7	1.2	1.4	2.6	26	61	50	4.1	c 4.3
19	2.2	b2.0	.8	.8	1.2	1.3	2.7	33	58	50	4.5	c 4.4
20	2.3	b2.0	.8	.9	1.2	1.2	2.8	40	58	49	4.4	c 4.5
21	2.4	b1.8	.8	.9	1.3	1.2	2.9	48	58	48	4.2	c 4.6
22	2.3	b1.8	.8	.8	1.1	1.4	3.1	54	58	47	4.1	c 4.7
23	2.3	b1.6	.7	.8	1.2	1.4	3.2	52	58	47	4.1	c 4.5
24	2.5	1.4	.7	.7	1.2	1.4	3.3	50	58	46	4.0	c 4.4
25	2.6	1.4	.6	.7	1.3	1.4	3.3	49	55	45	4.0	c 4.3
26	2.4	1.5	.6	.7	1.4	1.5	3.2	*48	58	44	4.0	c 4.3
27	2.4	1.6	.5	.7	1.4	1.6	3.1	46	60	44	4.5	c 4.4
28	2.3	1.6	.5	.5	1.2	1.6	3.0	41	60	43	4.4	c 4.4
29	2.3	1.4	.5	.4	1.2	1.7	3.0	36	60	36	4.5	c 4.4
30	2.3	1.2	.5	.3	-----	1.8	3.0	47	57	22	4.4	c 4.4
31	2.4	-----	.6	.4	-----	1.8	-----	82	-----	22	4.2	-----
Total	80.5	65.1	19.0	18.1	32.0	41.5	72.0	766.9	2,603	1,503	231.7	128.1
Mean	2.60	2.17	0.61	0.58	1.10	1.34	2.40	24.7	86.8	48.5	7.47	4.27
Ac-ft	160	129	38	36	63	82	143	1,520	5,160	2,980	460	254

Calendar year 1963: Max 56 Min - Mean 12.6 Ac-ft 9,140
 Water year 1963-64: Max 147 Min 0.3 Mean 15.2 Ac-ft 11,020

- * Discharge measurement made on this day.
- b Stage-discharge relation affected by ice.
- c Backwater from beaver dams.

Note.--No gage-height record Nov. 24 to May 26 (stage-discharge relation affected by ice during most of period).

9-413. Pass Creek near Kremmling, Colo.

Location.--Lat 40°08'00", long 106°29'20", in NW¼NE¼ sec.20, T.2 N., R.81 W., on left bank half a mile downstream from Burke Spring Creek, 6 miles upstream from mouth, and 7½ miles northwest of Kremmling.

Drainage area.--17.8 sq mi.

Records available.--October 1957 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,840 ft (from topographic map).

Average discharge.--7 years, 8.87 cfs (6,420 acre-ft per year).

Extremes.--Maximum discharge during year, 89 cfs May 21 (gage height, 3.42 ft); maximum gage height, 4.18 ft Apr. 2 (ice jam); minimum daily discharge, 1.1 cfs Mar. 9-11.

1957-64: Maximum discharge, 204 cfs May 11, 1962 (gage height, 3.63 ft), from rating curve extended above 75 cfs; maximum gage height, that of Apr. 2, 1964; minimum daily discharge, 0.6 cfs Aug. 2, 8, 12-14, 1958.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Some regulation by small reservoir on Spring Creek above station. Several small diversions above station for irrigation.

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

2.2	0.9	2.8	20
2.3	1.8	3.1	45
2.4	3.4	3.4	87
2.6	9.4		

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	2.0	2.1	1.9	1.7	1.3	1.3	1.7	15	31	8.4	3.0	1.5
2	2.0	2.0	1.8	1.8	1.3	1.3	1.6	15	29	5.8	2.4	1.4
3	2.0	2.1	1.8	1.6	1.2	1.2	1.6	10	*32	5.2	2.4	1.3
4	*2.0	2.6	1.9	1.5	1.2	1.2	1.6	*9.4	26	4.6	2.8	1.2
5	2.0	2.8	2.0	1.4	1.2	1.2	1.8	9.4	*22	4.6	6.3	1.2
6	2.0	*2.6	2.1	1.5	1.3	*1.2	1.8	9.9	20	4.1	4.9	1.2
7	2.1	2.6	2.0	*1.5	1.4	1.2	1.8	12	19	3.9	3.9	1.3
8	2.1	2.4	1.8	1.5	1.5	1.2	1.8	12	30	3.6	3.0	1.2
9	2.1	2.6	1.9	1.5	1.5	1.1	2.0	12	*22	*3.4	2.6	1.3
10	2.1	2.6	*1.8	1.4	1.5	1.1	2.1	16	18	4.4	*2.2	1.3
11	2.0	2.6	1.8	1.4	1.5	1.1	2.2	19	16	3.6	1.8	1.2
12	2.0	2.4	1.7	1.3	1.4	1.2	2.2	18	15	3.0	1.6	1.2
13	2.0	2.2	1.7	1.2	*1.3	1.2	2.2	24	14	2.8	1.6	1.2
14	2.1	2.6	1.8	1.2	1.3	1.3	3.0	32	14	2.8	1.6	1.2
15	2.1	2.4	1.8	1.3	1.2	1.3	5.0	39	*13	3.0	1.5	1.3
16	2.1	2.8	1.9	1.3	1.2	1.3	7.0	45	16	2.8	1.6	1.3
17	2.1	1.8	1.9	1.4	1.3	1.3	*8.0	52	14	2.8	1.6	*1.3
18	2.1	1.8	2.0	1.5	1.3	1.3	6.4	60	16	2.6	1.6	1.3
19	2.2	1.8	1.9	1.5	1.4	1.3	8.0	67	17	2.2	2.1	1.6
20	2.2	2.0	1.9	1.6	1.3	1.2	8.0	74	15	2.2	3.0	1.6
21	2.2	2.1	1.9	1.5	1.2	1.3	6.7	73	15	2.2	1.8	1.5
22	2.2	2.0	1.8	1.5	1.2	1.5	7.0	73	17	2.2	1.8	1.5
23	2.2	1.9	1.8	1.5	1.3	1.4	7.3	65	16	2.2	1.6	1.5
24	2.4	2.0	1.7	1.4	1.3	1.4	9.4	58	14	3.9	1.4	1.4
25	2.4	2.0	1.7	1.4	1.4	*1.4	9.0	*53	12	2.4	1.2	1.4
26	2.2	2.1	1.7	1.4	1.3	1.4	6.7	53	11	2.1	1.2	1.4
27	2.2	2.2	1.7	1.3	1.2	1.4	4.9	51	9.0	1.8	2.0	1.4
28	2.2	2.1	1.7	1.2	1.2	1.4	4.9	43	8.0	1.6	1.6	1.5
29	2.2	2.1	1.8	1.2	1.2	1.3	8.7	39	11	3.2	2.1	1.5
30	2.2	2.0	1.7	1.2	-----	1.4	14	34	10	3.2	1.6	1.5
31	2.2	-----	1.7	1.2	-----	1.5	-----	32	-----	3.9	1.5	-----
Total	65.9	67.3	56.6	43.9	37.9	39.9	148.4	1124.7	522.0	104.5	69.3	40.7
Mean	2.13	2.24	1.83	1.42	1.31	1.29	4.95	36.3	17.4	3.37	2.24	1.36
Ac-ft	131	133	112	87	75	79	294	2,230	1,040	207	137	81

Calendar year 1963: Max 50 Min 0.8 Mean 5.63 Ac-ft 4,080
 Water year 1963-64: Max 74 Min 1.1 Mean 6.34 Ac-ft 4,610

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18 to Mar. 25 (no gage-height record Dec. 7, 8, Jan. 5 to Mar. 25), Mar. 27 to Apr. 4, Apr. 11, 12, 14-17.

BLUE RIVER BASIN

9-419. Monte Cristo diversion near Hoosier Pass, Colo.

Location.--Lat 39°22'50", Long 106°04'10", in NE½SE¼ sec.2, T.8 S., R.78 W., on left bank at entrance to Hoosier Pass tunnel, 2,000 ft downstream from diversion point, 1½ miles northwest of Hoosier Pass, and 7 miles southwest of Breckenridge.

Records available.--October 1957 to September 1964.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 10,986 ft (from State engineer).

Extremes.--1957-64: Maximum daily discharge, 66 cfs June 15, 1959; no flow for most of each year.

Remarks.--Records good. This is a transmountain diversion from Monte Cristo Creek in Blue River basin through Hoosier Pass tunnel to South Platte River basin whence it is again diverted to South Catamount Creek in the Arkansas River basin. Water is for municipal use by city of Colorado Springs. Diversion point is in SW¼NE¼ sec.2, T.8 S., R.78 W. The entire flow is regulated by diversion gates.

Cooperation.--Gage-height record furnished by city of Colorado Springs.

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	2.4						0	0.3	5.7	25	14	
2	2.4						0	.3	8.9	27	20	
3	*2.3						0	.3	*10	25	32	
4	2.3						0	.3	9.3	24	36	
5	2.2						0	.3	14	27	32	
6	2.1						0	.3	14	25	14	
7	2.1						0	** .3	23	*22	1.9	
8	2.1						0	.3	21	21	13	
9	2.1						0	.3	12	19	1.1	
10	2.0						0	.3	16	21	0	(*)
11	1.8						0	.3	21	23	5.4	
12	1.7						0	.3	12	18	*4.4	
13	1.7						0	.4	8.3	17	8.7	
14	1.6						0	10	19	15	7.7	
15	1.6						0	22	23	16	5.4	
16	1.6						0	18	27	20	7.1	
17	1.5						0	18	26	17	11	
18	1.5						0	*12	23	15	8.3	
19	1.5						.1	8.3	15	15	3.1	
20	1.6						.1	10	17	9.0	0	
21	1.6						.1	29	16	*1.2	4.7	
22	.9						.2	22	17	.7	4.4	
23	*0						.2	29	11	0	3.3	
24	0						.2	24	20	0	4.4	
25	0						.3	29	26	0	6.0	
26	0						.3	18	22	0	0	
27	0						.3	14	24	0	0	
28	0						** .3	*12	26	4.0	0	
29	0						.3	15	*18	12	0	
30	0						.3	8.5	23	12	0	
31	0							5.4		14	0	
Total	40.6	0	0	0	0	0	2.7	308.2	528.2	444.9	247.9	0
Mean	1.31	0	0	0	0	0	0.09	9.94	17.6	14.4	8.00	0
Ac-ft	81	0	0	0	0	0	5.4	611	1,050	882	492	0

Calendar year 1963: Max 50 Min 0 Mean 5.02 Ac-ft 3,640

Water year 1963-64: Max 36 Min 0 Mean 4.30 Ac-ft 3,120

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

** Field estimate made on this day.

Note.--No gage-height record Oct. 23 to May 15, Sept. 7-30.

9-443. Bemrose-Hoosier diversion near Hoosier Pass, Colo.

Location.--Lat 39°22'50", long 106°04'10", in NE¼SE¼ sec.2, T.8 S., R.78 W., on right bank at entrance to Hoosier Pass tunnel, 1½ miles northwest of Hoosier Pass, about 2 miles downstream from diversion point on Bemrose Creek, and 7 miles southwest of Freckenridge.

Records available.--October 1957 to September 1964.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 10,986 ft (from State engineer).

Extremes.--1957-64: Maximum daily discharge, 40 cfs May 27, 1958; no flow for most of each year.

Remarks.--Records good. This is a transmountain diversion from Bemrose and Hoosier Creeks in Blue River basin through Foosier Pass tunnel to South Platte River basin whence it is again diverted to South Catamount Creek in the Arkansas River basin. Water is for municipal use by city of Colorado Springs. Diversion points are in SW¼SW¼ sec.6, T.8 S., R.77 W., and in sec.12, T.8 S., R.78 W. The entire flow is regulated by diversion gates.

Cooperation.--Gage-height record furnished by city of Colorado Springs.

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							0	5.0	6.3	2.7	
2	2.6							0	5.0	6.3	3.5	
3	*2.6							0	*5.0	5.9	5.0	
4	2.5							0	5.9	5.7	4.8	
5	2.5							0	5.9	5.4	4.1	
6	2.5							0	7.4	4.7	3.8	
7	2.5							*0	10	*4.5	4.3	
8	2.3							0	8.2	4.3	4.3	
9	2.3							0	7.8	4.1	4.0	
10	2.2							0	8.9	4.1	3.8	(*)
11	2.2							0	8.6	4.1	3.8	
12	2.2							0	8.2	4.0	*3.8	
13	2.2							1.2	7.8	4.0	4.0	
14	2.1							2.0	7.2	3.8	4.1	
15	2.1							2.9	8.2	3.8	3.8	
16	2.1							3.8	8.9	4.0	3.8	
17	2.0							5.0	8.9	3.8	3.8	
18	2.0							*5.0	8.6	3.3	2.5	
19	2.0							4.3	8.4	3.0	0	
20	2.1							7.4	7.8	1.5	0	
21	2.1							13	7.6	*0	0	
22	1.0							12	7.6	0	0	
23	*0							12	7.0	0	0	
24	0							12	7.0	0	0	
25	0							11	7.2	0	0	
26	0							11	7.0	0	0	
27	0							11	6.7	0	0	
28	0						(*)	*9.5	6.7	0	0	
29	0							7.2	*7.0	1.9	0	
30	0							5.7	6.7	2.9	0	
31	0							5.2		3.3	0	
Total	48.8	0	0	0	0	0	0	141.2	222.2	94.7	69.9	0
Mean	1.57	0	0	0	0	0	0	4.55	7.41	3.05	2.25	0
Ac-ft	97	0	0	0	0	0	0	280	441	188	139	0

Calendar year 1963: Max 6.3 Min 0 Mean 1.41 Ac-ft 1,020
 Water year 1963-64: Max 13 Min 0 Mean 1.58 Ac-ft 1,140

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

Note.--No gage-height record Oct. 23 to May 11, Sept. 7-30.

BLUE RIVER BASIN

9-448. McCullough-Spruce-Crystal diversion near Hoosier Pass, Colo.

Location.--Lat 39°22'50", long 106°04'10", in NE½SE¼ sec.2, T.8 S., R.78 W., on left bank at entrance to Hoosier Pass tunnel, 1½ miles northwest of Hoosier Pass, about 2 miles downstream from diversion point on McCullough Gulch, and 7 miles southwest of Breckenridge.

Records available.--October 1957 to September 1964. Prior to October 1961, published as McCullough diversion near Hoosier Pass.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 10,986 ft (from State engineer).

Extremes.--1957-64: Maximum daily discharge, 74 cfs Aug. 12, 1963; no flow for most of each year.

Remarks.--Records good. This is a transmountain diversion from McCullough Gulch, Spruce and Crystal Creeks in Blue River basin through Hoosier Pass tunnel to South Platte River basin whence it is again diverted to South Catamount Creek in the Arkansas River basin. Water is for municipal use by City of Colorado Springs. Diversion points are in secs.14, 23, 26, T.7 S., R.78 W. The entire flow is regulated by diversion gates.

Cooperation.--Gage-height record furnished by city of Colorado Springs.

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							0	8.3	4.9	2.4	0.5
2	4.4							0	9.2	5.3	3.1	.5
3	* 4.2							0	* 1.0	5.3	5.7	.5
4	4.0							0	1.3	5.2	5.0	.5
5	4.0							0	1.8	5.8	5.4	.2
6	3.9							0	2.5	4.9	3.7	0
7	3.8							* 0	4.1	* 4.5	2.1	0
8	3.8							0	3.2	4.2	2.2	0
9	3.6							0	2.4	4.1	1.6	0
10	3.6							0	3.7	3.5	1.8	* 0
11	3.6							0	4.2	1.9	1.0	0
12	3.6							0	4.0	1.6	* 1.6	0
13	3.4							0	3.5	2.2	1.5	0
14	3.3							0	3.0	2.8	1.3	0
15	3.4							2.6	3.8	3.0	1.2	0
16	3.3							7.8	4.6	3.1	1.3	0
17	3.3							1.1	4.7	2.1	1.4	0
18	3.3							* 1.4	4.1	1.9	8.1	0
19	3.2							2.3	2.8	1.4	.5	0
20	3.4							3.2	2.9	6.1	.5	0
21	3.0							4.5	3.0	* .4	.5	0
22	1.4							4.7	2.6	.4	.5	0
23	* 0							3.9	2.1	.4	.5	0
24	0							4.2	3.3	.4	.5	0
25	0							4.4	4.7	.4	.5	0
26	0							4.1	5.0	.4	.5	0
27	0							3.3	5.6	.4	.5	0
28	0							* 2.9	6.5	.4	.5	0
29	0							2.3	* 7.0	1.1	.5	0
30	0							1.4	5.5	1.9	.5	0
31	0							1.0		2.7	.5	
Total	78.0	0	0	0	0	0	0	457.4	1,046.5	743.3	437.6	2.2
Mean	2.52	0	0	0	0	0	0	14.8	34.9	24.0	14.1	0.07
Ac-ft	155	0	0	0	0	0	0	907	2,080	1,470	868	4.4

Calendar year 1963: Max 74 Min 0 Mean 7.68 Ac-ft 5,560
 Water year 1963-64: Max 70 Min 0 Mean 7.55 Ac-ft 5,480

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

Note.--No gage-height record Oct. 24 to May 13, Sept. 7-30.

BLUE RIVER BASIN

9-466. Blue River near Dillon, Colo.

Location.--Lat 39°32'58", long 106°02'22", in NW¼NE¼ sec.7, T.6 W., R.77 W., on right bank 0.3 mile downstream from Swan River and ¼ miles south of Dillon.

Drainage area.--120 sq mi, approximately.

Records available.--October 1957 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 9,120 ft (from topographic map).

Average discharge.--7 years, 89.1 cfs (64,510 acre-ft per year), including diversion to Hoosier Pass tunnel.

Extremes.--Maximum discharge during year, 262 cfs May 27 (gage height, 3.53 ft); minimum daily, 18 cfs Mar. 20, 21, 27-29, Apr. 9-11. 1957-64: Maximum discharge, 782 cfs June 8, 1958 (gage height, 4.73 ft); minimum daily, 17 cfs Mar. 21, 1961.

Remarks.--Records good. Transmountain diversion above station by Boreas Pass ditch and Hoosier Pass tunnel (see elsewhere in this report).

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

2.4	20	2.8	64
2.5	25	3.1	120
2.6	34	3.5	250

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

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Avg.	Sept.
1	47	35	27	22	22	22	20	33	175	135	79	64
2	44	35	26	22	22	22	20	37	171	128	77	60
3	*44	34	26	22	20	22	20	38	*171	122	76	56
4	43	35	25	22	21	22	20	38	171	118	88	52
5	43	35	*25	22	21	22	20	40	168	115	115	50
6	43	35	24	22	21	20	20	*43	171	113	178	47
7	43	35	24	22	22	20	20	46	185	*111	165	46
8	43	35	24	22	21	20	*19	48	206	106	140	44
9	41	*35	24	22	21	20	18	48	206	104	128	44
10	41	35	24	*22	21	20	18	52	196	102	111	44
11	41	35	24	23	21	*20	18	53	199	99	*97	44
12	41	34	24	23	21	20	20	56	199	104	90	44
13	41	34	24	20	21	20	20	59	192	108	81	43
14	40	34	24	22	21	20	20	68	192	104	76	43
15	40	34	24	22	21	20	20	83	185	95	71	*43
16	40	33	24	22	21	20	20	111	185	90	68	43
17	40	33	24	22	21	20	21	138	*188	92	67	41
18	40	32	24	22	22	20	23	152	188	92	65	41
19	38	31	24	22	*22	19	25	165	182	92	64	43
20	38	31	24	22	22	18	27	165	171	92	67	43
21	38	30	24	22	22	18	26	175	165	90	76	43
22	37	30	24	22	22	20	25	213	155	92	88	44
23	37	30	23	22	20	20	27	220	152	118	83	44
24	37	30	23	22	20	20	30	220	145	135	77	44
25	37	29	23	22	20	20	33	232	140	140	74	44
26	37	29	23	22	20	20	30	232	140	128	73	44
27	37	28	23	22	20	18	25	246	138	108	71	43
28	37	28	23	22	22	18	25	239	138	102	70	44
29	37	28	23	22	22	18	28	224	138	97	70	44
30	37	28	23	22	-----	20	33	206	138	90	68	44
31	37	-----	22	22	-----	20	-----	188	-----	81	67	-----
Total	1,239	970	743	682	613	619	691	3,868	5,150	3,303	2,720	1,373
Mean	40.0	32.3	24.0	22.0	21.1	20.0	23.0	125	172	107	87.7	45.8
Ac-ft	2,460	1,920	1,470	1,350	1,220	1,230	1,370	7,670	10,210	6,550	5,400	2,720

Calendar year 1963: Max 135 Min 21 Mean 45.9 Ac-ft 33,240
 Water year 1963-64: Max 246 Min 18 Mean 60.0 Ac-ft 43,570

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

* Discharge measurement made on this day.

Nota.--Stage-discharge relation affected by ice Jan. 13, Feb. 3 to Mar. 31. No gage-height record Feb. 16-19, Mar. 9-11, Apr. 1-28 (stage-discharge relation affected by ice during most of periods).

BLUE RIVER BASIN

9-475. Snake River near Montezuma, Colo.

Location.--Lat 39°36'20", long 105°56'33", in NW¼ sec.19, T.5 S., R 76 W. (projected), on right bank 200 ft downstream from North Fork and 4½ miles northwest of Montezuma.

Drainage area.--58.9 sq mi.

Records available.--July 1942 to September 1946, October 1951 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 9,320 ft (from topographic map). Prior to Oct. 14, 1943, staff gage at same site and datum.

Average discharge.--17 years, 59.6 cfs (43,150 acre-ft per year).

Extremes.--Maximum discharge during year, 361 cfs June 7 (gage height, 2.71 ft); minimum daily, 5 cfs Feb. 26.
1942-46, 1951-64: Maximum discharge, 1,250 cfs June 10, 1952 (gage height, 3.51 ft); minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Small diversions above station for irrigation and domestic use.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 11-14)

0.8	5.0	1.6	67
.9	8.0	2.0	140
1.1	17	2.5	275
1.3	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	31	16	11	12	9	8	8	16	98	142	72	35
2	31	18	11	12	8	8	8	14	97	138	84	33
3	* 31	20	11	12	7	8	8	14	102	134	93	31
4	30	21	*11	13	7	8	8	14	*116	132	88	30
5	30	20	11	10	7	8	8	14	142	136	82	29
6	29	18	11	10	7	7	7	* 14	172	*126	84	29
7	28	19	11	*10	7	7	8	15	239	116	98	29
8	27	19	10	10	7	7	7	16	218	116	86	29
9	26	* 20	11	10	8	7	7	14	191	113	77	30
10	26	20	11	11	8	* 8	7	16	236	111	70	29
11	25	18	12	11	8	8	7.7	17	236	106	66	26
12	25	16	13	10	*7	8	9.2	18	215	102	*72	24
13	25	16	12	9	7	8	7.4	16	191	98	69	23
14	24	18	11	10	7	7	*7.4	27	175	95	62	*23
15	23	16	11	10	7	7	7.5	42	197	91	56	24
16	23	16	11	11	6	7	8	58	224	97	56	25
17	23	15	12	11	6	8	9	76	218	91	58	23
18	23	15	12	10	7	8	11	91	*203	82	50	22
19	23	15	12	10	7	8	12	106	185	76	54	26
20	24	15	12	11	7	7	11	124	172	72	64	25
21	25	16	12	10	6	7	10	158	156	74	51	24
22	23	16	13	10	6	7	10	178	146	76	47	23
23	22	15	11	10	7	7	12	188	136	76	44	22
24	22	16	11	10	7	8	14	200	154	84	41	21
25	22	17	11	10	7	9	14	218	154	72	40	20
26	22	16	11	9	5	8	12	221	152	67	39	23
27	21	14	11	9	6	7	12	*203	152	61	46	26
28	20	13	11	9	8	7	12	188	152	60	41	23
29	20	11	12	8	8	7	12	158	154	56	41	22
30	20	11	12	8	8	8	14	122	148	69	38	21
31	21	-----	12	8	-----	8	-----	104	-----	82	36	-----
Total	765	496	354	314	204	235	288.2	2,660	5,131	2,951	1,905	770
Mean	24.7	16.5	11.4	10.1	7.0	7.6	9.61	85.8	171	95.2	61.5	25.7
Ac-ft	1,520	984	702	623	405	466	572	5,280	10,180	5,850	3,780	1,530

Calendar year 1963: Max 180 Min - Mean 39.7 Ac-ft 28,710
Water year 1963-64: Max 239 Min 5 Mean 43.9 Ac-ft 31,890

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

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17-23, Dec. 4-20, Apr. 15-17, 26, 27. No gage-height record Nov. 24 to Dec. 3, Dec. 21 to Apr. 10 (stage-discharge relation affected by ice during most of periods).

9-477. Keystone Gulch near Dillon, Colo.

Location.--Lat 39°35'40", long 105°58'19", in NE¼NE¼ sec.26, T.5 S., R.77 W., on right bank 0.7 mile upstream from mouth and 4.7 miles southeast of Dillon.

Drainage area.--8.80 sq mi.

Records available.--October 1957 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 9,350 ft (from topographic map).

Average discharge.--7 years, 4.98 cfs (3,610 acre-ft per year).

Extremes.--Maximum discharge during year, 19 cfs May 27 (gage height, 1.97 ft); minimum daily, 1.1 cfs Feb. 26.

1957-64: Maximum discharge, 90 cfs June 5, 1958 (gage height, 2.75 ft), from rating curve extended above 28 cfs; minimum not determined.

Remarks.--Records good except those for periods of no gage-height record, which are poor. No known diversion 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. 1-9)

1.5 1.7
1.6 3.0
1.7 6.0
1.8 11
2.0 24

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	2.2	2.0	1.3	1.5	1.4	1.5	1.7	2.9	12	5.7	4.2	2.4
2	2.1	2.1	1.3	1.5	1.3	1.5	1.6	2.9	12	5.7	4.8	2.4
3	* 2.1	2.2	1.2	1.5	1.3	1.5	1.5	2.9	12	5.4	5.1	2.2
4	2.1	2.3	*1.2	1.6	1.4	1.5	1.5	3.6	*12	5.4	4.8	2.2
5	2.1	2.2	1.3	1.6	1.4	1.5	1.5	3.6	12	5.4	4.5	2.2
6	2.1	2.1	1.3	1.5	1.3	1.4	1.5	* 3.6	12	* 5.1	4.5	2.2
7	2.1	2.1	1.3	1.5	1.4	1.4	1.5	3.3	15	* 5.1	5.1	2.2
8	2.0	* 2.0	1.3	1.5	1.4	1.4	1.6	2.7	13	4.8	4.5	2.2
9	* 2.1	2.0	1.3	1.5	1.5	1.4	1.7	2.7	12	4.8	3.9	2.2
10	2.0	2.0	1.4	* 1.4	1.7	* 1.4	1.7	2.9	12	4.8	3.6	2.2
11	2.0	2.0	1.5	1.4	1.7	1.5	1.7	2.6	12	4.5	3.6	2.0
12	2.0	1.9	1.5	1.3	* 1.6	1.6	1.9	2.6	12	4.8	* 3.6	1.8
13	2.0	1.9	1.5	1.2	1.4	1.5	1.5	2.7	12	4.5	3.6	1.8
14	2.0	1.9	1.3	1.2	1.4	1.5	1.5	3.9	12	4.5	3.3	* 1.8
15	2.1	1.9	1.3	1.3	1.4	1.5	* 1.8	5.4	11	4.2	3.0	2.1
16	2.0	1.8	1.3	1.3	1.4	1.6	2.1	7.5	10	4.2	3.0	2.1
17	2.0	1.8	1.3	1.3	1.4	1.7	2.0	9.0	* 10	4.5	3.3	2.0
18	2.0	1.6	1.3	1.3	1.4	1.7	* 1.9	8.0	9.5	4.2	3.0	2.0
19	2.1	1.6	1.3	1.4	1.4	1.5	2.4	8.5	9.0	3.9	3.0	2.4
20	2.1	1.7	1.4	1.5	1.4	1.4	2.5	9.0	8.0	3.6	3.3	2.2
21	2.2	1.7	1.5	1.4	1.4	1.5	2.4	11	8.0	3.6	2.9	2.2
22	2.0	1.5	1.5	1.3	1.4	1.5	2.2	12	8.0	3.9	2.7	2.2
23	2.0	1.5	1.5	1.3	1.4	1.5	2.4	13	7.5	3.9	2.7	2.2
24	2.1	1.5	1.4	1.4	1.4	1.6	2.7	13	7.5	4.5	2.6	2.2
25	2.1	1.4	1.4	1.3	1.2	1.6	2.9	14	7.0	3.9	2.6	2.1
26	2.1	1.3	1.4	1.4	1.1	1.3	2.4	15	7.0	3.6	2.6	2.4
27	2.1	1.3	1.4	1.4	1.3	1.3	2.4	* 16	6.5	3.6	2.7	2.5
28	2.0	1.3	1.4	1.3	1.4	1.3	2.4	15	6.0	3.3	2.6	2.4
29	2.1	1.3	1.5	1.3	1.6	1.3	2.6	13	6.0	3.3	2.6	2.4
30	2.1	1.3	1.5	1.3	-----	1.3	2.6	12	5.7	3.9	2.6	2.2
31	2.2	-----	1.5	1.4	-----	1.5	-----	12	-----	4.5	2.6	-----
Total	64.2	53.2	42.6	43.1	40.8	45.7	60.1	236.3	298.7	137.1	106.9	65.4
Mean	2.07	1.77	1.37	1.39	1.41	1.47	2.00	7.62	9.96	4.42	3.45	2.18
Ac-ft	127	106	84	85	81	91	119	469	592	272	212	130

Calendar year 1963: Max 10 Min 1.2 Mean 2.91 Ac-ft 2,110
Water year 1963-64: Max 16 Min 1.1 Mean 3.26 Ac-ft 2,370

Peak discharge (base, 35 cfs).--No peak above base.

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 1 to Apr. 18 (stage-discharge relation affected by ice during most of period).

BLUE RIVER BASIN

9-480. Snake River at Dillon, Colo.

Location.--Lat 39°36'45", long 106°02'30", in SW¼ sec.17, T.5 S., R.77 W., on left bank 0.6 mile upstream from mouth and 1 mile east of Dillon.

Drainage area.--92 sq mi, approximately.

Records available.--October 1910 to September 1919, October 1929 to April 1964 (discontinued). Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 8,870 ft (from topographic map). Oct. 15, 1910, to Sept. 30, 1919, staff gage and Oct. 1, 1929, to Apr. 22, 1953, water-stage recorder, at site 0.6 mile downstream at different datums; datum lowered 1.54 ft Oct. 1, 1929.

Average discharge.--43 years (1910-19, 1929-63), 64.0 cfs (46,330 acre-ft per year).

Extremes.--Maximum discharge during period October to April, 49 cfs Apr. 24 (gage height, 2.48 ft); maximum gage height recorded, 3.93 ft Dec. 8 (backwater from ice); minimum daily discharge, 10 cfs Mar. 24.

1910-19, 1929-64: Maximum discharge, 1,200 cfs June 13, 1935 (gage height, 4.25 ft, site and datum then in use), from rating curve extended above 700 cfs; maximum gage height recorded, 5.16 ft Dec. 17, 1961 (backwater from ice); minimum daily discharge, 3 cfs Nov. 9, 1912.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 350 acres above station. Diversion for power 6 miles above station in sec.19, T.5 S., R.76 W., prior to Dec. 15, 1959; water returned to Blue River just above mouth of Straight Creek. Water also bypassed station through old power canal beginning Sept. 1, 1963 (1,970 acre-ft in water year 1964).

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

2.0	10
2.1	15
2.3	32
2.6	68

Discharge, in cubic feet per second, October 1963 to April 1964

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	14	18	18	13	13	12					
2	16	17	18	18	12	13	12					
3	*16	16	18	18	11	13	11					
4	16	16	18	20	12	13	12					
5	16	15	18	16	12	13	12					
6	16	14	18	16	12	12	11					
7	16	16	*17	15	12	12	12					
8	16	14	16	14	12	12	11					
9	*16	*15	15	15	12	12	11					
10	16	14	16	*15	13	12	12					
11	16	14	17	14	12	12	12					
12	16	16	18	13	12	13	15					
13	16	15	17	12	12	11	12					
14	16	16	17	13	11	11	13					
15	16	14	17	13	12	12	*14					
16	15	14	18	14	12	12	19					
17	15	14	19	14	12	12	21					
18	14	12	19	14	12	12	20					
19	14	15	19	13	*12	14	27					
20	15	21	19	15	12	14	24					
21	16	20	19	14	12	11	21					
22	15	19	20	14	12	11	21					
23	14	19	18	14	12	11	29					
24	14	19	17	13	12	10	36					
25	14	20	17	13	11	15	32					
26	14	19	17	13	11	*11	21					
27	14	19	17	13	13	11	21					
28	14	18	18	12	13	11	20					
29	14	19	19	12	13	11	25					
30	14	19	19	12	-----	12	27					
31	16	-----	19	12	-----	12	-----					
Total	473	493	552	442	349	374	546					
Mean	15.3	16.4	17.8	14.3	12.0	12.1	18.2					
Ac-ft	938	978	1,090	877	692	742	1,080					

Calendar year 1963: Max 200 Min - Mean 41.8 Ac-ft 30,270
 Water year 1963-64: Max - Min - Mean - Ac-ft -

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17 to Dec. 8, Dec. 12, 13, Mar. 21, 27, Apr. 12-14. No gage-height record Dec. 9-11, Dec. 14 to Mar. 17, Mar. 28, 29 (stage-discharge relation affected by ice during most of periods).

9-501. Tenmile Creek below North Fork, at Frisco, Colo.

Location.--Lat 39°34'35", long 106°06'30", in SW¹/₄NE¹/₄ sec.34, T.5 S., R.78 W., on left bank 500 ft downstream from North Fork, 800 ft downstream from bridge on U. S. Highway 6, and 0.6 mile west of Frisco.

Drainage area.--93.3 sq mi.

Records available.--October 1957 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 9,090 ft (from topographic map).

Average discharge.--7 years, 84.5 cfs (61,180 acre-ft per year).

Extremes.--Maximum discharge during year, 929 cfs June 7 (gage height, 5.11 ft); minimum daily, 9.0 cfs Feb. 20, Mar. 4.

1957-64: Maximum discharge, 1,260 cfs May 28, 1958; maximum gage height, 5.70 ft May 24, 1958; minimum daily discharge, 7 cfs Mar. 8, 14, 1960.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Natural flow of stream affected by a few small diversions above station for irrigation and municipal use and transbasin diversion from Robinson Reservoir (capacity, 2,520 acre-ft) in Eagle River basin.

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

2.3	11	3.8	180
2.7	26	4.3	370
3.0	46	4.8	680
3.4	98		

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	18	13	13	11	11	12	28	284	213	79	31
2	26	20	13	14	10	11	11	30	288	217	84	29
3	26	20	13	13	10	10	11	29	*312	220	112	30
4	25	20	12	14	10	9.0	11	28	312	204	111	26
5	25	20	*1.1	13	10	10	11	30	355	201	122	25
6	25	18	12	12	10	10	11	*30	420	186	105	25
7	26	18	13	12	10	10	11	31	571	*180	111	25
8	26	18	13	12	10	10	11	34	533	165	109	25
9	25	*19	13	12	11	10	12	35	392	150	87	26
10	*25	19	13	12	11	11	*12	38	473	152	73	26
11	25	18	14	11	11	11	12	48	521	152	58	24
12	24	17	14	11	11	*11	12	42	485	137	*47	24
13	23	17	15	10	10	11	13	47	443	126	45	23
14	22	18	14	*10	*9.5	11	14	79	414	116	46	*23
15	23	17	15	11	9.5	11	14	118	437	118	46	23
16	22	18	14	11	10	12	16	165	414	129	53	25
17	22	18	14	11	10	12	17	241	*398	122	47	24
18	23	16	14	11	10	12	16	300	370	103	38	23
19	24	17	13	12	9.5	12	17	335	304	93	48	26
20	24	18	14	13	9.0	10	18	443	300	92	77	26
21	24	18	14	12	9.5	10	16	558	284	85	50	24
22	22	19	14	11	10	11	16	584	273	74	50	24
23	22	14	14	11	9.5	11	17	515	230	79	53	24
24	23	15	14	12	9.5	11	20	521	237	96	47	23
25	22	16	14	11	9.5	11	22	631	248	105	44	23
26	22	15	14	12	9.5	11	20	624	244	96	35	25
27	23	15	13	13	10	11	20	*571	241	98	40	28
28	21	14	13	11	10	10	20	545	251	92	37	27
29	21	13	14	10	10	10	21	473	262	74	38	25
30	21	12	13	10	-----	10	24	355	234	59	46	24
31	22	-----	13	11	-----	13	-----	296	-----	70	37	-----
Total	730	515	417	362	290.0	334.0	458	7804	10,530	4,004	1,975	756
Mean	23.5	17.2	13.5	11.7	10.0	10.8	15.3	252	351	129	63.7	25.2
Ac-ft	1,450	1,020	827	718	575	662	908	15,480	20,890	7,940	3,920	1,500

Calendar year 1963: Max 266 Min - Mean 55.0 Ac-ft 39,800
 Water year 1963-64: Max 631 Min 9.0 Mean 77.0 Ac-ft 55,890

Peak discharge (base, 700 cfs).--May 25 (2130) 824 cfs (4.98 ft); June 7 (2015) 929 cfs (5.11 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18 to Dec. 12. No gage-height record Jan. 5 to Apr. 10 (stage-discharge relation affected by ice during most of period), Sept. 14.

BLUE RIVER BASIN

9-506. Dillon Reservoir at Dillon, Colo.

Location.--Lat 39°37'15", long 106°03'55", in NE¼ sec.13, T.5 S., R.78 W., in gatehouse at dam on Blue River, 0.8 mile upstream from Straight Creek, about 1 mile southwest of Dillon, and 3.5 miles northeast of Frisco.

Drainage area.--335 sq mi.

Records available.--September 1963 to September 1964.

Gage.--Electric tape gage read once daily. Datum of gage is at mean sea level (levels by Denver Board of Water Commissioners).

Extremes.--Maximum contents observed during period Sept. 3, 1963 to Sept. 30, 1964, 91,550 acre-ft July 19 (elevation, 8,942.24 ft); minimum observed since appreciable storage was attained in July 1964, 63,860 acre-ft Sept. 30, 1964 (elevation, 8,920.97 ft).

Remarks.--Reservoir is formed by earth- and rock-fill dam. Dam completed and storage began Sept. 3, 1963, dead storage pool filled Sept. 12, 1963. Capacity, 254,000 acre-ft between elevations 8,829.00 (invert of valves in outlet to Blue River) and 9,017.00 ft (crest of spillway). Dead storage, 3,270 acre-ft. Reservoir is used to store water for transmountain diversion to South Platte River basin through Harold D. Roberts tunnel (see elsewhere in this report) for municipal use by City of Denver. Figures given herein represent usable contents.

Cooperation.--Records furnished by Denver Board of Water Commissioners.

Month-end elevation and contents, September 1963 to September 1964

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	8,846.15	4,900	+4,900
Oct. 31.....	8,857.72	10,050	+5,150
Nov. 30.....	8,862.81	12,870	+2,820
Dec. 31.....	8,862.88	12,910	+40
Calendar year 1963.....	-	-	+12,910
Jan. 31.....	8,862.88	12,910	0
Feb. 29.....	8,862.92	12,930	+20
Mar. 31.....	8,862.84	12,890	-40
Apr. 30.....	8,862.99	12,970	+80
May 31.....	8,899.20	40,430	+27,460
June 30.....	8,933.68	79,880	+39,450
July 31.....	8,940.48	89,090	+9,210
Aug. 31.....	8,932.72	78,620	-10,470
Sept. 30.....	8,920.97	63,860	-14,760
Water year 1963-64.....	-	-	+58,960

† Elevation at 0800 on first day of following month.

9-507. Blue River below Dillon, Colo.

Location.--Lat 39°37'30", long 106°04'05", in SE¼ sec.12, T.5 S., R.78 W., on right bank half a mile downstream from Dillon dam, 0.5 mile upstream from Straight Creek, 1.1 miles northwest of Dillon, and 1.2 miles downstream from Tenmile Creek.

Drainage area.--335 sq mi.

Records available.--January 1960 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 8,760 ft (from topographic map). Supplementary water-stage recorder and Parshall flume on Valear ditch about 600 ft downstream from point of diversion.

Extremes.--Maximum discharge during year, 937 cfs Dec. 10 (gage height, 2.71 ft); no flow Oct. 1 to Nov. 19.
1960-64: Maximum discharge, 1,720 cfs June 17, 1960; maximum gage height, 3.60 ft June 14, 1962; no flow Sept. 4 to Nov. 19, 1963.

Remarks.--Records good. Records show combined flow of river and Valear ditch. Flow completely regulated by Dillon Reservoir (see preceding page). Natural flow of stream affected by transmountain diversions, transbasin diversions, and diversions above station for irrigation of about 400 acres of hay meadows. Valear ditch diverts water just below Dillon dam for irrigation below station. Part of natural flow of Snake River above station has been diverted through old power canal since Sept. 1, 1963 (1,260 acre-ft in October 1963 and 708 acre-ft in November 1963), and returned to river below this 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	64	57	49	56	54	105	47	53	295	180
2		0	59	56	52	56	54	150	47	53	287	150
3		0	52	56	54	59	54	143	45	53	313	154
4		0	50	54	52	61	52	99	*45	53	310	122
5		0	*50	54	50	61	52	*45	47	53	338	130
6		0	50	56	50	61	50	45	47	55	351	104
7		0	50	56	50	61	50	45	47	*55	392	70
8		0	50	57	50	61	50	45	50	54	397	96
9	(*)	*0	50	56	50	61	50	45	51	54	368	117
10		0	54	52	50	61	50	45	51	52	327	128
11		0	50	50	50	*61	49	45	51	53	*305	131
12		0	50	50	50	61	49	45	49	54	264	128
13		0	50	50	50	57	49	45	52	53	252	122
14		0	50	50	*50	54	49	47	52	53	228	*115
15		0	50	52	50	49	*49	50	53	54	212	118
16		0	54	54	52	45	54	52	53	54	198	117
17		0	59	54	52	45	85	52	54	54	212	161
18		0	59	*52	52	45	94	52	*54	54	202	211
19		0	59	54	52	45	114	52	54	54	173	211
20		*41	61	54	52	52	133	50	54	123	212	211
21		75	61	52	52	52	114	50	54	246	236	251
22		66	57	54	52	52	94	50	54	243	212	288
23		61	50	56	52	52	94	50	53	*253	212	288
24		61	49	59	54	52	121	49	53	272	198	292
25		64	49	54	54	54	147	50	53	282	191	292
26		66	52	52	54	56	108	52	53	290	173	292
27		66	54	52	56	54	85	52	53	291	168	292
28		66	54	54	56	54	80	50	53	283	194	381
29		66	54	54	56	54	108	50	52	266	186	436
30		64	56	52	-----	54	99	50	52	262	198	436
31		-----	59	49	-----	54	-----	48	-----	291	184	-----
Total	0	696	1,666	1,662	1,503	1,700	2,291	1,808	1,533	4,120	7,788	6,024
Mean	0	23.2	53.7	53.6	51.8	54.8	76.4	58.3	51.1	133	251	201
Ac-ft	0	1,380	3,300	3,300	2,980	3,370	4,540	3,590	3,040	8,170	15,450	11,950

Calendar year 1963: Max 524 Min 0 Mean 136 Ac-ft 98,410
Water year 1963-64: Max 436 Min 0 Mean 84.1 Ac-ft 61,070

* Discharge measurement made on this day.
Note.--Backwater from beaver dam on ditch Aug. 25 to Sept. 8.

BLUE RIVER BASIN

9-535. Blue River above Green Mountain Reservoir, Colo.

Location.--Lat 39°49'55", long 106°13'20", in S½ sec.34, T.2 S., R.79 W., on left bank 300 ft north of old State Highway 9, just upstream from high-water line of Green Mountain Reservoir at elevation 7,950 ft, 1.3 miles downstream from Brush Creek, and 18 miles southeast of Kremmling.

Drainage area.--514 sq mi.

Records available.--October 1943 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 7,946.56 ft above mean sea level, unadjusted.

Extremes.--Maximum discharge during year, 587 cfs Aug. 3 (gage height, 1.93 ft); maximum gage height recorded, 3.15 ft Mar. 5 (backwater from ice); minimum daily discharge, 33 cfs Oct. 20.

1943-64: Maximum discharge, 5,020 cfs June 11, 1952 (gage height, 4.93 ft); maximum gage height recorded, 6.93 ft Nov. 5, 1961 (backwater from ice); minimum daily discharge, that of Oct. 20, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by Dillon Reservoir since Sept. 3, 1963 (see elsewhere in this report). Natural flow of stream affected by transmountain and transbasin diversions and many small diversions for irrigation of about 4,000 acres of hay meadows above station.

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

0.5	26	1.3	225
.7	52	1.8	515
1.0	120	2.4	1,000

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	60	37	105	86	69	74	78	213	189	360	470	275
2	*60	37	95	84	70	74	78	250	185	348	456	280
3	60	38	85	82	72	75	78	250	201	336	522	225
4	58	43	82	82	70	75	76	205	*209	324	528	250
5	56	44	80	80	68	76	75	154	225	314	515	168
6	56	42	80	82	68	77	74	138	235	330	528	235
7	52	42	*80	82	68	76	78	*141	297	297	522	144
8	52	43	80	82	68	76	*82	141	384	*280	554	171
9	50	*43	80	80	68	76	88	132	250	275	502	182
10	46	43	84	76	68	76	93	144	265	275	470	201
11	48	43	80	74	68	*73	93	164	330	280	*432	189
12	48	43	80	74	68	74	98	144	314	270	396	193
13	48	43	78	74	70	74	96	154	319	250	396	178
14	48	43	80	75	*71	74	96	193	308	235	372	174
15	46	42	80	*75	72	70	112	230	292	250	336	*168
16	40	42	85	73	72	66	141	265	360	260	330	178
17	36	42	90	75	72	64	168	302	*366	260	324	185
18	34	42	92	76	72	64	193	330	372	250	324	240
19	34	41	92	77	72	64	235	366	286	240	286	255
20	33	42	95	78	72	66	250	414	265	217	348	255
21	35	118	95	74	72	69	235	450	260	360	366	270
22	34	110	90	75	72	70	205	450	292	378	330	324
23	*34	102	82	76	72	70	205	408	240	402	308	324
24	34	100	82	79	72	70	240	372	240	426	297	319
25	34	105	80	75	74	70	260	414	275	432	265	319
26	35	108	82	72	74	72	255	*470	319	420	260	324
27	35	108	85	72	74	70	164	476	354	420	255	330
28	35	108	85	74	74	70	171	396	372	420	280	366
29	35	108	84	75	74	72	201	348	366	408	302	489
30	36	105	86	72	-----	78	235	245	396	414	308	489
31	42	-----	88	70	-----	80	-----	197	-----	456	308	-----
Total	1,354	1,907	2,642	2,381	2,056	2,235	4,453	8,556	8,766	10,187	11,890	7,700
Mean	43.7	63.6	85.2	76.8	70.9	72.1	148	276	292	329	384	257
Ac-ft	2,690	3,780	5,240	4,720	4,080	4,430	8,830	16,970	17,390	20,210	23,580	15,270

Calendar year 1963: Max 970 Min 33 Mean 225 Ac-ft 163,100
 Water year 1963-64: Max 554 Min 33 Mean 175 Ac-ft 127,200

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16 to Mar. 28 (no gage-height record Dec. 31 to Jan. 15, Feb. 9-14). No gage-height record Mar. 29 to Apr. 9 (stage-discharge relation affected by ice during most of period).

9-570. Green Mountain Reservoir near Kremmling, Colo.

Location.--Lat 39°52'45", long 106°19'45", in NE¼ sec.15, T.2 S., R.80 W., in hoist house at right end of Green Mountain Dam on Blue River, 0.6 mile upstream from Elliott Creek and 13 miles southeast of Kremmling.

Drainage area.--599 sq mi (includes 15.4 sq mi of Elliott Creek above diversion for Elliott Creek feeder canal).

Records available.--November 1942 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 7,800 ft above mean sea level (Bureau of Reclamation bench mark). Gage heights have been reduced to elevations above mean sea level. Prior to Sept. 25, 1951, mercury gage in powerhouse at same datum. Sept. 25, 1951, to Oct. 1, 1953, electric-tape gage at present site and datum.

Extremes.--Maximum contents observed during year, 129,500 acre-ft Aug. 24, 25 (elevation, 7,941.51 ft); minimum, 53,670 acre-ft Apr. 15 (elevation, 7,890.98 ft).

1942-64: Maximum contents observed, 148,900 acre-ft July 10, 1947 (elevation, 7,950.95 ft); minimum since appreciable storage was attained, 388 acre-ft Jan. 12, 1963 (elevation, 7,801.70 ft).

Remarks.--Reservoir is formed by an earth- and rock-fill dam. Dam completed and storage began in November 1942. Capacity of reservoir, 146,900 acre-ft between elevations 7,800 (sill of outlet gate) and 7,950 ft (top of radial spillway gates). Dead storage, 7,760 acre-ft. Reservoir is used for power development and storage for replacement of water diverted to South Platte River basin during late irrigation season. Figures given herein represent usable contents.

Cooperation.--Records furnished by Bureau of Reclamation.

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.....	7,917.32	87,530	-
Oct. 31.....	7,904.79	70,040	-17,490
Nov. 30.....	7,899.88	63,870	-6,170
Dec. 31.....	7,898.88	62,660	-1,210
Calendar year 1963.....	-	-	+56,180
Jan. 31.....	7,898.00	61,610	-1,050
Feb. 29.....	7,896.16	59,460	-2,150
Mar. 31.....	7,892.74	55,590	-3,870
Apr. 30.....	7,893.61	56,560	+970
May 31.....	7,911.02	78,420	+21,860
June 30.....	7,927.19	103,300	+24,880
July 31.....	7,936.13	119,200	+15,900
Aug. 31.....	7,941.36	129,200	+10,000
Sept. 30.....	7,934.30	115,800	-13,400
Water year 1963-64.....	-	-	+28,270

† Elevation at 2400.

BLUE RIVER BASIN

9-575. Blue River below Green Mountain Reservoir, Colo.

Location.--Lat 39°52'50", long 106°20'00", in NE¼ sec.15, T.2 S., R.80 W., on left bank 0.3 mile upstream from Elliott Creek, 0.3 mile downstream from Green Mountain Dam, and 13 miles southeast of Kremmling.

Drainage area.--599 sq mi (includes 15.4 sq mi of Elliott Creek above diversion for Elliott Creek feeder canal).

Records available.--October 1937 to September 1964. Published as Blue River below Green Mountain Reservoir, near Kremmling, 1938-43.

Gage.--Water-stage recorder (digital). Datum of gage is 7,682.66 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Oct. 1, 1951, at site 3.7 miles downstream at different datum.

Extremes.--Maximum discharge during year, 1,600 cfs Nov. 6 (gage height, 7.05 ft); minimum daily, 76 cfs June 26.

1937-64: Maximum discharge, 4,000 cfs June 4, 1938 (gage height, 5.93 ft, site and datum then in use), from rating curve extended above 3,000 cfs; minimum daily (prior to construction of Green Mountain Reservoir), 80 cfs Feb. 18-24, 1938, Feb. 18, 19, 1940; no flow at times in 1943.

Remarks.--Records good. Flow regulated by Green Mountain Reservoir (see preceding page). Diversions for irrigation of about 5,000 acres above station. Transmountain diversions above station (see elsewhere in this report).

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

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	*605	242	138	119	136	140	180	86	77	77	255	255
2	601	136	136	117	132	144	178	79	77	77	255	259
3	608	138	134	121	136	140	182	84	77	82	206	400
4	601	140	138	121	138	140	182	86	*84	80	123	436
5	601	668	134	119	138	144	180	84	80	79	82	436
6	608	387	134	117	138	*140	180	84	80	*82	84	433
7	601	541	*134	119	136	140	*182	86	80	80	80	436
8	598	*136	138	119	136	142	182	80	86	79	80	372
9	601	138	134	121	136	150	182	86	79	80	82	349
10	598	134	138	119	134	180	188	86	79	79	174	380
11	605	279	111	115	132	182	182	84	79	79	*236	448
12	601	136	123	113	136	182	182	86	86	79	317	541
13	650	138	123	121	*136	184	186	87	79	77	419	541
14	633	136	121	117	136	182	180	82	80	80	419	541
15	162	134	119	*119	134	180	160	80	79	84	417	*526
16	160	130	119	115	136	182	162	84	82	82	419	529
17	162	134	117	115	138	182	162	86	84	79	374	526
18	158	132	119	115	136	182	164	82	79	82	372	529
19	162	255	121	117	138	182	160	84	82	80	346	619
20	158	150	123	119	136	182	160	84	80	196	341	668
21	158	134	115	119	136	182	162	80	79	303	238	517
22	160	134	117	115	136	182	158	80	80	403	236	577
23	162	134	117	119	144	182	158	80	80	487	238	580
24	158	134	115	127	140	182	160	80	80	487	277	591
25	160	134	117	134	144	182	160	80	79	467	288	577
26	158	132	119	134	142	182	162	77	76	487	390	580
27	162	134	119	132	142	182	127	79	79	490	354	584
28	164	132	119	136	142	184	84	79	80	481	324	584
29	136	130	119	136	138	182	87	79	82	490	324	591
30	136	132	119	136	-----	182	84	82	80	377	324	587
31	136	-----	117	138	-----	178	-----	79	-----	288	290	-----
TOTAL	11,163	5,614	3,847	3,784	3,982	5,280	4,856	2,555	2,404	6,493	8,366	14,992
MEAN	360	187	124	122	137	170	162	82.4	80.1	209	270	500
AC-FT	22,140	11,140	7,630	7,510	7,900	10,470	9,630	5,070	4,770	12,880	16,590	29,740

CALENDAR YEAR 1963 MAX 868 MIN 47 MEAN 208 AC-FT 150,400
 WATER YEAR 1963-64 MAX 668 MIN 76 MEAN 200 AC-FT 145,470

* Discharge measurement made on this day.

9-580. Colorado River near Kremmling, Colo.

Location.--Lat 40°02'12", long 106°26'22", in NE¼SW¼ sec.23, T.1 N., R.81 W., on right bank at upstream end of Gore Canyon, 3 miles southwest of Kremmling and 3.8 miles downstream from Blue River.

Drainage area.--2,360 sq mi, approximately.

Records available.--July 1904 to September 1918 (published as Grand River near Kremmling), October 1961 to September 1964.

Gage.--Water-stage recorder (digital). Altitude of gage is 7,320 ft (from topographic map). Prior to July 28, 1910, wire-weight, chain, and staff gages and July 28, 1910, to Sept. 30, 1918, water-stage recorder supplemented in winter by staff gage, all within a few hundred feet, at datum of 7,301.32 ft above mean sea level (Denver Northwestern and Pacific Railway bench mark) except prior to Oct. 18, 1906, at datum 0.80 ft lower.

Extremes.--Maximum discharge during year, 1,630 cfs May 22 (gage height, 6.61 ft); minimum daily, 250 cfs Dec. 13.
1904-18, 1961-64: Maximum discharge observed, 21,500 cfs June 7, 1912 (gage height, 21.8 ft, datum then in use), from rating curve extended above 14,000 cfs; minimum observed, 166 cfs Dec. 19, 1907.

Remarks.--Records good. Natural flow of stream affected by transmountain diversions, storage reservoirs, diversions for irrigation of about 40,000 acres above station, and return flow from irrigated areas.

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	954	517	303	270	290	300	360	801	989	508	959	762
2	958	442	306	280	290	310	360	793	1,050	500	941	736
3	924	422	290	280	290	300	354	699	1,090	492	957	783
4	916	439	290	270	290	300	247	549	1,160	455	851	892
5	918	747	301	270	290	300	357	564	1,060	428	751	884
6	923	835	*290	280	290	300	361	572	*1,000	*419	588	881
7	930	761	280	280	290	300	361	*639	1,040	386	467	879
8	924	*514	285	280	290	300	357	682	1,100	367	573	848
9	897	439	325	280	300	310	363	665	1,180	347	574	755
10	*879	439	292	280	310	330	393	632	952	364	579	762
11	887	532	273	280	300	350	423	732	885	368	774	758
12	848	454	260	280	290	350	467	734	828	368	799	934
13	881	427	250	280	290	350	421	633	759	368	963	942
14	867	424	260	270	290	350	427	745	783	363	961	940
15	640	430	270	270	290	350	481	912	777	347	954	*942
16	388	433	280	280	290	350	602	1,030	634	343	954	958
17	378	419	280	290	290	350	691	1,210	639	344	950	955
18	373	397	280	290	290	350	693	1,360	623	373	862	951
19	370	499	280	280	300	350	730	1,400	593	377	909	1,060
20	375	424	270	280	290	350	874	1,500	529	397	891	997
21	391	394	270	270	290	350	840	1,530	482	599	827	989
22	394	348	270	270	290	360	789	1,580	555	690	775	755
23	397	311	260	260	300	360	683	1,550	682	902	765	920
24	397	343	260	270	300	360	*708	1,490	638	914	759	894
25	391	323	260	280	300	350	876	1,460	549	939	794	898
26	448	311	260	280	300	350	682	*1,390	468	918	838	897
27	454	323	270	280	300	350	563	1,470	448	906	923	894
28	457	318	270	280	300	350	430	1,350	449	891	862	899
29	463	306	270	280	300	350	451	1,230	490	911	870	943
30	422	299	270	280	-----	350	644	1,080	514	942	863	956
31	433	-----	270	290	-----	350	-----	1,010	-----	927	842	-----
TOTAL	19,877	13,270	8,595	8,610	8,530	10,430	16,088	31,992	22,946	17,523	25,375	26,664
MEAN	641	442	277	278	294	336	536	1,032	765	565	819	889
AC-FT	39,430	26,320	17,050	17,080	16,920	20,690	31,910	63,460	45,510	34,760	50,330	52,890

CALENDAR YEAR 1963 MAX 1,230 MIN 250 MEAN 554 AC-FT 401,380
 WATER YEAR 1963-64 MAX 1,580 MIN 250 MEAN 573 AC-FT 416,350

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 12 to Apr. 1.

PINEY RIVER BASIN

9-585. Piney River below Piney Lake, near Minturn, Colo.

Location (revised).--Lat 39°42'25", long 106°25'40", in sec.14, T.4 S., R.81 W., on left bank 1½ miles upstream from Dickson Creek, 2 miles downstream from Piney Lake, and 8½ miles north of Minturn.

Drainage area.--13.0 sq mi.

Records available.--October 1947 to September 1954, October 1963 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 9,145.25 ft above mean sea level (levels by Bureau of Reclamation). Prior to October 1963, water-stage recorder at site 15 ft upstream at same datum.

Average discharge.--8 years, 24.2 cfs (17,520 acre-ft per year).

Extremes.--Maximum discharge during year, 178 cfs May 27 (gage height, 4.76 ft); minimum not determined.
1947-54, 1963-64: Maximum discharge, 396 cfs June 11, 1952 (gage height, 5.47 ft); minimum not determined.

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)

3.0	0.5	3.5	15
3.1	1.0	3.6	22
3.2	2.5	4.0	60
3.3	5.5	4.7	167

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.9	0.9						6.4	49	94	18	5.2
2	*1.8	.8						7.3	*49	96	18	4.9
3	1.9	1.2						7.8	57	94	44	4.3
4	1.8	1.2						7	64	90	28	3.7
5	1.6	1.2						6.0	84	81	22	3.1
6	1.6	1.4						5.2	83	86	18	3.1
7	1.8	1.8						4.9	128	77	15	3.7
8	1.8	1.6				1.2	3	5.2	140	70	14	4.0
9	1.8	1.4						5.2	74	61	12	4.3
10	1.6	1.3						9	93	66	10	4.3
11	1.6	1.4						7.8	120	61	9.1	3.7
12	1.4	1.6						9	100	56	8.6	3.4
13	1.6	1.8						11	98	50	12	2.5
14	1.4	1.4						17	88	46	10	2.5
15	1.4	1.6						30	96	41	8.2	2.5
16	1.4	1.6	1.2	1	1			54	*134	44	7.8	3.7
17	1.9	1.4						79	129	49	9.6	3.7
18	1.8	1.2						118	112	38	8.2	3.4
19	1.6	1.0						118	69	34	7.8	7.3
20	1.8	1.2						139	73	30	13	10
21	2.4	1.4						153	77	27	12	9.1
22	2.5	1.6						150	80	25	9.6	7.8
23	2.4	1.4				2	6	124	59	25	7.8	6.4
24	2.4	1.6						121	66	36	5.5	5.5
25	2.2	1.6						150	*100	28	5.2	4.9
26	2.2	1.6						150	115	21	5.2	4.6
27	2.0	1.6						144	105	18	*6.8	4.9
28	1.9	1.4						104	107	16	8.2	4.9
29	10	1.2					(*)	92	107	*14	8.2	4.9
30	*7.3	1.0					6.4	60	108	14	7.8	4.9
31	2.2	-----					-----	56	-----	17	6.4	-----
Total	71.0	41.4	37.2	31	29	50.0	135.4	1,950.8	2,764	1,505	376.0	141.2
Mean	2.29	1.38	1.2	1	1	1.6	4.51	62.9	92.1	48.5	12.1	4.71
Ac-ft	141	82	74	61	58	99	269	3,870	5,480	2,990	746	280

Calendar year 1963: Max - Min - Mean - Ac-ft -
Water year 1963-64: Max 153 Min - Mean 19.5 Ac-ft 14,150

Peak discharge (base, 150 cfs)--May 27 (0200) 178 cfs (4.76 ft); June 8 (0230) 174 cfs (4.74 ft).

* Discharge measurement made on this day.

Nota.--Stage-discharge relation affected by ice Nov. 16 to Dec. 9, May 4, 10, 12-15. No gage-height record Dec. 10 to Apr. 29 (stage-discharge relation affected by ice during most of period).

9-595. Piney River near State Bridge, Colo.

Location.--Lat 39°48', long 106°35', in sec.16, T.3 S., R.82 W., on left bank at downstream side of private bridge at Perry Olsen Ranch just downstream from Rock Creek, 6 miles southeast of State Bridge.

Drainage area.--82.6 sq mi.

Records available.--May 1944 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 7,272.35 ft above mean sea level, unadjusted. Prior to July 29, 1944, staff gage and July 29, 1944, to Oct. 24, 1947, water-stage recorder, at datum 2.38 ft higher.

Average discharge.--20 years, 72.7 cfs (52,630 acre-ft per year).

Extremes.--Maximum discharge during year, 575 cfs May 21 (gage height, 4.73 ft); minimum daily, 6 cfs Oct. 1, 10-16. 1944-64: Maximum discharge, 1,110 cfs June 8, 1952 (gage height, 5.61 ft); minimum daily, 1.9 cfs Sept. 1, 18, 19, 1954.

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 400 acres of hay meadows above and below station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 18-29, Aug. 21 to Sept. 30)

2.2	5.5	3.3	89
2.3	8.0	3.6	150
2.5	16	4.0	260
2.7	26	4.6	510
3.0	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	5	8	(*)	(*)			21	40	228	146	29	12						
2	7	7					139	26	10									
3	7	7					25	50	264	137	47	8.8						
4	7	7.5					28	40	278	128	39	8.0						
5	6.5	8					32	35	288	118	34	8.0						
6	6.5	8.5	12	11	10	9.5	34	30	298	115	29	7.5						
7	6.5	10					34	25	358	107	24	8.4						
8	6.5	9					34	30	390	* 98	22	8.4						
9	*6.5	8.5					35	35	278	87	21	10						
10	6	9					36	40	* 274	94	19	9.6						
11	6	10					12	11	10	9.5	36	35	298	84	16	8.0		
12	6	11									36	*40	264	75	18	7.8		
13	6	*12									36	55	250	65	21	7.0		
14	6	13									36	89	225	61	18	6.8		
15	6	12									38	139	222	56	16	8.0		
16	6	b 11	12	11	10	9.5	40	195	254	55	15	10						
17	6.5	b 10					40	257	247	62	19	8.4						
18	6.5	b 9.5					39	330	234	52	16	8.0						
19	6.5	9.5					39	334	174	46	16	14						
20	6.5	10					39	398	162	42	24	16						
21	7	11					12	11	10	9.5	39	440	162	38	20	14		
22	8.5	12									40	485	172	37	16	12		
23	8	12									40	450	141	39	14	11		
24	7.5	11									(*)	(*)	45	435	* 137	42	13	10
25	7.5	12									45	485	164	37	12	9.2		
26	7	12	12	11	10	9.5	45	* 490	179	30	* 12	8.8						
27	7	13					(*)	9.2	40	490	167	26	17	12				
28	6.5	12					10	35	480	167	* 24	16	14					
29	20	11					11	35	374	164	24	15	14					
30	15	11					14	40	270	167	22	14	14					
31	9	-----					18	-----	247	-----	24	13	-----					
Total	230.5	307.5					372	341	290	308.6	1,086	6,888	6,831	2,110	631	303.7		
Mean	7.44	10.2					12	11	10	9.95	36.2	222	228	68.1	20.4	10.1		
Ac-ft	457	610					738	676	575	612	2,150	13,660	13,550	4,190	1,250	602		

Calendar year 1963: Max 241 Min 6 Mean 36.1 Ac-ft 26,170
Water year 1963-64: Max 490 Min 6 Mean 53.8 Ac-ft 39,070

Peak discharge (base, 520 cfs).--May 21 (2100) 575 cfs (4.73 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 1 to Nov. 13, Nov. 19 to Mar. 24 (stage-discharge relation affected by ice during most of period), Apr. 22 to May 12.

ROCK CREEK BASIN

9-605. Rock Creek near Toponas, Colo.

Location.--Lat 40°02'28", long 106°39'19", in NW¼ sec.24, T.1 N., R.83 W., on right bank 0.1 mile upstream from Horse Creek, three-quarters of a mile downstream from Shoe and Stocking Creek, and 8 miles east of Toponas.

Drainage area.--48 sq mi, approximately.

Records available.--October 1952 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,544 ft (from topographic map).

Average discharge.--12 years, 31.4 cfs (22,730 acre-ft per year).

Extremes.--Maximum discharge during year, 274 cfs May 17 (gage height, 3.79 ft); minimum not determined.

1952-64: Maximum discharge, 482 cfs May 12, 1962 (gage height, 4.80 ft); maximum gage height, 5.49 ft Apr. 18, 1962 (backwater from ice); minimum daily discharge, 2.2 cfs Aug. 30, 31, Sept. 2, 1954.

Remarks.--Records good except those for period of ice effect, which are poor. No regulation or diversion above station.

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

1.8	3.0	2.5	52
2.0	9.0	2.8	95
2.1	14	3.0	125
2.3	31	3.4	193

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	6.9						34	128	23	12	6.2
2	6.2	6.6	(*)					36	134	20	10	5.8
3	6.6	6.9						36	148	18	17	5.5
4	6.6	*8.6						32	142	16	20	5.5
5	6.6	9.0						*28	122	15	32	5.2
6	6.2	8.0						24	119	*14	29	5.5
7	*6.2	8.6						24	118	13	18	6.2
8	6.2	8.3				7	15	30	*171	13	12	6.2
9	6.2	8.6						30	119	14	11	6.2
10	6.2	8.6						40	102	20	9.0	6.2
11	6.2	8.3						55	94	16	8.3	5.8
12	6.2	7.6						60	82	13	7.6	5.5
13	6.6	7.2						92	74	12	8.3	5.5
14	6.6	8.0						131	78	12	7.6	5.5
15	6.6	7.2						143	65	13	7.2	6.2
16	6.6	8.3	5	6	5.5	(*)		168	58	12	7.2	7.6
17	6.2	6.5						180	52	13	8.6	6.9
18	6.2	5.5						179	61	13	7.6	6.2
19	6.6	6						177	51	12	9.0	8.0
20	6.9	6						192	46	11	12	7.6
21	7.2	6.5						184	43	10	8.3	6.9
22	6.9	6.5						191	*55	10	8.0	6.9
23	6.9	6				10	25	188	53	13	7.2	6.6
24	7.6	6.5						191	38	18	*6.6	6.6
25	8.0	6						193	32	12	5.8	6.6
26	7.6	6						191	28	10	5.8	6.2
27	7.6	5.5						191	26	*10	9.6	6.2
28	6.9	5.5						180	26	9.0	9.0	6.6
29	7.2	5						155	31	9.0	9.0	6.6
30	7.2	5						136	27	11	8.0	6.9
31	7.6							128		14	6.9	
Total	208.2	209.2	155	186	159.5	265	600	3,609	2,323	419.0	337.6	189.4
Mean	6.72	6.97	5	6	5.5	8.5	20	116	77.4	13.5	10.9	6.31
Ac-ft	413	415	307	369	316	526	1,190	7,160	4,610	831	670	376

Calendar year 1963: Max 142 Min - Mean 21.3 Ac-ft 15,420
 Water year 1963-64: Max 193 Min - Mean 23.7 Ac-ft 17,180

Peak discharge (base, 200 cfs).--May 17 (2130) 274 cfs (3.79 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17 to May 12 (no gage-height record Dec. 20 to Mar. 16, Mar. 20 to Mar 5).

9-608, Big Alkali Creek near Burns, Colo.

Location.--Lat 39°51', long 106°48', in NE¼ sec.28, T.2 S., R.84 W., on right bank half a mile upstream from Catamount Creek and 5 miles southeast of Burns.

Drainage area.--16 sq mi, approximately.

Records available.--October 1958 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,200 ft (from topographic map).

Average discharge.--6 years, 0.84 cfs (608 acre-ft per year).

Extremes.--Maximum discharge during year, 137 cfs July 30 (gage height, 3.77 ft), from rating curve extended above 1 cfs as explained below; no flow for many days.

1958-64: Maximum discharge, 715 cfs Aug. 2, 1959 (gage height, 7.00 ft, from floodmarks), from rating curve extended above 3 cfs on basis of slope-area measurement of peak flow; no flow for many days in most years.

Remarks.--Records poor. Water is stored in Hurt Reservoir (capacity, about 100 acre-ft) for use in Catamount Creek drainage. One small diversion above 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	0.1	0.1					3.8	0.7	1.2	0.5	0.2	0.1
2	.1	.1	(*)				3.6	.7	1.2	.5	.2	.1
3	.1	.1					3.0	.7	1.4	.6	.2	.1
4	.1	*.1					2.6	.8	1.6	.6	1.7	.1
5	.1	.1					2.6	.8	1.4	.6	.3	.1
6	.1	.1		(*)			*2.8	.7	1.2	*.5	.2	.1
7	*.1	.1					3.0	.7	1.2	.5	.2	.2
8	.1	.1				1	2.7	.7	*1.4	.5	.2	.1
9	.1	.1					2.6	.7	1.4	.5	.2	.1
10	.1	.1					2.4	.7	1.2	.5	.2	.1
11	.1	.1					2.0	*.7	1.2	.4	.2	.1
12	.1	.1					1.4	.7	1.1	.4	.2	.1
13	.1	.1					1.1	.8	1.0	.4	.2	.1
14	.1	.1					1.0	.8	1.0	.4	.2	.1
15	.1	.1					1.4	1.0	1.0	.4	.2	.1
16	.1	.1					1.2	1.4	.8	.3	.2	.2
17	.1	b.1					1.0	1.3	.8	.3	.2	.1
18	.1	b.1					1.0	1.4	.7	.3	.1	.1
19	.1	b.1					1.0	1.4	.6	.4	.2	.1
20	.1	.1					.9	1.2	.6	.4	.2	.1
21	.1	.1					*.8	1.2	.5	.4	.2	.1
22	.1	.1					.8	1.0	*.5	.4	.1	.1
23	.1	.1					.8	1.0	.5	.4	.1	.1
24	.1	.1					.9	1.0	.5	.4	*.1	.1
25	.1	.1			(*)	2.5	.9	1.2	.5	.3	.1	.1
26	.1	0					.9	1.2	.5	.3	.1	.1
27	.1	0					.8	1.0	.5	*.3	.4	.1
28	.1	0					.8	1.2	.6	.3	.3	.1
29	.1	0					.8	1.2	.6	.3	.2	.1
30	.1	0					.8	1.2	.6	4.7	.1	.1
31	.1							1.2		.3	.1	
Total	3.1	2.5	0	0	0	55.0	49.4	30.3	27.3	17.1	7.3	3.2
Mean	0.10	0.08	0	0	0	1.8	1.65	0.98	0.91	0.55	0.24	0.11
Ac-ft	6.1	5.0	0	0	0	109	98	60	54	34	14	6.3

Calendar year 1963: Max 4.3 Min 0 Mean 0.25 Ac-ft 183

Water year 1963-64: Max 4.7 Min 0 Mean 0.53 Ac-ft 386

Peak discharge (base, 30 cfs).--July 30 (1515) 137 cfs (3.77 ft), Aug. 4 (1930) 44 cfs (2.58 ft).

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

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 1-7, Nov. 20 to Apr. 6 (stage-discharge relation affected by ice most of period), Apr. 18-20, May 18 to June 8, Aug. 21-24, Aug. 28 to Sept. 30.

EAGLE RIVER BASIN

9-630. Eagle River at Red Cliff, Colo.

Location.--Lat 39°30'35", long 106°22'00", in SE¼ sec.19, T.6 S., R.80 W., on left bank at Red Cliff, 0.3 mile upstream from Turkey Creek.

Drainage area.--72.2 sq mi.

Records available.--October 1910 to September 1925, May 1944 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 8,648.48 ft above mean sea level, datum of 1929. Jan. 8, 1911, to Sept. 30, 1925, chain gage at bridge a quarter of a mile downstream at different datum. May 25, 1944, to Oct. 12, 1952, water-stage recorder at site 200 ft upstream at datum 3.54 ft higher.

Average discharge.--35 years, 53.3 cfs (38,590 acre-ft per year).

Extremes.--Maximum discharge during year, 330 cfs May 24 (gage height, 4.22 ft); minimum not determined. 1910-25, 1944-64: Maximum discharge observed, 1,010 cfs June 5, 1912 (gage height, 4.0 ft, site and datum then in use), from rating curva extended above 500 cfs; minimum daily, 1 cfs Oct. 15, 1917.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Transmountain diversions above station by Columbine, Ewing, and Wurtz ditches (see elsewhere in this report). Transbasin diversion above station from Robinson Reservoir (capacity, 2,520 acre-ft) to Tenmile Creek for mining development. Small diversions for irrigation of about 400 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 25-27, June 20 to July 1)

2.4	6.0	3.3	102
2.5	9.0	3.7	195
2.7	21	4.0	290
3.0	53		

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	13	12					7.8	32	140	56	30	15
2	19	12					7.8	32	124	51	28	14
3	21	12					7.5	26	114	48	38	12
4	20	12	(*)			(*)	8.1	22	124	46	41	13
5	18	+ 12			(*)		7.5	26	124	43	30	14
6	17	12					7.5	25	143	42	27	13
7	16	12					7.5	27	188	39	27	12
8	15	12		(*)			7.2	30	198	36	28	12
9	* 13	12					7.5	28	178	* 37	24	13
10	13	12					8.1	37	* 170	37	22	14
11	13	11					8.4	40	172	34	22	12
12	12	11					8.4	* 37	140	32	22	12
13	12	10					9.5	47	118	32	22	11
14	11	11					10	70	104	30	19	12
15	11	11					12	93	104	29	18	14
16	12	11	7.5	8.5	9		17	112	102	29	18	15
17	12	10					18	140	95	31	19	12
18	12	9					15	158	95	28	18	12
19	12	9.5					17	152	89	26	18	18
20	12	10					18	185	79	25	29	16
21	15	11					15	210	81	24	21	13
22	14	10					* 15	234	82	25	19	15
23	12	10					18	237	81	26	18	14
24	12	10					24	266	* 74	30	* 15	12
25	12	10					26	252	69	28	15	12
26	12	9.5					19	246	64	27	15	14
27	12	9				* 8	16	* 246	60	* 26	20	19
28	11	9				7.8	16	* 228	59	24	19	16
29	11	8.5				9.0	21	204	59	24	18	14
30	12	8				8.4	27	178	63	26	17	15
31	14					8.1		155		36	15	
Total	421	318.5	232.5	263.5	261	262.3	406.8	3,775	3,293	1,027	692	41.0
Mean	13.6	10.6	7.5	8.5	9	8.46	13.6	122	110	33.1	22.3	13.7
Ac-ft	835	632	461	523	518	520	807	7,490	6,530	2,040	1,370	813

Calendar year 1963: Max 81 Min - Mean 23.4 Ac-ft 16,940
Water year 1963-64: Max 266 Min - Mean 31.0 Ac-ft 22,540

Peak discharge (base, 280 cfs).--May 24 (1930) 330 cfs (4.22 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 17 to Dec. 2. No gage-height record Dec. 3 to Mar. 27 (stage-discharge relation affected by ice during most of period).

EAGLE RIVER BASIN

9-634. Turkey Creek near Red Cliff, Colo.

Location.--Lat 39°31'20", long 106°20'15", in NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.16, T.6 S., R.80 W., on right bank 400 ft downstream from Lime Creek, 1.9 miles northeast of Red Cliff, and 2.0 miles upstream from mouth.

Drainage area.--23.9 sq mi.

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,885 ft (from topographic map).

Extremes.--Maximum discharge during year, 157 cfs June 11 (gage height, 2.48 ft); minimum not determined.

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)

1.2	2.0	2.0	47
1.3	3.5	2.2	77
1.5	10	2.4	127
1.7	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	5.0	3.4	(*)	3	(*)	(*)	3.0	4.7	63	46	14	8.2			
2	5.0	3.5					3.0	4.4	57	44	16	7.9			
3	* 5.0	4.1					3.0	4.1	57	42	17	7.9			
4	4.7	4.1					b3.0	4.4	59	40	15	7.2			
5	4.7	4.1					2.9	4.1	65	39	14	7.2			
6	4.7	4.1					2.9	4.1	72	35	15	7.2			
7	4.7	4.4					2.9	4.7	96	35	15	7.2			
8	4.7	4.4					3.0	4.7	94	32	14	7.2			
9	4.7	4.4					3.0	4.7	94	* 31	13	7.6			
10	4.7	4.4					2.9	5.9	*104	30	12	7.2			
11	4.7	4.4	3.5	2	1	2	3.0	6.8	101	27	12	6.8			
12	4.7	4.1					b3.0	5.9	112	26	12	6.5			
13	4.7	4.1					3.0	* 6.8	96	25	12	6.2			
14	4.7	4.1					3.0	10	92	23	10	6.2			
15	4.7	3.8					3.5	14	94	23	10	6.5			
16	4.4	3.8					4.7	20	88	24	11	6.8			
17	4.4	b 3.6					4.4	29	92	23	11	6.2			
18	4.4	b 3.4					3.5	36	94	22	10	6.2			
19	4.4	b 3.4					3.8	40	85	20	10	7.2			
20	4.7	3.6					3.8	48	75	19	12	6.5			
21	5.0	4.0	1			3.4	* 60	70	20	10	6.2				
22	4.7	4.4				*3.4	68	68	20	9.3	6.2				
23	4.4	4.2				3.5	75	67	20	9.3	5.9				
24	4.4	4.0				4.1	81	* 65	20	*9.0	5.9				
25	4.4	4.0				4.4	94	60	19	8.6	5.6				
26	4.1	4.0				(*)			3.8	104	57	18	8.6	5.9	
27	4.1	4.0							2.4	4.1	* 101	56	* 17	10	5.9
28	3.8	4.0							b2.4	3.4	96	55	16	9.0	5.3
29	4.1	3.8							b2.6	3.8	94	52	15	9.0	5.3
30	* 3.8	3.8							b2.8	4.1	83	50	16	8.6	5.3
31	3.8		b3.0		74					16	8.2				
Total	140.3	119.4	108.5	61	29				65.2	103.3	1,192.3	2,290	803	354.6	197.4
Mean	4.53	3.98	3.5	2	1				2.10	3.44	38.5	76.3	25.9	11.4	6.58
Ac-ft	278	237	215	121	58				129	205	2,360	4,540	1,590	703	392

Calendar year 1963: Max - Min - Mean - Ac-ft -
 Water year 1963-64: Max 112 Min - Mean 14.9 Ac-ft 10,830

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

* Discharge measurement made on this day.
 b Stage-discharge relation affected by ice.
Note.--No gage-height record Oct. 1, 2, Nov. 20 to Mar. 26 (stage-discharge relation affected by ice during most of period).

EAGLE RIVER BASIN

9-645. Homestake Creek near Red Cliff, Colo.

Location.--Lat 39°28'25", long 106°22'00", in sec.6, T.7 S., R.80 W., on right bank at downstream side of Forest Service highway bridge, 3 miles upstream from mouth, and 3 miles south of Red Cliff.

Drainage area.--58.9 sq mi.

Records available.--October 1910 to September 1918, May 1944 to September 1964. Published as "at Redcliff" October 1910 to September 1916.

Gage.--Water-stage recorder. Datum of gage is 8,783 ft above mean sea level (river-profile survey). Jan. 8, 1911, to Sept. 30, 1918, staff gage at three sites 2¼ to 2.8 miles downstream at different datums. May 25, 1944, to May 8, 1961, water-stage recorder at site 15 ft downstream at same datum.

Average discharge.--28 years, 87.0 cfs (62,990 acre-ft per year).

Extremes.--Maximum discharge during year, 694 cfs May 22 (gage height, 3.34 ft); maximum gage height recorded, 3.61 ft Apr. 12 (backwater from ice); minimum discharge not determined.

1910-18, 1944-64: Maximum discharge observed, 1,300 cfs June 24, 1918 (gage height, 6.2 ft, site and datum then in use); minimum observed, 0.6 cfs Jan. 25, 1915 (discharge measurement).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion 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	11	14					8	62	174	256	48	28
2	11	17					8	66	171	235	43	24
3	10	16					8	50	199	227	94	20
4	10	12	(*)			(*)	8.5	49	223	223	116	18
5	10	*12			(*)		8	42	264	219	134	15
6	9.6	11					7.5	39	294	203	86	14
7	9.2	10					7.5	42	405	178	68	14
8	9.2	10		(*)		5	* 7.5	44	420	171	91	14
9	* 8.4	9.5					b 8	43	247	* 147	68	16
10	8.0	9					b 8.5	56	* 321	150	49	15
11	7.7	8.5					b 9	64	375	144	41	12
12	7.4	8.5					b 9.5	* 64	355	125	41	11
13	7.4	9					10	74	335	110	42	10
14	7.1	9					13	113	312	104	35	8.4
15	6.8	8					15	154	321	107	28	10
16	7.1	7	5	6	5.5		24	223	375	113	29	16
17	6.8	6.5					28	316	335	119	41	14
18	6.8	6.5					24	385	303	107	31	11
19	7.1	6.5					26	425	235	91	28	15
20	12	7					b 26	550	290	72	131	18
21	18	7					b 24	592	239	62	68	16
22	14	6.5					* 24	580	235	62	48	16
23	13	6					31	508	164	68	36	14
24	12	6					49	484	* 192	174	* 28	12
25	12	6.5					55	556	272	137	25	11
26	12	6					50	538	290	86	22	10
27	11	5.5					50	* 484	290	* 64	34	22
28	11	5.5					38	390	290	49	40	22
29	10	5.5					40	375	294	46	43	19
30	11	5					50	243	277	49	49	18
31	13	-----					-----	196	-----	50	36	-----
Total	309.6	256.5	155	186	159.5	179.0	675.0	7,807	8,497	3,948	1,673	463.4
Mean	9.99	8.55	5	6	5.5	5.8	22.5	252	283	127	54.0	15.4
Ac-ft	614	509	307	369	316	355	1,340	15,480	16,850	7,830	3,320	919

Calendar year 1963: Max 380 Min - Mean 61.1 Ac-ft 44,210
 Water year 1963-64: Max 592 Min - Mean 66.4 Ac-ft 48,210

Peak discharge (base, 710 cfs).--No peak above base.

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 6 to Apr. 8, Apr. 13-19, 22 (stage-discharge relation affected by ice during most of periods).

9-655, Gore Creek at upper station, near Minturn, Colo.

Location.--Lat 39°37'40", long 106°16'30", on left bank 140 ft downstream from bridge on U. S. Highway 6, half a mile upstream from Black Gore Creek, and 8.8 miles (revised) northeast of Minturn, Eagle County.

Drainage area.--14.4 sq mi.

Records available.--October 1947 to September 1956, October 1963 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,620 ft (from topographic map). Prior to Aug. 26, 1952, at site 40 ft upstream at same datum; Aug. 27, 1952, to Sept. 30, 1956, at site 20 ft upstream at same datum.

Average discharge.--10 years, 27.6 cfs (19,980 acre-ft per year).

Extremes.--Maximum discharge during year, 232 cfs June 7 (gage height, 3.17 ft); minimum daily, 1.5 cfs Feb. 28 to Mar. 9. 1947-56, 1963-64: Maximum discharge, 588 cfs June 10, 1952, from rating curve extended above 260 cfs; maximum gage height, 6.65 ft June 18, 1951, site then in use; minimum daily discharge, 1.5 cfs Feb. 28 to Mar. 9, 1964.

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)
(Shifting-control method used July 25 to Sept. 30)

0.9	1.5	2.0	22
1.1	2.4	2.3	44
1.3	4.2	2.7	100
1.5	7.0	2.9	145
1.8	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	3.6	b 3.2	2.0	2.0	1.6	1.5	2.2	9	70	98	19	8.0
2	3.6	b 3.4	b 2.0	2.0	1.6	1.5	2.2	8	70	97	20	7.2
3	3.4	b 3.6	2.0	2.0	1.6	*1.5	2.2	7	70	92	26	6.0
4	3.4	b 3.8	b 1.8	2.0	*1.6	1.5	2.2	7.5	73	95	22	5.5
5	3.4	4.1	*b 1.8	2.0	1.6	1.5	2.2	7	95	96	20	4.6
6	3.2	3.9	b 1.8	2.0	1.6	1.5	2.2	6	92	80	18	4.6
7	3.2	3.9	b 1.8	*1.9	1.6	1.5	2.2	6.5	122	77	18	5.2
8	3.2	3.3	1.8	1.9	1.6	1.5	*2.2	7	145	70	16	4.8
9	3.3	3.5	1.9	1.9	1.6	1.5	2.2	7	102	*64	15	5.5
10	3.3	3.4	2.1	1.9	1.6	1.6	2.3	10	130	66	14	4.8
11	3.4	3.6	2.2	2.0	1.6	1.6	2.3	12	*132	65	13	4.0
12	3.2	3.4	2.1	2.0	1.6	1.6	2.6	11	130	62	13	3.5
13	3.1	3.2	2.0	1.9	1.6	1.6	2.4	*15	120	56	15	3.0
14	3.1	3.3	2.0	1.9	1.6	1.6	2.4	30	112	50	13	3.0
15	3.1	3.1	2.0	1.8	1.6	1.7	3.3	50	114	48	12	3.5
16	3.1	b 2.8	2.0	1.8	1.6	1.7	5.4	60	114	50	12	5.5
17	3.2	b 2.6	2.0	1.8	1.6	1.7	6.1	70	112	42	13	3.7
18	3.2	b 2.4	2.0	1.8	1.6	1.7	4.3	80	93	40	11	3.3
19	3.3	b 2.6	1.9	1.8	1.6	1.7	5.1	*90	80	38	13	6.6
20	4.0	b 2.8	1.9	1.9	1.6	1.7	6.1	100	95	34	23	6.8
21	5.6	3.0	1.9	1.9	1.6	1.7	4.8	110	86	33	16	5.8
22	5.1	3.0	1.9	1.8	1.6	1.7	4.8	120	80	34	13	5.2
23	4.6	b 2.8	1.9	1.8	1.6	1.7	*5.6	110	70	33	11	4.6
24	4.6	2.7	1.9	1.8	1.6	1.7	5.1	130	98	30	10	4.0
25	4.3	2.7	1.8	1.8	1.6	1.7	5.4	140	*130	26	9.2	3.3
26	4.2	2.5	1.8	1.8	1.6	1.7	7	130	128	24	*9.0	4.0
27	4.0	2.6	1.8	1.8	1.6	1.8	7	130	114	22	11	6.2
28	*3.5	2.4	1.9	1.7	1.5	2.0	6.5	120	110	20	11	5.5
29	3.5	2.2	2.0	1.7	1.5	2.0	7	110	110	20	11	4.6
30	3.4	2.0	2.1	1.7	-----	2.1	9	90	100	*19	9.7	4.8
31	b 3.2	-----	2.0	1.7	-----	2.2	-----	80	-----	20	8.6	-----
Total	112.3	91.8	60.1	57.8	46.2	52.0	124.3	1,863.0	3,077	1,591	445.5	1,471
Mean	3.62	3.06	1.94	1.86	1.59	1.68	4.14	60.1	103	51.0	14.4	4.90
Ac-ft	223	182	119	115	92	103	247	3,700	6,100	3,140	884	292

Calendar year 1963: Max - Min - Mean - Ac-ft -
Water year 1963-64: Max 145 Min 1.5 Mean 20.9 Ac-ft 15,200

Peak discharge (base, 200 cfs)--June 7 (2200) 232 cfs (3.17 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 1-8, Apr. 26 to June 3.

EAGLE RIVER BASIN

9-660. Black Gore Creek near Minturn, Colo.

Location.--Lat 39°35'50", long 106°15'55", on right bank 300 ft from U. S. Highway 6, 0.3 mile upstream from Timber Creek, 2½ miles upstream from mouth, and 9 miles east of Minturn, Eagle County.

Drainage area.--11.8 sq mi.

Records available.--October 1947 to September 1956, October 1963 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 9,180 ft (from topographic map). Prior to October 1963 water-stage recorder at site 15 ft upstream at same datum.

Average discharge.--10 years, 16.4 cfs (11,870 acre-ft per year).

Extremes.--Maximum discharge during year, 168 cfs June 7 (gage height, 4.37 ft), from rating curve extended above 84 cfs; maximum gage height, 4.51 ft Apr. 12 (backwater from ice); minimum daily discharge determined, 1.2 cfs Nov. 29, 30.
1947-56, 1963-64: Maximum discharge, 365 cfs June 7, 1952 (gage height, 5.42 ft); maximum gage height, 5.70 ft Mar. 31, 1956 (ice jam); minimum discharge, 0.9 cfs Jan. 11, 1950 (gage height, 2.79 ft).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station. Natural regulation by two small recreation lakes above station.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 8 to Nov. 15)

2.7	1.4	3.4	21
2.8	2.5	3.7	51
3.1	8.0	4.0	95
3.2	11	4.2	133

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	2.4	1.6					1.6	6.4	64	28	7.2	4.0
2	* 2.4	1.8					1.6	5.6	64	26	7.2	3.8
3	2.3	2.3					1.6	5.0	72	23	7.6	3.7
4	2.3	2.3	(*)		(*)	(*)	1.6	5.2	74	23	7.2	3.4
5	2.3	2.2					1.6	4.6	81	20	7.0	3.4
6	2.2	2.3					1.6	4.2	92	19	7.0	3.4
7	2.2	2.2		(*)			* 1.6	4.8	119	18	7.2	3.4
8	2.1	2.1					1.4	5.0	102	17	6.6	3.6
9	2.1	2.2					b 1.4	5.0	87	* 16	6.2	3.6
10	2.1	2.2					b 1.6	7.0	95	15	5.8	3.4
11	2.1	2.2					b 2.0	7.4	* 93	14	5.6	3.2
12	2.1	2.2					b 2.2	7.2	87	13	5.8	3.1
13	2.1	2.2					b 2.0	* 8.9	79	13	5.8	3.1
14	2.1	2.1					b 2.2	15	74	12	5.4	3.0
15	2.1	2.0					b 3.4	23	74	12	5.2	3.2
16	2.0	b 1.6	1.6	1.8	1.6	1.6	b 4.4	34	76	12	5.6	3.4
17	2.0	b 1.6					b 3.8	46	70	11	5.6	3.1
18	2.0	b 1.8					3.1	56	66	10	5.0	3.1
19	2.0	b 1.8					3.6	* 61	56	9.2	5.6	3.8
20	2.3	b 1.8					4.2	79	52	8.9	6.6	3.6
21	2.4	b 1.8					3.4	92	47	8.3	5.4	3.4
22	2.3	b 1.6					3.0	100	44	8.3	5.0	3.2
23	2.3	b 1.4					* 3.4	97	41	8.3	4.8	3.2
24	2.3	1.6					7.0	104	41	8.3	4.4	3.1
25	2.2	1.6					5.2	121	* 39	8.3	4.2	3.1
26	2.1	1.4					5.6	117	37	7.4	* 4.2	3.4
27	2.1	1.4					4.2	115	35	7.2	5.6	3.7
28	* 2.0	1.4					3.6	113	34	7.0	4.8	3.4
29	2.0	1.2					5.2	95	32	* 6.8	5.0	3.1
30	2.1	1.2					6.4	78	30	7.2	4.4	3.1
31	2.3							72		7.4	4.2	
Total	67.3	55.1	49.6	55.8	46.4	49.6	93.5	1,494.3	1,957	404.6	177.2	101.0
Mean	2.17	1.84	1.6	1.8	1.6	1.6	3.12	48.2	65.2	13.1	5.72	3.37
Ac-ft	133	109	98	111	92	98	185	2,960	3,880	803	351	200

Calendar year 1963: Max - Min - Mean - Ac-ft -
Water year 1963-64: Max 121 Min - Mean 12.4 Ac-ft 9,020

Peak discharge (base, 150 cfs)--May 25 (1800) 155 cfs (4.31 ft); June 7 (1800) 168 cfs (4.37 ft).

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--No gage-height record Oct. 1, 2, Nov. 16 to Apr. 7 (stage-discharge relation affected by ice during most of period).

9-661. Bighorn Creek near Minturn, Colo.

Location.--Lat 39°38'20", long 106°17'35", on left bank 0.3 miles upstream from U. S. Highway 6, 0.4 mile upstream from mouth, and 8.2 miles northeast of Minturn, Eagle County.

Drainage area.--4.37 sq mi.

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,600 ft (from topographic map).

Extremes.--Maximum discharge during year, 54 cfs June 7 (gage height, 3.43 ft), from rating curve extended above 34 cfs; minimum not determined.

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

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

2.2	0.3	2.7	6.5
2.3	.8	2.9	14
2.4	1.5	3.2	33
2.5	2.5	3.5	63
2.6	4.0		

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		0.9						2.3	16	29	7.9	2.6	
2		.9						2.3	17	30	9.0	2.5	
3		1.0				(*)		1.8	21	29	1.3	2.4	
4		1.1			(*)			1.6	25	27	1.1	2.3	
5		1.0	(*)				0.4	1.6	30	27	9.3	2.2	
6		.9						1.5	35	26	8.2	2.1	
7		1.0		(*)				1.8	44	24	7.6	2.2	
8		.9					(*)	2.0	37	23	6.8	2.2	
9		.9					.4	1.8	30	* 21	6.0	2.3	
10		.9					.4	2.4	37	22	5.5	2.1	
11		.9					.5	3.1	* 38	20	5.2	2.0	
12	1.0	.9					.6	2.6	37	20	6.0	1.8	
13		.9					.6	* 3.4	35	19	6.0	1.7	
14		.9					.6	7.2	32	17	5.0	1.6	
15		.9					.7	1.1	33	17	4.5	1.7	
16		.9	0.7	0.5	0.3	0.4		.9	19	38	18	4.8	2.0
17		.9						1.2	26	38	16	5.0	1.7
18		b .8						1.0	28	31	15	4.2	1.7
19		b .8						1.1	30	26	14	5.8	2.4
20		b .8						1.1	* 38	28	13	9.6	2.5
21		.9						1.0	41	29	12	6.2	2.4
22		.9						.9	40	27	13	5.0	2.2
23		.9						* 1.2	38	23	14	4.8	2.1
24	* 1.1	.9						1.6	36	27	13	4.0	2.0
25	1.1	.9						1.9	39	34	11	3.7	1.9
26	1.1	.9						1.5	43	* 34	10	* 3.4	1.9
27	1.1	.9						1.3	40	33	8.2	4.2	2.3
28	1.0	.8						1.2	34	32	6.8	3.7	2.1
29	*.9	.8						1.2	28	31	6.8	3.6	2.0
30	.9	.8						1.7	21	30	* 7.2	3.1	1.9
31	1.0							1.8		7.9	2.8		
Total	31.2	26.9	21.7	15.5	8.7	12.4	25.8	565.4	928	536.9	184.9	62.8	
Mean	1.01	0.90	0.7	0.5	0.3	0.4	0.86	18.2	30.9	17.3	5.96	2.09	
Ac-ft	62	53	43	31	17	25	51	1,120	1,840	1,060	367	125	

Calendar year 1963: Max - Min - Mean - Ac-ft -
 Water year 1963-64: Max 44 Min - Mean 6.61 Ac-ft 4,790

Peak discharge (base, 50 cfs)--May 26 (1800) 51 cfs (3.43 ft); June 7 (1800) 54 cfs (3.43 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 1-23, Nov. 21 to Apr. 8 (stage-discharge relation affected by ice during most of period).

EAGLE RIVER BASIN

9-664. Red Sandstone Creek near Minturn, Colo.

Location.--Lat 39°40'55", long 106°24'05", in sec.25, T.4 S., R.81 W. (projected), on left bank 150 ft upstream from road culvert, 1,200 ft upstream from Indian Creek, and 6.8 miles north of Minturn.

Drainage area.--7.27 sq mi.

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 9,150 ft (from topographic map).

Extremes.--Maximum discharge during year, 79 cfs May 26 (gage height, 3.89 ft), from rating curve extended above 43 cfs; minimum not determined.

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

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

2.4	0.7	3.0	13
2.5	1.5	3.2	20
2.6	2.9	3.4	31
2.7	4.7	3.8	69

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					1.1	2.6	30	17	4.0	1.8
2	*1.0	b 1.0					1.0	2.5	30	16	5.4	1.6
3	1.0	b 1.2				(*)	.9	2.2	35	15	6.3	1.5
4	1.0	b 1.2			(*)		.9	2.2	37	14	4.5	1.4
5	1.0	b 1.2	(*)				.9	2.3	40	12	4.2	1.4
6	1.0	b 1.0					.9	2.2	42	12	3.6	1.4
7	1.0	b 1.0		(*)			.9	2.3	50	11	3.3	1.8
8	.9	b 1.2					.9	2.5	45	9.7	3.1	1.8
9	.9	1.2					1.0	2.3	37	9.4	2.8	2.1
10	.9	1.3					1.0	2.9	41	10	2.6	1.8
11	.9	b 1.2					1.1	4.0	* 45	8.8	2.5	1.5
12	.9	b 1.0					1.2	3.3	43	7.6	2.9	1.5
13	1.0	b 1.0				0.9	1.1	4.3	38	7.0	3.4	1.4
14	.9	b 1.0					1.1	* 7.6	34	6.3	2.8	1.4
15	.9	b 1.0	0.9	0.8	0.7		1.3	11	35	6.8	2.2	1.8
16	1.0	b .8					2.2	15	37	6.8	2.5	1.9
17	1.0	.7					2.3	20	36	6.8	2.6	1.6
18	1.0	.7					1.6	25	31	5.6	2.1	1.6
19	1.1	.7					1.8	27	27	4.9	2.3	3.8
20	1.2	.8					2.2	35	27	4.7	3.1	2.9
21	1.4	1.0					1.8	* 41	25	4.2	2.1	2.6
22	1.3	1.0					1.8	46	24	4.2	1.8	2.3
23	1.3	1.0					* 2.1	48	22	4.9	1.5	2.1
24	1.3	1.0					2.9	56	22	5.4	1.3	1.9
25	1.3	1.0				(*)	3.4	62	* 23	4.0	1.3	1.8
26	1.2	1.0				.9	2.3	64	22	3.4	1.3	2.1
27	1.2	1.0				.9	1.9	62	21	3.3	* 2.9	2.2
28	1.1	.9				.9	1.8	59	20	3.1	2.6	2.1
29	* 1.1	.8				.9	2.2	47	19	* 2.9	2.6	2.2
30	1.2	.8				1.0	2.3	39	18	3.1	2.2	2.1
31	1.3					1.1		33		4.3	1.9	
Total	33.3	29.7	27.9	24.8	20.3	28.2	47.9	733.2	956	234.2	87.7	57.4
Mean	1.07	0.99	0.9	0.8	0.7	0.91	1.60	23.7	31.9	7.55	2.83	1.91
Ac-ft	66	59	55	49	40	56	95	1,450	1,900	465	174	114

Calendar year 1963: Max - Min - Mean - Ac-ft -
Water year 1963-64: Max 64 Min - Mean 6.23 Ac-ft 4,520

Peak discharge (base, 70 cfs)--May 26 (1900) 79 cfs (3.89 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 1, 2, Nov. 17 to Mar. 25 (stage-discharge relation affected by ice during most of period).

9-673, Alkali Creek near Wolcott, Colo.

Location.--Lat 39°45', long 106°40', in SE¼ sec.27, T.3 S., R.83 W., on right bank 100 ft below unnamed tributary, 100 ft above ford and headgate, and 3½ miles north of Wolcott.

Drainage area.--27 sq mi, approximately.

Records available.--October 1958 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is about 7,300 ft (estimated from nearby level line).

Average discharge.--6 years, 2.03 cfs (1,470 acre-ft per year).

Extremes.--Maximum discharge during year, 195 cfs Aug. 19 (gage height, 5.10 ft, from floodmark), from rating curve extended above 41 cfs as explained below; no flow for many days.

1958-64: Maximum discharge, 310 cfs Aug. 26, 1961 (gage height, 5.56 ft), from rating curve extended above 41 cfs on basis of slope-area measurement of peak flow; no flow at times most years.

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

Rating tables, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-28, Aug. 19 to Sept. 30)

Oct. 1 to Apr. 6				Apr. 7 to Sept. 30			
2.2	0.3	1.8	0	2.2	1.5		
2.3	1.0	1.9	.1	2.3	3.0		
2.4	2.5	2.0	.3	2.5	8.0		
		2.1	.6	2.6	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	0.1	0.6					2.0	2.7	3.4	0.6	1.0	0.1
2	.1	.7					1.8	1.6	3.4	.5	.7	.1
3	.1	.4	(*)				1.6	1.1	4.3	.5	.8	.1
4	.1	.6					1.8	1.3	2.7	.5	.5	.1
5	.1	*.4					1.8	1.3	1.6	.5	.5	.1
6	.1	.3		(*)			1.6	1.2	1.5	.5	1.5	.1
7	.1	.3					* 1.6	1.4	2.1	.8	.8	.1
8	.1	.3				0.5	1.8	1.3	3.0	* .7	.5	.1
9	* .1	.3					3.2	1.5	2.2	1.0	.5	.1
10	.1	.3					3.7	3.9	* 2.0	1.2	.5	.1
11	.1	.3					4.1	5.0	2.0	.7	.4	.1
12	.1	.3					2.4	* 4.8	1.8	.7	.8	.1
13	.1	.3					1.6	6.3	1.8	.7	.4	.1
14	.1	.3					2.8	8.0	1.8	.7	.4	.1
15	.2	.3					4.1	8.9	1.6	1.0	.3	.1
16	.2	b.2					3.9	10	1.5	.6	.3	.1
17	.2	b.1					2.8	10	1.2	.7	.2	.1
18	.2	.1					2.6	9.5	1.4	.7	.2	.1
19	.2	.1					2.8	10	1.2	.6	5.6	.1
20	.3	.2					2.6	9	1.0	.6	1.0	.1
21	.3	.2					2.1	8	1.0	.5	.6	.1
22	.3	.2					2.4	7	1.3	.6	.5	.1
23	.3	.1				1.0	2.2	6	1.1	.5	.4	.1
24	.3	.1			(*)		* 2.6	6.5	* 1.1	.7	.3	.1
25	.3	.1					2.2	5	1.0	.5	* .3	0
26	.3	.1		(*)			1.8	* 5	.8	.5	.3	0
27	.3	.1					1.5	5.0	.8	.5	.5	0
28	.3	.1					1.5	4.1	.7	* .5	.1	0
29	.3	.1					2.2	3.7	.9	.5	.1	0
30	.4	0					2.8	3.7	.8	.5	.1	0
31	.5	-----					-----	3.4	-----	.5	.1	-----
Total	6.3	7.5	0	0	0	23.5	71.9	156.2	51.0	19.6	20.2	2.4
Mean	0.20	0.25	0	0	0	0.8	2.40	5.04	1.70	0.63	0.65	0.08
Ac-ft	12	15	0	0	0	47	143	310	101	39	40	4.8

Calendar year 1963: Max 17 Min 0 Mean 0.90 Ac-ft 649

Water year 1963-64: Max 10 Min 0 Mean 0.98 Ac-ft 712

Peak discharge (base, 15 cfs).--Aug. 6 (1400) 17 cfs (2.81 ft); Aug. 19 (1615) 195 cfs (5.10 ft).

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

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 18 to Apr. 8 (stage-discharge relation affected by ice most of period), May 18-26, Aug. 7-25.

EAGLE RIVER BASIN

9-680. Brush Creek near Eagle, Colo.

Location.--Lat 39°33'40", long 106°46'20", in SE¼ sec.1, T.6 S., R.84 W., on left bank 150 ft downstream from Beecher Creek, 1½ miles downstream from confluence of East and West Brush Creeks, and 7½ miles southeast of Eagle.

Drainage area.--71 sq mi, approximately.

Records available.--October 1950 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,450 ft (estimated from nearby level line).

Average discharge.--14 years, 43.2 cfs (31,280 acre-ft per year).

Extremes.--Maximum discharge during year, 214 cfs June 16 (gage height, 3.65 ft); minimum daily, 13 cfs Jan. 28 to Feb. 1. 1950-64: Maximum discharge, 775 cfs June 7, 1952 (gage height, 5.10 ft), from rating curve extended above 400 cfs; minimum daily, 11 cfs Feb. 28, Mar. 14, 1962.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Small diversions for irrigation of hay meadows above and below station. One small diversion to Gypsum Creek above station. Slight regulation by Zurcher's Lake (capacity, 450 acre-ft) on West Brush Creek for irrigation of hay meadows above station.

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

2.4	13	3.0	66
2.6	24	3.5	180
2.8	41		

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	22	20	18	17	13	16	16	28	74	87	39	29
2	22	20	16	16	14	15	16	26	69	92	36	28
3	23	20	*16	16	15	15	15	24	71	92	50	27
4	22	20	17	15	16	*16	15	23	69	83	58	27
5	22	*21	17	15	*18	16	15	22	80	81	93	26
6	21	20	17	15	16	16	*15	22	90	81	55	26
7	21	20	17	16	16	15	15	22	138	73	55	27
8	20	20	16	*16	16	16	15	22	162	*66	49	28
9	*18	20	16	16	16	16	15	21	*118	65	45	30
10	19	20	17	16	16	16	15	22	122	73	40	29
11	19	20	16	15	16	15	16	25	140	66	39	27
12	19	20	15	15	16	16	16	*24	155	60	40	26
13	19	20	15	14	16	16	15	28	150	55	43	26
14	19	20	15	14	16	15	16	34	138	51	38	26
15	20	20	16	15	15	16	19	43	140	52	36	27
16	20	20	16	17	16	16	22	55	162	53	37	29
17	20	19	16	18	16	16	23	78	158	52	43	28
18	20	18	16	18	15	16	21	96	152	49	42	27
19	20	18	16	17	15	16	23	87	98	45	40	30
20	23	19	16	16	15	16	22	112	118	43	48	32
21	26	19	16	15	16	15	20	130	120	40	42	30
22	24	19	17	14	16	15	21	138	130	38	37	30
23	23	18	17	14	16	15	22	120	*87	39	34	28
24	24	19	17	14	15	14	25	132	94	45	32	26
25	22	19	17	14	15	14	26	150	112	44	*31	26
26	22	18	17	14	15	14	23	*145	112	38	30	26
27	21	19	17	14	16	14	21	*152	112	36	36	27
28	20	18	16	13	16	14	*21	128	118	33	35	27
29	19	17	17	13	16	15	23	122	105	33	32	26
30	20	18	17	13	-----	16	26	80	103	*36	31	26
31	21	-----	17	13	-----	16	-----	80	-----	33	30	-----
Total	651	579	509	468	453	477	573	2,191	3,497	1,734	1,286	827
Mean	21.0	19.3	16.4	15.1	15.6	15.4	19.1	70.7	117	55.9	41.5	27.6
Ac-ft	1,290	1,150	1,010	928	899	946	1,140	4,350	6,940	3,440	2,550	1,640

Calendar year 1963: Max 92 Min 15 Mean 29.2 Ac-ft 21,160
 Water year 1963-64: Max 162 Min 13 Mean 36.2 Ac-ft 26,280

Peak discharge (base, 160 cfs)--May 26 (2400) 195 cfs (3.64 ft); June 16 (0200) 214 cfs (3.65 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 8, 12-14, 23, 24, 30, Jan. 4-6, 9-22 (no gage-height record Jan. 13-21), Jan. 28-31, Feb. 1, 3, 4, Mar. 9, 11. No gage-height record Feb. 15 to Mar. 4.

9-700. Eagle River below Gypsum, Colo.

Location.--Lat 39°39'00", long 106°57'10", in NW¼ sec.5, T.5 S., R.85 W., on right bank 30 ft downstream from bridge on U. S. Highways 6 and 24 at Gypsum and 150 ft downstream from Gypsum Creek.

Drainage area.--957 sq mi.

Records available.--October 1946 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,270 ft.

Average discharge.--18 years, 574 cfs (415,600 acre-ft per year).

Extremes.--Maximum discharge during year, 2,950 cfs May 27 (gage height, 6.50 ft); minimum daily, 130 cfs Feb. 4, 5.
1946-64: Maximum discharge, 6,580 cfs June 11, 1952; maximum gage height, 9.17 ft June 29, 1957; minimum daily discharge, 110 cfs Feb. 21, 1955, Feb. 3, 1956, Dec. 26, 27, 1962.

Remarks.--Records good except those for periods of ice effect, which are fair. Transmountain diversions above station (see elsewhere in this report). Transbasin diversions above station from Robinson Reservoir (capacity, 2,520 acre-ft) to Tenmile Creek for mining development. Many small diversions for irrigation of hay meadows above station.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 24-29, May 17, 20-27, Sept. 16-30)

Oct. 1 to May 17				May 18 to Sept. 30			
3.4	125	5.0	870	3.5	155	5.0	1,100
3.8	200	5.3	1,160	3.8	230	6.0	2,200
4.0	255			4.2	430	6.5	2,820
4.4	440			4.6	720		

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	149	190	175	150	b140	148	212	306	1180	1300	350	280
2	140	182	173	165	b140	138	188	322	1120	1300	345	262
3	140	188	* 169	161	b140	138	165	286	1150	1220	465	250
4	140	200	165	161	b130	* 142	152	246	1230	1210	472	242
5	137	200	165	161	*b130	136	167	246	1360	1140	535	230
6	136	* 200	155	* 165	b140	134	* 169	228	1430	1110	451	227
7	134	198	165	154	b140	137	161	220	1810	* 1020	437	234
8	132	200	148	b150	b140	136	150	237	2390	930	430	227
9	131	192	154	b140	144	132	152	228	* 1680	828	406	230
10	* 132	198	159	150	142	136	161	231	1700	846	370	227
11	134	202	155	b150	146	140	167	* 310	1980	819	340	215
12	137	198	143	b150	140	143	180	310	2010	738	335	209
13	137	198	142	b140	143	136	161	322	1980	688	340	203
14	134	198	142	140	140	138	161	476	1890	648	310	203
15	136	195	169	150	142	138	185	710	1770	619	295	203
16	136	202	b160	152	149	137	200	888	2100	648	290	198
17	136	200	163	167	149	137	234	1130	1950	626	320	198
18	136	188	165	161	144	136	228	1560	1930	584	320	190
19	137	190	b160	154	140	134	237	1670	1390	535	345	195
20	142	200	b150	150	142	132	249	1970	1410	493	437	209
21	146	205	b160	149	143	132	225	* 2250	1390	451	458	203
22	148	215	b150	148	146	134	215	2400	1410	430	388	195
23	148	195	142	148	144	134	218	2260	* 1120	444	345	190
24	150	195	144	150	143	134	252	2120	1060	500	325	185
25	149	200	149	149	138	132	306	2520	1310	500	* 305	173
26	150	188	150	b140	140	132	269	2600	1460	418	285	169
27	152	190	155	b140	148	132	243	2650	1450	382	315	178
28	159	188	159	b140	144	132	* 218	2140	1510	* 345	320	185
29	165	178	159	b140	148	140	225	1970	1450	340	300	180
30	167	173	163	b140	-----	165	262	1510	1460	350	305	173
31	185	-----	143	b140	-----	202	-----	1270	-----	355	300	-----
Total	4,455	5,846	4,851	4,655	4,115	4,317	6,112	35,586	47,080	21,817	11,249	6,263
Mean	144	195	156	150	142	139	204	1,148	1,569	704	363	209
Ac-ft	8,840	11,600	9,620	9,230	8,160	8,560	12,120	70,580	93,380	43,270	22,310	12,420

Calendar year 1963: Max 1,370 Min 131 Mean 340 Ac-ft 245,900
Water year 1963-64: Max 2,650 Min 130 Mean 427 Ac-ft 310,100

Peak discharge (base, 3,500 cfs)--No peak above base.

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

COLORADO RIVER MAIN STEM

9-705. Colorado River near Dotsero, Colo.

Location.--Lat 39°38'40", long 107°04'40", in sec.6, T.5 S., R.86 W., on left bank about 500 ft south of U. S. Highways 6 and 24, 1½ miles west of Dotsero, and 1½ miles downstream from Eagle River.

Drainage area.--4,390 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 6,130 ft (from topographic map).

Records available.--October 1940 to September 1964.

Average discharge.--24 years, 2,128 cfs (1,541,000 acre-ft per year).

Extremes.--Maximum discharge during year, 6,460 cfs May 26 (gage height, 6.34 ft); minimum daily, 460 cfs Dec. 14, Jan. 15. 1940-64: Maximum discharge, 19,100 cfs June 8, 1952 (gage height, 11.56 ft); minimum daily, 350 cfs Jan. 5, 1944.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Natural flow of stream affected by transmountain diversions, storage reservoirs, power development, diversions for irrigation of 68,000 acres above station, and return flow from irrigated areas.

Cooperation.--Gage-height record collected in cooperation with The Public Service Co. of Colorado.

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

1.6	610	4.0	2,870
1.9	760	5.0	4,250
2.0	820	6.0	5,800
2.5	1,200	7.0	7,550
3.0	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	1,260	827	620	560	540	520	897	1,340	3,500	2,430	1,530	1,220
2	1,240	890	600	600	560	540	911	1,580	3,300	2,340	1,510	1,140
3	1,230	855	* 530	600	540	540	820	1,500	3,440	2,220	1,640	1,090
4	1,190	883	610	580	540	* 540	778	1,270	3,630	2,130	1,730	1,130
5	1,210	911	580	560	540	540	841	1,140	3,840	2,000	1,650	1,210
6	1,210	* 1,250	600	560	560	540	* 834	1,110	3,830	1,960	1,490	1,200
7	1,190	1,220	670	580	540	540	790	1,100	4,260	* 1,810	1,280	1,200
8	1,210	1,220	480	600	540	540	772	1,190	5,160	1,660	1,170	1,200
9	1,210	932	520	580	580	540	755	1,230	* 4,340	1,530	1,200	1,160
10	* 1,180	855	600	560	620	560	796	1,190	4,050	1,580	1,140	1,140
11	1,160	869	620	540	600	560	808	* 1,320	4,180	1,540	1,070	1,060
12	1,190	946	500	520	580	580	876	1,470	4,150	1,420	1,260	1,060
13	1,150	897	490	500	540	620	827	1,450	4,000	1,370	1,310	1,200
14	1,180	862	460	480	540	620	772	1,620	3,830	1,290	1,420	1,230
15	1,170	869	550	460	540	600	814	2,150	3,620	1,260	1,370	1,220
16	890	890	720	500	540	600	953	2,700	4,000	1,270	1,350	1,220
17	710	890	650	560	540	600	1,180	3,310	3,720	1,270	1,390	1,220
18	690	796	680	600	560	620	1,280	4,050	3,690	1,190	1,380	1,210
19	685	790	670	620	560	650	1,300	4,260	3,010	1,120	1,320	1,230
20	695	918	640	620	540	620	1,420	4,800	2,790	1,070	1,530	1,370
21	705	897	630	620	540	620	1,490	5,380	2,710	1,000	1,530	1,290
22	725	897	630	600	540	650	1,400	5,870	2,690	1,170	1,330	1,240
23	725	778	630	580	540	645	1,330	5,830	* 2,480	1,280	1,230	1,060
24	735	766	550	560	540	645	1,270	5,580	2,400	1,600	1,180	1,140
25	730	796	520	560	540	645	1,420	* 5,900	2,580	1,600	* 1,160	1,120
26	725	755	550	560	540	645	1,510	6,040	2,660	1,530	1,180	1,090
27	760	735	620	560	560	645	1,220	6,020	2,570	1,450	1,280	1,130
28	784	725	600	560	540	655	* 1,080	5,510	2,570	* 1,410	1,370	1,170
29	790	710	630	560	540	680	960	4,970	2,540	1,390	1,290	1,160
30	808	620	580	560	-----	755	1,060	4,140	2,660	1,420	1,290	1,190
31	827	-----	540	540	-----	841	-----	3,550	-----	1,540	1,270	-----
Total	29,964	26,249	18,270	17,440	15,980	18,896	31,164	98,570	102,000	47,850	41,900	35,300
Mean	967	875	589	563	551	610	1,039	3,180	3,400	1,544	1,352	1,177
Ac-ft	59,430	52,060	36,240	34,590	31,700	37,480	61,810	195,500	202,300	94,910	83,110	70,020

Calendar year 1963: Max 3,280 Min 460 Mean 1,189 Ac-ft 860,600
 Water year 1963-64: Max 6,040 Min 460 Mean 1,321 Ac-ft 959,200

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 30 to Mar. 18 (no gage-height record Dec. 12 to Feb. 24), Mar. 20, 21.

COLORADO RIVER MAIN STEM

193

9-725. Colorado River at Glenwood Springs, Colo.

Location.--Lat 39°33'00", long 107°19'20", in sec.9, T.6 S., R.89 W., on right bank at powerplant at Glenwood Springs, 10 ft from U. S. Highways 6 and 24 and half a mile upstream from Roaring Fork.

Drainage area.--4,560 sq mi, approximately.

Records available.--May 1899 to September 1964. Prior to October 1918, published as Grand River at Glenwood Springs.

Gage.--Water-stage recorder (digital). Datum of gage is 5,720.71 ft above mean sea level, adjustment of 1912. Prior to Jan. 1, 1900, wire-weight gage at railroad bridge 2,500 ft downstream at different datum. Jan. 1, 1900, to May 16, 1910, staff or float gage at present site and datum.

Average discharge.--65 years, 2,723 cfs (1,971,000 acre-ft per year).

Extremes.--Maximum discharge during year, 7,580 cfs May 25 (gage height, 7.16 ft); minimum daily, 432 cfs Mar. 23. 1899-1964: Maximum discharge, 30,100 cfs June 14, 1918 (gage height, 12.55 ft); minimum daily, 286 cfs Jan. 22, 1935.

Remarks.--Records good. Natural flow of stream affected by transmountain diversions, storage reservoirs, power development, diversions for irrigation of about 70,000 acres, and return flow from irrigated areas. Low flow regulated by Shoshone powerplant 6 miles above station.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Jan. 1-9)

Oct. 1 to Mar. 31		Apr. 1 to Sept. 30	
2.5	343	3.0	650
3.0	615	3.5	1,020
3.5	990	4.0	1,520
4.0	1,500	5.0	2,910
6.0	4,800	7.0	7,160

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	1,300	871	656	598	521	547	916	1,350	3,630	2,510	1,640	1,290
2	1,350	901	636	630	613	* 574	1,100	1,520	3,580	2,390	1,620	1,160
3	1,320	903	* 560	619	* 565	580	* 909	1,540	3,720	2,260	1,640	1,080
4	1,270	927	640	590	566	556	804	1,410	3,950	2,200	1,790	1,030
5	1,240	898	604	581	551	590	859	1,160	4,200	2,060	1,700	1,280
6	1,320	* 1,040	621	* 536	591	570	910	1,190	4,230	2,000	1,620	1,190
7	1,260	1,450	710	609	579	573	823	1,110	4,670	* 1,880	1,490	1,180
8	1,270	1,230	507	646	578	580	854	1,210	5,570	1,750	1,340	1,260
9	1,220	1,200	548	530	614	548	821	1,250	* 4,780	1,640	1,280	1,180
10	* 1,220	889	640	564	652	605	727	1,240	4,310	1,680	1,230	1,120
11	1,270	935	654	572	645	535	871	* 1,290	4,450	1,660	1,150	1,090
12	1,220	930	526	563	633	596	948	1,440	4,460	1,540	1,160	1,070
13	1,210	1,050	518	533	570	663	944	1,550	4,320	1,480	1,160	1,200
14	1,210	894	497	504	590	623	854	1,650	4,070	1,460	1,360	1,280
15	1,210	889	599	484	559	639	778	2,180	3,810	1,400	1,520	1,270
16	1,130	927	757	528	579	642	999	2,780	4,140	1,370	1,530	1,260
17	797	920	686	572	560	654	1,200	3,430	3,880	1,370	1,540	1,280
18	699	820	713	637	593	648	1,320	4,240	3,820	1,370	1,580	1,260
19	700	789	707	642	587	694	1,270	4,530	3,260	1,240	1,540	1,250
20	708	893	673	652	552	649	1,370	5,070	2,910	1,180	1,590	1,310
21	766	960	658	649	567	686	1,470	5,720	2,840	1,130	1,630	1,360
22	817	946	653	676	566	752	1,440	6,320	2,810	1,150	1,460	1,340
23	768	800	653	618	569	432	1,380	6,390	* 2,630	1,290	1,340	1,160
24	774	842	577	586	562	795	1,370	6,120	2,490	1,530	1,240	1,200
25	769	805	555	588	573	581	1,360	* 6,520	2,620	1,660	* 1,160	1,240
26	607	787	587	596	494	790	1,490	6,610	2,740	1,590	1,160	1,140
27	792	729	660	538	601	661	1,390	6,590	2,640	1,500	1,200	1,190
28	807	741	631	609	467	752	* 1,170	6,110	2,640	* 1,430	1,390	1,160
29	830	760	661	564	612	709	1,010	5,510	2,620	a 1,400	1,360	1,280
30	845	649	622	596	-----	786	967	4,660	2,710	a 1,400	1,340	1,250
31	900	-----	572	524	-----	897	-----	3,940	-----	a 1,500	1,320	-----
TOTAL	31,599	27,375	19,281	18,134	16,709	19,907	32,324	105,630	108,500	50,020	44,080	36,360
MEAN	1,019	913	622	585	576	642	1,077	3,407	3,617	1,614	1,422	1,212
AC-FT	62,680	54,300	38,240	35,970	33,140	39,480	64,110	209,500	215,200	99,210	87,430	72,120

CALENDAR YEAR 1963 MAX 4,050 MIN 497 MEAN 1,274 AC-FT 922,130
WATER YEAR 1963-64 MAX 6,610 MIN 432 MEAN 1,393 AC-FT 1,011,000

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

ROARING FORK BASIN

9-735. Roaring Fork at Aspen, Colo.

Location.--Lat 39°11'20", long 106°48'55", in sec.7, T.10 S., R.84 W., on right bank at Aspen, three-quarters of a mile upstream from Hunter Creek.

Drainage area.--109 sq mi.

Records available.--October 1910 to September 1921, October 1931 to September 1964 (discontinued). Monthly discharge only for some periods, published in WSP 1313. Records since May 24, 1935, are equivalent to prior records if diversion to Twin Lakes tunnel is added to flow past station.

Gage.--Water-stage recorder. Datum of gage is 7,884.58 ft above mean sea level, datum of 1929. Jan. 1, 1911, to Feb. 23, 1915, staff gage at bridge 1,800 ft upstream at different datum. Feb. 24, 1915, to Sept. 30, 1921, staff gage and Apr. 24, 1932, to Oct. 5, 1935, water-stage recorder, at bridge half a mile downstream at different datum.

Average discharge.--44 years, 151 cfs (109,300 acre-ft per year), including diversion by Twin Lakes tunnel.

Extremes.--Maximum discharge during year, 645 cfs May 22 (gage height, 3.23 ft); minimum not determined.
1910-21, 1931-64: Maximum discharge, 3,170 cfs June 18, 1917 (gage height, 7.2 ft, site and datum then in use, from floodmarks), from rating curve extended above 1,200 cfs; minimum daily prior to construction of Twin Lakes tunnel, 15 cfs July 15, 16, 1934; minimum daily since diversion through Twin Lakes tunnel, 0.4 cfs Sept. 24, 27, 28, 1956.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Transmountain diversion 15 miles upstream through Twin Lakes tunnel to Arkansas River basin since May 24, 1935 (see elsewhere in this report). Salvation ditch diverts water above station for irrigation of about 1,000 acres below.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 21-30)

0.4	14	1.5	110
.6	20	2.0	200
.8	30	2.5	370
1.0	48	3.0	590

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	26	22	20	18	15	17	49	192	178	66	54		
2	28	24	24				17	50	* 188	172	58	50		
3	29	28	24				16	43	200	164	74	44		
4	28	29	* 24				16	39	194	156	* 63	41		
5	28	27	24				15	43	215	148	75	39		
6	27	25	22					(*)	* 15	39	234	* 140	64	39
7	27	* 28	20						15	40	358	130	59	39
8	* 27	26	20						15	44	454	119	59	40
9	25	26	19						15	40	265	112	52	48
10	25	29	18				(*)		15	48	338	120	48	46
11	24	25	17			16	64	406	101	45	42			
12	24	25	17			17	52	366	95	47	39			
13	24	25	18			16	63	350	94	63	36			
14	24	28	19			16	* 102	298	86	50	33			
15	24	24	18			17	148	* 354	95	44	38			
16	24	28	18			20	205	414	116	45	49			
17	24	22	17			26	262	330	124	56	44			
18	24	22	17			32	342	322	107	44	40			
19	24	22	17			32	352	237	86	41	41			
20	32	22	17			33	442	246	78	68	44			
21	33	23	17			29	505	237	70	61	41			
22	32	24	17			31	545	237	69	51	43			
23	29	22	16			35	452	192	72	46	40			
24	29	22	17			44	474	192	94	41	38			
25	28	23	18			(*) 47	* 490	205	85	36	36			
26	26	22	19			15	36	520	200	68	36			
27	26	22	19			15	32	438	198	57	* 47			
28	25	22	19			15	* 32	338	202	58	67			
29	26	22	19			16	36	302	192	56	64			
30	26	22	17			16	42	215	178	54	63			
31	29	-----	19		-----	17	-----	208	-----	56	-----			
Total	829	735	589	620	522	469	745	6,974	7,995	3,160	1,689	1,237		
Mean	26.7	24.5	19.0	20	18	15.1	24.8	225	266	102	54.5	41.2		
Ac-ft	1,640	1,460	1,170	1,230	1,040	930	1,480	13,830	15,860	6,270	3,350	2,450		

Calendar year 1963: Max 237 Min 9 Mean 42.7 Ac-ft 30,940
Water year 1963-64: Max 545 Min - Mean 69.8 Ac-ft 50,710

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17-20, 23, 24, 28-30, Dec. 1-7, Mar. 26 to Apr. 17. No gage-height record Dec. 15 to Mar. 25 (stage-discharge relation affected by ice during most of period).

9-772. Fryingpan River near Ivanhoe Lake, Colo.

Location.--Lat 39°14'44", long 106°31'51", on left bank 200 ft downstream from Martin Creek, 2 miles southwest of Ivanhoe Lake, and 9 miles southeast of Norrie, Pitkin County.

Drainage area.--18.7 sq mi.

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 9,940 ft (from topographic map).

Extremes.--Maximum discharge during year, 285 cfs June 15 (gage height, 2.74 ft), from rating curve extended above 110 cfs; minimum not determined.

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)

1.0	6.5	2.0	60
1.2	10	2.3	122
1.5	20	2.5	185
1.8	38		

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	13	9	7.8					5.0	50	122	38	26
2	13	9	7.7					5.0	50	120	42	24
3	12	9.5	7.7					5.0	53	120	53	23
4	12	9.5	7.7					4.8	* 59	110	52	22
5	12	*10	7.7					4.8	70	110	58	21
6	12	11	7.7					* 4.6	92	105	49	21
7	12	10	7.6					4.6	144	94	47	20
8	12	10	6.8				4	4.8	139	81	43	19
9	12	10	6					5.0	103	77	38	20
10	12	9	5					5.5	147	74	35	20
11	11	9	4.4					6	168	70	32	18
12	11	9.5	4.2					5.5	160	70	43	17
13	11	9.5	4.2					6.5	154	* 63	46	17
14	11	9.5	4.2					9	147	63	37	17
15	11	9.5	4.4					12	164	79	33	18
16	11	9	4.6	3.5	3.5	3.8		18	168	70	36	19
17	11	8.5	4.6					25	157	74	35	17
18	11	8	4.6					40	142	58	30	16
19	11	8.5	4.4					60	110	54	34	17
20	15	8.5	4.2					90	105	48	48	17
21	14	8.5	4.0					130	108	44	37	18
22	13	8.5	3.8					120	105	43	33	17
23	12	8	4.0					120	* 81	50	30	15
24	12	8	4.2					130	100	58	29	15
25	12	8.5	4.4					140	130	46	* 27	14
26	12	8.6	4.2					150	142	42	27	15
27	11	8.6	4.0					140	147	37	34	17
28	11	8.4	4.0					110	144	34	32	16
29	11	8.2	4.0					96	133	* 36	34	15
30	11	8.0	3.8					67	* 122	36	29	14
31	9.5	-----	3.6		-----	-----	-----	56	-----	38	27	-----
Total	364.5	269.8	159.5	108.5	101.5	117.8	127.5	1,580.1	3,594	2,126	1,168	545
Mean	11.8	8.99	5.15	3.5	3.5	3.8	4.2	51.0	120	68.6	37.7	18.2
Ac-ft	723	535	316	215	201	234	253	3,130	7,130	4,220	2,320	1,080

Calendar year 1963: Max - Min - Mean - Ac-ft -
 Water year 1963-64: Max 168 Min - Mean 28.0 Ac-ft 20,360

Peak discharge (base, 250 cfs)--June 15 (2130) 285 cfs (2.74 ft)

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 31 to Nov. 25, Dec. 9-12. No gage-height record Dec. 13 to May 28 (stage-discharge relation affected by ice during most of period).

ROARING FORK BASIN

9-774. Fryingspan River near Norrie, Colo.

Location.--Lat 39°17'45", long 106°36'10", in sec.1, T.9 S., R.83 W. (projected), on right bank just upstream from bridge at Horseshoe Bend Ranch, 0.1 mile upstream from Ivanhoe Creek, and 4 miles southeast of Norrie.

Drainage area.--32.2 sq mi.

Records available.--October 1963 to September 1964.

Extremes.--Maximum discharge during year, 362 cfs June 7; maximum gage height, 3.47 ft May 21; minimum discharge not determined.

Remarks.--Records fair except those for periods of ice effect, indefinite stage-discharge relation, or no gage-height record, which are poor. No regulation or diversion above station.

Rating table, except periods of ice effect or indefinite stage-discharge relation
(gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 5-8, 11, 16-25, June 3, 4)

0.6	6.0	2.0	117
.9	19	2.5	187
1.3	48	3.0	290

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	15	(*)				8.5	e 12	114	156	57	* 36				
2	18	16					8.5	e 11	118	152	58	32				
3	18	17					8.5	e 10	*135	147	87	29				
4	18	16					8.5	e 10	140	137	83	28				
5	18	15					8	1.0	154	136	22	26				
6	18	14	8	7.5	7	7	7.5	8.8	178	133	75	26				
7	18	* 14					7	9.6	239	123	68	26				
8	18	13					7	13	257	109	62	25				
9	e 17	13					7	e 13	178	103	54	26				
10	e 17	13					7	e 15	231	100	48	26				
11	e 16	14					7	* 21	255	94	45	23				
12	e 15	13					7	e 20	241	92	59	21				
13	e 15	13					7	e 24	235	*85	70	20				
14	e 15	12					7.5	e 34	219	83	54	21				
15	e 15	13					8	e 50	227	102	47	23				
16	e 15	12	8	7.5	7	7	* 8.5	90	241	93	50	26				
17	e 15	11					9	114	219	105	53	23				
18	e 15	10					9.5	119	205	84	42	21				
19	e 18	10					9.5	* 152	156	78	47	25				
20	e 26	10					9.5	209	152	72	82	25				
21	e 22	11					9.5	237	147	65	57	24				
22	e 20	11					9.5	237	155	64	50	24				
23	e 18	11					10	229	*124	71	45	22				
24	e 17	11					10	241	133	97	41	21				
25	e 16	12					10	272	161	72	38	20				
26	e 15	11	8	7.5	7	7	e 10	285	170	63	36	20				
27	e 15	10					e 9.5	253	178	58	54	26				
28	e 14	9					e 9	215	180	*50	52	24				
29	e 15	9					e 9.5	185	170	48	53	22				
30	e 15	9					e 10	159	*154	*50	44	21				
31	16	-----					-----	-----	-----	122	-----	53	37	-----		
Total	526	368					248	232.5	203	217	257.0	3,360.4	5,466	2,875	1,740	732
Mean	17.0	12.3					8	7.5	7	7	8.57	108	182	92.7	56.1	24.4
Ac-ft	1,040	730					492	461	403	430	510	6,670	10,840	5,700	3,450	1,450

Calendar year 1963: Max - Min - Mean - Ac-ft -
Water year 1963-64: Max 285 Min - Mean 44.3 Ac-ft 32,180

Peak discharge (base, 350 cfs).--June 7 (2330) 362 cfs (3.22 ft).

* Discharge measurement made on this day.

e Stage-discharge relation indefinite.

Note.--Stage-discharge relation affected by ice Oct. 31 to Apr. 25 (no gage-height record Dec. 15 to Apr. 16).

9-776. Ivanhoe Creek near Norrie, Colo.

Location.--Lat 39°17'20", long 106°33'10", on right bank near Public Service powerline cabin, 1½ miles downstream from Lyle Creek, 3 miles upstream from mouth, and 6½ miles southeast of Norrie, Pitkin County.

Drainage area.--9.12 sq mi.

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 10,350 ft (from topographic map).

Extremes.--Maximum discharge during year, 120 cfs June 7 (gage height, 5.74 ft), from rating curve extended above 32 cfs; maximum gage height, 6.50 ft May 17 (backwater from ice); minimum discharge not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Transmountain diversions above station through Busk-Ivanhoe tunnel to Arkansas River basin (see elsewhere in this report).

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

3.2	0.8	3.9	9.0
3.3	1.3	4.4	25
3.4	2.0	4.8	45
3.7	5.3	5.4	90

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	1.4	}	}	}	}	}	2.0	26	* 1.2	2.5	1.0					
2	1.2	1.4											1.6	* 27	1.0	2.7	1.7
3	1.2	1.4											1.6	36	8.8	4.0	1.6
4	1.2	* 1.3											1.6	41	8.0	5.0	1.5
5	1.2	b 1.4											1.7	51	7.2	4.5	1.4
6	1.2	b 1.5											1.7	60	6.5	3.3	1.4
7	1.2	b 1.5											1.8	72	5.8	2.8	1.6
8	1.2	b 1.5										1.2	1.9	65	5.3	2.5	1.4
9	1.1	b 1.5											2.0	48	5.0	2.2	1.6
10	1.1	b 1.5											2.5	* 48	5.3	2.0	1.6
11	1.0	b 1.5											2.6	51	5.0	1.9	1.4
12	1.0	b 1.5											2.5	48	4.9	1.9	1.2
13	1.0	b 1.5											b 2.8	44	5.2	2.2	1.2
14	1.0	b 1.5											b 4.0	42	4.4	1.9	1.1
15	1.0	1.5						1.0	0.8	0.8	1.0		b 6	43	4.3	1.9	1.4
16	1.0	1.4						b 10	36	* 4.5	2.0	1.9					
17	1.0	1.3						b 28	26	6.2	2.4	1.4					
18	1.0	1.2						b 50	23	4.6	1.8	1.3					
19	1.0	1.2						69	18	3.6	2.3	1.9					
20	1.6	1.2						75	16	3.3	5.0	1.9					
21	1.9	1.2						30	15	2.9	2.5	1.7					
22	1.6	1.0						96	16	2.9	2.2	1.8					
23	1.5	1.1					2	94	16	3.4	1.9	1.6					
24	1.5	1.2						97	* 15	3.8	1.7	1.4					
25	1.4	1.0						90	15	3.0	* 1.6	1.4					
26	1.4	1.1						96	15	2.4	1.6	1.4					
27	1.3	1.2						76	15	2.1	2.5	2.4					
28	1.2	1.2						67	15	1.9	2.9	2.1					
29	1.2	1.2						56	14	* 1.8	3.4	1.9					
30	1.2	1.2					(*)	34	13	1.8	2.6	1.8					
31	b 1.4							30		2.3	2.1						
Total	38.0	39.6	31.0	24.8	23.2	31.0	48.0	1,044.3	977	148.2	77.8	47.9					
Mean	1.23	1.32	1.0	0.8	0.8	1.0	1.6	33.7	32.6	4.78	2.57	1.60					
Ac-ft	75	79	61	49	46	61	95	2,070	1,940	294	158	95					

Calendar year 1963: Max - Min - Mean - Ac-ft -
 Water year 1963-64: Max 90 Min - Mean 6.92 Ac-ft 5,020

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

Note.--No gage-height record Nov. 1-4, Nov. 15 to May 1 (stage-discharge relation affected by ice during part of periods).

ROARING FORK BASIN

9-778. South Fork Fryingpan River at upper station, near Norrie, Colo.

Location.--Lat 39°14'30", long 106°35'33", on left bank 5 miles upstream from mouth and 7 miles southeast of Norrie, Pitkin County.

Drainage area.--11.5 sq mi.

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 9,960 ft (from topographic map).

Extremes.--Maximum discharge during year, 205 cfs June 15 (gage height, 2.95 ft), from rating curve extended above 97 cfs; minimum not determined.

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

1.6	4.0	2.3	50
1.7	6.5	2.5	84
1.8	10	2.7	132
2.0	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	*6.0							4.4	31	78	23	* 16
2	6.0							4.4	29	73	24	14
3	5.8							4.2	31	69	33	14
4	5.5							4.2	38	65	33	13
5	5.2							4.2	48	67	32	12
6	5.2	(*)						4.0	59	60	28	12
7	5.0							4.2	95	56	25	12
8	4.8						3.5	4.2	74	50	23	12
9	4.5							4.4	*58	48	21	12
10	4.5							5.0	93	46	19	11
11	4.5							6	104	43	18	10
12	4.5							7	97	42	19	10
13	4.2							8	97	39	17	9.6
14	4.5							9.5	93	*42	17	9.0
15	4.5							11	116	48	16	10
16	4.5	4.6	4	3.6	3.2	3.2		16	104	44	19	12
17	4.5							25	104	43	19	9.6
18	4.8							50	82	35	16	9.3
19	5.0							60	67	33	19	9.3
20	6.8							75	69	29	31	9.3
21	6.5							95	74	27	20	9.6
22	5.8							90	*64	30	18	9.3
23	5.5						4	85	54	40	17	9.0
24	5.5							90	67	49	15	8.2
25	5.0							* 95	86	35	14	7.9
26	5.0							104	95	28	14	7.9
27	5.0							78	97	25	21	9.6
28	4.8							71	95	*23	20	8.6
29	4.8							56	86	23	22	7.9
30	4.8							38	*80	23	19	7.9
31	b 4.6							36		23	16	
Total	157.6	138.0	124	111.6	92.8	99.2	112.5	1,148.7	2,287	1,335	648	312.0
Mean	5.08	4.6	4	3.6	3.2	3.2	3.8	37.1	76.2	43.1	20.9	10.4
Ac-ft	313	274	246	221	184	197	223	2,280	4,540	2,650	1,290	619

Calendar year 1963: Max - Min - Mean - Ac-ft -
 Water year 1963-64: Max 116 Min - Mean 17.9 Ac-ft 13,040

Peak discharge (base, 200 cfs).--June 15 (1830) 205 cfs (2.95 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 1 to May 25 (stage-discharge relation affected by ice during most of period).

9-779. South Fork Fryingpan River near Norrie, Colo.

Location.--Lat 39°18'05", long 106°37'05", in sec.1, T.9 S., R.83 W. (projected), on right bank 100 ft downstream from trail crossing, half a mile upstream from mouth, and 3 miles southeast of Norrie.

Drainage area.--17.3 sq mi.

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,650 ft (from topographic map).

Extremes.--Maximum discharge during year, 228 cfs June 15 (gage height, 3.21 ft), from rating curve extended above 87 cfs; minimum not determined.

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

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

1.5	5.5	2.1	31
1.7	10	2.5	73
1.9	18	3.0	170

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	8.0	7	(*)					6.7	* 46	* 92	30	* 18				
2	8.0	6.5										6.7	49	86	29	16
3	7.8	7										6.5	56	81	42	16
4	7.8	7										6.5	58	77	39	15
5	7.5	* 7										6.3	67	76	42	15
6	7.5	6.5	4	3.8	3.6	3.6	3.6	5.9	80	73	36	15				
7	7.5	7.5										6.1	114	68	30	15
8	7.3	6.5										6.3	115	61	28	15
9	7.1	6.5										6.5	* 76	58	25	14
10	7.1	7										7.5	112	57	23	14
11	7.1	6.5										* 8.5	125	53	21	14
12	6.9	6										9	115	51	22	13
13	6.9	6										11	114	* 46	25	12
14	6.7	6										16	110	43	20	12
15	6.9	6.5										20	123	54	19	14
16	6.9	6						26	123	50	20	16				
17	6.7	5.5						40	121	50	23	14				
18	6.7	5.5						69	106	42	19	13				
19	6.9	5.5						80	80	38	19	14				
20	9.5	5.5						99	79	35	37	14				
21	9.2	5.5						119	81	32	26	14				
22	8.2	5.5						115	96	36	22	14				
23	7.8	5						106	* 69	44	19	13				
24	7.8	5.5						110	80	58	19	12				
25	7.5	5.5						127	97	41	17	12				
26	7.3	5						136	99	33	17	12				
27	7.3	5						110	102	30	22	15				
28	6.9	4.8						92	96	28	23	14				
29	7.1	4.6						77	96	28	23	13				
30	6.9	4.2						57	94	* 28	20	13				
31	7.3							51		30	18					
Total	230.1	178.1	124	117.8	104.4	111.6	123.0	1,543.5	2,769	1,579	774	421				
Mean	7.42	5.94	4	3.8	3.6	3.6	4.10	49.8	92.3	50.9	25.0	14.0				
Ac-ft	456	353	246	234	207	221	244	3,060	5,490	3,130	1,540	835				

Calendar year 1963: Max - Min - Mean - Ac-ft -
 Water year 1963-64: Max 136 Min - Mean 22.1 Ac-ft 16,020

Peak discharge (base, 220 cfs)--June 15 (2100) 228 cfs (3.21 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 1 to Apr. 30 (no gage-height record Nov. 16 to Apr. 23), May 3, 4, 9, 10, 12.

ROARING FORK BASIN

9-780, Fryngpan River at Norrie, Colo.

Location.--Lat 39°19'50", long 106°39'30", in NE¼ sec.28, T.8 S., R.83 W., on right bank 300 ft south of State Highway 104 at Norrie, 1 mile upstream from North Fork, and 2 miles downstream from Chapman Gulch.

Drainage area.--89.5 sq mi.

Records available.--October 1910 to March 1917, October 1947 to September 1964. Prior to October 1962, published as Fryngpan Creek at Norrie.

Gage.--Water-stage recorder. Altitude of gage is 8,410 ft (from river-profile map). February 1911 to March 1917 staff gages at site 200 ft upstream at different datums.

Average discharge.--23 years (1910-16, 1947-64), 124 cfs (89,770 acre-ft per year).

Extremes.--Maximum discharge during year, 800 cfs June 8 (gage height, 4.14 ft); minimum daily, 11 cfs Jan. 13.

1910-17, 1947-64: Maximum discharge, 1,780 cfs June 30, 1957; maximum gage height, 5.55 ft June 28, 1957; minimum daily discharge, 8 cfs Dec. 26, 1962, but may have been less during periods of no gage-height record.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Transmountain diversions above station through Busk-Ivanhoe tunnel to Arkansas River basin since June 1925 (see elsewhere in this report).

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

1.7	18	2.5	108
1.9	25	3.0	270
2.1	40	3.5	485
2.3	66	4.0	730

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	30	26	19	19	17	16	16	45	290	350	111	74
2	30	27	20	20	17	16	16	44	302	334	106	68
3	31	30	*19	20	17	*15	17	36	*346	322	173	62
4	30	29	19	17	15	14	18	34	372	302	168	56
5	29	28	19	17	16	15	18	35	408	298	179	55
6	29	*24	19	16	*17	15	17	32	458	286	144	56
7	31	26	20	17	16	14	16	34	585	263	124	58
8	*31	24	20	17	15	14	15	*36	625	235	116	53
9	30	24	19	*16	14	13	15	35	449	228	99	55
10	30	25	20	15	14	14	15	45	540	221	92	55
11	29	24	20	16	16	14	15	59	595	200	93	50
12	27	23	16	15	16	13	16	51	560	196	94	45
13	27	23	16	11	16	14	16	74	540	176	122	44
14	26	24	19	13	16	14	16	113	521	168	92	42
15	26	22	20	15	14	13	19	165	535	204	83	50
16	26	24	22	16	15	13	*26	218	555	186	87	62
17	26	24	22	17	15	14	26	294	521	*204	99	50
18	26	24	20	18	15	14	24	390	*494	165	81	45
19	26	22	19	20	16	14	24	472	400	144	87	51
20	42	22	19	20	15	13	26	560	386	127	176	52
21	40	24	19	20	14	13	25	625	382	119	116	48
22	33	24	19	19	15	14	24	650	395	127	94	50
23	29	24	17	18	15	14	24	620	322	144	83	45
24	29	24	18	17	14	14	26	630	350	221	77	41
25	29	26	19	17	13	13	26	675	400	144	*72	38
26	27	26	19	18	13	13	26	695	418	122	70	42
27	27	24	19	18	14	*13	26	620	426	106	103	56
28	25	22	19	17	15	13	26	540	418	96	106	52
29	26	20	19	17	15	13	34	476	404	94	111	46
30	26	19	17	17	-----	12	40	364	354	99	94	*45
31	29	-----	18	17	-----	14	-----	326	-----	*101	79	-----
Total	902	728	589	530	440	428	648	8,993	13,351	5,982	3,327	1,546
Mean	29.1	24.3	19.0	17.1	15.2	13.8	21.6	290	445	193	107	51.5
Ac-Ft	1,790	1,440	1,170	1,050	873	849	1,290	17,840	26,480	11,870	6,600	3,070

Calendar year 1963: Max 449 Min 9 Mean 75.8 Ac-ft 54,910
 Water year 1963-64: Max 695 Min 11 Mean 102 Ac-ft 74,320

Peak discharge (base, 760 cfs).--June 8 (0030) 800 cfs (4.14 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 17-19, Dec. 12 to Mar. 27, Mar. 29-31 (stage-discharge relation affected by ice during most of periods). Stage-discharge relation affected by ice Nov. 20 to Dec. 11, Mar. 28, Apr. 1-20, 23-26.

9-781. North Fork Fryingpan River above Cunningham Creek, near Norrie, Colo.

Location.--Lat 39°21'25", long 106°34'30", on left bank 1.2 miles upstream from Cunningham Creek and 5½ miles east of Norrie, Pitkin County.

Drainage area.--12.0 sq mi.

Records available.--October 1963 to September 1964.

Extremes.--Maximum discharge during year, 176 cfs June 7 (gage height, 3.31 ft), from rating curve extended above 110 cfs; minimum not determined.

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)

1.3	2.0	1.8	12
1.4	2.5	2.1	27
1.5	3.5	2.5	65
1.6	5.0	3.1	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	2.7	3.5						4.6	40	80	14	7.7
2	*2.7	4.2						4.4	42	*78	16	6.5
3	2.8	4.2						4.2	50	76	24	5.9
4	2.7	4.1						*4.2	58	71	22	5.0
5	2.6	4.2						4.4	71	66	22	4.7
6	2.6	4.1						4.0	87	65	18	4.7
7	2.6	4.4						4.0	130	57	15	4.6
8	2.6	*4.6					2.5	4.6	114	51	16	4.6
9	2.5	4.2						6	76	46	14	4.8
10	2.5	4.1						9	99	46	13	4.7
11	2.5	4.0						11	117	40	11	4.0
12	2.5	3.8						12	*110	40	11	3.8
13	2.4	3.8						15	100	34	11	3.4
14	2.4	3.8						25	94	29	9.4	3.4
15	2.4	3.6	2.5	1.5	1.5	2.5		40	103	*29	8.0	3.8
16	2.4	3.6						60	113	31	8.7	4.4
17	2.4	3.0						80	99	41	10	3.8
18	2.4	3.0						87	86	33	8.4	3.3
19	2.4	3.0						99	66	27	9.0	4.7
20	4.1	3.0						116	70	23	22	4.7
21	4.8	3.0						125	66	20	13	4.4
22	4.2	2.8						124	65	20	10	4.2
23	3.8	2.8					3.5	111	51	22	8.7	3.8
24	3.8	2.8						116	62	31	*7.4	3.6
25	3.8	2.8						130	*78	23	6.8	3.3
26	3.5	2.6						137	86	20	6.5	4.0
27	3.5	2.6						*114	86	*17	10	6.2
28	3.3	2.6						93	86	15	10	5.3
29	3.3	2.6						77	87	15	11	5.0
30	3.3	2.6						53	82	15	11	4.6
31	4.1	-----			-----			44	-----	14	9.0	-----
Total	93.6	103.4	77.5	46.5	43.5	77.5	90.0	1,718.4	2,474	1,175	385.9	136.9
Mean	3.02	3.45	2.5	1.5	1.5	2.5	3.0	55.4	82.5	37.9	12.4	4.56
Ac-ft	186	205	154	92	86	154	179	3,410	4,910	2,330	765	272

Calendar year 1963: Max - Min - Mean - Ac-ft -
 Water year 1963-64: Max 137 Min - Mean 17.5 Ac-ft 12,740

Peak discharge (base, 150 cfs).--May 26 (2000) 168 cfs (3.25 ft); June 7 (2030) 176 cfs (3.31 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 17 to May 17 (stage-discharge relation affected by ice during most of period).

ROARING FORK BASIN

9-782. Cunningham Creek near Norrie, Colo.

Location.--Lat 39°20'05", long 106°34'30", on left bank half a mile upstream from unnamed tributary, 1½ miles upstream from mouth, and 4½ miles east of Norrie, Pitkin County.

Drainage area.--7.12 sq mi.

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 9,600 ft. (from topographic map).

Extremes.--Maximum discharge during year, 108 cfs June 7 (gage height, 2.29 ft), from rating curve extended above 49 cfs; minimum not determined.

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

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

1.0	1.1	1.5	7.5
1.1	1.4	1.6	12
1.2	2.0	1.8	24
1.3	3.0	1.9	33
1.4	4.8	2.2	86

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	b 1.2						4.0	26	*41	6.2	2.8
2	1.2	b 1.4						4.0	*26	40	7.2	2.4
3	1.2	b 1.4						4.0	30	39	1.1	2.3
4	1.2	* 1.5						4.0	36	33	1.1	2.1
5	1.2	1.5						3.8	41	29	1.1	2.1
6	1.2	1.5						3.6	52	27	7.5	2.0
7	1.2	1.5						3.8	67	23	6.4	2.0
8	1.1	1.5						4.0	65	21	5.9	2.1
9	1.1	1.5						4.0	46	20	5.1	2.2
10	1.1	1.3						5.0	*60	20	4.3	2.0
11	1.1	1.2	1	0.8	0.8	1	2	7	69	16	4.1	1.8
12	1.1							9	63	16	3.4	1.7
13	1.1							12	60	17	3.4	1.5
14	1.1							15	56	*14	3.0	1.5
15	1.1							18	61	14	2.9	1.9
16	1.1							24	60	13	3.5	2.4
17	1.1							30	56	22	3.9	1.8
18	1.1							36	43	18	2.8	1.7
19	1.1							41	41	14	3.5	2.5
20	1.9							51	39	11	7.9	2.6
21	2.2	56	39	9.2	4.4	2.2						
22	1.8	60	39	8.4	3.5	2.1						
23	1.5	56	31	13	2.9	1.9						
24	1.5	58	*36	16	2.5	1.8						
25	1.4	63	43	11	*2.4	1.8						
26	1.4	71	47	8.4	2.4	1.9						
27	1.5	60	46	7.2	4.1	2.9						
28	1.3	47	43	6.2	3.9	2.6						
29	1.3	44	44	* 5.6	4.6	2.1						
30	1.3	32	40	5.3	4.1	2.0						
31	b1.2	29	5.9	3.0								
Total	39.9	38.3	31	24.8	23.2	31	82.5	859.2	1,405	544.2	151.8	62.7
Mean	1.29	1.28	1	0.8	0.8	1	2.8	27.7	46.8	17.6	4.90	2.09
Ac-ft	79	76	61	49	46	61	164	1,700	2,790	1,080	301	124

Calendar year 1963: Max - Min - Mean - Ac-ft -
 Water year 1963-64: Max 71 Min - Mean 9.00 Ac-ft 6,530

Peak discharge (base, 100 cfs).--June 7 (2000) 108 cfs (2.29 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 11 to May 17 (stage-discharge relation affected by ice during most of period).

9-783, North Fork Fryingspan River below Cunningham Creek, near Norrie, Colo.

Location.--Lat 39°20'35", long 106°36'40", in sec.24, T.8 S., R.83 W., on right bank 200 ft upstream from campground, 1.2 miles downstream from Cunningham Creek, and 2½ miles east of Norrie.

Drainage area.--24.2 sq mi.

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,770 ft (from topographic map).

Extremes.--Maximum discharge during year, 272 cfs June 7 (gage height, 2.29 ft), from rating curve extended above 180 cfs; minimum not determined.

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)

0.7	2.0	1.2	38
.8	4.0	1.5	95
.9	8.0	2.2	245
1.0	15		

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	5.5						14	91	*123	23	12
2	4.0	5.5						14	97	119	25	11
3	3.8	5.5						13	*113	113	38	8.7
4	3.8	6.0	(*)					*12	121	111	35	7.6
5	3.8	6.0						12	135	105	35	7.2
6	3.6	6						10	155	99	29	7.2
7	3.6	*6.5						10	199	91	23	6.8
8	3.4	6.5				3.0	4.2	11	193	79	24	6.8
9	3.4	6						12	139	69	21	7.6
10	3.2	6.0						14	171	69	18	7.2
11	3.2	5.5						20	*188	63	17	6.4
12	3.2	5.5						21	175	59	15	5.6
13	3.2	5.5						29	167	55	16	5.2
14	3.2	6.0						50	159	43	14	5.2
15	3.2	5.5					(*)	95	167	*45	12	6.8
16	3.2	5	3.5	2.5	2.5			123	173	45	13	9.4
17	3.4	5						151	153	65	17	6.8
18	3.4	5						165	141	52	13	6.0
19	3.4	5						173	111	40	12	8.0
20	6.4	5						195	113	35	37	10
21	8.0	5				3.5	8.5	204	109	33	23	8.0
22	7.2	4.8						211	111	34	17	7.6
23	6.0	4.8						190	87	38	14	6.8
24	6.0	4.8						179	97	50	*12	6.0
25	5.6	4.8						211	*129	34	11	5.6
26	5.2	4.6						225	139	29	10	6.0
27	5.2	4.4						*195	141	*26	16	12
28	4.8	4.2				4.0	11	161	137	22	17	10
29	4.8	4.0						145	135	21	18	8.7
30	4.8	4.0						111	127	21	18	7.6
31	5.6							97		21	14	
Total	135.6	157.9	108.5	77.5	72.5	104.0	203.0	3,073	4,173	1,809	607	229.8
Mean	4.37	5.26	3.5	2.5	2.5	3.4	6.8	99.1	139	58.4	19.6	7.66
Ac-ft	269	313	215	154	144	206	403	6,100	8,280	3,590	1,200	456

Calendar year 1963: Max - Min - Mean - Ac-ft -
 Water year 1963-64: Max 225 Min - Mean 29.4 Ac-ft 21,330

Peak discharge (base, 250 cfs).--May 26 (2200) 268 cfs (2.28 ft); June 7 (2130) 272 cfs (2.29 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 1-3, 6-9, 11-13, Nov. 15 to Dec. 10. No gage-height record Dec. 11 to May 4 (stage-discharge relation affected by ice most of period).

ROARING FORK BASIN

9-785. North Fork Fryingpan River near Norrie, Colo.

Location.--Lat 39°20'40", long 106°39'50", in N½ sec.21, T.8 S., R.83 W., on left bank 1,000 ft upstream from bridge on State Highway 104, a quarter of a mile upstream from mouth, half a mile downstream from Last Chance Creek, and 1 mile northwest of Norrie.

Drainage area.--41.2 sq mi.

Records available.--October 1910 to March 1917, October 1947 to September 1964. Prior to October 1962, published as North Fork Fryingpan Creek near Norrie.

Gage.--Water-stage recorder. Altitude of gage is 3,400 ft (from topographic map). Feb. 18, 1911, to Mar. 31, 1917, staff gage at site 10 ft downstream at different datum. Oct. 1, 1947, to Sept. 30, 1949, water-stage recorder at present site at datum 2.00 ft higher.

Average discharge.--23 years (1910-16, 1947-64), 52.3 cfs (37,860 acre-ft per year).

Extremes.--Maximum discharge during year, 374 cfs May 21 (gage height, 4.04 ft); minimum not determined.
1910-17, 1947-64: Maximum discharge, 1,320 cfs June 6, 1958, from rating curve extended above 700 cfs; maximum gage height, 5.80 ft May 21, 1948 (present datum); minimum daily discharge, 0.5 cfs Nov. 1, 1950.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. One small diversion bypasses station for domestic use and irrigation of pasture.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 9-30)

1.9	2.0	2.6	25	3.3	113
2.0	3.5	2.8	39	3.6	195
2.2	9.0	3.0	61	3.9	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	7.5					9	26	123	142	27	14
2	6.0	11					9	26	123	137	30	13
3	5.8	8.7				(*)	8.5	21	*148	130	50	11
4	5.2	8.4					7.5	19	161	125	43	10
5	5.0	8.4	(*)				8	20	189	113	46	9.6
6	4.8	*8.7			(*)		8	19	202	109	34	9.3
7	4.5	9.0					8	19	252	98	29	9.6
8	*4.0	8.4				3	7.5	*21	254	84	30	9.3
9	4.0	7.5		(*)			7.5	20	183	74	27	11
10	3.8	7					7.5	33	220	74	24	10
11	3.5	7					8	45	246	68	22	8.7
12	3.5	7					8.5	46	238	64	20	7.5
13	3.5	7.5					8	64	226	61	22	6.6
14	3.5	7					7.5	92	209	50	19	6.6
15	3.4	6.5					*9	132	212	*53	17	7.5
16	3.2	6	4	3	3		14	192	223	55	17	11
17	3.0	6					17	216	206	65	22	7.5
18	2.3	6.5					17	246	*186	55	16	6.3
19	2.4	6.5					16	238	140	46	16	9.3
20	7.5	6.5					15	256	148	40	40	11
21	11	7				4	16	300	140	36	24	9.3
22	9.6	7					16	256	142	38	20	9.3
23	7.8	7					*18	254	113	44	17	7.8
24	7.2	7.5					22	262	127	55	14	6.9
25	6.9	7.5					24	262	164	46	*13	6.6
26	6.3	7.5					24	270	170	36	12	7.8
27	6.3	7					22	262	167	30	20	16
28	5.8	6.5				6	20	238	164	28	20	15
29	5.5	6					21	206	164	28	20	12
30	5.8	5.5					24	153	153	*28	20	*11
31	7.5						135			29	16	
Total	164.6	219.6	124	93	87	121	407.5	4,369	5,399	2,041	747	290.5
Mean	5.31	7.32	4	3	3	3.9	13.6	141	180	65.8	24.1	9.68
Ac-ft	326	436	246	184	173	240	808	8,670	10,710	4,050	1,480	576

Calendar year 1963: Max 216 Min - Mean 34.3 Ac-ft 24,860
Water year 1963-64: Max 300 Min - Mean 38.4 Ac-ft 27,900

Peak discharge (base, 420 cfs).--No peak above base.

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 9 to Apr. 23 (no gage-height record Nov. 17 to Apr. 23). No gage-height record July 16-30.

9-789. Lime Creek near Troutville, Colo.

Location.--Lat 39°26'00", long 106°35'45", in sec.19, T.7 S., R.82 W. (projected), on left bank 600 ft upstream from Eagle Lake and 2 miles northeast of Troutville.

Drainage area.--4.56 sq mi.

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 10,080 ft (from topographic map).

Extremes.--Maximum discharge during year, 84 cfs June 15 (gage height, 2.71 ft); minimum not determined.

Remarks.--Records good except those for period of 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)
(Shifting-control method used Aug. 1 to Sept. 13)

1.3	1.1	1.8	14
1.4	2.0	2.1	30
1.5	3.5	2.5	65
1.6	6.0		

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								3.8	15	44	11	4.2
2								3.6	14	46	11	3.5
3								3.2	*16	45	21	2.9
4								3.0	19	42	20	2.6
5								2.8	26	42	18	2.2
6								2.8	34	40	16	2.0
7								3.0	53	37	21	1.7
8							1.6	3.2	50	33	25	2.0
9								3.8	26	29	20	2.9
10								5.0	32	29	15	2.8
11								4.6	*45	28	12	3.0
12								4.6	50	27	11	2.4
13								10	51	24	14	2.3
14								16	44	22	11	1.8
15								22	53	25	9.2	2.8
16	2.2			1				30	63	34	8.4	4.0
17		1.4			1			34	58	*32	10	3.8
18			1.2					40	48	26	8.8	3.0
19								46	29	23	8.1	3.4
20								*55	35	20	13	4.5
21								62	36	18	16	4.2
22								61	37	18	12	3.8
23								53	25	16	9.2	3.5
24								48	30	18	6.7	3.0
25								57	53	15	6.0	2.8
26								55	*53	13	*5.2	2.8
27								43	51	12	6.4	3.5
28								32	52	10	7.4	3.5
29								28	50	11	7.0	3.8
30								18	46	*13	7.0	3.4
31								17		12	5.5	
Total	68.2	42.0	37.2	31	29	37.2	61.5	770.4	1,193	804	377.9	92.1
Mean	2.2	1.4	1.2	1	1	1.2	2.05	24.9	39.8	25.9	12.2	3.07
Ac-ft	135	83	74	61	58	74	122	1,530	2,370	1,590	750	183

Calendar year 1963: Max - Min - Mean - Ac-ft -
Water year 1963-64: Max 63 Min - Mean 9.68 Ac-ft 7,030

Peak discharge (base, 80 cfs)--June 15 (2300) 84 cfs (2.71 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1 to May 20 (stage-discharge relation affected by ice most of period).

ROARING FORK BASIN

9-802. Fryingpan River at Ruedi, Colo.

Location.--Lat 39°21'40", long 106°49'10", in NW¼ sec.18, T.8 S., R.84 W., on right bank 200 ft upstream from Rocky Fork Creek (formerly Rocky Fork), half a mile downstream from Ruedi Creek, and 1 mile west of Ruedi.

Drainage area.--223 sq mi.

Records available.--October 1959 to September 1964 (discontinued). Prior to October 1962, published as Fryingpan Creek at Fuedi.

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

Average discharge.--5 years, 200 cfs (144,800 acre-ft per year).

Extremes.--Maximum discharge during year, 1,910 cfs May 21 (gage height, 4.84 ft); minimum daily, 24 cfs Jan. 14, Feb. 8-10, 15, 16, 21, 22, 25-27, Mar. 4, 5, 9-12.

1959-64: Maximum discharge, 1,910 cfs May 21, 1964 (gage height, 4.84 ft); minimum daily, 22 cfs Jan. 11, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of several hundred acres and small transmountain diversions above station to Arkansas River basin.

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

2.1	24	3.2	340
2.3	45	4.0	920
2.5	90	4.6	1,600
2.8	175		

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	55	47	34	32	30	26	32	100	600	635	182	130
2	51	45	34	34	28	26	30	105	*558	614	169	120
3	49	57	32	34	26	*26	29	92	642	572	258	110
4	49	61	*30	32	26	24	28	80	678	551	250	100
5	49	55	30	30	26	24	29	92	758	502	282	100
6	47	45	30	30	*26	26	28	75	848	488	230	110
7	45	*55	30	32	26	26	28	72	1,280	460	203	100
8	*45	45	30	34	24	26	28	*85	1,450	418	206	95
9	44	49	32	*32	24	24	*28	82	884	382	186	100
10	43	51	34	28	24	24	28	102	1,050	382	169	95
11	43	43	30	26	26	24	29	151	1,200	364	154	90
12	43	43	28	26	28	24	33	130	1,440	340	151	80
13	43	43	30	26	28	26	30	178	1,100	330	186	80
14	41	49	32	24	28	26	30	262	1,040	300	157	75
15	40	41	34	26	24	26	39	382	1,050	*330	142	75
16	40	b 40	32	28	24	26	49	621	1,180	305	133	100
17	41	42	32	30	26	26	57	782	1,050	352	166	95
18	41	40	30	30	28	28	57	1,120	990	325	136	75
19	41	38	30	30	28	28	59	1,130	734	274	130	80
20	59	40	30	30	26	28	68	1,400	734	246	234	90
21	70	42	30	30	24	26	61	1,510	696	214	189	90
22	61	40	28	28	24	26	61	1,550	758	214	160	80
23	55	42	26	26	26	28	63	1,430	607	214	145	90
24	53	42	28	28	26	30	92	1,490	614	352	133	80
25	53	42	30	30	24	30	108	1,550	*734	254	124	70
26	51	40	32	32	24	*28	88	1,600	742	203	*115	70
27	49	40	32	32	24	31	82	1,480	734	189	142	95
28	47	36	32	30	26	30	61	1,210	742	175	157	90
29	44	34	30	28	26	b 32	75	1,100	718	166	163	80
30	53	32	28	28	-----	b 36	90	900	656	175	157	90
31	57	-----	30	30	-----	b 32	-----	750	-----	*175	136	-----
Total	1,502	1,319	950	916	750	843	1,520	21,601	26,257	10,501	5,345	2,715
Mean	48.5	44.0	30.6	29.5	25.9	27.2	50.7	697	875	339	172	90.5
Ac-ft	2,980	2,620	1,880	1,820	1,490	1,670	3,010	42,840	52,080	20,830	10,600	5,390

Calendar year 1963: Max 820 Min 22 Mean 143 Ac-ft 103,300
 Water year 1963-64: Max 1,600 Min 24 Mean 203 Ac-ft 147,200

Peak discharge (base, 1,500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-21	2300	4.84	1,910	6-16	0130	4.54	1,520
6-8	0200	4.78	1,830				

* Discharge measurement made on this day.
 b Stage-discharge relation affected by ice.
 Note.--No gage-height record Nov. 17 to Mar. 26 (stage-discharge relation affected by ice during part of period), May 29 to June 1, Sept. 1-30.

9-808. West Sopris Creek near Basalt, Colo.

Location.--Lat 39°20'10", long 107°05'40", in S½ sec.22, T.8 S., R.87 W., on right bank 30 ft downstream from private bridge, 2¼ miles upstream from East Sopris Creek, and 4 miles southwest of Basalt.

Drainage area.--14.4 sq mi.

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,210 ft. (from topographic map).

Extremes.--Maximum discharge during year, 48 cfs May 17 (gage height, 2.59 ft), from rating curve extended above 13 cfs; minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Small diversions above station for irrigation of hay meadows. Water exported from Dinkle Lake above station to Prince Creek drainage.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 15)

1.5	1.0	2.0	6.2
1.6	1.3	2.1	9.0
1.7	1.8	2.3	18
1.8	2.7	2.5	35

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	1.3	1.3					1.8	3.9	11	8.4	2.8	2.6
2	* 1.3	1.2					1.8	3.8	10	7.0	2.7	2.6
3	1.3	1.2					1.7	3.9	12	6.8	2.8	2.5
4	1.3	1.2					1.7	3.9	* 12	7.0	2.7	2.5
5	1.3	1.2	(*)				2.0	3.8	12	7.0	2.8	2.5
6	1.3	1.2					2.2	3.4	13	6.8	2.7	2.5
7	1.2	* 1.2					1.9	3.4	14	6.2	2.6	2.5
8	1.2	1.2					1.8	3.3	17	6.2	2.5	2.5
9	1.5	1.2		(*)			2.2	3.3	9.0	6.2	2.4	2.7
10	1.7	1.1					2.1	3.6	8.2	5.2	2.3	3.4
11	1.7	1.1					2.6	3.9	* 7.6	5.2	2.6	3.4
12	1.7	1.1					2.3	* 4.2	8.2	5.2	2.5	3.4
13	1.7	1.1				1.1	2.1	5.2	7.6	4.8	2.7	3.4
14	1.7	1.1					* 2.5	7.9	8.2	4.4	2.6	3.4
15	1.7	1.1					3.9	14	7.6	4.0	2.6	3.8
16	1.7	b 1.0	0.8	1.0	1.0		5.0	22	* 7.3	4.0	2.7	3.4
17	1.7	b 1.0					3.8	31	7.9	3.6	2.6	3.4
18	1.7	b 1.1					3.6	35	7.9	3.2	2.5	3.3
19	1.7	b 1.1					3.8	33	7.0	2.8	3.0	3.4
20	2.2	b 1.1					3.2	30	7.3	2.8	3.0	3.2
21	1.7	1.1					3.2	27	8.2	2.8	2.8	3.2
22	1.6	1.1					3.3	23	10	2.8	2.8	3.0
23	1.6	1.0					3.3	16	8.2	3.0	2.7	2.8
24	1.6	1.0					* 3.6	12	8.7	3.0	2.6	2.8
25	1.4	1.1				(*)	3.6	* 9.4	8.2	2.7	2.5	2.7
26	1.4	1.1				1.2	3.3	9.0	6.8	2.4	2.6	3.0
27	1.4	1.1				1.2	3.3	7.6	7.3	2.5	3.3	2.8
28	1.3	1.1				1.2	3.0	5.6	7.9	2.7	3.0	2.7
29	1.3	1.1				1.3	3.2	6.0	* 8.2	2.8	* 2.7	2.7
30	1.3	1.0				1.4	3.2	5.4	8.7	3.0	2.7	2.7
31	1.4	-----				1.6	-----	7.0	-----	* 3.0	2.6	-----
Total	46.9	33.5	24.8	31.0	29.0	35.4	85.0	350.5	277.0	137.5	83.4	88.8
Mean	1.51	1.12	0.8	1.0	1.0	1.14	2.83	11.3	9.23	4.44	2.69	2.96
Ac-ft	93	66	49	61	58	70	169	695	549	273	165	176

Calendar year 1963: Max - Min - Mean - Ac-ft -
Water year 1963-64: Max 35 Min - Mean 3.34 Ac-ft 2,420

Peak discharge (base, 40 cfs).--May 17 (2300) 48 cfs (2.59 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 1, 2, Nov. 21 to Mar. 25 (stage-discharge relation affected by ice during most of period).

ROARING FORK BASIN

9-815.5. Crystal River at Placita, Colo.

Location.--Lat 39°08'30", long 107°15'20", in SE¼ sec.31, T.10 S., R.88 W., on right bank 0.1 mile downstream from highway bridge, 0.4 mile upstream from Bears Gulch, 0.7 mile north of Placita, and 3 miles upstream from Coal Creek.

Drainage area.--107 sq mi.

Records available.--October 1959 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 7,371.89 ft above mean sea level (levels by U. S. Bureau of Reclamation).

Average discharge.--5 years, 198 cfs (143,300 acre-ft per year).

Extremes.--Maximum discharge during year, 1,490 cfs June 15 (gage height, 5.50 ft); minimum daily, 20 cfs Feb. 15. 1959-64: Maximum discharge, 1,680 cfs June 27, 1962 (gage height, 5.65 ft), from rating curve extended above 1,100 cfs; minimum daily, 20 cfs Mar. 6, 12, 1961, Feb. 15, 1964.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. A few small diversions above station for irrigation of hay meadows.

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

Oct. 1 to Mar. 31		Apr. 1 to Sept. 30	
2.2	33	2.1	21
2.4	50	2.3	36
		2.6	68
		3.0	128
		3.5	250
		4.0	420
		4.5	680
		5.0	1,060
		5.5	1,510

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	45	42	36	30	28	26	30	109	590	852	170	104
2	43	40	* 34	30	26	* 28	28	107	540	792	175	96
3	42	42	32	28	24	26	26	90	608	771	232	89
4	42	44	32	26	22	24	26	79	* 620	708	166	96
5	41	45	34	26	22	24	27	76	743	694	* 141	82
6	40	43	34	28	* 24	26	26	57	860	656	139	93
7	40	* 44	34	30	26	26	26	68	1,140	596	132	88
8	40	42	30	30	26	26	24	78	1,100	540	132	83
9	39	42	34	26	26	24	* 25	66	750	* 510	130	90
10	39	41	36	28	24	24	26	79	820	480	123	88
11	* 39	40	34	32	24	26	27	112	996	436	117	91
12	39	39	32	30	24	28	25	130	1,050	416	117	76
13	39	39	32	28	22	26	27	192	1,020	388	190	72
14	38	39	30	* 26	24	26	28	268	988	359	142	74
15	37	38	32	28	20	26	37	362	* 1,080	345	123	83
16	37	42	34	28	22	26	53	465	1,180	370	133	89
17	37	36	34	30	24	28	57	602	1,110	373	159	83
18	36	36	34	30	24	28	52	757	956	331	130	81
19	36	36	34	30	24	28	58	924	708	301	135	88
20	49	36	34	30	24	26	51	1,070	743	277	220	85
21	46	36	36	30	22	26	56	1,130	820	253	168	82
22	42	38	34	30	24	26	60	1,150	785	262	141	82
23	41	36	26	28	24	26	67	1,100	572	256	125	78
24	41	39	30	30	22	26	81	1,120	632	232	114	74
25	41	36	32	30	24	26	82	1,140	876	212	109	74
26	40	34	34	30	24	* 24	67	* 1,150	1,040	190	109	76
27	39	34	34	28	24	24	* 60	1,020	1,040	178	126	75
28	39	34	34	26	26	24	57	892	1,000	166	* 112	72
29	39	32	32	26	26	26	67	828	940	159	112	71
30	39	34	30	26	-----	28	86	701	908	170	107	71
31	47	-----	28	28	-----	30	-----	650	-----	170	101	-----
Total	1,252	1,159	1,016	886	696	808	1,362	16,572	26,215	12,443	4,330	2,456
Mean	40.4	38.6	32.8	28.6	24.0	26.1	45.4	535	874	401	140	81.9
Ac-ft	2,480	2,300	2,020	1,760	1,380	1,600	2,700	32,870	52,000	24,680	8,590	4,870

Calendar year 1963: Max 1,060 Min 26 Mean 158 Ac-ft 114,700
 Water year 1963-64: Max 1,180 Min 20 Mean 189 Ac-ft 137,200

Peak discharge (base, 1,200 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-21	2145	5.38	1,390	6-15	2145	5.50	1,490
6-7	2345	5.36	1,390	6-27	2100	5.27	1,260

* Discharge measurement made on this day.
 Note.--Stage-discharge relation affected by ice Nov. 17-21, 23, Nov. 26 to Mar. 31 (no gage-height record Dec. 8 to Mar. 26).

9-816. Crystal River above Avalanche Creek, near Redstone, Colo.

Location.--Lat 39°13'55", long 107°13'35", in SW¼ sec.33, T.9 S., R.88 W., on right bank 1¼ miles upstream from Avalanche Creek and ¾ miles north of Redstone.

Drainage area.--167 sq mi.

Records available.--October 1955 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,905 ft (from river-profile map).

Average discharge.--9 years, 283 cfs (204,900 acre-ft per year).

Extremes.--Maximum discharge during year, 2,240 cfs May 21 (gage height, 4.85 ft); minimum daily, 22 cfs Feb. 15.
1955-64: Maximum discharge, 3,980 cfs July 1, 1957 (gage height, 5.65 ft); minimum daily, 22 cfs Dec. 5, 1955, Feb. 15, 1964.

Remarks.--Records good except those for period of no gage-height record, which are poor. A few small diversions for irrigation above station.

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

1.3	12	2.5	275
1.4	23	3.0	495
1.6	48	4.0	1,190
1.8	78	4.6	1,850
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	59	52	47	40	29	31	58	a 200	831	964	201	118
2	58	49	* 40	42	33	* 33	51	a 180	782	922	201	109
3	55	49	33	39	25	30	44	a 150	859	880	282	100
4	55	55	35	28	25	27	43	a 130	* 838	824	298	98
5	55	55	38	36	* 29	30	44	120	950	803	* 195	96
6	55	52	36	35	31	30	45	109	1,050	782	180	96
7	55	* 54	38	44	31	30	44	107	1,390	719	171	98
8	55	51	28	35	31	30	43	116	1,400	646	165	94
9	55	51	39	31	29	23	* 44	109	978	598	159	102
10	52	51	42	38	28	25	47	147	1,020	* 574	150	96
11	* 48	48	38	42	29	27	49	228	1,200	512	141	92
12	48	48	35	38	29	33	54	282	1,280	480	144	88
13	47	48	33	33	25	30	48	* 372	1,270	465	231	84
14	47	49	30	* 30	30	30	52	480	1,190	410	177	86
15	47	48	44	33	22	31	73	652	1,310	415	150	98
16	47	55	40	34	29	30	100	852	1,460	445	177	98
17	47	49	42	35	25	34	100	999	1,330	430	207	94
18	47	45	42	35	30	35	92	1,140	* 1,150	390	153	88
19	48	45	39	35	30	36	102	1,320	894	346	177	96
20	73	48	39	35	29	31	100	1,570	908	318	258	96
21	64	49	43	35	24	33	96	1,770	971	292	198	92
22	59	51	42	34	29	33	123	1,800	943	303	165	92
23	58	45	30	31	27	33	a 140	1,680	726	296	147	88
24	58	52	35	33	25	33	a 160	1,650	782	272	132	88
25	56	51	40	36	31	33	a 160	1,660	992	250	123	84
26	55	44	42	36	27	31	a 140	* 1,610	1,090	225	120	88
27	55	47	45	33	30	31	* a 100	1,450	1,140	213	162	86
28	54	44	42	30	28	31	a 90	1,240	1,130	204	* 129	84
29	52	38	45	28	31	38	a 110	1,150	1,060	195	126	82
30	51	40	36	28	-----	47	a 150	978	985	216	120	80
31	58	-----	42	29	-----	55	-----	901	-----	210	113	-----
Total	1,673	1,463	1,200	1,071	821	1,004	2,502	25,152	31,909	14,599	5,352	2,791
Mean	54.0	48.8	38.7	34.5	28.3	32.4	83.4	811	1,064	471	173	93.0
Ac-ft	3,320	2,900	2,380	2,120	1,630	1,990	4,960	49,890	63,290	28,960	10,620	5,540

Calendar year 1963: Max 1,180 Min 28 Mean 191 Ac-ft 138,000
Water year 1963-64: Max 1,800 Min 22 Mean 245 Ac-ft 177,600

Peak discharge (base, 2,000 cfs)--May 21 (2130) 2,240 cfs (4.85 ft).

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

ROARING FORK BASIN

9-828. North Thompson Creek near Carbondale, Colo.

Location.--Lat 39°19'47", long 107°19'58", in sec.28, T.8 S., R.89 W., on right bank 0.4 mile downstream from Yank Creek and 8½ miles southwest of Carbondale.

Drainage area.--26.8 sq mi.

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,120 ft (from topographic map).

Extremes.--Maximum discharge during year, 322 cfs May 17 (gage height, 4.05 ft), from rating curve extended above 190 cfs; minimum daily, 0.3 cfs Sept. 9.

Remarks.--Records good except those for periods of ice effect, indefinite stage-discharge relation, or no gage-height record, which are poor. Water exported above station to West Divide Creek by Thompson Creek feeder ditch. Figures of exports in acre-feet, furnished by State engineer of Colorado, are given below:

June.....	455
July.....	90
Water year 1963-64.....	545

Rating table, except periods of ice effect or indefinite stage-discharge relation (gage height, in feet, and discharge, in cubic feet per second) (Shifting-control method used Oct. 1-20, July 20 to Aug. 28)

1.8	0.1	2.6	39
1.9	1.0	2.8	66
2.0	4.0	3.0	100
2.1	8.0	3.5	195
2.4	24	4.0	305

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	b 2.2	(*)				2.2	2.2	100	13	0.6	0.8
2	*.8	b 2.0					2.2	2.2	100	12	.7	.8
3	.7	b 2.2					2.0	1.9	116	10	6.4	.6
4	.6	b 2.6					2.0	1.7	* 107	9.0	2.2	.6
5	.6	b 3.0					2.0	1.2	95	8.0	* 2.5	.7
6	.6	b 2.6					2.0	1.2	92	7.2	1.0	.6
7	.6	b 2.4					2.0	1.4	95	6.8	.7	e.5
8	.6	*b 2.2					2.0	1.3	109	9.0	.6	e.4
9	.6	b 2.0					2.2	1.4	83	* 8.0	.6	e.3
10	.6	b 2.0					2.4	2.2	73	8.5	.7	e.4
11	.6	b 2.0	2.4	3.3	68	6.8	.7	e.4				
12	.6	b 1.8	2.2	4.4	63	6.4	1.0	e.4				
13	.6	b 1.8	2.6	6.1	53	6.0	7.2	e.4				
14	.6	1.9	3.0	7.8	42	7.6	2.2	e.5				
15	.6	b 1.8	6	* 113	39	6.0	1.6	e.6				
16	.6	b 1.6	1	0.8	0.8	10	151	39	6.0	1.9	e.8	
17	.7	1.2				11	199	39	5.2	2.8	e.4	
18	.7	1.4				10	197	* 39	4.0	1.3	e.4	
19	.7	1.4				11	193	31	3.1	3.1	e1.0	
20	5.6	1.4				10	193	26	2.5	5.6	e1.6	
21	4.4	1.4				12	207	25	2.8	2.2	e1.4	
22	2.8	1.4				* 14	221	29	2.2	.9	e1.2	
23	1.9	1.2				2.2	215	23	2.2	.7	e1.2	
24	3.4	1.4				3.0	215	22	1.9	1.3	e1.2	
25	3.1	1.4				25	* 211	19	.8	3.1	e1.2	
26	1.9	1.4	22	203	17	.7	3.4	e1.4				
27	1.6	1.4	16	201	16	.5	6.4	e1.8				
28	1.0	1.4	17	175	17	.5	3.1	e1.6				
29	1.0	1.2	17	147	16	.5	* 1.3	e1.6				
30	1.3	1.0	17	125	15	.6	1.0	e1.6				
31	3.1				107	1.0	.9					
Total	43.5	52.7	31	24.8	23.2	40.6	281.2	3,456	1,608	158.8	67.7	26.4
Mean	1.40	1.76	1	0.8	0.8	1.31	9.37	111	53.6	5.12	2.18	0.88
Ac-ft	86	105	61	49	46	81	558	6,850	3,190	315	134	52

Calendar year 1963: Max - Min - Mean - Ac-ft -
 Water year 1963-64: Max 221 Min 0.3 Mean 15.9 Ac-ft 11,530

Peak discharge (base, 300 cfs)--May 17 (1830) 322 cfs (4.05 ft).

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

Note.--No gage-height record Oct. 1, Nov. 17 to Apr. 22 (stage-discharge relation affected by ice during part of period).

9-837. Prince Creek near Carbondale, Colo.

Location.--Lat 39°19'25", long 107°08'20", in SW¼SW¼, sec.29, T.8 S., R.87 W., on right bank 100 ft from county road, a quarter of a mile downstream from unnamed tributary, and 7 miles southeast of Carbondale.

Drainage area.--3.04 sq mi.

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,880 ft (from topographic map).

Extremes.--Maximum discharge during year, 13 cfs May 31 (gage height, 2.14 ft); no flow Oct. 13.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Water imported above station from Dinkle Lake in West Sopris Creek drainage.

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

1.4	0	1.8	1.7
1.5	.1	1.9	3.8
1.6	.3	2.0	7.0
1.7	.8	2.1	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	2.6	2.3					2.3	5.7	11	11	7.0	7.8
2	* 2.8	2.5	(*)				2.3	4.8	11	11	7.0	7.4
3	3.0	2.1					2.1	4.4	11	10	7.0	7.0
4	3.2	2.1					2.1	4.1	* 11	10	6.7	6.7
5	3.2	2.1					1.9	4.4	11	10	6.4	6.4
6	3.2	2.1					1.9	4.4	10	10	6.0	5.4
7	2.5	* 2.1					1.9	4.8	9.8	9.8	5.7	4.8
8	2.1	2.1					1.7	4.8	9.4	9.4	5.7	4.4
9	1.4	2.1					1.9	4.8	9.0	9.0	6.0	4.1
10	1.9	2.1					1.7	5.1	9.0	9.0	6.0	3.6
11	.2	2.1					1.9	5.1	* 8.6	9.0	5.7	3.4
12	.1	2.1					1.9	* 5.4	8.2	8.6	5.7	3.4
13	0	2.1				1.8	1.7	5.4	8.6	8.6	6.4	3.4
14	.1	2.1					* 1.9	5.1	9.0	8.2	5.7	3.4
15	.2	2.1					2.3	4.4	8.2	8.2	6.0	3.6
16	1.2	2.1	2.5	2.0	1.8		3.0	4.4	* 9.4	7.8	7.0	3.4
17	.8	2.1					3.0	4.1	9.8	7.8	7.0	3.4
18	1.3	1.9					3.0	* 4.4	9.4	7.8	6.4	3.4
19	3.2	1.7					3.0	4.8	8.6	7.8	7.8	3.8
20	3.4	.9					2.8	5.4	7.8	7.0	9.4	3.4
21	3.2	.8					2.8	6.0	7.8	6.7	9.0	3.4
22	3.2	1.5					3.2	6.7	9.0	7.0	8.6	3.2
23	3.0	1.6					3.6	6.7	8.6	7.4	8.2	3.2
24	3.0	1.4					* 3.6	7.4	8.2	7.0	7.8	3.2
25	2.8	1.8				(*)	3.2	* 7.4	9.4	6.7	7.8	3.2
26	2.8	2.2					1.9	3.2	9.0	9.8	6.4	3.4
27	2.5	2.0					1.9	3.0	11	10	6.0	3.4
28	2.5	2.0					1.9	3.2	9.8	11	6.4	3.4
29	2.5	2.2					1.9	3.8	10	* 11	7.0	3.2
30	2.5	2.4					2.1	5.4	11	11	7.0	3.2
31	2.5						2.1		11		* 7.0	
Total	66.9	58.5	77.5	62.0	52.2	56.8	79.3	191.8	285.6	254.6	217.6	125.0
Mean	2.16	1.95	2.5	2.0	1.8	1.83	2.64	6.19	9.52	8.21	7.02	4.17
Ac-ft	133	116	154	123	104	113	157	380	566	505	432	248

Calendar year 1963: Max - Min - Mean - Ac-ft -
 Water year 1963-64: Max 11 Min 0 Mean 4.17 Ac-ft 3,030

Peak discharge (base, 15 cfs)--No peak above base.

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1, 2, Nov. 25 to Mar. 25 (stage-discharge relation affected by ice during part of period).

ROARING FORK BASIN

9-840. Cattle Creek near Carbondale, Colo.

Location.--Lat 39°28'00", long 107°03'05", in NE¼NE¼ sec.12, T.7 S., R.87 W., on left bank at ford just downstream from Taylor Creek, half a mile upstream from diversion to Missouri Heights Reservoir and 10 miles northeast of Carbondale.

Drainage area.--31.1 sq mi.

Records available.--October 1950 to September 1955, October 1962 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,640 ft (from topographic map).

Average discharge.--7 years, 14.0 cfs (10,140 acre-ft per year).

Extremes.--Maximum discharge during year, 165 cfs May 22 (gage height, 3.54 ft); minimum daily determined, 1.7 cfs Oct. 3-5.

1950-55, 1962-64: Maximum discharge, 280 cfs about June 4, 1952 (gage height, 4.75 ft, from recorded range in stage); minimum daily determined, that of Oct. 3-5, 1963.

Remarks.--Records fair except those for periods of ice effect, no gage-height record, or indefinite stage-discharge relation, which are poor. Small diversions for irrigation of hay meadows 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	e 1.8	3.5					4.4	19	57	14	5.0	3.3
2	e 1.8	3.3					4.4	18	* 61	14	4.8	3.2
3	e 1.7	3.4					4.6	16	65	13	5.3	3.2
4	e 1.7	4.1					5.0	16	60	12	* 4.7	3.1
5	e 1.7	3.7	(*)				5.6	15	56	11	4.4	3.1
6	e 1.8	3.4					5.4	15	55	10	4.2	3.2
7	e 1.9	3.4					5.3	15	55	9.6	4.1	3.4
8	*e 2.0	* 3.3				2.2	4.8	15	64	9.2	4.4	3.4
9	e 1.9	3.3					5.0	16	53	8.8	5.3	3.4
10	e 1.9	3.3					5.5	19	47	* 8.8	5.0	3.5
11	e 2.0	3.3					5.9	22	46	8.3	5.2	3.2
12	e 2.0	3.2					5.5	* 22	44	7.5	5.6	3.2
13	e 1.9	3.3					5.0	29	41	7.5	6.0	3.2
14	e 2.0	3.3					5.0	37	39	7.7	5.4	3.5
15	e 2.2	3.3					6	47	38	7.5	5.2	3.6
16	e 2.2	3.2	2.4	2.2	2.0		7	55	* 38	6.9	5.4	3.6
17	e 2.2	3.0					8	68	36	6.9	5.6	3.4
18	e 2.6	3.0					8.8	80	34	6.4	4.8	3.5
19	e 3.4	3.0					9.9	88	31	6.2	4.7	4.1
20	e 4.4	3.2				2.8	9.2	113	28	6.0	4.7	3.8
21	e 3.8	3.3					7.9	131	27	5.9	4.6	3.3
22	e 3.6	3.2					* 9.5	139	27	6.2	4.4	3.4
23	e 3.6	3.0					11	129	23	6.4	4.1	3.4
24	e 3.4	3.3				(*)	14	117	21	5.8	3.4	3.4
25	e 3.4	3.2				3.2	13	125	20	5.4	3.4	3.4
26	e 3.4	2.8				3.2	11	* 121	18	4.8	3.5	3.6
27	e 3.4	3.0				3.4	9.9	111	18	4.7	4.1	3.8
28	e 3.4	2.8				3.6	9.9	98	18	4.8	* 3.4	3.8
29	e 3.2	2.6				4.0	12	85	17	5.0	3.5	3.6
30	3.5	2.6				5.0	16	71	16	4.8	3.4	3.5
31	4.3					4.6		60		5.3	3.3	
Total	82.1	96.3	74.4	68.2	58.0	85.2	233.5	1,912	1,153	240.4	140.9	103.1
Mean	2.65	3.21	2.4	2.2	2.0	2.75	7.78	61.7	38.4	7.75	4.55	3.44
Ac-ft	163	191	148	135	115	169	463	3,790	2,290	477	279	204

Calendar year 1963: Max 40 Min - Mean 5.97 Ac-ft 4,330

Water year 1963-64: Max 139 Min - Mean 11.6 Ac-ft 8,420

Peak discharge (base, 100 cfs).--May 22 (2130) 165 cfs (3.54 ft).

* Discharge measurement made on this day.

e Stage-discharge relation indefinite.

Note.--Stage-discharge relation affected by ice Nov. 16-20, 22, 23, Nov. 25 to Apr. 4 (no gage-height record Jan. 30 to Mar. 24), Apr. 9, 10, 12-17.

9-846. Fourmile Creek near Glenwood Springs, Colo.

Location.--Lat 39°24'00", long 107°19'25", in NW¼SW¼ sec.34, T.7 S., R.89 W., on left bank 100 ft downstream from National Forest boundary, 2.8 miles upstream from Freeman Creek, 6 miles west of Carbondale, 8 miles upstream from mouth, and 10 miles south of Court House in Glenwood Springs.

Drainage area.--16.7 sq mi.

Records available.--October 1957 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,780 ft (from topographic map).

Average discharge.--7 years, 7.69 cfs (5,570 acre-ft per year).

Extremes.--Maximum discharge during year, 267 cfs May 16 (gage height, 5.13 ft); minimum daily, 0.2 cfs several days in October and September.

1957-64: Maximum discharge, 303 cfs May 11, 1962 (gage height, 5.21 ft), from rating curve extended above 100 cfs; minimum daily, 0.1 cfs Sept. 5, 7-11, 1959, Aug. 1-20, 1963.

Remarks.--Records fair 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)
(Shifting-control method used Oct. 1-6, May 30 to June 21, June 28 to July 19, July 22 to Sept. 30)

2.8	0.2	3.6	14
2.9	.5	3.9	32
3.0	1.1	4.3	78
3.2	3.0	4.8	185
3.4	7.0		

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	0.3	0.7	0.5	0.4	0.3	0.4	1.5	14	34	3.0	2.0	0.9
2	.3	.7	.5	.4	.3	.4	1.5	12	32	2.8	1.8	.8
3	.3	.7	.4	.4	*.3	.4	1.3	7.4	*35	2.7	3.5	.7
4	.2	.9	.4	.4	.3	*.4	1.2	6.6	33	2.6	3.9	.6
5	.2	1.0	*.4	.4	.3	.4	1.1	5.2	30	2.5	3.0	.5
6	.2	*.9	.5	.4	.3	.4	1.0	4.4	28	2.4	2.5	.4
7	*.3	.9	.4	.4	.3	.4	1.0	4.4	27	2.2	2.0	.4
8	.2	.8	.4	*.4	.3	.4	.9	4.4	31	2.0	1.8	.3
9	.2	.7	.4	.4	.3	.4	* 1.0	4.4	24	1.9	1.6	.3
10	.3	.7	.4	.4	.3	.4	1.1	8.0	20	* 1.9	1.4	.3
11	.2	.7	.4	.4	.4	.4	1.2	20	19	1.8	1.1	.3
12	.3	.6	.4	.4	.4	.4	1.3	34	18	1.6	1.5	.2
13	.3	.6	.4	.4	.4	.5	1.1	52	16	2.8	3.0	.2
14	.3	.6	.4	.4	.4	.5	1.3	75	14	3.5	2.0	.2
15	.2	.6	.4	.4	.4	.5	1.9	* 103	12	2.1	1.3	.4
16	.2	.6	.4	.4	.4	.5	2.5	133	11	2.0	1.5	.4
17	.3	.5	.4	.5	.4	.6	2.9	170	* 11	1.7	2.0	.4
18	.3	.5	.4	.5	.4	.6	2.8	117	12	2.0	1.5	.4
19	.3	.4	.4	.4	.4	.6	4.4	117	9.8	2.8	1.3	.4
20	.4	.4	.4	.4	.4	.5	4.6	112	9.1	2.2	1.9	.5
21	.5	.6	.4	.4	.4	.6	3.7	119	8.8	3.0	1.4	.3
22	.5	.6	.4	.4	.4	.7	4.1	117	11	2.6	1.5	.4
23	.4	.6	.4	.4	.4	.6	5.0	99	7.7	2.4	1.2	.5
24	.4	.6	.3	.4	.4	.5	* 1.1	88	6.6	2.0	.9	.6
25	.4	.6	.3	.4	.4	.5	1.3	81	5.7	1.8	.7	.7
26	.5	.6	.3	.4	.4	.5	9.4	*81	4.8	1.6	.8	.8
27	.4	.6	.3	.4	.3	.5	5.7	78	5.0	1.4	2.0	.7
28	.4	.5	.4	.3	.3	.6	5.7	63	4.3	* 1.2	1.6	.7
29	.4	.5	.4	.3	.3	.9	6.6	53	4.8	1.0	1.2	.7
30	.4	.5	.3	.3	-----	1.4	8.8	46	3.7	1.1	1.0	.7
31	.7	-----	.3	.3	-----	1.4	-----	42	-----	2.4	* 1.0	-----
Total	10.2	19.2	12.1	12.2	10.3	17.3	108.6	1,870.8	488.3	67.0	53.9	14.7
Mean	0.33	0.64	0.39	0.39	0.36	0.56	3.62	60.3	16.3	2.16	1.74	0.49
Ac-ft	20	38	24	24	20	34	215	3,710	969	133	107	29

Calendar year 1963: Max 22 Min 0.1 Mean 2.42 Ac-ft 1,750
Water year 1963-64: Max 170 Min 0.2 Mean 7.33 Ac-ft 5,320

Peak discharge (base, 60 cfs)--May 16 (2000) 267 cfs (5.13 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 17-20, 23, Nov. 28 to Dec. 12, Feb. 4 to Mar. 1. No gage-height record Dec. 30 to Feb. 3 (stage-discharge relation affected by ice during part of period), July 23-28.

ROARING FORK BASIN

9-850. Roaring Fork at Glenwood Springs, Colo.

Location.--Lat 39°32'50", long 107°19'50", in sec.9, T.6 S., R.89 W., on left bank at Glenwood Springs, 1,500 ft upstream from mouth,Drainage area.--1,460 sq mi, approximately.Records available.--October 1905 to September 1909, September 1910 to September 1964. Monthly discharge only for some periods, published in WSP 1313.Gage.--Water-stage recorder. Datum of gage is 5,720.73 ft above mean sea level, adjustment of 1912. Prior to Nov. 20, 1915, chain gage on highway bridge 800 ft downstream at different datum. Nov. 20, 1915, to Oct. 26, 1917, staff gage at present site and datum.Average discharge.--58 years, 1,384 cfs (1,002,000 acre-ft per year).Extremes.--Maximum discharge during year, 5,930 cfs May 27 (gage height, 4.88 ft); minimum daily, 228 cfs Feb. 26, Mar. 9. 1905-9, 1910-64: Maximum discharge, 19,000 cfs July 1, 1957; maximum gage height, 8.7 ft June 14, 1921, from floodmark; minimum discharge, 145 cfs Jan. 21, 1935 (gage height, 0.65 ft); minimum daily, 179 cfs Jan. 21, 1935.Remarks.--Records good. Diversions above station for irrigation of about 35,000 acres. Transmountain diversions to Arkansas River basin through Busk-Ivanhoe tunnel since 1925 and through Twin Lakes tunnel since 1935 (see elsewhere in this report).

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

0.8	200	3.0	2,280
1.2	400	4.0	4,030
1.6	680	5.0	6,200
2.0	1,050		

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	305	488	352	352	320	270	430	707	2,590	3,320	970	707
2	305	454	340	340	330	*290	430	716	2,410	3,240	950	664
3	305	460	320	340	290	270	394	624	*2,670	3,040	1,330	616
4	300	502	330	270	270	*245	352	537	2,670	2,920	1,160	572
5	315	502	*340	325	290	270	370	502	2,990	2,780	1,340	544
6	320	*488	340	*290	310	260	358	454	3,130	2,730	932	537
7	320	481	352	352	285	255	364	430	4,190	2,600	1,030	537
8	320	481	295	315	280	270	330	442	5,190	2,420	990	530
9	305	467	346	265	250	228	320	424	3,530	2,170	941	551
10	*305	460	388	245	295	275	346	448	3,550	2,200	869	537
11	315	460	370	300	285	232	330	616	4,230	2,010	779	509
12	310	442	315	280	295	260	406	680	4,370	1,900	806	488
13	310	442	315	245	275	290	320	824	4,310	1,790	980	467
14	310	442	325	265	285	260	305	1,060	3,990	1,690	905	467
15	305	442	418	290	245	260	394	1,680	4,030	1,620	806	460
16	305	448	382	352	260	270	502	2,220	4,750	1,800	761	488
17	310	448	376	460	270	270	551	2,830	*4,250	1,780	896	474
18	310	388	364	430	275	285	474	*3,430	4,210	1,750	806	448
19	320	394	346	394	275	310	502	3,730	3,110	1,550	770	460
20	412	412	335	370	265	260	495	4,310	3,060	1,430	1,120	495
21	488	430	346	346	250	265	436	4,730	3,060	1,260	1,070	509
22	454	436	330	340	265	300	454	5,170	3,350	1,170	941	*502
23	430	400	290	315	245	*285	474	4,870	2,670	1,240	851	495
24	430	436	310	295	*250	280	*544	4,830	2,570	1,430	770	488
25	442	436	335	325	240	260	648	5,190	3,130	1,260	707	467
26	454	400	330	330	228	255	544	*5,350	3,530	1,120	672	454
27	460	412	335	*320	275	260	502	5,280	3,610	1,040	752	467
28	454	406	330	280	236	250	448	4,370	3,850	*960	*815	474
29	448	358	335	300	270	270	454	4,070	*3,630	914	788	467
30	454	340	280	295	-----	320	523	3,190	3,570	905	815	448
31	523	-----	295	300	-----	376	-----	2,890	-----	1,000	752	-----
Total	11,344	13,155	10,465	9,926	7,899	8,451	13,000	76,604	106,200	57,039	28,074	15,322
Mean	366	438	338	320	272	273	433	2,471	3,540	1,840	906	511
Ac-ft	22,500	26,090	20,760	19,690	15,670	16,760	25,990	151,900	210,600	113,100	55,680	30,390

Calendar year 1963: Max 3,100 Min 280 Mean 727 Ac-ft 526,500
Water year 1963-64: Max 5,350 Min 228 Mean 977 Ac-ft 708,900

Peak discharge (base, 6,300 cfs)--No peak above base.

* Discharge measurement made on this day.

DIVIDE CREEK BASIN

9-890. West Divide Creek below Willow Creek, near Raven, Colo.

Location.--Lat 39°16'32", long 107°31'10", in sec.14, T.9 S., R.91 W., on right bank at upstream side of bridge, 0.4 mile downstream from Willow Creek, 13 miles south of Raven, and 20 miles south of Silt.

Drainage area.--34.9 sq mi. Area at site used prior to Oct. 1, 1963, 33.0 sq mi (revised).

Records available.--October 1938 to September 1947, October 1963 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,820 (from topographic map). October 1938 to September 1947 at site 0.25 mile upstream at different datum.

Average discharge.--10 years, 27.2 cfs (19,690 acre-ft per year).

Extremes.--Maximum discharge during year, 362 cfs May 21 (gage height, 4.10 ft); maximum gage height, 4.20 ft Apr. 3 (backwater from ice); minimum daily discharge determined, 0.2 cfs Oct. 1-11, Sept. 12-14.

1938-47, 1963-64: Maximum discharge, 876 cfs May 13, 1941 (gage height, 3.27 ft, site and datum then in use), from rating curve extended above 320 cfs; no flow at times in 1939, 1940.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Water imported above station from North Thompson Creek (Roaring Fork basin) and Clear Fork (Gunnison River basin). Figures of imports in acre-feet, furnished by State engineer of Colorado, are given below:

Month	Clear Fork ditch	Thompson Creek feeder ditch
June.....	678	455
July.....	108	90
Water year 1963-64.....	786	545

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

1.6	0	1.9	1.5	2.4	20	3.3	165
1.7	.3	2.0	3.5	2.7	52	4.0	340
1.8	.7	2.2	9.0	3.0	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	0.2	0.7	(*)				6	64	103	45	1.7	0.6
2	.2	.6					51	103	40	2.1	.5	
3	.2	.7				6.5	39	111	37	9.4	.4	
4	*.2	* 1.1				6	31	100	31	8.1	.4	
5	.2	1.2				6	29	94	26	11	.3	
6	.2	.9					5.5	34	99	* 23	6.6	.4
7	.2	1.1				0.6	5	42	91	19	3.8	.5
8	.2	.9					5	39	* 92	15	2.5	.5
9	.2	.9				5	37	74	13	1.7	.5	
10	.2	.8				5.5	52	68	12	1.4	.5	
11	.2	.7					6	77	70	10	1.3	.4
12	.3	.7					6.5	96	77	8.4	2.1	.2
13	.3	.7				(*)	6	131	75	8.1	10	.2
14	.3	.8				.8	6	162	82	11	4.5	.2
15	.3	.7	0.5	0.4	0.4	.8	9.5	*202	82	7.5	2.7	.3
16	.3	.6							.8	12	202	85
17	.4	.4				1.0	15	238	89	6.3	3.3	.5
18	.4	.4				1.4	17	250	82	5.8	1.9	.4
19	.5	.5				1.2	18	278	72	4.8	*3.1	.6
20	2.1	.6				1.2	*18	*288	75	3.8	8.1	.7
21	2.1	.6				1.2	17	295	71	3.1	3.3	.5
22	1.4	.6				1.2	16	*285	* 74	3.1	2.1	.4
23	.6	.5				1.2	24	268	62	3.5	1.4	.3
24	.9	.4				1.2	40	248	60	2.9	1.1	.3
25	1.0	.6				1.0	30	218	60	2.1	.8	.3
26	.7	.6				1.0	38	208	60	1.5	.9	.3
27	.6	.6				1.0	22	*215	58	1.3	1.9	.4
28	.6	.6				1.2	23	190	59	1.0	1.4	.4
29	.6	.6				2.0	37	155	56	1.0	.9	.3
30	.6	.5				3.5	51	127	48	1.1	.7	.3
31	1.0					6		109		* 2.3	.6	
Total	17.2	20.6	15.5	12.4	11.6	35.5	469.0	4,660	2,322	356.5	103.1	12.7
Mean	0.55	0.69	0.5	0.4	0.4	1.15	15.6	150	77.4	11.5	3.33	0.42
Ac-ft	34	41	31	25	23	70	930	9,240	4,610	707	204	25

Calendar year 1963: Max - Min - Mean - Ac-ft -
 Water year 1963-64: Max 295 Min - Mean 22.0 Ac-ft 15,940

Peak discharge (base, 150 cfs).--May 21 (2000) 362 cfs (4.10 ft).

* Discharge measurement made on this day.
 Note.--No gage-height record Oct. 1-4. Stage-discharge relation affected by ice Nov. 16 to Apr. 25 (no gage-height record Dec. 2 to Mar. 13).

DIVIDE CREEK BASIN

9-895. West Divide Creek near Raven, Colo.

Location.--Lat 39°19'52", long 107°34'46", in W½ sec.29, T.8 S., R.91 W., on left bank 10 ft downstream from private road bridge, 0.8 mile upstream from Brook Creek, 8 miles south of Raven, and 16 miles south of Silt.

Drainage area.--65.8 sq mi.

Records available.--October 1955 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,050 ft (from topographic map).

Average discharge.--9 years, 27.1 cfs (19,620 acre-ft per year).

Extremes.--Maximum discharge during year, 479 cfs May 17 (gage height, 4.94 ft); minimum daily, 0.2 cfs Oct. 1-17.

1955-64: Maximum discharge, 790 cfs May 12, 1962 (gage height, 5.41 ft), from rating curve extended above 350 cfs; no flow at times in most years.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by water imported from North Thompson Creek (Roaring Fork basin), Clear Fork (Gunnison River basin), and Owens Creek (Plateau Creek basin). See preceding page for figures of imports from North Thompson Creek and Clear Fork. Figures of imports in acre-ft, furnished by State Engineer of Colorado, for water imported from Owens Creek, are given below:

Month	Owens Creek ditch
May.....	555
June.....	789
July.....	81
Water year 1963-64.....	1,420

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, Oct. 29 to Nov. 15)

1.6	0.2	2.2	2.2	2.8	19	4.0	176
1.8	.5	2.4	4.8	3.0	32	4.5	318
2.0	.9	2.6	10	3.5	80	5.0	503

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	1.5					15	96	122	52	3.7	1.6
2	.2	1.1	(*)				14	70	118	45	3.5	1.5
3	.2	1.0					13	47	139	38	9.1	1.4
4	.2	* 1.9					13	35	124	33	10	1.3
5	.2	2.1					12	36	120	28	12	1.2
6	.2	1.8					11	38	116	*24	9.7	1.2
7	*.2	1.6					11	50	118	22	5.2	1.4
8	.2	1.6				2	11	44	*132	18	3.8	1.4
9	.2	1.4					12	37	103	15	3.1	1.4
10	.2	1.4					12	58	98	14	2.9	1.5
11	.2	1.3					12	89	100	12	2.8	1.4
12	.2	1.2					13	107	103	9.4	4.6	1.1
13	.2	1.1		(*)		(*)	12	150	92	8.5	12	1.0
14	.2	1.2					14	205	96	14	6.1	1.0
15	.2	1.3					16	*255	89	8.5	4.2	1.4
16	.2	1.2	0.6	0.8	1.5		18	282	89	7.0	3.5	1.9
17	.2	1.2					22	315	90	6.8	4.3	1.8
18	.3	.8					30	353	93	5.9	3.4	1.5
19	.4	.8					32	342	77	5.0	*3.5	1.5
20	1.4	1.0					* 32	*356	88	4.3	8.5	1.7
21	2.0	1.2					30	342	88	4.2	4.6	1.7
22	1.0	1.2					36	342	* 89	3.7	3.4	1.6
23	1.2	1.0					44	306	77	4.3	2.8	1.4
24	.8	1.2					50	279	73	3.7	2.3	1.3
25	.9	1.2					36	258	71	3.1	2.1	1.3
26	.9	1.0					26	236	70	2.8	1.9	1.3
27	.8	1.0					* 20	244	68	2.6	2.4	1.4
28	.8	1.0				10	17	216	68	2.3	2.7	1.3
29	.8	.8					33	186	66	2.2	2.1	1.3
30	.8	.6					62	154	61	2.3	1.9	1.3
31	1.7	-----					-----	132	-----	* 3.5	1.7	-----
Total	17.2	36.7	18.6	24.8	43.5	140	679	5,660	2,838	405.1	143.8	42.1
Mean	0.55	1.22	0.6	0.8	1.5	4.5	22.6	183	94.6	13.1	4.64	1.40
Ac-ft	34	73	37	49	86	278	1,350	11,230	5,630	804	285	84

Calendar year 1963: Max 87 Min 0 Mean 9.14 Ac-ft 6,610

Water year 1963-64: Max 356 Min 0.2 Mean 27.5 Ac-ft 19,940

Peak discharge (base, 160 cfs).--May 17 (2200) 479 cfs (4.94 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-12, Dec. 8 to Mar. 13, Mar. 17 to Apr. 27 (stage-discharge relation affected by ice during part of periods). Stage-discharge relation affected by ice Nov. 16 to Dec. 7, Mar. 14-16.

9-907. East Divide Creek near Silt, Colo.

Location.--Lat 39°26'10", long 107°34'10", in NE¹/₄NE¹/₄ sec.20, T.7 S., R.91 W., on right bank 0.2 mile upstream from Tar Gulch 0.7 mile upstream from June Creek, and 9 miles southeast of Silt.

Drainage area.--40.8 sq mi.

Records available.--October 1959 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,650 ft (from topographic map).

Average discharge.--5 years, 9.57 cfs (6,930 acre-ft per year).

Extremes.--Maximum discharge during year, 256 cfs May 21 (gage height, 4.76 ft); no flow for many days.

1959-64: Maximum discharge, about 350 cfs May 12, 1962 (gage height not determined); maximum gage height, 5.06 ft Mar. 16, 1961 (backwater from ice); no flow for many days in each year.

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

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 14, 15)

2.5	0	3.2	2.3	3.9	26
2.7	.1	3.3	3.7	4.0	36
2.8	.2	3.4	5.7	4.2	67
2.9	.5	3.6	12	4.4	116
3.1	1.5	3.8	20	4.6	180

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	0.4						25	71	10	1.7	0.6
2	0	.2	(*)			(*)		24	71	8.7	1.6	.4
3	0	.2						17	74	7.8	3.0	.3
4	0	*.5			(*)			14	71	6.9	2.9	.2
5	0	.7						14	65	6.6	2.3	.2
6	0	.5				0		12	60	*6.0	2.1	.1
7	*0	.4					1.5	13	58	4.9	1.6	.1
8	0	.4						14	60	4.3	1.4	.3
9	0	.3						13	50	4.1	1.2	.4
10	0	.3						17	40	3.9	1.1	.3
11	0	.2						28	40	3.7	.9	.3
12	0	.2						37	*36	3.1	1.1	.1
13	0	.1		(*)				49	30	2.9	4.7	.1
14	0	.2					(*)	60	28	7.5	3.0	0
15	0	.2				.1	4.1	*85	24	5.1	1.8	.3
16	0	.2					5.1	116	22	3.6	2.0	1.7
17	0	.1					5.7	156	21	3.0	2.6	1.1
18	0	.1					8.4	139	23	2.6	1.7	.7
19	0	.1					8.7	*136	19	2.1	*1.5	1.1
20	.6	.1					9.0	142	17	1.9	2.1	1.1
21	1.1	.1					*8.4	162	17	1.7	1.8	.8
22	.4	.1					9.4	*152	*21	1.7	1.4	.6
23	.2	.1					11	139	17	1.5	1.1	.6
24	.3	.1					16	136	14	1.5	.9	.4
25	.4	.1					15	136	13	1.3	.7	.4
26	.2	.1					11	148	12	1.1	.7	.4
27	.1	.1					9.4	*162	12	.9	1.7	.7
28	.1	.1					9.4	119	11	.7	1.3	.6
29	.1	.1					12	97	11	.8	.9	.5
30	.1	0					15	87	11	1.6	.8	.5
31	1.3	-----					-----	78	-----	*1.9	.7	-----
Total	4.9	6.3	0	0	0	6.5	178.6	2,527	1,019	113.4	52.3	14.9
Mean	0.16	0.21	0	0	0	0.21	5.95	81.5	34.0	3.66	1.69	0.50
Ac-ft	9.7	12	0	0	0	13	354	5,010	2,020	225	104	30

Calendar year 1963: Max 31 Min 0 Mean 2.88 Ac-ft 2,080
Water year 1963-64: Max 162 Min 0 Mean 10.7 Ac-ft 7,780

Peak discharge (base, 80 cfs)--May 21 (2130) 256 cfs (4.76 ft).

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

Note.--Stage-discharge relation affected by ice Nov. 16, 17, Nov. 30 to Dec. 7. No gage-height record Dec. 8 to Apr. 14 (stage-discharge relation affected by ice part of period).

RIFLE CREEK BASIN

9-915. East Rifle Creek near Rifle, Colo.

Location.--Lat 39°41', long 107°41', in sec.22, T.4 S., R.92 W., on right bank 100 ft downstream from abandoned powerplant outlet, 100 ft upstream from Grass Valley Canal, and 12 miles northeast of Rifle.

Drainage area.--34.3 sq mi.

Records available.--October 1936 to September 1943 (published as East Fork Rifle Creek near Rifle), October 1956 to September 1964 (discontinued). Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 6,550 ft (by barometer). Prior to Apr. 20, 1938, staff gage just downstream at different datum. Apr. 20 to Dec. 3, 1938, staff gage at same site and datum. Dec. 4, 1938, to Sept. 30, 1943, water-stage recorder at same site and datum.

Average discharge.--15 years, 38.4 cfs (27,800 acre-ft per year).

Extremes.--Maximum discharge during year, 84 cfs Aug. 16 (gage height, 2.53 ft); minimum daily, 25 cfs Sept. 17, 18. 1936-43, 1956-64: Maximum discharge observed, 409 cfs Aug. 5, 1937 (gage height, 4.00 ft, datum then in use), from rating curve extended above 50 cfs; minimum daily, 24 cfs Feb. 18, 1938, Dec. 27-29, 1939, Feb. 26-28, 1941.

Remarks.--Records good. Several small diversions for irrigation above station. One diversion to Colorado Fish and Game Department fish hatchery; water is returned to stream above gage.

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

Oct. 1 to Nov. 4		Nov. 5 to Sept. 30	
1.9	29	1.9	23
2.0	37	2.2	50

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	32	31	31	30	29	29	* 31	31	31	29	29	28
2	32	31	30	30	29	* 29	31	31	32	29	30	26
3	32	31	* 30	29	29	29	30	30	32	29	30	27
4	32	32	30	30	29	29	30	30	31	30	30	28
5	32	* 32	30	30	29	29	31	30	30	31	30	28
6	32	33	31	30	* 28	29	30	30	32	30	30	28
7	32	33	31	30	29	29	29	30	31	* 29	30	28
8	* 32	32	30	30	29	29	29	31	* 34	29	31	28
9	32	32	31	* 30	29	28	29	30	34	29	31	28
10	33	32	31	31	29	29	29	30	32	30	29	28
11	33	31	29	30	29	29	30	* 29	32	30	30	28
12	33	31	29	29	29	29	29	* 29	32	29	31	27
13	33	31	29	29	29	29	29	30	32	29	31	27
14	33	31	29	29	29	29	29	29	31	29	31	26
15	33	31	30	29	29	29	29	30	31	30	32	26
16	33	32	30	29	29	29	29	30	31	29	35	26
17	33	31	30	29	29	29	30	29	31	30	32	25
18	33	30	30	29	29	29	29	33	32	30	30	25
19	33	30	30	29	29	29	30	36	32	30	32	26
20	34	31	30	29	29	29	29	41	32	30	32	26
21	33	31	31	29	29	29	* 29	46	32	30	30	26
22	33	31	30	30	29	29	29	45	* 32	30	30	26
23	33	31	30	29	29	29	29	41	31	32	30	26
24	33	31	30	29	29	29	30	38	32	31	29	26
25	32	31	30	29	29	29	31	36	31	31	* 29	26
26	32	31	30	29	29	29	31	34	31	31	29	26
27	32	31	30	29	29	29	31	33	30	31	29	26
28	32	31	30	29	29	29	31	31	31	* 29	29	27
29	32	31	30	29	29	29	31	31	32	29	29	27
30	32	31	29	29	29	30	31	31	30	30	28	* 26
31	32	-----	30	29	-----	29	-----	33	-----	31	29	-----
Total	1,008	938	931	911	840	899	895	1,018	947	926	936	801
Mean	32.5	31.3	30.0	29.4	29.0	29.0	29.8	32.8	31.6	29.9	30.2	26.7
Ac-ft	2,000	1,860	1,850	1,810	1,670	1,780	1,780	2,020	1,880	1,840	1,860	1,590

Calendar year 1963: Max 39 Min 28 Mean 32.5 Ac-ft 23,530
 Water year 1963-64: Max 46 Min 25 Mean 30.2 Ac-ft 21,940

* Discharge measurement made on this day.

9-920. Rifle Creek near Rifle, Colo.

Location.--Lat 39°37'10", long 107°45'45", NE¼ sec.18, T.5 S., R.92 W., on right bank 0.5 mile downstream from confluence of East and West Rifle Creeks and 6.2 miles northeast of Rifle.

Drainage area.--140 sq mi.

Records available.--October 1939 to September 1946, October 1952 to September 1964 (discontinued). Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder and concrete control. Datum of gage is 5,808.82 above mean sea level (Bureau of Reclamation bench mark). Prior to July 21, 1942, staff gage at same site at datum 1.31 ft higher. July 21, 1942, to Sept. 30, 1946, water-stage recorder at site 100 ft downstream at same datum.

Average discharge.--19 years, 24.8 cfs, unadjusted (17,950 acre-ft per year).

Extremes.--Maximum discharge during year, 660 Aug. 16 (gage height, 5.27 ft), from rating curve extended above 35 cfs as explained below; minimum daily, 4.6 cfs Feb. 24, 26.

1939-46, 1952-64: Maximum discharge, 1,720 cfs Aug. 9, 1963 (gage height, 7.74 ft), from rating curve extended above 35 cfs on basis of slope-area measurement of peak flow; minimum daily, 2.7 cfs Feb. 6, 1941.

Flood of July 27, 1951, reached a stage of 7.7 ft, from floodmarks at site 100 ft downstream (discharge not determined).

Discharge previously published has been found to be unreliable and should not be used.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 870 acres above station in Rifle Creek basin. Some regulation by small reservoir on West Rifle Creek. Diversion above station from East Rifle Creek by Grass Valley Canal to Harvey Gap Reservoir for use outside Rifle Creek basin (see table below). A small amount of water diverted from canal for irrigation in Elk Creek drainage.

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

Month	Diversion	Month	Diversion
October.....	590	April.....	1,260
November.....	1,680	May.....	84
December.....	1,760	June.....	10
		July.....	29
Calendar year 1963.....	10,140	August.....	402
		September.....	11
January.....	1,770		
February.....	1,620	Water year 1963-64.....	10,940
March.....	1,720		

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	7.0	5.5	5.8	5.5	5.4	* 8	26	37	29	34	34
2	25	7.0	* 5.5	6.0	5.6	5.8	8.5	26	38	26	32	30
3	22	7.0	5.5	5.8	* 5.5	5.5	7.6	24	37	26	32	26
4	22	7.3	5.5	5.5	5.6	5.0	7.3	24	37	29	65	28
5	22	* 7.0	5.5	6.0	5.8	5.4	7.6	23	36	29	30	28
6	22	6.6	5.5	* 5.5	5.6	5	8.2	24	36	* 27	44	28
7	22	6.4	5.5	6.1	5.2	5	15	26	37	26	30	28
8	* 22	6.4	5.5	5.6	5.4	5	19	27	* 42	26	29	28
9	22	6.4	5.5	5.5	5.6	5	19	27	42	26	27	28
10	22	6.4	5.5	6.0	5.6	5	19	29	40	29	26	28
11	26	6.4	5	5.6	5.5	5.5	18	* 33	37	28	25	28
12	28	6.4	5	5.4	5.6	5.5	13	32	37	29	74	28
13	31	7.0	5	5	5.4	5.5	6.7	32	36	30	51	26
14	32	10	5	5	5.5	5.5	6.7	30	35	31	47	26
15	32	10	5.5	5.5	4.9	5.5	6.7	27	33	30	45	26
16	32	11	6	5.8	5.6	6	6.6	26	33	32	95	26
17	32	10	6	5.8	5.0	6	6.1	27	32	32	16	26
18	32	10	6	6.0	5.4	6	6.2	30	35	30	15	24
19	32	9.5	6	5.8	5.4	6	6.4	* 33	32	30	12	26
20	37	9	6	5.8	5.0	5.5	6.1	40	33	29	12	26
21	31	6.6	6	5.8	4.9	6	* 6.7	58	34	29	11	26
22	29	6.6	6.0	6.0	5.0	6	7.3	60	* 36	27	12	26
23	28	6.5	5.8	5.5	4.9	6.5	7.6	49	33	30	18	26
24	29	6	5.8	5	* 4.6	6.5	10	42	28	30	* 22	26
25	18	6	5.8	5.8	5.4	6	16	40	28	29	71	26
26	8.8	6	5.8	5.8	4.6	6	21	38	28	29	22	26
27	8.4	6	6.0	5.8	5.0	6	21	37	28	28	24	26
28	8.4	6	5.8	5.5	5.0	6.5	19	34	29	29	21	28
29	7.3	6	6.0	5.6	5.5	7	20	34	30	* 29	18	26
30	6.7	5.5	5.8	5.6	5.6	7.5	21	35	29	33	18	* 26
31	7.3	5.5	6.0	5.5	5.5	8	21	40	34	34	19	26
Total	722.9	218.0	175.3	175.4	153.6	181.1	351.3	1,033	1,028	901	957	810
Mean	23.3	7.27	5.65	5.66	5.30	5.84	11.7	33.3	34.3	29.1	30.9	27.0
Ac-ft	1,430	432	348	348	305	359	697	2,050	2,040	1,790	1,900	1,610

Calendar year 1963: Max 97 Min 5.0 Mean 20.5 Ac-ft 14,850
 Water year 1963-64: Max 95 Min 4.6 Mean 18.3 Ac-ft 13,310

Peak discharge (base, 140 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8-4	2000	3.16	188	8-12	1515	4.27	418
8-6	1830	2.78	152	8-16	1800	5.27	660

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18-20, Nov. 23 to Dec. 21, Jan. 13-15, 23, 24. No gage-height record Mar. 6 to Apr. 1, Aug. 17-24, Sept. 3-30.

BEAVER CREEK BASIN

9-925. Beaver Creek near Rifle, Colo.

Location.--Lat 39°28'20", long 107°49'55", in NE¼ sec.1, T.7 S., R.94 W., on left bank 150 ft upstream from unnamed tributary, 200 ft upstream from road bridge, 4 miles upstream from mouth, and 4.8 miles southwest of Rifle.

Drainage area.--7.90 sq mi.

Records available.--October 1952 to September 1964.

Gage.--Water-stage recorder and plank control. Altitude of gage is 6,685 ft (from topographic map).

Average discharge.--12 years, 4.13 cfs (2,990 acre-ft per year).

Extremes.--Maximum discharge during year, 85 cfs May 24 (gage height, 4.00 ft); minimum not determined.
1952-64: Maximum discharge, 85 cfs May 24, 1964 (gage height, 4.00 ft), from rating curve extended above 37 cfs; minimum daily, 0.3 cfs Jan. 4-6, 1959.

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 170 acres below station and about 380 acres in Mamm Creek basin.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 1-7)

Oct. 1-30		Oct. 31 to Sept. 30			
2.7	0.2	2.8	0.4	3.2	11
2.8	1.2	2.9	1.8	3.4	24
2.9	3.6	3.0	4.0	3.7	55
		3.1	7.0	3.8	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	1.1	1.5				1.1	2.0	4.6	21	8.2	2.9	1.7
2	1.1	1.5	(*)			1.1	1.5	4.3	22	7.4	2.5	1.5
3	.9	1.5			(*)	1.1	1.2	3.1	28	7.0	2.9	1.5
4	.8	*1.5				1.1	1.2	3.1	29	7.0	2.9	1.5
5	.8	1.5				1.1	1.2	2.9	24	7.0	2.7	1.2
6	.9	1.5		(*)		1.1	1.2	2.9	24	*7.0	2.2	1.4
7	*1.1	1.5				1.1	1.0	2.7	25	6.7	3.3	1.5
8	1.1	1.5				1.1	1.1	2.7	*25	6.4	3.1	1.4
9	1.1	1.5				1.1	1.2	2.5	20	6.1	2.7	1.5
10	1.1	1.5				1.1	1.4	2.7	18	5.5	2.2	1.4
11	1.1	1.5				1.1	1.5	*3.6	20	4.9	2.0	1.2
12	1.1	1.4				1.1	1.5	4.3	22	4.6	2.5	1.2
13	1.1	1.5				1.1	1.4	6.1	19	4.3	3.6	1.1
14	1.1	1.5				1.1	1.8	8.6	20	4.3	2.5	1.2
15	1.2	1.4				1.1	2.2	12	20	4.3	2.2	1.5
16	1.2	1.7	0.8	0.7	0.8	1.0	2.9	16	21	4.0	2.5	1.4
17	1.2	1.3				1.0	2.9	26	20	3.6	2.2	1.2
18	1.2	1.3				1.0	2.5	39	19	3.3	2.2	1.2
19	1.2	1.4				1.0	2.2	*47	18	3.1	3.1	1.5
20	3.1	1.4				1.0	*1.8	51	16	2.9	2.7	1.4
21	2.6	1.4				1.0	2.0	56	16	2.9	2.2	1.2
22	1.8	1.4				1.0	2.0	59	*16	3.3	2.2	1.2
23	1.8	1.4				1.0	2.2	60	14	4.0	2.0	1.2
24	2.1	1.4			(*)	1.0	2.5	64	13	3.6	*1.8	1.1
25	1.8	1.2				1.0	2.2	68	12	2.9	1.7	1.1
26	1.8	1.4				1.0	1.7	60	11	2.7	1.7	1.2
27	1.8	1.4				1.0	1.7	51	10	*2.5	2.5	1.4
28	1.6	1.2				1.0	1.7	47	9.8	2.5	2.0	1.2
29	1.6	1.4				1.1	2.5	41	9.4	2.5	1.8	1.2
30	1.5	1.4				*1.2	3.1	34	9.0	2.5	1.7	1.1
31	1.5					1.4		26		2.9	1.7	
Total	43.4	43.0	24.8	21.7	23.2	33.2	55.3	811.1	551.2	139.9	74.2	39.4
Mean	1.40	1.43	0.8	0.7	0.8	1.07	1.84	26.2	18.4	4.51	2.39	1.31
Ac-ft	86	85	49	43	46	66	110	1,610	1,090	277	147	78

Calendar year 1963: Max 21 Min 0.4 Mean 2.51 Ac-ft 1,810
Water year 1963-64: Max 68 Min - Mean 5.08 Ac-ft 3,690

Peak discharge (base, 25 cfs).--May 24 (2000) 85 cfs (4.00 ft); June 4 (1730) 39 cfs (3.74 ft).

* Discharge measurement made on this day.
Note.--No gage-height record Oct. 29, 30. Stage-discharge relation affected by ice Nov. 17-21, 23, Nov. 29 to Mar. 2 (no gage-height record Jan. 22 to Feb. 24).

9-926. Battlement Creek near Grand Valley, Colo.

Location.--Lat 39°26'10", long 107°58'40", in NE¼SE¼ sec.15, T.7 S., R.95 W., on left bank 300 ft downstream from ford, 4½ miles upstream from mouth, and 5 miles southeast of Grand Valley.

Drainage area.--10.5 sq mi.

Records available.--October 1956 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 6,630 ft (from topographic map).

Average discharge.--8 years, 8.21 cfs (5,940 acre-ft per year).

Extremes.--Maximum discharge during year, 68 cfs May 27 (gage height, 2.60 ft); minimum not determined.
1956-64; Maximum discharge, 102 cfs June 7, 1957 (gage height, 2.79 ft); maximum gage height, 2.96 ft May 26, 1958 (backwater from debris); minimum discharge not determined.

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

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

Oct. 1 to Dec. 17				Dec. 18 to Sept. 30			
1.5	1.0			1.4	1.0	2.1	15
1.6	2.0			1.6	3.1	2.2	19
1.8	5.0			1.8	5.7	2.4	37
				1.9	8.2	2.6	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	1.9	3.6	2.6	2.4		1.0	1.8	1.2	4.3	1.8	6.0	3.4
2	1.8	3.6	* 2.6	2.4		1.0	* 1.8	7.4	4.7	1.7	5.6	3.3
3	1.9	3.6	2.6	2.4		1.0	* 1.8	5.6	5.6	1.6	5.6	3.3
4	2.8	* 3.8	2.6	2.4			1.9	5.1	5.8	1.5	5.4	3.1
5	3.0	3.4	2.6	2.4			1.9	5.2	5.6	1.5	5.7	3.1
6	3.4	3.4	2.4	* 2.4			1.9	5.1	5.4	* 1.4	5.4	3.2
7	* 3.5	3.2	2.4				1.8	5.0	5.6	1.3	5.1	3.2
8	3.6	3.0	2.4				1.8	4.8	* 5.6	1.3	5.1	3.1
9	3.6	3.0	2.4				2.0	4.8	5.1	1.3	4.8	3.1
10	3.5	3.0	2.4				2.0	5.6	4.7	1.3	4.6	2.9
11	3.5	3.0	2.0		(*)		2.4	* 7.2	4.7	1.2	4.6	2.7
12	3.4	2.9	2.0				2.2	8.5	4.5	1.1	4.6	2.7
13	3.4	2.9	2.0		1.5		2.3	1.2	4.4	1.1	5.2	2.6
14	3.2	2.9	2.0			1.2	2.6	1.5	4.1	1.1	4.6	2.8
15	3.4	2.9	2.4				1.7	1.8	4.3	1.1	4.4	3.1
16	3.4	3.0	2.4				1.8	2.1	3.8	1.1	4.6	2.7
17	3.4	3.0	2.4				1.9	3.3	3.8	9.8	4.5	2.6
18	3.4	3.0	2.4				2.3	3.5	3.7	8.5	4.2	2.3
19	3.4	3.0	2.3	2.2			3.0	4.0	3.3	7.7	4.6	2.7
20	3.5	3.0	2.3				* 3.3	4.3	3.0	7.2	4.4	2.8
21	4.1	2.9	2.3				3.6	4.7	2.9	7.0	4.6	2.8
22	3.8	2.8	2.3				4.2	5.0	* 2.9	7.0	4.8	2.7
23	3.8	2.6	2.3				5.0	4.7	2.5	7.0	5.0	2.6
24	4.4	2.9	2.2				5.2	4.7	2.3	6.7	* 5.1	2.3
25	4.0	2.9	2.2		(*)		4.6	4.7	2.1	6.4	4.2	2.1
26	3.8	2.8	2.2		1.1		4.0	5.1	2.0	6.0	3.9	2.2
27	3.6	2.6	2.2		1.0		3.6	6.0	1.9	* 6.0	4.4	2.1
28	3.6	2.6	2.2		1.0	1.8	3.6	6.3	1.8	6.2	3.9	2.0
29	3.5	2.6	2.2		1.0		4.2	6.1	1.9	6.0	3.8	1.9
30	3.8	2.6	2.2				4.8	6.0	1.9	6.0	3.6	1.8
31	4.2		2.3					4.8		7.2	3.5	
Total	105.6	90.5	71.8	69.4	41.6	40.2	85.0	874.3	1,142	318.7	145.8	81.2
Mean	3.41	3.02	2.32	2.24	1.43	1.30	2.83	28.2	38.1	10.3	4.70	2.71
Ac-ft	209	180	142	138	83	80	169	1,730	2,270	632	289	161

Calendar year 1963: Max 21 Min 1.1 Mean 4.59 Ac-ft 3,320
Water year 1963-64: Max 63 Min - Mean 8.38 Ac-ft 6,080

Peak discharge (base, 40 cfs).--May 27 (2000) 68 cfs (2.60 ft); June 8 (1800) 61 cfs (2.56 ft).

* Discharge measurement made on this day.
Note.--No gage-height record Oct. 15-19, Jan. 6 to Feb. 25, Mar. 4 to Apr. 3 (stage-discharge relation affected by ice during most of the last two periods). Stage-discharge relation affected by ice Nov. 17-19, 23, Nov. 26 to Dec. 17.

ROAN CREEK BASIN

9-942. Roan Creek above Clear Creek, near De Beque, Colo.

Location.--Lat 39°29'30", long 108°21'15", in SE¼NW¼ sec.32, T.6 S., R.98 W., on left bank 1.7 miles upstream from Clear Creek and 14 miles north of De Beque.

Drainage area.--151 sq mi.

Records available.--October 1962 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 5,560 ft (from topographic map).

Extremes.--Maximum discharge during year, 126 cfs July 23 (gage height, 3.95 ft, from floodmarks), from rating curve extended above 19 cfs; minimum daily, 1.0 cfs Nov. 23.

1963-64: Maximum discharge, 339 cfs Aug. 8, 1963 (gage height, 5.6 ft, from floodmarks), from rating curve extended above 15 cfs on basis of slope-area measurement of peak flow; minimum daily, that of Nov. 23, 1963.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 1,400 acres above station.

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

1.9	1.0
2.0	2.0
2.1	4.2
2.3	11
2.6	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	3.1	3.1	b 1.8	3.1	3.5	4.5	14	9.2	23	9.6	11	4.2
2	2.7	3.3	*b 2.2	3.3	3.5	* 4.9	13	9.2	22	9.6	8.2	4.2
3	2.2	3.1	b 2.4	3.3	* 3.1	4.9	11	8.6	21	8.9	7.2	4.5
4	2.7	* 2.9	b 2.6	3.3	4.0	3.8	9.6	8.6	20	8.6	6.8	4.5
5	2.7	2.7	b 2.6	2.4	3.5	5.2	9.6	10	18	8.6	6.5	4.2
6	2.4	2.4	b 2.8	* 2.9	3.3	4.0	10	10	17	* 7.8	6.5	4.9
7	* 2.2	2.7	b 2.6	3.7	3.1	4.5	9.6	10	17	7.5	7.8	5.2
8	2.2	2.4	b 2.2	3.3	3.3	3.5	8.6	10	* 18	7.5	7.5	4.5
9	2.9	2.7	b 2.2	2.0	4.0	3.5	8.2	11	17	7.8	6.5	4.2
10	2.7	3.3	b 2.0	3.3	4.2	5.2	8.6	11	15	9.2	6.2	4.0
11	2.7	3.5	1.9	2.4	4.2	3.5	8.6	* 10	14	7.5	5.5	4.0
12	2.4	3.5	2.2	2.7	4.0	5.2	9.2	9.6	13	6.8	6.5	4.2
13	2.7	3.8	2.7	2.2	3.5	5.2	8.6	9.2	12	7.2	12	4.5
14	3.1	4.0	2.4	2.7	3.8	4.2	* 8.2	9.2	14	7.5	6.5	4.9
15	3.1	4.2	b 3.0	3.1	3.3	5.2	6.2	8.9	13	7.5	5.8	5.5
16	3.3	b 3.6	b 2.8	3.3	4.0	5.2	4.5	8.9	12	7.8	7.2	5.5
17	3.3	b 3.0	b 3.2	3.8	4.0	4.9	4.9	9.2	13	7.8	6.8	4.5
18	3.1	b 2.6	b 3.0	4.2	4.0	6.5	5.5	10	16	7.5	5.8	4.9
19	3.3	b 2.4	b 3.0	4.2	4.5	6.2	6.8	14	13	7.2	5.8	4.9
20	3.8	b 2.0	b 3.2	4.2	4.0	6.5	* 7.2	14	12	6.8	6.5	4.5
21	3.8	b 1.6	3.5	4.0	4.2	7.5	6.5	14	12	6.8	5.8	4.5
22	3.8	1.2	3.5	4.2	4.5	6.8	6.2	16	* 12	7.2	5.5	4.5
23	3.8	1.0	b 2.6	3.8	3.8	6.5	5.2	17	12	21	5.5	4.2
24	4.0	1.1	b 2.6	3.3	4.0	6.5	6.2	17	11	12	* 5.8	4.0
25	4.2	1.2	b 2.8	4.2	4.2	6.5	10	19	10	9.6	5.5	4.0
26	4.2	1.5	b 3.2	4.0	3.5	5.8	10	21	10	8.9	5.2	4.0
27	4.2	1.6	3.5	3.5	3.5	5.8	10	26	9.6	* 8.2	5.8	4.2
28	4.2	1.6	3.1	3.3	3.5	5.8	9.6	25	9.6	8.2	5.5	4.0
29	4.5	b 1.4	3.3	3.5	4.2	8.9	10	23	10	7.8	4.9	3.8
30	4.0	b 1.6	2.2	b 3.4	-----	* 12	8.9	23	9.6	7.5	4.5	3.8
31	3.3	-----	b 2.8	b 3.2	-----	15	-----	24	-----	7.5	4.5	-----
Total	100.6	75.0	83.9	103.8	110.2	183.7	254.5	425.6	425.8	262.4	201.1	132.8
Mean	3.25	2.50	2.71	3.35	3.80	5.93	8.48	13.7	14.2	8.46	6.49	4.43
Ac-ft	200	149	166	206	219	364	505	844	845	520	399	263

Calendar year 1963: Max 27 Min 1.0 Mean 7.15 Ac-ft 5,180
 Water year 1963-64: Max 26 Min 1.0 Mean 6.45 Ac-ft 4,680

Peak discharge (base, 80 cfs)--July 23 (1800) 126 cfs (3.95 ft).

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

9-950. Roan Creek near De Beque, Colo.

Location.--Lat 39°27'15", long 108°19'00", on line between secs. 10 and 15, T.7 S., R.98 W., on left bank 15 ft downstream from bridge, half a mile downstream from Kimball Creek and 11 miles north of De Beque.

Drainage area.--321 sq mi.

Records available.--April 1921 to September 1926, October 1962 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 5,380 ft (from topographic map). Prior to October 1962, chain gage at different datum.

Average discharge.--7 years, 46.6 cfs (33,740 acre-ft per year).

Extremes.--Maximum discharge during year, 466 cfs July 23 (gage height, 4.46 ft, from floodmark), from rating curve extended above 22 cfs on basis of slope-area measurement of peak flow; minimum daily, 3.2 cfs Nov. 25.

1921-26, 1962-64: Maximum discharge observed, 1,110 cfs May 21, 1922, from rating curve extended above 700 cfs; maximum gage height observed, 4.6 ft (datum then in use) May 6, 7, 1922; minimum daily discharge, 3.2 cfs Nov. 25, 1963, but may have been less during periods of no gage-height record.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Diversions above station for irrigation of about 3,500 acres above and about 500 acres below station.

Cooperation.--Two discharge measurements furnished by Bureau of Reclamation.

Rating tables (gage height, in feet, and discharge,
in cubic feet per second)
(Shifting-control method used Mar. 29, July 23 to Aug. 27)

Oct. 1 to Mar. 29		Mar. 30 to Aug. 27		Aug. 28 to Sept. 30	
0.9	2.5	1.1	4.5	0.9	6.5
1.0	5.0	1.3	10	1.0	9.5
1.1	8.5	1.5	20		
1.2	13	2.0	56		
		3.0	152		

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	8.2	9.0	4.2	5.7	7.4	7.1	18	14	27	15	16	7.7
2	7.8	9.0	* 5.7	6.0	7.8	* 7.4	20	15	25	14	13	7.7
3	7.8	8.5	5.7	5.4	* 6.8	7.1	18	15	25	14	13	7.7
4	a 7.5	* 8.2	6.0	4.8	6.4	6.0	14	16	24	14	14	7.7
5	a 7	7.8	6.0	4.8	6.8	7.4	14	18	23	13	14	7.7
6	a 7	8.5	6.4	* 5.7	6.8	6.8	15	19	22	* 13	13	8.3
7	6.8	8.5	4.8	6.8	6.0	7.1	14	21	22	12	14	8.6
8	7.8	7.8	5.0	5.4	6.8	6.4	10	21	* 23	12	13	8.3
9	9.4	7.8	6.8	4.8	7.4	6.4	7.0	20	22	12	12	8.3
10	9.0	9.0	5.7	5.7	7.8	7.4	6.8	20	20	13	11	8.0
11	9.0	9.0	6.0	5.0	7.4	6.8	7.0	* 20	20	12	10	7.7
12	9.0	9.0	6.4	5.0	7.1	7.8	8.0	18	18	11	10	8.0
13	9.0	9.0	6.0	4.8	6.4	7.8	8.4	18	18	11	* 15	8.0
14	9.0	9.0	6.8	4.8	7.1	6.8	* 6.2	18	21	11	12	8.3
15	9.0	9.0	7.4	4.8	5.7	7.8	5.8	18	20	11	11	9.2
16	9.0	11	6.8	5.4	7.1	7.8	5.8	17	18	11	10	* 8.9
17	9.4	8.2	7.4	5.7	6.8	8.2	5.5	17	18	12	7.7	8.6
18	9.0	7.1	7.1	6.0	7.1	8.5	5.2	18	21	11	8.0	9.2
19	9.0	6.4	6.8	6.4	7.1	8.2	5.2	19	18	10	7.7	9.5
20	9.8	6.4	6.8	6.4	6.8	8.2	* 5.0	20	16	10	7.4	8.9
21	9.8	6.0	6.8	6.4	6.8	9.0	5.5	20	16	10	7.7	8.3
22	9.8	4.0	5.7	6.8	7.1	9.0	6.5	20	* 16	10	8.8	8.3
23	9.8	3.5	5.0	6.0	6.4	8.2	7.0	20	16	* a 9.0	9.1	* 7.4
24	9.8	3.5	5.4	5.7	6.4	7.1	7.7	20	16	a 2.0	* 9.4	7.1
25	9.8	3.2	5.7	6.4	7.4	6.4	13	21	16	a 18	9.4	6.8
26	9.8	3.5	5.7	6.4	6.8	6.4	14	22	16	a 16	9.1	7.4
27	9.4	3.8	6.0	6.4	6.0	6.0	14	25	15	* a 14	9.4	7.4
28	9.8	3.8	5.7	6.8	5.7	5.4	13	27	15	13	* 9.5	7.1
29	9.8	3.8	5.7	7.4	6.8	7.4	12	26	16	12	9.5	7.1
30	9.8	3.8	4.8	7.4	-----	* 16	13	26	15	12	8.3	6.5
31	9.4	-----	5.4	7.1	-----	18	-----	27	-----	13	7.7	-----
Total	276.5	207.1	185.7	182.2	198.0	245.9	304.6	616	578	470	329.7	239.7
Mean	8.92	6.90	5.99	5.88	6.83	7.93	10.2	19.9	19.3	15.2	10.6	7.99
Ac-ft	548	411	368	361	393	488	604	1,220	1,150	932	654	475

Calendar year 1963: Max 37 Min 3.2 Mean 13.4 Ac-ft 9,720
 Water year 1963-64: Max 90 Min 3.2 Mean 10.5 Ac-ft 7,600

Peak discharge (base, 100 cfs)--July 23 (1700) 466 cfs (4.46 ft).

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

COLORADO RIVER MAIN STEM

9-955. Colorado River near Cameo, Colo.

Location.--Lat 39°14'20", long 108°16'00", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.30, T.9 S., R.97 W., on left bank 100 ft north of U. S. Highways 6 and 24, half a mile upstream from Jackson Canyon, 5.9 miles upstream from Grand Valley project diversion dam, and 7 miles northeast of Cameo.

Drainage area.--8,050 sq mi, approximately.

Records available.--October 1933 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 4,813.73 ft above mean sea level, datum of 1929. Prior to Oct. 10, 1934, staff gage on river and water-stage recorder on highline canal, about 10 miles downstream at different datum. Oct. 10, 1934, to Feb. 27, 1958, at site 3 miles downstream at datum 22.55 ft lower.

Average discharge.--31 years, 3,882 cfs (2,810,000 acre-ft per year).

Extremes.--Maximum discharge during year, 14,000 cfs May 25 (gage height, 8.14 ft); minimum daily, 800 cfs Jan. 13, Feb. 29, 1933-64; Maximum discharge, 36,000 cfs June 16, 1935; maximum gage height, 11.60 ft June 8, 1952 (site and datum then in use); minimum daily discharge, 700 cfs Dec. 29, 1939.

Remarks.--Records good except those for period of ice effect, which are fair. Natural flow of stream effected by transmountain diversions, storage reservoirs, power developments, and diversion for irrigation of about 160,000 acres.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second) (Shifting-control method used Aug. 3-9)

2.8	1,040	5.0	4,400
3.0	1,230	6.0	6,740
3.5	1,800	7.0	9,800
4.0	2,540	8.1	14,000

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	1.670	1.580	1.260	1.000	900	900	1.550	2.030	7.110	* 6.320	2.810	2.180
2	1.680	1.550	1.240	1.000	1.100	950	1.830	2.410	6.580	5.960	2.740	2.140
3	* 1.730	1.540	1.220	1.000	1.000	1.000	1.640	2.460	6.690	5.670	2.810	* 2.030
4	1.720	1.550	1.210	1.000	950	950	1.500	2.280	7.060	5.430	3.150	1.930
5	1.640	1.570	1.260	1.000	950	950	1.450	* 2.140	7.530	5.190	3.150	1.920
6	1.660	1.570	1.240	950	1.000	950	1.560	1.930	7.980	5.020	* 3.060	2.010
7	1.700	1.730	1.260	950	950	900	* 1.530	2.000	8.860	4.820	2.860	1.960
8	1.660	1.850	1.240	900	950	900	1.520	1.890	11.300	4.470	2.590	1.940
9	1.670	1.760	1.100	900	1.000	950	1.460	1.970	* 10.600	4.080	2.440	2.010
10	1.640	1.660	1.150	900	1.100	900	1.450	1.940	8.540	3.940	2.400	1.970
11	1.630	1.520	1.160	850	* 1.100	* 1.000	1.440	2.000	9.120	3.860	2.250	1.880
12	1.670	1.530	* 1.100	850	1.000	950	1.610	2.180	9.800	3.630	2.200	1.860
13	1.620	1.540	1.000	* 800	950	1.000	1.610	2.330	9.660	3.370	2.480	1.840
14	1.630	1.600	1.100	850	1.000	1.050	1.520	2.620	9.290	3.280	2.490	1.900
15	1.630	* 1.480	1.200	850	950	1.180	1.470	3.420	8.700	3.150	2.430	2.000
16	1.640	1.570	1.300	900	1.000	1.160	1.550	4.730	9.260	3.150	2.380	1.970
17	1.540	1.550	1.300	950	950	1.160	1.860	6.120	9.320	3.200	2.410	1.970
18	1.350	1.500	1.200	1.000	1.000	1.170	1.930	* 7.890	8.930	3.190	2.440	1.960
19	1.280	1.370	1.200	1.100	950	1.190	2.010	8.900	7.860	3.010	2.380	1.930
20	1.420	1.400	1.200	1.100	950	* 1.170	1.970	9.980	6.610	2.730	2.360	1.940
21	1.470	1.480	1.100	1.000	950	1.130	2.080	11.400	6.510	2.640	2.730	1.990
22	1.500	1.500	1.100	1.000	900	1.190	2.130	12.900	6.640	2.460	2.640	2.010
23	1.480	1.500	1.100	1.000	900	1.260	2.070	13.400	6.320	2.610	2.430	2.000
24	1.480	1.430	1.000	950	900	1.010	2.100	12.700	5.550	2.640	2.270	1.850
25	1.480	1.420	1.000	950	950	1.260	2.190	* 13.000	5.840	3.060	2.130	1.860
26	1.480	1.410	1.100	950	850	1.090	2.180	13.500	6.450	2.860	2.070	1.860
27	1.350	1.370	1.100	950	900	1.220	2.200	13.700	6.640	2.690	2.070	1.840
28	1.480	1.340	1.100	950	850	1.130	2.160	12.600	6.660	2.590	2.160	1.840
29	1.480	1.350	1.100	850	800	1.230	1.790	11.200	6.660	2.490	2.300	1.850
30	1.500	1.330	1.100	850	-----	1.260	1.750	9.700	6.580	2.460	2.270	1.890
31	1.610	-----	1.000	850	-----	1.450	-----	8.040	-----	2.540	-----	-----
Total	48,490	45,550	35,740	29,150	27,750	33,610	53,110	203,360	234,650	112,510	77,150	58,330
Mean	1,564	1,518	1,153	940	957	1,084	1,770	6,560	7,822	3,629	2,489	1,944
Ac-ft	96,180	90,350	70,890	57,820	55,040	66,660	105,300	403,400	465,400	223,200	153,000	115,700

Calendar year 1963: Max 7,770 Min 1,000 Mean 2,170 Ac-ft 1,571,000
 Water year 1963-64: Max 13,700 Min 800 Mean 2,621 Ac-ft 1,903,000

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 12 to Mar. 14 (no gage-height record Jan. 8-13, Feb. 3-11, 14-24).

9-958. Plateau Creek near Heiberger, Colo.

Location.--Lat 39°13'10", long 107°46'30", near center of sec.4, T.10 S., R.93 W., on right bank 50 ft upstream from ford, 7 miles south of Heiberger, and 9½ miles southeast of Collbran.

Drainage area.--19 sq mi, approximately.

Records available.--May 1958 to September 1964 (discontinued).

Gage.--Water-stage recorder. Datum of gage is 8,016.31 ft above mean sea level (Bureau of Reclamation bench mark).

Average discharge.--6 years, 9.12 cfs (6,600 acre-ft per year).

Extremes.--Maximum discharge during year, 209 cfs May 23 (gage height, 3.15 ft); minimum daily, 0.2 cfs Oct. 9-16, July 5, 6. 1958-64: Maximum discharge, 272 cfs May 23, 1958 (gage height, 3.56 ft); minimum daily, 0.1 cfs Aug. 2, 3, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of hay meadows and slight regulation by one reservoir (capacity, 200 acre-ft) above station. Erie Canal diverts water above station to Buzzard Creek drainage for irrigation of about 280 acres.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 16 to Nov. 25, Apr. 17 to May 29)

1.3	0.2	2.0	18
1.4	.8	2.2	33
1.5	2.0	2.5	64
1.6	3.7	3.0	155
1.8	8.2		

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	0.8	1.3					4.8	25	49	2.0	4.8	2.5
2	.9	.8					* 4.2	17	64	.3	3.5	2.0
3	.6	.8					4.2	15	66	.3	6.8	1.9
4	.5	.9					4.2	12	66	.3	3.0	1.8
5	.5	.9					4.2	12	54	.2	3.0	1.9
6	.4	.7					4.2	12	51	.2	3.5	1.9
7	.4	.8					4.0	12	60	.3	2.3	2.3
8	.3	1.3				2.2	4.0	12	* 56	.3	2.3	2.0
9	.2	1.5					3.8	13	43	* 2.3	1.6	2.3
10	.2	1.9			(*)		4.0	17	44	5.4	.6	2.2
11	.2	2.2	(*)			(*)	4.0	22	42	5.8	.5	1.8
12	.2	2.5					4.2	27	30	5.0	.4	1.6
13	.2	2.5					4.4	38	23	4.5	7.2	1.5
14	.2	2.8		(*)			4.8	45	18	4.5	2.7	2.0
15	.2	2.5					6	68	18	4.8	1.1	3.5
16	* .2	2.5	2.4	2.4	2.2		9	82	22	4.5	1.6	3.0
17	.4	1.9					* 12	102	18	4.3	2.8	2.2
18	.6	* 2.7					11	123	12	4.3	1.6	2.0
19	.7	3.0					11	139	7.5	3.5	.9	3.4
20	3.2	2.8					12	147	6.0	3.5	1.9	3.0
21	3.5	2.8					9.5	145	6.3	3.2	1.9	2.7
22	2.3	3.0					9.9	143	* 8.0	3.5	3.0	2.5
23	1.4	3.5				2.6	15	155	5.2	4.1	2.7	1.9
24	1.5	2.5					21	155	4.3	5.4	2.3	1.6
25	1.3	2.5					17	143	4.1	3.5	* 2.2	1.5
26	1.0	2.5					15	* 139	3.7	3.2	2.3	1.6
27	1.2	2.5					11	* 131	3.5	4.8	4.3	1.8
28	1.0	2.5					10	123	3.7	3.0	3.5	1.8
29	1.0	2.5					14	89	3.2	3.4	2.8	1.6
30	1.4	2.5					19	64	2.3	* 5.2	2.5	1.6
31	2.0							50		5.2	2.5	
Total	28.5	63.1	74.4	74.4	63.8	74.6	261.4	2,277	793.8	100.8	82.1	63.4
Mean	0.92	2.10	2.4	2.4	2.2	2.4	8.71	73.5	26.5	3.25	2.65	2.11
Ac-ft	57	125	148	148	127	148	518	4,520	1,570	200	163	126

Calendar year 1963: Max 52 Min 0.1 Mean 4.12 Ac-ft 2,990
Water year 1963-64: Max 155 Min 0.2 Mean 10.8 Ac-ft 7,850

Peak discharge (base, 140 cfs)--May 23 (2000) 209 cfs (3.15 ft).

* Discharge measurement made on this day.
Note.--No gage-height record Oct. 4-16, Dec. 4 to Apr. 2, July 2-9, Aug. 11, 18. Stage-discharge relation affected by ice Nov. 26 to Apr. 16.

PLATEAU CREEK BASIN

9-961. Vega Reservoir near Collbran, Colo.

Location.--Lat 39°13'30", long 107°48'40", in sec.6, T.10 S., R.93 W., at dam on Plateau Creek, 10 miles southeast of Collbran.

Drainage area.--24.4 sq mi.

Records available.--April 1960 to September 1964.

Gage.--Staff gage read once daily. Datum of gage is 7,906 ft above mean sea level (Bureau of Reclamation bench mark); gage readings have been reduced to elevations above mean sea level.

Extremes.--Maximum contents observed during year, 29,790 acre-ft June 13 (elevation, 7,980.4 ft); minimum observed, 3,960 acre-ft Sept. 30 (elevation, 7,930.9 ft).

1960-64: Maximum contents observed, 34,110 acre-ft June 12-15, 1962 (elevation, 7,985.3 ft); minimum observed, 1,260 acre-ft Apr. 15, 1960 (elevation, 7,917.4 ft).

Remarks.--Reservoir is formed by an earth- and rock-fill dam. Dam completed by Bureau of Reclamation in 1960. Usable storage began in May 1958 while dam was under construction. Capacity of reservoir, 32,930 acre-ft between elevations 7,906 (bottom of outlet gate) and 7,984 ft (crest of spillway). Dead storage, 823 acre-ft. Figures given herein are usable contents. Reservoir is used to store water for irrigation and power development.

Cooperation.--Records furnished by Bureau of Reclamation.

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.....	7,933.8	4,750	-
Oct. 31.....	7,933.5	4,670	-80
Nov. 30.....	7,935.0	5,100	+430
Dec. 31.....	7,935.7	5,310	+210

Calendar year 1963.....	-	-	-13,000

Jan. 31.....	7,936.9	5,670	+360
Feb. 29.....	7,938.0	6,020	+350
Mar. 31.....	7,939.2	6,400	+380
Apr. 30.....	7,944.5	8,270	+1,870
May 31.....	7,973.8	24,510	+16,240
June 30.....	7,977.1	27,070	+2,560
July 31.....	7,965.0	18,440	-8,630
Aug. 31.....	7,948.1	9,690	-8,750
Sept. 30.....	7,930.9	3,960	-5,730

Water year 1963-64.....	-	-	-790

† Elevation at 0800.

PLATEAU CREEK BASIN

9-965. Plateau Creek near Collbran, Colo.

Location.--Lat 39°15'00", long 107°50'25", in NE¼ sec.26, T.9 S., R.94 W., on right bank 10 ft downstream from private bridge, 1½ miles downstream from Leon Creek, and 6 miles east of Collbran.

Drainage area.--80.4 sq mi.

Records available.--September 1921 to September 1964. Prior to October 1933 monthly discharge only, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,130 ft (from topographic map).

Extremes.--Maximum discharge during year, 762 cfs May 24 (gage height, 4.30 ft); minimum daily, 2.0 cfs Apr. 3-8, May 15.
1921-64: Maximum discharge, 3,080 cfs May 27, 1922 (gage height, 6.90 ft), from rating curve extended above 1,300 cfs; minimum daily, 1.9 cfs Feb. 26, 1961 (result of storage in Vega Reservoir); minimum daily prior to construction of Vega Reservoir, 3 cfs Sept. 21, 1926.

Remarks.--Records good except those for periods of ice effect, which are poor. Natural flow of stream affected by storage in Vega Reservoir since 1959, transbasin diversion to Surface Creek in Gunnison River basin, diversions above station for irrigation of about 800 acres above and about 8,400 acres below, and about 550 acres in Buzzard Creek drainage, and for power development.

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

Oct. 1 to May 22				May 23 to Sept. 30			
0.7	2.0	1.7	56	1.2	9.7	2.5	133
.9	6.0	2.5	145	1.3	13	3.0	223
1.2	18	3.0	250	1.5	24	3.5	370
1.4	30	3.7	490	2.0	68	4.0	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	1.5	8.8	5.0	5.0	5.0	4.8	3.6	7.2	6.4	32	28	14
2	1.2	6.8	5.5	5.0	4.8	4.8	* 2.8	5.0	100	26	28	14
3	1.3	6.4	6.0	4.8	4.8	4.6	2.0	4.4	91	22	47	20
4	1.1	6.8	6.0	4.4	5.2	4.4	2.0	4.0	108	25	25	22
5	9.2	6.4	6.5	4.8	5.6	4.6	2.0	4.2	66	29	28	21
6	8.0	5.4	7.0	4.6	5.0	4.6	2.0	3.4	54	21	33	20
7	8.0	4.2	7.0	4.6	5.0	4.6	2.0	3.2	61	19	30	22
8	8.0	4.4	7.0	4.6	5.0	4.6	2.0	2.8	* 43	20	33	22
9	8.0	4.4	7.5	4.8	5.0	4.6	2.8	2.4	37	* 23	25	23
10	7.6	4.2	7.0	5.0	* 5.0	4.6	2.8	2.4	36	26	22	22
11	7.2	4.2	* 6.5	4.6	4.8	* 4.8	3.2	2.4	35	23	19	18
12	7.6	4.2	5.0	4.6	4.8	4.8	3.8	2.4	30	20	23	16
13	7.6	4.2	4.8	4.6	4.8	4.8	3.4	2.4	28	20	100	14
14	7.2	4.2	4.6	* 5.0	5.0	4.6	4.4	2.4	28	27	33	15
15	8.0	4.2	5.0	5.5	4.8	4.8	5.4	2.0	30	28	21	20
16	* 8.0	4.6	5.5	6.0	5.2	4.8	6.0	1.4	42	23	23	27
17	8.0	4.0	6.0	5.5	4.8	4.6	* 5.2	4.6	43	22	28	16
18	8.0	* 4.6	6.0	4.8	4.8	5.0	4.2	8.4	42	28	22	17
19	8.0	4.4	6.0	4.8	4.8	4.8	4.8	163	38	22	27	22
20	22	4.0	5.5	4.8	4.8	4.6	4.4	284	37	20	33	20
21	20	4.0	5.0	4.8	4.6	4.6	4.0	344	38	17	21	19
22	17	4.0	5.0	4.8	4.8	4.8	4.4	490	* 39	17	18	16
23	1.2	4.0	5.0	4.6	4.6	4.6	4.6	503	37	29	17	14
24	1.1	4.8	5.0	4.6	4.6	4.6	4.4	465	37	26	15	14
25	1.0	4.4	5.0	5.0	4.8	4.8	4.4	417	37	22	* 14	12
26	8.8	5.0	5.0	4.8	4.8	4.6	3.4	352	37	20	14	13
27	8.8	4.6	5.0	4.6	5.2	4.6	3.4	* 398	37	18	20	14
28	8.8	4.4	5.0	4.4	5.0	4.4	3.8	352	37	18	16	13
29	8.8	4.6	5.0	4.6	5.2	4.4	4.8	223	37	18	13	11
30	8.8	4.8	4.6	5.0	-----	4.6	5.0	122	35	18	13	10
31	9.6	-----	5.0	5.0	-----	3.4	-----	68	-----	* 23	13	-----
Total	315.0	145.0	174.0	150.0	142.6	143.2	111.0	4,375.6	1,384	702	802	521
Mean	10.2	4.83	5.61	4.84	4.92	4.62	3.70	141	46.1	22.6	25.9	17.4
Ac-ft	625	288	345	298	283	284	220	8,680	2,750	1,390	1,590	1,030

Calendar year 1963: Max 183 Min 4.0 Mean 15.7 Ac-ft 11,330
Water year 1963-64: Max 503 Min 2.0 Mean 24.5 Ac-ft 17,780

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17-20, 23, 25-30, Dec. 1 to Jan. 4, Jan. 6, 13-17, 23, 24, 28-30, Feb. 8, 9, 13, 15, 21, 23, 24, 26, 28, Mar. 4, 8, 9, 11, 14, 17, 20, 21, 28, 29.

PLATEAU CREEK BASIN

9-968, Buzzard Creek below Owens Creek, near Heiberger, Colo.

Location.--Lat 39°14'10", long 107°38'00", in N½ sec.35, T.9 S., R.92 W., on left bank 500 ft downstream from Owens Creek, 2½ miles upstream from Porter Creek, 4¼ miles southeast of Hightower ranger station, and 8½ miles southeast of Heiberger.

Drainage area.--52.2 sq mi.

Records available.--October 1955 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,206 ft (from topographic map).

Average discharge.--9 years, 23.7 cfs (17,160 acre-ft per year).

Extremes.--Maximum discharge during year, 475 cfs May 17 (gage height, 5.08 ft); no flow for many days.
1955-64: Maximum discharge, 636 cfs June 4, 1957 (gage height, 5.82 ft); no flow at times in 1956-64.

Remarks.--Records good except those for period of ice effect, which are poor. Natural flow of stream affected by diversions above station from Owens Creek to West Divide Creek basin for irrigation (see records for West Divide Creek near Raven for figures of diversion).

Cooperation.--Nine discharge measurements furnished by Bureau of Reclamation.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-17)

1.5	0	2.4	26
1.6	1.0	2.7	48
1.7	2.2	3.0	77
1.9	5.5	3.5	152
2.1	11	4.5	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	0	2.0					* 3.0	110	98	7.2	3.6	0.6
2	.2	1.6					2.8	60	126	5.5	5.6	.4
3	0	1.7					2.8	42	142	5.0	15	.2
4	0	2.4					2.8	38	131	4.0	7.8	0
5	0	2.8					2.6	* 37	112	3.3	6.5	0
6	0	2.5					2.6	42	93	3.0	6.5	0
7	0	2.4					2.4	52	99	2.2	4.5	.1
8	0	2.1				1.0	* 2.4	42	112	* 2.0	3.3	.1
9	0	2.0					2.4	45	* 72	2.0	2.5	.3
10	0	1.7	(*)	(*)			* 2.4	73	62	2.1	1.8	.3
11	.1	1.6			(*)		2.6	101	52	2.0	1.5	.2
12	.1	1.5					2.8	128	42	2.1	1.5	.1
13	.1	1.2					3.0	165	37	2.2	16	0
14	.1	1.6		(*)			4.0	204	36	2.8	6.2	0
15	.2	1.5	0.5	0.4	0.8		* 6	248	32	2.7	3.5	.4
16	*.2	1.4					60	298	34	2.8	3.0	1.4
17	.2	1.4					*44	328	33	2.2	5.2	1.6
18	0	1.6					36	320	34	2.7	3.8	1.2
19	.3	*1.6					38	* 308	25	2.2	4.0	1.5
20	3.6	1.6					42	300	20	1.5	6.8	1.8
21	4.6	1.6					*40	304	18	1.0	3.8	1.5
22	3.3	1.6					38	298	27	1.4	2.5	1.0
23	2.4	1.4				2.0	67	294	* 20	1.5	2.0	.9
24	2.2	1.4					*24	278	15	5.2	*1.4	.9
25	2.0	1.4					60	254	13	3.0	1.0	.7
26	1.8	1.4					43	238	11	1.7	.7	.7
27	1.7	1.4					26	238	9.8	1.4	1.8	.6
28	1.6	1.4					30	204	9.2	.9	2.8	.7
29	1.5	1.2					*46	163	9.5	.9	2.0	.7
30	1.4	1.2					83	126	9.5	* 1.5	1.4	.7
31	2.1							104		4.0	.8	
Total	29.7	50.2	15.5	12.4	23.2	47.0	791.6	5,442	1,514.0	82.0	128.8	18.6
Mean	0.96	1.67	0.5	0.4	0.8	1.5	26.4	176	50.5	2.65	4.15	0.62
Ac-ft	59	100	31	25	46	93	1,570	10,790	3,000	163	255	37

Calendar year 1963: Max 95 Min 0 Mean 7.55 Ac-ft 5,470
Water year 1963-64: Max 328 Min 0 Mean 22.3 Ac-ft 16,170

Peak discharge (base, 200 cfs).--May 17 (2000) 475 cfs (5.08 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16 to Apr. 22 (no gage-height record Nov. 19 to Apr. 1).

9-975. Buzzard Creek near Colibrán, Colo.

Location.--Lat 39°16'20", long 107°51'00", in sec.14, T.9 S., R.94 W., on right bank 150 ft upstream from county bridge, half a mile upstream from Brush Creek, and 7 miles east of Colibrán.

Drainage area.--139 sq mi.

Records available.--September 1921 to September 1964. Prior to October 1933 monthly discharge only, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 6,955 ft (from topographic map).

Average discharge.--43 years, 47.1 cfs (34,100 acre-ft per year).

Extremes.--Maximum discharge during year, 758 cfs May 18 (gage height, 5.26 ft); minimum daily, 0.1 cfs Oct. 8-11, 13.
1921-64: Maximum discharge, 1,630 cfs May 14, 1941 (gage height, 7.80 ft), from rating curve extended above 90' cfs; no flow for many days in 1959-60, 1963.

Remarks.--Records good Apr. 5 to July 9 and poor for the remainder of the year. Diversions for irrigation of about 1,300 acres above station. Erie Canal imports water from Plateau Creek for irrigation of about 280 acres above station. Small diversions above station from Middleton and Uhl Creeks to West Mamm Creek (Mamm Creek basin).

Cooperation.--Two measurements 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	0.8	4.2	2.6	1.2	1.6	2.0	* 60	310	117	17	4.3	5.2
2	.8	3.8	2.6	1.4	1.4	2.2	50	192	128	14	3.9	3.3
3	.7	3.8	2.4	1.6	1.4	2.2	46	113	166	13	11	3.1
4	.4	4.2	2.4	1.4	1.4	2.0	44	89	139	11	13	3.1
5	.3	5.0	2.3	1.2	1.4	2.2	42	86	138	9.4	8.6	2.7
6	.2	4.4	2.3	1.2	1.2	2.2	30	82	98	8.2	6.2	2.7
7	.2	3.8	1.6	1.2	1.4	2.0	24	97	98	6.0	6.5	3.5
8	.1	3.8	.8	1.0	1.4	2.0	25	94	*128	5.8	5.5	3.1
9	.1	3.8	.9	* 1.4	1.6	1.6	38	81	102	*4.1	4.3	3.7
10	.1	3.6	1.3	1.6	* 2.2	2.0	40	113	79	3.5	3.5	3.5
11	.1	3.6	* 1.0	1.6	* 2.0	* 1.8	51	167	70	3.9	2.9	3.1
12	.2	3.4	.9	1.4	2.0	2.0	62	177	60	4.3	2.4	3.7
13	.1	3.2	1.0	1.2	1.8	2.0	51	264	52	4.5	7.7	3.7
14	.2	4.0	1.0	* 1.2	1.8	1.6	78	316	52	4.5	2.0	4.5
15	.3	5.0	.8	1.3	1.6	2.0	126	398	46	4.5	9.0	5.8
16	*.5	4.0	.8	1.8	1.8	2.0	173	468	45	5.0	6.8	4.5
17	.6	3.0	.8	2.0	1.8	2.2	* 136	506	44	4.8	6.5	4.1
18	.4	* 2.6	.7	1.9	1.8	2.2	90	* 527	48	4.5	8.2	3.1
19	.5	3.4	.6	1.8	1.8	2.0	112	470	39	4.1	7.0	3.7
20	6.0	3.6	.6	1.4	1.8	1.8	97	460	32	4.8	8.6	3.9
21	5.5	3.6	.7	1.3	1.8	2.0	80	446	30	3.9	11	3.3
22	5.0	4.2	.8	1.4	1.8	2.2	103	430	* 42	3.5	7.0	3.3
23	4.8	3.0	.8	1.4	1.8	2.2	131	402	39	3.5	4.8	2.5
24	4.6	4.0	.9	1.0	2.0	2.2	177	376	25	4.1	3.5	2.7
25	4.2	3.6	1.0	1.0	2.0	2.0	139	340	19	3.9	* 3.7	1.3
26	4.0	3.4	1.0	1.0	1.8	2.0	77	306	18	3.9	4.5	1.0
27	3.8	3.2	1.0	1.0	1.6	2.2	63	* 328	16	2.7	5.0	1.0
28	3.6	3.0	1.0	1.2	1.8	2.4	63	266	17	2.7	5.0	1.0
29	3.6	2.8	1.0	1.2	2.0	3.4	98	210	18	2.2	5.5	.9
30	4.0	2.8	1.2	1.4	-----	7	* 167	153	20	3.1	6.5	.9
31	4.6	-----	1.0	1.6	-----	15	-----	136	-----	* 5.5	5.2	-----
Total	60.3	109.8	37.8	42.3	49.8	82.6	2,473	8,403	1,925	1,759	207.6	91.9
Mean	1.95	3.66	1.22	1.36	1.72	2.66	82.4	271	64.2	5.67	6.70	3.06
Ac-ft	120	218	75	84	99	164	4,910	16,670	3,820	349	412	182

Calendar year 1963: Max 101 Min 0 Mean 11.8 Ac-ft 8,530
Water year 1963-64: Max 527 Min 0.1 Mean 37.3 Ac-ft 27,100

Peak discharge (base, 350 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-16	1900	4.01	412	5-18	0300	5.26	758
5- 1	2100	3.81	372				

* Discharge measurement made on this day.
Note.--Stage-discharge relation indefinite Oct. 1-15, Oct. 20 to Dec. 5. Stage-discharge relation affected by ice Dec. 31 to Jan. 14, Jan. 24-27, Feb. 1 to Apr. 4.

PLATEAU CREEK BASIN

9-976. Brush Creek near Collbran, Colo.

Location.--Lat 39°19'30", long 107°50'30", in W½ sec.36, T.8 S., R.94 W., on right bank at site of former highway bridge, 1 mile downstream from West Brush Creek, 4 miles upstream from mouth, and 8½ miles northeast of Collbran.

Drainage area.--9.57 sq mi.

Records available.--October 1955 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,183 ft (from topographic map).

Average discharge.--9 years, 6.86 cfs (4,970 acre-ft per year).

Extremes.--Maximum discharge during year, 197 cfs May 17 (gage height, 4.08 ft); minimum not determined.
1955-64: Maximum discharge, 317 cfs June 7, 1957 (gage height, 4.35 ft); minimum daily determined, 0.1 cfs Apr. 1, 2, 1961.

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

Rating table, except periods of ice effect (gage height, in feet,
and discharge, in cubic feet per second)
(Shifting-control method used Apr. 30 to May 12, May 15-24)

1.9	0.2	2.7	21
2.0	.9	3.0	30
2.2	3.3	3.3	70
2.4	7.0	3.7	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	0.8	2.1						16	28	4.3	2.4	0.8
2	.8	2.1						14	28	4.0	2.3	.6
3	.8	2.3						14	28	4.2	2.6	.6
4	.8	2.5						10	28	4.0	2.0	.6
5	.8	2.5						7.4	27	4.2	1.8	.6
6	.8	2.4						6.8	26	4.0	1.6	.6
7	.8	2.4						6.2	25	3.5	1.7	.8
8	.8	2.4					1.5	5.8	* 26	3.5	1.7	.7
9	.8	2.3						6.4	23	* 3.5	1.6	.8
10	.8	2.4	(*)		(*)			9.8	20	3.5	1.6	.7
11	.8	2.3						20	18	3.0	1.3	.6
12	.8	2.3						30	18	2.8	2.4	.5
13	.8	2.1						4.1	16	2.8	3.3	.4
14	.8	2.3		(*)				58	14	2.8	1.9	.4
15	.9	2.1			0.6	0.6	0.8	71	13	2.6	1.6	.6
16	*1.0	2.0	0.8					100	13	2.4	1.8	.6
17	1.1	1.4						107	13	2.4	1.7	.5
18	1.2	* 1.6						* 103	12	2.3	1.6	.4
19	1.6	1.6						103	11	2.1	2.1	.8
20	3.3	1.8						115	9.8	2.0	1.9	.8
21	2.5	2.0						121	9.8	1.9	1.6	.6
22	2.1	2.0						115	* 9.4	2.0	1.4	.5
23	2.3	1.6					7.5	100	6.0	2.8	1.3	.4
24	2.6	1.4						94	5.0	2.8	* 1.1	.4
25	2.4	1.6						77	4.8	2.1	1.0	.5
26	2.3	1.6						70	4.8	1.8	1.0	.7
27	2.1	1.4						64	4.7	1.8	1.6	.8
28	2.0	1.2						54	4.5	1.8	1.0	.9
29	2.0	1.0					(*)	45	4.3	1.8	1.0	.9
30	2.1	1.0					11	40	4.5	2.6	.9	.9
31	2.6							32		* 3.3	.8	
Total	45.3	57.7	24.8	18.6	17.4	24.8	138.5	1,656.4	454.6	88.6	51.6	19.0
Mean	1.46	1.92	0.8	0.6	0.6	0.8	4.6	53.4	15.2	2.86	1.66	0.63
Ac-ft	90	114	49	37	35	49	275	3,290	902	176	102	38

Calendar year 1963: Max 24 Min - Mean 2.85 Ac-ft 2,060
Water year 1963-64: Max 121 Min - Mean 7.10 Ac-ft 5,160

Peak discharge (base, 50 cfs).--May 17 (1700) 197 cfs (4.08 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16, 17, Mar. 31. No gage height record Nov. 18 to Mar. 30, Apr. 1-29 (stage-discharge relation affected by ice during most of periods), July 27-30.

9-1050. Plateau Creek near Cameo, Colo.

Location.--Lat 39°11'00", long 108°16'10", in NW¼SW¼ sec.18, T.10 S., R.97 W., on left bank 300 ft from State Highway 65, 1.1 miles upstream from mouth, and 4 miles northeast of Cameo.

Drainage area.--604 sq mi.

Records available.--October 1935 to September 1964. Prior to May 1936 monthly discharge only, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 4,836 ft (from topographic map). Prior to Aug. 27, 1936, staff gage at same site and datum.

Average discharge.--29 years, 186 cfs (134,700 acre-ft per year).

Extremes.--Maximum discharge during year, 2,020 cfs May 26 (gage height, 6.07 ft); minimum daily, 33 cfs July 27.
1935-64: Maximum discharge, 3,920 cfs May 27, 1942 (gage height, 7.73 ft), from rating curve extended above 3,000 cfs; minimum daily, 13 cfs July 31, 1959.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by storage reservoirs, diversions for irrigation of about 25,000 acres, return flow from irrigated areas, and for power development.

Rating tables, except periods of ice effect (gage height, in feet and discharge, in cubic feet per second)
(Shifting-control method used Apr. 4 to May 17)

Oct. 1 to May 16				May 17 to Sept. 30			
1.8	32	3.0	370	2.1	30	3.5	320
2.0	62	3.6	620	2.4	60	4.0	530
2.3	128			2.8	128	5.2	1,320

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	51	91	62	50	42	40	400	402	281	* 92	52	
2	54	84	66	55	40	42	* 200	358	275	79	58	
3	48	82	67	55	46	44	* 150	194	352	73	90	
4	46	100	66	50	50	42	105	164	302	66	101	
5	43	89	67	46	55	40	123	155	330	63	110	
6	39	93	67	50	55	40	107	134	227	61	87	
7	42	87	64	50	55	40	84	143	195	60	79	
8	45	84	60	40	55	40	67	161	257	59	79	
9	48	76	55	44	50	40	67	134	* 224	* 60	73	
10	44	75	50	48	* 55	40	105	143	172	58	64	
11	42	71	* 55	40	55	39	80	239	160	57	63	
12	46	73	55	36	50	40	161	274	141	51	64	
13	48	76	55	* 36	50	* 46	112	370	124	58	203	
14	44	82	44	40	50	45	* 115	462	106	53	114	
15	48	* 76	48	44	50	43	190	* 546	112	48	84	
16	* 50	70	46	44	50	48	242	615	106	70	85	
17	52	65	50	42	55	56	274	634	112	46	80	
18	56	70	55	38	55	60	187	* 664	126	48	70	
19	67	70	55	38	50	60	143	802	120	40	80	
20	212	75	50	38	46	48	184	946	110	40	110	
21	105	75	55	40	40	57	* 110	1,000	97	44	95	
22	98	70	55	44	38	71	155	1,100	* 110	45	90	
23	91	71	55	42	36	66	152	1,260	122	43	75	
24	89	73	55	40	* 36	64	242	1,180	112	52	65	
25	87	71	50	40	36	56	264	* 1,210	104	41	* 58	
26	84	66	50	40	42	49	149	1,160	97	35	57	
27	80	71	55	40	48	49	120	1,140	99	33	53	
28	78	69	55	40	44	51	102	918	88	42	53	
29	80	60	50	42	40	80	149	694	90	43	52	
30	82	64	50	46	-----	120	208	450	92	43	52	
31	140	-----	55	44	-----	250	-----	320	-----	* 71	53	-----
Total	2,139	2,279	1,722	1,342	1,374	1,806	4,747	17,972	4,843	1,664	2,449	2,700
Mean	69.0	76.0	55.5	43.3	47.4	58.3	158	580	161	53.7	79.0	90
Ac-ft	4,240	4,520	3,420	2,660	2,730	3,580	9,420	35,650	9,610	3,300	4,860	5,360

Calendar year 1963: Max 288 Min 19 Mean 80.0 Ac-ft 57,950
Water year 1963-64: Max 1,260 Min 33 Mean 123 Ac-ft 89,350

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 10-16, Mar. 29 to Apr. 3, May 21, 22, Aug. 16-24, Sept. 1-30. Stage-discharge relation affected by ice Nov. 16-22, Dec. 9 to Mar. 10.

GUNNISON RIVER BASIN

9-1085. Taylor Park Reservoir at Taylor Park, Colo.

Location.--Lat 38°49'05", long 106°36'15", in sec.24, T.14 S., R.83 W., at dam on Taylor River just downstream from Taylor Park, 17 miles northeast of Almont.

Drainage area.--254 sq mi (revised).

Records available.--October 1937 to September 1964. Prior to October 1938, published in WSP 1313.

Gage.--Staff gage read once or twice daily. Datum of gage is 9,187 ft above mean sea level (Bureau of Reclamation bench mark); gage readings have been reduced to elevations above mean sea level.

Extremes.--Maximum contents observed during year, 107,300 acre-ft July 14-20 (elevation, 9,330.50 ft); minimum, 32,830 acre-ft Nov. 2 (elevation, 9,280.00 ft).

1937-64: Maximum contents observed, 111,000 acre-ft July 1, 1957 (elevation, 9,332.35 ft); minimum (after first filling), 8,780 acre-ft Oct. 19, 20, 1956 (elevation, 9,240.70 ft).

Remarks.--Reservoir is formed by an earth- and rock-fill dam. Dam completed by Bureau of Reclamation in September 1937. Capacity of reservoir, 106,200 acre-ft between elevations 9,187 (bottom of outlet gates) and 9,330 ft (crest of spillway). No dead storage. Water used for irrigation in Uncompahgre Valley. Figures given herein are usable contents.

Cooperation.--Records furnished by Uncompahgre Valley Water Users Association.

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.....	9,291.60	44,710	-
Oct. 31.....	9,280.10	32,920	-11,790
Nov. 30.....	9,283.10	35,470	+2,550
Dec. 31.....	9,285.50	37,800	+2,330
Calendar year 1963.....	-	-	+33,420
Jan. 31.....	9,287.80	40,290	+2,490
Feb. 29.....	9,289.90	42,700	+2,410
Mar. 31.....	9,292.40	45,680	+2,980
Apr. 30.....	9,295.90	50,000	+4,320
May 31.....	9,312.70	74,400	+24,400
June 30.....	9,328.50	103,100	+28,700
July 31.....	9,330.00	106,200	+3,100
Aug. 31.....	9,325.82	97,640	-8,560
Sept. 30.....	9,312.90	74,740	-22,900
Water year 1963-64.....	-	-	+30,030

† Elevation at 0800.

9-1090. Taylor River below Taylor Park Reservoir, Colo.

Location.--Lat 38°48'50", long 106°36'40", in sec.24, T.14 S., R.83 W., on left bank 500 ft downstream from Taylor Park Reservoir Dam, 3 1/2 miles upstream from Lottis Creek, and 16 miles northeast of Almont.

Drainage area.--254 sq mi.

Records available.--June 1929 to September 1934 (monthly discharge only, published in WSP 1313), October 1938 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 9,169.67 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Nov. 11, 1952, at site 1,000 ft downstream at datum 1.00 ft lower. Oct. 15, 1946, to May 4, 1952, supplementary chain and staff gages just downstream from reservoir outlet at different sites and datums used during winter months.

Average discharge.--31 years, 184 cfs (133,200 acre-ft per year).

Extremes.--Maximum discharge during year, 712 cfs Sept. 11 (gage height, 5.17 ft); minimum daily, 3.8 cfs June 19 to July 5. 1938-64; Maximum discharge, 2,270 cfs July 1, 1957 (gage height, 7.56 ft); no flow May 1 to July 3, 1940, May 7-22, 1942, May 5-21, 1943.

Remarks.--Records good. Flow regulated by Taylor Park Reservoir (see preceding page) since 1937. One small diversion from Willow Creek above reservoir.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 15 to May 14)

1.9	3.0	3.0	61
2.1	5.0	3.5	137
2.2	7.0	4.0	265
2.4	13	5.0	640
2.6	23	5.5	860

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	384	91	12	4.5	4.0	4.0	4.5	5.0	4.3	3.8	180	516
2	384	90	12	4.0	4.0	4.0	4.5	5.0	4.3	3.8	180	576
3	374	82	* 12	4.0	4.0	4.0	4.5	5.0	4.3	3.8	180	608
4	366	81	12	4.0	4.0	4.0	4.5	5.0	4.2	3.8	180	616
5	366	* 35	8.0	4.0	4.0	4.0	4.5	4.8	4.3	3.8	111	668
6	366	13	5.0	4.0	4.0	4.0	4.5	102	4.3	15	77	702
7	363	13	5.0	4.0	4.0	4.0	4.5	240	4.3	77	84	702
8	* 363	12	5.0	4.0	4.0	4.0	4.5	175	4.3	126	135	648
9	370	12	5.0	4.0	4.0	4.0	4.5	78	* 4.5	* 155	175	664
10	366	12	5.0	4.0	4.0	4.0	4.5	92	4.5	166	217	702
11	366	12	5.0	4.0	4.0	4.0	5.0	38	4.5	168	360	707
12	366	12	5.0	4.0	4.0	4.0	5.0	5.0	4.5	168	405	707
13	370	12	5.0	4.0	4.0	4.0	5.0	* 5.0	4.5	164	408	707
14	370	12	5.0	4.0	4.0	4.0	5.0	5.4	4.5	162	155	702
15	360	12	5.0	4.0	4.0	4.0	5.0	5.4	4.5	168	77	702
16	332	12	5.0	4.0	4.0	4.0	5.0	6.2	4.5	188	141	596
17	296	12	5.0	4.0	4.0	4.0	5.0	6.2	4.5	214	296	548
18	268	12	5.0	4.0	4.0	4.0	5.0	5.6	4.2	202	296	464
19	259	12	5.0	4.0	4.0	4.0	5.0	5.4	3.8	180	296	426
20	195	12	5.0	4.0	4.0	4.5	5.0	5.4	3.8	159	300	430
21	132	12	5.0	4.0	4.0	4.5	* 5.0	5.4	3.8	250	300	363
22	110	12	5.0	4.0	4.0	4.5	5.0	5.4	3.8	346	300	162
23	100	12	5.0	4.0	4.0	4.5	5.0	5.2	3.8	296	300	109
24	100	12	5.0	4.0	4.0	4.5	5.0	5.2	* 3.8	229	321	109
25	102	12	5.0	4.0	4.0	4.5	5.0	5.2	3.8	185	468	108
26	102	12	5.0	4.0	4.0	4.5	5.0	5.4	3.8	185	* 508	106
27	103	12	5.0	4.0	4.0	4.5	5.2	4.9	3.8	180	508	108
28	103	12	5.0	4.0	4.0	4.5	39	4.5	3.8	* 178	516	108
29	102	12	5.0	4.0	4.0	4.5	78	4.4	3.8	108	516	108
30	85	12	5.0	4.0	-----	4.5	36	4.4	3.8	85	512	108
31	90	-----	5.0	4.0	-----	4.5	-----	4.4	-----	180	512	-----
Total	9,013	681	186.0	124.5	116.0	130.0	283.2	897.0	124.6	4,553.0	9,014	13,780
Mean	258	22.7	6.00	4.02	4.00	4.19	9.44	28.9	4.15	147	291	459
Ac-ft	15,890	1,350	369	247	230	258	562	1,780	247	9,030	17,880	27,330

Calendar year 1963: Max 743 Min 5.0 Mean 181 Ac-ft 131,000
Water year 1963-64: Max 707 Min 3.8 Mean 104 Ac-ft 75,170

* Discharge measurement made on this day.

Note.--Discharge computed from once daily chain-gage readings Oct. 22, 23, Nov. 6-15, Nov. 26 to Apr. 21, Apr. 28 to May 12.

GUNNISON RIVER BASIN

9-1100. Taylor River at Almont, Colo.

Location.--Lat 38°40', long 106°51', in sec.22, T.51 N., R.1 E., on left bank at Almont, 15 ft downstream from bridge on State Highway 306 and 800 ft upstream from confluence with East River.

Drainage area.--477 sq mi.

Records available.--July 1910 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 8,010.76 ft above mean sea level, datum of 1929. Prior to Apr. 16, 1922, staff gage at same site and datum.

Average discharge.--54 years, 339 cfs (245,400 acre-ft per year).

Extremes.--Maximum discharge during year, 806 cfs Sept. 15 (gage height, 2.89 ft); minimum daily, 38 cfs Jan. 15, Mar. 4.

1910-64: Maximum discharge observed, 3,760 cfs June 9, 1920, from rating curve extended above 2,300 cfs; maximum gage height, 5.32 ft July 1, 1957; minimum discharge observed before storage began in Taylor Park Reservoir, 50 cfs for several days in August 1913 (gage height, 1.2 ft); minimum daily, 24 cfs Mar. 12, 1938.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Flow regulated since September 1937 by Taylor Park Reservoir (see elsewhere in this report), 24 miles above station. Diversions for irrigation of about 360 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 Oct. 1-16, July 7 to Sept. 30)

0.8	44	1.6	225
1.0	73	2.0	385
1.3	135	2.8	830

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	135	80	50	50	44	46	120	292	150	296	595
2	* 420	138	80	50	50	46	44	122	288	142	292	634
3	405	132	75	50	50	46	44	90	304	135	304	686
4	390	138	* 75	50	* 50	* 38	46	82	304	130	300	696
5	390	* 130	75	50	50	40	46	80	328	135	246	728
6	385	75	75	48	50	42	46	155	336	135	178	776
7	385	73	70	46	48	42	* 46	316	376	175	175	782
8	385	70	70	* 44	46	42	45	332	425	232	211	740
9	385	68	70	46	50	40	47	187	* 332	* 264	272	740
10	385	68	65	46	55	42	48	225	336	284	292	782
11	385	67	60	46	50	40	48	222	349	292	410	782
12	385	65	60	44	48	42	49	140	320	292	495	782
13	376	63	60	42	46	44	47	* 181	304	288	546	782
14	376	65	65	40	46	44	49	204	288	284	344	782
15	372	63	70	38	44	44	57	225	288	284	175	794
16	354	63	70	46	42	46	68	250	296	300	197	722
17	332	59	70	50	44	46	71	268	292	340	372	644
18	312	62	65	55	46	46	65	288	296	336	367	562
19	308	73	60	55	48	44	65	284	260	304	372	496
20	300	78	60	55	48	42	70	312	242	276	405	490
21	200	76	60	50	46	44	62	* 376	228	328	380	450
22	160	76	65	50	46	46	* 70	440	228	465	372	296
23	152	70	65	50	44	46	75	425	204	415	367	181
24	152	71	65	50	44	46	87	425	* 190	372	362	178
25	150	73	60	55	44	46	88	450	187	324	502	172
26	150	68	60	55	42	46	70	556	181	304	* 590	175
27	148	82	60	50	42	46	63	540	175	292	612	175
28	138	80	60	50	42	44	78	440	175	* 292	600	172
29	132	80	60	50	42	42	178	410	172	242	600	166
30	132	80	60	50	-----	44	163	336	163	181	600	166
31	138	-----	55	50	-----	46	-----	316	-----	292	595	-----
Total	9,102	2,441	2,045	1,511	1,353	1,356	1,981	8,797	8,159	8,285	11,819	16,116
Mean	294	81.4	66.0	48.7	46.7	43.7	66.0	284	272	267	381	537
Ac-ft	18,050	4,840	4,060	3,000	2,680	2,690	3,930	17,450	16,180	16,430	23,440	31,970

Calendar year 1963: Max 758 Min 30 Mean 246 Ac-ft 178,300
Water year 1963-64: Max 794 Min 38 Mean 199 Ac-ft 144,700

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1, 2, Nov. 28 to Apr. 7 (stage-discharge relation affected by ice during most of period).

9-1122. East River below Cement Creek, near Crested Butte, Colo.

Location.--Lat 38°47'25", long 106°52'20", in sec.34, T.14 S., R.85 W., on left bank at downstream side of private bridge, 1.1 miles downstream from Cement Creek and 8 miles southeast of Crested Butte.

Drainage area.--235 sq mi.

Records available.--October 1963 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,450 ft (from topographic map).

Extremes.--Maximum discharge during year, 2,020 cfs May 21 (gage height, 7.57 ft); minimum daily, 38 cfs Jan. 14.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 4,500 acres above and below station.

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

3.8	42	6.0	700
4.0	60	7.0	1,500
4.5	150	7.4	1,860
5.0	300		

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	58	61	55	51	44	40	48	226	852	740	217	122
2	* 58	61	54	51	44	42	48	211	798	725	202	116
3	59	62	52	b 48	42	44	48	162	888	655	211	108
4	58	68	* 53	b 46	* 42	* 42	46	155	866	650	202	104
5	58	* 71	55	b 48	44	41	45	160	1,060	634	196	104
6	59	68	53	b 46	46	41	49	146	1,150	618	196	102
7	60	74	53	49	46	41	*48	165	1,360	582	190	110
8	59	70	48	*b 48	46	41	49	172	1,470	530	187	106
9	59	68	53	b 48	44	b 44	48	178	* 1,030	* 478	170	110
10	58	70	54	49	44	46	49	268	* 1,090	494	162	110
11	57	68	53	b 46	46	b 44	49	328	1,190	462	150	102
12	56	66	b 50	b 44	46	b 44	48	356	1,240	454	155	100
13	55	65	b 50	b 40	46	46	49	* 462	1,200	426	247	96
14	54	66	b 50	38	44	45	50	558	1,050	374	205	96
15	53	64	55	46	44	45	54	* 725	1,180	386	199	108
16	52	66	b 50	50	42	45	61	928	1,290	506	211	112
17	54	58	54	55	42	b 42	77	1,130	1,190	442	205	102
18	53	55	54	55	42	45	88	1,320	1,150	390	152	98
19	55	57	53	50	42	44	92	1,430	912	335	165	96
20	66	56	53	50	42	44	92	1,640	880	296	262	96
21	65	60	52	50	40	b 44	85	* 1,800	904	282	223	100
22	68	62	b 50	46	40	b 42	* 102	1,810	944	307	190	100
23	64	51	b 48	42	40	44	108	1,710	720	346	172	98
24	61	57	b 50	42	40	44	134	1,660	* 745	442	158	94
25	59	66	51	46	40	44	136	1,700	859	360	146	92
26	58	57	51	46	40	44	116	1,770	896	293	* 146	106
27	58	62	50	44	40	42	96	1,620	880	259	165	110
28	57	58	50	44	40	42	100	1,390	904	* 241	144	102
29	58	52	50	44	40	44	126	1,300	824	226	132	98
30	60	53	b 48	42	-----	45	168	1,010	792	217	128	96
31	66	-----	51	42	-----	47	-----	896	-----	223	124	-----
Total	1,815	1,872	1,603	1,446	1,238	1,348	2,309	27,386	30,314	13,373	5,612	3,094
Mean	58.5	62.4	51.7	46.6	42.7	43.5	77.0	883	1,010	431	181	103
Ac-ft	3,600	3,710	3,180	2,870	2,460	2,670	4,580	54,320	60,130	26,520	11,130	6,140

Calendar year 1963: Max - Min - Mean - Ac-ft -
 Water year 1963-64: Max 1,810 Min 38 Mean 250 Ac-ft 181,300

Peak discharge (base, 1,500 cfs)--May 21 (2345) 2,020 cfs (7.57 ft); June 8 (0100) 1,610 cfs (7.17 ft)

* Discharge measurement made on this day.
 b Stage-discharge relation affected by ice.
 Note.--No gage-height record Oct. 1, 2, Jan. 14 to Mar. 4 (stage-discharge relation affected by ice during part of period).

GUNNISON RIVER BASIN

9-1125, East River at Almont, Colo.

Location.--Lat 38°40', long 106°51', in sec.22, T.51 N., R.1 E., on left bank at Almont, 200 ft upstream from bridge on State Highway 135 and 400 ft upstream from confluence with Taylor River.

Drainage area.--295 sq mi.

Records available.--April to October 1905, July 1910 to September 1922, October 1934 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 8,006.29 ft above mean sea level, datum of 1929. Apr. 16 to Sept. 30, 1905, and July 27, 1910, to Apr. 30, 1922, staff gages at bridge 200 ft downstream at different datums. Oct. 1, 1934, to Sept. 22, 1954, water-stage recorder at present site at datum 2.00 ft higher.

Average discharge.--42 years, 341 cfs (246,900 acre-ft per year).

Extremes.--Maximum discharge during year, 2,060 cfs May 22 (gage height, 5.45 ft); minimum daily, 36 cfs Jan. 14, 1905, 1910-22, 1934-64: Maximum discharge observed, 6,500 cfs June 15, 1921 (gage height, 6.6 ft, site and datum then in use), from rating curve extended above 3,000 cfs; minimum daily, 19 cfs Aug. 13, 1913.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 7,400 acres above station.

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

1.8	30	3.5	610
2.0	62	4.0	900
2.4	165	5.0	1,660
3.0	390	5.5	2,110

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	74	80	74	50	48	44	45	196	816	700	228	128
2	74	76	74	50	48	48	45	190	756	660	224	120
3	69	76	65	46	46	50	44	150	822	620	224	118
4	67	80	*60	46	*46	*48	42	138	792	600	221	112
5	67	*80	60	48	48	50	47	144	960	560	218	112
6	67	78	60	48	50	50	47	135	1,030	520	207	110
7	64	93	60	48	50	50	*47	141	1,280	500	207	115
8	*64	90	55	*46	48	47	47	150	1,500	460	235	112
9	67	78	55	46	48	44	45	147	*995	*400	218	115
10	67	80	55	50	48	45	45	210	995	410	207	118
11	64	80	50	50	50	42	48	260	1,100	398	193	110
12	59	78	50	50	50	48	48	294	1,170	378	193	108
13	54	76	50	44	50	45	47	374	1,160	382	270	105
14	52	78	50	36	48	40	52	478	998	342	238	102
15	52	78	55	48	46	39	60	615	1,090	334	221	105
16	50	78	60	55	46	44	69	798	1,240	402	232	110
17	50	65	60	60	46	45	85	967	1,110	386	235	102
18	50	65	55	60	48	45	92	1,220	1,000	350	186	100
19	54	65	50	55	48	44	100	1,320	880	314	190	102
20	62	65	50	55	46	42	100	1,580	900	270	270	98
21	60	71	50	55	44	44	95	*1,780	360	249	249	90
22	62	65	50	50	42	44	*102	1,800	1,000	256	221	92
23	62	64	55	46	42	42	110	1,620	*740	266	204	90
24	59	69	55	46	42	44	132	1,600	740	394	190	88
25	59	74	55	50	42	42	135	1,630	810	346	176	88
26	57	64	50	50	40	44	118	1,720	840	290	*165	95
27	57	74	50	48	44	42	105	1,600	846	256	176	100
28	55	69	50	48	42	42	102	1,320	840	*238	156	100
29	55	62	50	48	42	42	120	1,210	780	228	144	95
30	57	64	50	46	-----	42	141	942	720	224	138	98
31	67	-----	50	46	-----	42	-----	840	-----	218	132	-----
Total	1,877	2,195	1,713	1,524	1,338	1,380	2,315	25,569	28,860	11,947	6,368	3,138
Mean	60.5	73.2	55.3	49.2	46.1	44.5	77.2	825	962	385	205	105
Ac-ft	3,720	4,350	3,400	3,020	2,650	2,740	4,590	50,720	57,240	23,700	12,630	6,220

Calendar year 1963: Max 1,290 Min 40 Mean 187 Ac-ft 135,200
 Water year 1963-64: Max 1,800 Min 36 Mean 241 Ac-ft 175,000

Peak discharge (base, 1,600 cfs).--May 22 (0330) 2,060 cfs (5.45 ft); June 8 (0230) 1,640 cfs (4.97 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17-20, 22, Dec. 3 to Mar. 7 (no gage-height record Dec. 23-26, Jan. 4 to Mar. 4). No gage-height record June 18-24, June 28 to July 9.

9-1133. Ohio Creek at Baldwin, Colo.

Location.--Lat 38°45'55", long 107°03'30", in NE¼ sec.12, T.15 S., R.87 W., on left bank three quarters of a mile northwest of Baldwin and 0.2 mile downstream from Castle Creek.

Drainage area.--48 sq mi, approximately.

Records available.--October 1958 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,600 ft (from topographic map).

Average discharge.--6 years, 39.8 cfs (28,810 acre-ft per year).

Extremes.--Maximum discharge during year, 499 cfs May 21 (gage height, 3.39 ft); maximum gage height, 3.65 Apr. 21 (backwater from ice); minimum discharge not determined.

1958-64: Maximum discharge, about 550 cfs May 9, 1962; maximum gage height, 3.77 ft May 12, 1962; minimum daily discharge determined, 3.8 cfs July 29, 1963.

Remarks.--Records good except those for period of ice effect, which are poor. Diversions above station for irrigation of about 580 acres of hay meadows. Two diversions above station for irrigation of about 1,000 acres below station.

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

1.3	6.0	2.5	135
1.5	12	2.8	210
1.8	36	3.2	390
2.2	85		

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	11						57	119	81	28	13
2	6.6	11						40	121	76	24	12
3	6.6	11	(*)					28	127	77	21	11
4	6.6	11			(*)			26	145	71	24	10
5	6.6	* 12						28	162	69	34	11
6	6.6	11						28	178	63	31	11
7	6.6	11						31	133	51	24	12
8	* 6.9	10		(*)			7	28	254	* 40	21	12
9	7.2	11						34	* 178	34	20	12
10	6.9	11						62	170	33	16	11
11	6.9	10						73	192	31	15	10
12	7.2	11						80	183	28	21	9.7
13	7.2	11						102	165	25	75	9.7
14	6.9	11						* 119	147	22	36	10
15	7.2	11						153	175	25	27	12
16	7.2	11	8.5	8.5	7.5	7	7.5	201	155	36	26	11
17	7.2	10						8	263	147	23	10
18	7.5	9.5						9	290	129	37	9.0
19	8.1	10						11	320	121	24	8.1
20	15	10						10	330	131	12	7.5
21	11	11						* 9.5	* 355	125	9.7	8.4
22	10	11						12	335	119	15	8.1
23	9.7	10						20	276	104	34	7.5
24	10	10						30	258	109	69	8.7
25	9.7	11						26	281	* 110	40	9.7
26	9.4	10						24	300	105	30	10
27	9.4	10						18	245	102	27	10
28	9.0	10						22	214	101	* 27	10
29	9.7	9.5						36	186	95	24	10
30	9.4	9						43	149	84	22	10
31	11	-----						125	-----	25	14	-----
Total	255.9	316.0	263.5	263.5	217.5	217	397.0	5,017	4,236	1,205.7	774	304.4
Mean	8.25	10.5	8.5	8.5	7.5	7	13.2	162	141	38.9	25.0	10.1
Ac-ft	508	627	523	523	431	430	787	9,950	8,400	2,390	1,540	604

Calendar year 1963: Max 143 Min - Mean 21.6 Ac-ft 15,650
 Water year 1963-64: Max 355 Min - Mean 36.8 Ac-ft 26,710

Peak discharge (base, 300 cfs).--May 21 (1830) 499 cfs (3.39 ft); June 8 (0030) 340 cfs (3.10 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17 to Apr. 25 (no gage-height record Nov. 17, 18, Dec. 25 to Apr. 21).

9-1135. Ohio Creek near Baldwin, Colo.

Location.--Lat 38°42', long 107°00", in SW¼ sec.34, T.15 S., R.86 W., on right bank 600 ft upstream from bridge, 800 ft downstream from Mill Creek, 5½ miles southeast of Baldwin, and 11 miles upstream from mouth.

Drainage area.--124 sq mi.

Records available.--April 1940 to September 1950, October 1958 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 8,180 ft (by barometer). Prior to Apr. 3, 1942, staff gage at present site and datum. Apr. 3, 1942, to Sept. 30, 1950, water-stage recorder at present site and datum.

Average discharge.--16 years, 86.7 cfs (62,770 acre-ft per year).

Extremes.--Maximum discharge during year, 610 cfs July 23 (gage height, 2.85 ft); minimum not determind.

1940-50, 1958-64: Maximum discharge, 1,260 cfs May 19, 1948 (gage height, 4.65 ft), from rating curve extended above 560 cfs; minimum daily, 6.9 cfs Sept. 12, 1960.

Floods in May 1952 and June 1957 reached a stage of 5.5 ft, from floodmarks (discharge, about 1,500 cfs).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of 3,850 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 1-15)

0.1	8	1.0	78
.3	15	1.5	162
.5	26	2.0	290
.7	42	2.5	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	9.8	13					11	124	184	124	54	28
2	9.5	13					10	98	193	119	45	25
3	9.5	14	(*)				10	63	200	116	44	22
4	9.5	16			(*)		11	57	212	110	59	21
5	9.5	* 18				(*)	11	59	230	108	74	21
6	9.2	17					12	54	254	98	64	22
7	9.8	18					* 12	58	293	82	55	24
8	* 9.8	16		(*)			12	59	320	* 75	48	21
9	10	16					11	55	* 233	69	42	22
10	10	15					12	79	242	69	38	22
11	9.8	15					12	102	251	63	36	19
12	10	15					12	105	236	61	41	18
13	10	16					12	140	220	59	106	16
14	9.8	16					13	* 176	212	58	59	16
15	10	15					18	222	233	68	49	19
16	10	15	12	11	9	9	24	263	225	97	45	19
17	9.8	13					32	305	204	105	45	16
18	9.8	12					46	344	193	81	38	16
19	11	13					70	390	168	60	43	16
20	21	13					65	428	172	48	85	16
21	16	14					* 60	439	164	38	55	21
22	14	14					55	* 422	166	55	44	23
23	13	13					70	404	137	150	36	21
24	13	14					80	390	140	197	30	20
25	13	16					70	400	* 148	95	26	20
26	12	14					50	432	144	74	40	22
27	12	15					34	397	152	63	* 60	22
28	11	14					50	320	154	* 53	36	21
29	12	13					70	284	146	48	30	20
30	11	13					100	220	133	43	28	21
31	15							189		50	27	
Total	349.8	439	372	341	261	279	1,055	7,068	3,959	2,536	1,482	610
Mean	11.3	14.6	12	11	9	9	35.2	228	199	81.8	47.8	20.3
Ac-ft	694	871	738	676	518	553	2,090	14,020	11,820	5,030	2,940	1,210

Calendar year 1963: Max 191 Min - Mean 37.7 Ac-ft 27,280
 Water year 1963-64: Max 439 Min - Mean 56.7 Ac-ft 41,160

Peak discharge (base, 450 cfs).--May 21 (2300) 570 cfs (2.73 ft); July 23 (2345) 610 cfs (2.85 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18 to Dec. 16, Dec. 20-27, Jan. 18-26, Apr. 12, 15-30. No gage-height record Dec. 17-19, Dec. 28 to Jan. 17, Jan. 27 to Apr. 7 (stage-discharge relation affected by ice most of periods), Aug. 20-27.

9-1145. Gunnison River near Gunnison, Colo.

Location.--Lat 38°32'50", long 106°57'00", on line between secs. 34 and 35, T.50 N., R.1 W., on right bank 1,500 ft downstream from Antelope Creek and 1 mile west of Gunnison.

Drainage area.--1,010 sq mi, approximately.

Records available.--October 1910 to December 1928, October 1944 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,670 ft (from river-profile map). Nov. 25, 1910, to Dec. 31, 1928, staff or chain gages (supplementary water-stage recorder Apr. 28, 1916, to June 17, 1918) at bridge about 1 mile downstream at various datums.

Average discharge.--38 years, 778 cfs (563,200 acre-ft per year).

Extremes.--Maximum discharge during year, 2,740 cfs May 27 (gage height, 4.32 ft); minimum daily, 100 cfs Jan. 14, 15.
1910-28, 1944-64: Maximum discharge observed, 11,400 cfs June 13, 1918 (gage height, 4.05 ft, site and datum then in use), from rating curve extended above 5,000 cfs; minimum daily, 80 cfs Dec. 27, 1962.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Flow regulated by Taylor Park Reservoir (see elsewhere in this report), 37 miles above station. Diversions for irrigation of about 22,000 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 Apr. 10-30)

1.2	135	3.0	1,250
1.4	195	3.5	1,680
1.6	270	4.0	2,270
2.0	500	4.2	2,530

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	500	230	140	140	120	120	120	514	1,190	938	633	752
2	493	223	150	140	120	120	120	496	1,150	898	626	759
3	500	226	150	130	120	120	120	337	1,200	794	640	815
4	496	242	*150	130	120	120	110	274	1,200	766	647	822
5	490	*238	150	130	*120	120	120	266	1,360	745	661	850
6	490	196	150	130	120	120	130	262	1,430	738	570	906
7	490	177	150	120	110	120	*130	376	1,710	717	514	906
8	490	168	140	120	110	120	130	514	2,170	*668	591	843
9	*490	153	140	120	120	110	130	315	1,520	661	619	822
10	493	150	150	*120	120	120	130	348	*1,410	682	605	866
11	486	150	170	120	120	110	140	528	1,510	661	717	836
12	496	150	160	120	120	120	140	*394	1,540	654	801	822
13	472	156	150	110	120	120	140	598	1,540	682	1,030	822
14	465	153	130	100	120	120	150	752	1,380	619	822	829
15	465	156	130	100	120	110	174	930	1,440	619	563	850
16	437	153	150	110	120	120	220	1,160	1,610	696	556	808
17	406	140	160	120	120	*120	254	1,300	1,500	759	752	675
18	376	130	150	130	120	120	262	1,570	1,500	745	675	626
19	354	130	150	130	120	120	270	1,600	1,250	675	675	549
20	430	140	160	130	120	120	315	1,890	1,190	591	843	535
21	326	150	150	120	110	120	266	*2,170	1,190	591	780	521
22	266	140	140	120	110	120	*273	2,300	1,200	780	724	430
23	246	130	130	120	110	120	279	2,110	1,030	801	689	274
24	234	140	130	120	120	120	354	2,030	945	1,190	654	250
25	226	150	130	120	110	120	364	2,160	*1,000	954	*717	250
26	223	140	140	120	110	120	279	2,430	1,030	794	794	258
27	220	140	140	130	110	110	238	2,370	1,030	717	850	258
28	220	140	150	130	110	110	216	1,910	1,070	668	822	246
29	202	130	150	130	110	110	382	1,750	1,060	*605	787	223
30	202	130	150	130	-----	110	444	1,390	1,020	521	766	223
31	216	-----	140	130	-----	110	-----	1,250	-----	591	766	-----
Total	11,980	4,847	4,540	3,820	3,390	3,640	6,406	36,344	39,376	22,520	21,889	18,626
Mean	383	162	146	123	117	117	214	1,172	1,313	726	706	621
Ac-ft	23,560	9,610	9,000	7,580	6,700	7,220	12,710	72,090	78,100	44,670	43,420	36,940

Calendar year 1963: Max 1,390 Min 120 Mean 464 Ac-ft 336,200
Water year 1963-64: Max 2,430 Min 100 Mean 484 Ac-ft 351,600

* Discharge measurement made on this day.
Note.--No gage-height record Oct. 5-9, Dec. 1 to Mar. 2, Mar. 26 to Apr. 14 (stage-discharge relation affected by ice during part of periods). Stage-discharge relation affected by ice Nov. 17-30, Mar. 3-25.

GUNNISON RIVER BASIN

9-1155. Tomichi Creek at Sargents, Colo.

Location.--Lat 38°24', long 106°25', in SW¼ sec.21, T.48 N., R.5 E., on right bank 300 ft from U. S. Highway 50, half a mile downstream from Marshall Creek, and three-quarters of a mile south of Sargents.

Drainage area.--155 sq mi.

Records available.--October 1916 to September 1922, October 1937 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 8,420 ft (estimated from railroad elevation). May 12 to Oct. 5, 1917, staff gage and Oct. 6, 1917, to Sept. 30, 1922, water-stage recorder, at railroad bridge 1,000 ft upstream at different datum. Apr. 18, 1938, to Sept. 9, 1953, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge.--33 years, 63.4 cfs (45,900 acre-ft per year).

Extremes.--Maximum discharge during year, 440 cfs May 27 (gage height, 2.55 ft); maximum gage height, 3.10 ft Apr. 16 (backwater from ice); minimum daily discharge, 12 cfs Jan. 13, 14.
1916-22, 1937-64: Maximum discharge, 804 cfs June 6, 1957 (gage height, 3.66 ft); maximum gage-height, 3.74 ft Mar. 24, 1963 (backwater from ice); minimum discharge recorded, 6 cfs Nov. 16, 1920.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 1,900 acres above station. Larkspur ditch diverts water above station to Arkansas River basin (see elsewhere in this report).

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

0.7	11	1.6	146
.8	18	2.0	258
1.0	38	2.6	450
1.3	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	21	26	16	17	19	19	20	96	258	73	50	26
2	21	27	17	17	22	19	22	82	264	67	55	25
3	* 21	28	17	17	20	* 20	22	68	255	62	50	25
4	21	28	18	16	19	19	20	61	242	58	47	25
5	21	28	* 19	15	* 19	20	20	59	252	62	47	24
6	21	* 28	18	15	20	22	* 20	57	258	62	41	22
7	21	27	17	16	19	22	20	58	287	57	39	22
8	22	26	17	16	19	20	22	61	300	53	49	20
9	23	27	18	* 16	20	19	24	56	248	54	41	21
10	23	26	18	16	22	20	26	62	* 252	* 54	42	21
11	23	24	18	15	24	19	28	72	255	53	39	19
12	24	22	17	13	24	18	28	65	229	54	45	18
13	23	22	16	12	22	20	26	96	218	53	48	17
14	23	22	15	12	20	20	28	* 108	201	59	41	20
15	23	20	14	13	20	19	38	136	198	58	40	26
16	23	19	13	14	18	18	70	168	187	73	40	30
17	23	18	13	15	18	18	100	192	170	76	37	23
18	23	17	14	17	19	18	90	223	163	61	32	23
19	24	17	15	18	20	18	100	223	153	50	31	27
20	30	18	16	18	20	19	* 85	245	146	42	38	31
21	23	19	16	16	19	20	100	* 274	134	42	36	30
22	26	19	16	16	18	22	* 105	322	132	42	32	30
23	25	18	16	16	18	22	112	341	* 112	50	30	27
24	24	18	15	17	18	22	122	364	105	80	29	27
25	24	19	14	18	19	22	82	367	98	70	* 27	28
26	24	19	14	18	18	20	57	380	94	60	28	29
27	24	18	14	17	19	18	48	428	92	48	36	30
28	23	17	14	17	19	17	58	380	92	50	29	29
29	23	16	14	17	19	18	70	351	90	* 46	26	31
30	23	16	15	17	-----	19	72	303	78	48	25	32
31	28	-----	16	18	-----	20	-----	277	-----	46	26	-----
Total	727	649	490	495	571	607	1,635	5,965	5,563	1,763	1,176	758
Mean	23.5	21.6	15.8	16.0	19.7	19.6	54.5	192	185	56.9	37.9	25.3
Ac-ft	1,440	1,290	972	982	1,130	1,200	3,240	11,830	11,030	3,500	2,330	1,500

Calendar year 1963: Max 129 Min 13 Mean 35.2 Ac-ft 25,480

Water year 1963-64: Max 428 Min 12 Mean 55.7 Ac-ft 40,440

Peak discharge (base, 200 cfs)--May 27 (0500) 440 cfs (2.55 ft); June 8 (0330) 325 cfs (2.15 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 11 to Apr. 21 (no gage-height record Dec. 13 to Mar. 3, Mar. 10 to Apr. 6). No gage-height record July 19 to Aug. 3.

9-1170. Tomichi Creek at Parlin, Colo.

Location.--Lat 38°29'50", long 106°43'30", in NW¼ sec.23, T.49 N., R.2 E., on left bank 70 ft upstream from bridge, 0.2 mile south of Parlin, and 0.4 mile upstream from Quartz Creek.

Drainage area.--427 sq mi.

Records available.--October 1944 to September 1951, October 1963 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,910 ft (from topographic map). Prior to October 1963 at site 800 ft downstream at different datum.

Average discharge.--8 years, 60.8 cfs (44,020 acre-ft per year).

Extremes.--Maximum discharge during year, 499 cfs May 28 (gage height, 5.77 ft), from rating curve extended above 210 cfs; minimum daily, 6.4 cfs Oct. 7.

1944-51, 1963-64: Maximum discharge, 669 cfs May 25, 1948 (gage height, 6.37 ft, site and datum then in use), from rating curve extended above 400 cfs; minimum daily, 0.5 cfs Sept. 10-12, 1950.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. 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 June 27 to July 14)

2.6	6.0	3.5	107
2.7	10	4.0	185
2.8	17	5.0	355
3.0	38	5.7	485

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	8.8	30	15	20	18	24	36	147	282	66	59	19
2	8.8	27	15	22	19	26	36	142	278	59	69	20
3	* 8.8	25	15	22	19	* 26	34	118	275	49	67	19
4	8.8	27	15	22	18	26	34	118	256	46	69	19
5	8.8	31	* 14	22	* 17	26	34	102	229	45	70	19
6	8.0	* 30	15	20	17	26	34	90	219	46	67	20
7	6.4	30	16	20	17	28	34	73	214	46	59	21
8	7.6	28	17	22	18	28	34	73	231	40	51	21
9	8.0	24	18	* 22	19	26	* 36	70	243	32	48	21
10	8.4	21	19	20	20	24	40	64	* 200	* 18	44	22
11	9.2	20	18	19	22	24	46	70	174	13	43	18
12	9.2	19	17	18	22	26	50	69	172	15	49	12
13	8.0	18	16	16	22	26	46	71	156	16	53	11
14	8.4	18	15	15	20	26	60	* 104	148	15	53	11
15	8.4	18	14	15	19	24	100	98	147	16	46	14
16	9.2	19	14	17	17	24	200	118	136	19	48	16
17	11	16	14	18	17	26	278	132	125	77	48	16
18	11	17	14	18	17	26	179	155	100	82	43	14
19	14	17	15	17	20	26	214	187	83	60	37	14
20	21	18	16	16	22	28	* 204	199	82	45	40	15
21	20	17	17	16	22	30	143	* 214	77	37	40	16
22	23	17	17	16	20	32	134	226	78	37	37	16
23	25	16	17	16	19	32	136	260	* 78	37	35	17
24	21	16	16	16	19	32	158	294	73	67	31	17
25	21	17	15	16	20	30	159	321	62	124	* 28	16
26	20	17	14	16	22	30	104	346	51	90	29	17
27	20	17	14	16	22	28	88	409	46	71	29	17
28	19	16	15	17	22	28	74	477	51	59	28	19
29	21	15	16	17	22	30	107	398	71	* 63	25	21
30	21	14	17	17	---	32	108	368	71	59	21	19
31	24	---	18	18	---	34	---	316	---	60	19	---
Total	426.8	615	498	562	568	854	2,940	5,829	4,408	1,509	1,385	517
Mean	13.8	20.5	15.7	18.1	19.6	27.5	98.0	188	147	48.7	44.7	17.2
Ac-ft	847	1,220	968	1,110	1,130	1,690	5,830	11,560	8,740	2,990	2,750	1,030

Calendar year 1963: Max - Min - Mean - Ac-ft -
Water year 1963-64: Max 477 Min 6.4 Mean 54.9 Ac-ft 39,860

Peak discharge (base, 250 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-17	0230	5.43	432	6-9	0830	4.39	251
5/28	1000	5.77	499				

* Discharge measurement made on this day.
Note.--No gage-height record Oct. 1-3. Stage-discharge relation affected by ice Nov. 19 to Apr. 16 (no gage-height record Dec. 14 to Mar. 3, Mar. 14 to Apr. 9).

GUNNISON RIVER BASIN

9-1180. Quartz Creek near Ohio City, Colo.

Location.--Lat 38°33'35", long 106°38'10", in SW¼SW¼ sec.27, T.50 N., R.3 E., on left bank 10 ft downstream from bridge on State Highway 162, 0.7 mile downstream from Willow Creek, 1.3 miles southwest of Ohio City, and 1.4 miles downstream from Gold Creek.

Drainage area.--106 sq mi.

Records available.--October 1937 to September 1950 (published as "near Ohio"), October 1959 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 8,430 ft (from topographic map). Prior to Oct. 1, 1945, at site 75 ft upstream at datum 3.00 ft higher. Oct. 1, 1945, to Sept. 30, 1950, at site 75 ft upstream at datum 2.00 ft higher.

Average discharge.--18 years, 52.7 cfs (38,150 acre-ft per year).

Extremes.--Maximum discharge during year, 405 cfs May 26 (gage height, 3.22 ft); minimum daily, 12 cfs Jan. 14. 1937-50, 1959-64: Maximum discharge, 640 cfs May 26, 1942 (gage height, 5.90 ft, present datum), from rating curve extended above 470 cfs; maximum gage-height, 7.73 ft (present datum) July 31, 1945 (backwater from Flick Gulch, 225 ft below station); minimum daily discharge, 8.5 cfs Sept. 30, 1950.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 700 acres above and 200 acres below station. Slight regulation prior to 1946 by small powerplant 3 miles above station.

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

1.6	14	2.2	74
1.8	26	2.5	150
2.0	45	3.1	365

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	22	25	20	19	15	13	17	43	113	69	44	32
2	23	25	22	22	15	13	16	37	110	64	45	29
3	* 21	25	22	20	14	* 13	15	34	113	61	44	24
4	20	27	20	18	13	14	15	33	113	60	43	29
5	20	28	* 20	16	* 13	15	15	32	135	58	41	26
6	21	* 25	b 19	17	13	17	* 15	32	156	57	40	28
7	22	25	b 19	18	13	18	14	32	236	53	40	29
8	22	24	b 19	17	14	18	15	32	240	52	46	28
9	23	24	b 20	* 15	15	17	15	33	138	50	42	29
10	22	25	22	16	15	17	15	34	* 204	* 48	41	30
11	21	26	22	16	15	18	17	40	201	46	43	28
12	22	25	22	14	15	19	17	44	194	45	46	27
13	22	25	20	13	15	19	16	54	180	44	52	27
14	23	26	19	12	14	18	18	* 64	159	50	45	28
15	23	25	19	13	14	17	24	74	165	49	43	32
16	21	25	19	14	14	16	33	106	168	50	42	32
17	21	b 22	19	15	14	16	33	118	150	53	43	29
18	21	b 22	19	16	15	16	32	120	141	50	40	28
19	23	b 22	19	16	16	18	35	123	120	42	38	28
20	32	22	20	16	16	20	* 32	184	118	37	48	30
21	28	24	22	15	16	22	28	215	113	41	41	29
22	25	24	22	14	15	22	34	* 297	110	42	37	29
23	25	22	22	13	14	22	40	313	* 96	43	35	28
24	24	24	22	13	14	22	41	313	92	53	34	27
25	24	24	20	13	15	20	36	329	85	55	* 34	28
26	24	24	19	13	15	18	36	357	83	49	36	28
27	24	22	18	13	15	16	29	321	74	45	41	28
28	24	20	18	13	14	13	31	268	74	44	36	27
29	24	20	18	14	14	14	35	246	76	* 44	33	27
30	24	20	18	15	15	15	38	162	74	45	33	28
31	28	-----	18	15	-----	17	-----	132	-----	43	32	-----
Total	719	717	618	474	420	533	757	4,222	4,031	1,542	1,258	852
Mean	23.2	23.9	19.9	15.3	14.5	17.2	25.2	136	134	49.7	40.6	28.4
Ac-ft	1,430	1,420	1,230	940	833	1,060	1,500	8,370	8,000	3,060	2,500	1,690

Calendar year 1963: Max 132 Min - Mean 32.9 Ac-ft 23,810
 Water year 1963-64: Max 357 Min 12 Mean 44.1 Ac-ft 32,030

Peak discharge (base, 220 cfs)--May 26 (2230) 405 cfs (3.22 ft); June 7 (2400) 317 cfs (2.98 ft).

* Discharge measurement made on this day.

b Stege-discharge relation affected by ice.

Note.--No gage-height record Nov. 20 to Dec. 5, Dec. 10 to Apr. 6 (stege-discharge relation affected by ice during most of periods).

9-1190. Tomichi Creek at Gunnison, Colo.

Location--Lat 38°31'20", long 106°56'25", in NE¼SW¼ sec.11, T.49 N., R.1 W., on right bank 300 ft downstream from highway bridge, 1.8 miles southwest of post office in Gunnison, and 2 miles upstream from mouth.

Drainage area--1,020 sq mi, approximately.

Records available--November and December 1910 (gage heights and discharge measurements only), October 1937 to September 1964. Monthly discharge only for some periods, published in WSP 1313. Published as "near Gunnison" 1910.

Gage--Water-stage recorder. Datum of gage is 7,628.58 ft above mean sea level, datum of 1929. Nov. 25 to Dec. 24, 1910, staff gage 300 ft upstream at different datum. Apr. 20, 1938, to Oct. 2, 1940, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge--27 years, 169 cfs (122,400 acre-ft per year).

Extremes--Maximum discharge during year, 798 cfs May 27 (gage height, 2.84 ft); minimum daily, 12 cfs Oct. 4. 1937-64: Maximum discharge, 1,900 cfs June 8, 1957 (gage height, 4.10 ft); minimum daily, 12 cfs Oct. 4, 1963.

Remarks--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 24,000 acres above station. Water diverted above station by Larkspur ditch to Arkansas River basin since 1935 and by Tarbell ditch to Rio Grande basin since 1914 (see elsewhere in this report).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-6, Apr. 1 to May 4)

0.7	22	2.1	400
.9	40	2.6	640
1.1	70	3.0	880
1.5	170		

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	33	86	48	50	50	55	130	336	490	176	176	84
2	31	92	46	55	55	* 60	130	348	480	155	173	84
3	22	90	44	55	55	60	120	296	465	135	179	72
4	* 12	86	44	55	55	60	120	256	436	130	197	67
5	13	89	44	50	* 50	60	120	228	408	146	191	58
6	14	* 102	* 46	48	50	65	120	204	396	149	188	63
7	14	95	48	48	48	65	120	179	412	140	170	67
8	14	90	50	50	48	60	* 130	173	470	128	164	68
9	16	96	55	* 50	50	55	135	167	432	* 118	161	65
10	18	84	55	50	55	60	149	161	392	105	149	67
11	18	96	55	48	60	55	173	167	* 364	84	146	63
12	18	92	50	44	60	60	182	* 170	352	90	161	58
13	18	88	46	40	60	65	176	158	356	52	200	55
14	18	88	44	38	60	60	197	188	340	60	208	56
15	18	96	42	38	55	60	252	212	336	63	185	63
16	19	88	40	44	50	60	380	252	332	67	167	76
17	20	75	40	46	50	60	500	272	320	86	167	78
18	24	60	40	46	50	60	392	332	296	182	158	76
19	30	55	42	44	55	65	404	384	252	146	143	74
20	35	60	44	42	60	70	* 432	404	228	115	158	78
21	38	65	48	40	60	75	340	* 432	228	102	155	82
22	38	65	48	40	60	80	308	485	232	128	135	80
23	39	60	48	40	55	90	296	545	224	140	125	70
24	52	55	46	40	55	95	328	595	200	191	115	60
25	67	55	44	42	55	95	340	650	* 191	348	* 100	56
26	65	55	42	44	55	95	284	690	173	324	100	56
27	65	55	42	46	55	90	220	768	149	* 232	120	56
28	67	55	42	48	55	80	191	756	152	194	118	55
29	63	50	44	48	55	90	228	708	176	179	105	53
30	65	50	46	48	-----	100	252	605	179	179	95	50
31	74	-----	48	50	-----	120	-----	540	-----	176	86	-----
Total	1,038	2,232	1,421	1,427	1,581	2,225	7,149	11,661	9,461	4,520	4,695	1,990
Mean	33.5	74.4	45.8	46.0	54.5	71.8	238	376	315	146	151	66.3
Ac-ft	2,060	4,430	2,820	2,830	3,140	4,410	14,180	23,130	18,770	8,970	9,310	3,950

Calendar year 1963: Max 605 Min 12 Mean 86.1 Ac-ft 62,330
Water year 1963-64: Max 768 Min 12 Mean 135 Ac-ft 98,000

* Discharge measurement made on this day.
Note--No gage-height record Oct. 3-19, Jan. 5-9, Jan. 13 to Apr. 8 (stage-discharge relation affected by ice during part of periods). Stage-discharge relation affected by ice Nov. 17 to Jan. 4, Jan. 10-12.

GUNNISON RIVER BASIN

9-1225, Soap Creek near Sapinero, Colo.

Location.--Lat 38°33'40", long 107°19'30", in SW¼ sec.29, T.50 N., R.4 W., on right bank 1½ miles upstream from Cow Creek and 6½ miles north of Sapinero.

Drainage area.--57.3 sq mi.

Records available.--August 1955 to September 1964.

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

Average discharge.--9 years, 56.9 cfs (41,190 acre-ft per year).

Extremes.--Maximum discharge during year, 530 cfs May 20; maximum gage height, 3.38 ft May 15; minimum discharge not determined. 1955-64: Maximum discharge, about 1,000 cfs sometime during period June 4-6, 1957; maximum gage height, 6.07 ft June 6, 1957; minimum daily discharge, 2.4 cfs Sept. 18, 1962.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. One small diversion for irrigation of hay meadows 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	5.0	6.8					7.5	145	168	42	19	8.5
2	4.8	6.5					7	98	185	40	17	7.5
3	4.5	6.0					6.5	71	205	39	20	6.5
4	4.3	7.5					6	60	205	36	17	5.9
5	4.3	8.8					5.5	60	220	35	38	5.6
6	4.1	8.5					5.5	54	229	32	23	6.7
7	4.1	*9.2					5.5	60	253	28	18	7.9
8	4.1	9.0				4	5.5	60	262	26	16	7.7
9	*3.9	9.0					5.5	64	208	22	17	7.9
10	3.7	8.8					5.5	101	208	20	14	7.7
11	3.7	8.5	(*)				5.5	135	*220	24	13	6.0
12	3.9	8.0					6	*152	217	22	12	5.2
13	4.1	8.0					6.5	211	208	26	36	4.6
14	4.1	7.8					*7	250	205	*28	22	5.8
15	4.1	7.8		4	4		8	298	205	30	16	11
16	3.9	7.8	4.5				12	338	205	32	15	8.8
17	3.9	7.5					20	384	199	32	16	6.2
18	4.1	7					33	387	180	30	14	5.4
19	4.1	6					36	394	158	26	15	5.3
20	7.2	6					39	*443	145	26	25	5.4
21	7.5	6.5					39	478	*138	*28	16	6.5
22	6.8	6.5					50	468	*130	28	14	6.7
23	6.5	6.5				5	78	436	109	30	12	5.6
24	6.5	6.5					112	412	94	34	11	5.3
25	6.2	6.5					80	412	90	31	9.9	5.6
26	6.0	6.5					50	404	86	25	10	6.7
27	5.8	6					38	*384	74	22	*20	8.1
28	5.5	5.5					44	338	67	21	13	6.9
29	5.5	5.5					60	295	60	18	11	6.4
30	5.8	5.5					103	244	47	*19	9.2	6.0
31	7.0							199		19	8.8	
Total	155.0	216.0	139.5	1.24	116	140	887.0	7,835	4,980	871	517.9	199.4
Mean	5.00	7.20	4.5	4	4	4.5	29.6	253	166	28.1	16.7	6.65
Ac-ft	307	428	277	246	230	278	1,760	15,540	9,880	1,730	1,030	396

Calendar year 1963: Max 254 Min - Mean 30.0 Ac-ft 21,710
 Water year 1963-64: Max 478 Min - Mean 44.2 Ac-ft 32,100

Peak discharge (base, 300 cfs).--May 20 (1930) 530 cfs (2.98 ft).

* discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17 to Apr. 17 (no gage-height record Dec. 5 to Apr. 14). No gage-height record July 11-20.

9-1245, Lake Fork at Gateview, Colo.

Location.--Lat 38°17'50", long 107°13'50", in sec.29, T.47 N., R.3 W., on left bank at old village of Gateview, 15 ft downstream from private bridge, a quarter of a mile upstream from Indian Creek, and 15 miles upstream from mouth.

Drainage area.--338 sq mi.

Records available.--October 1937 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 7,827.66 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1938, at datum 2.00 ft higher and Oct. 1, 1938, to Sept. 30, 1945, at datum 1.00 ft higher.

Average discharge.--27 years, 243 cfs (175,900 acre-ft per year).

Extremes.--Maximum discharge during year, 1,550 cfs May 26 (gage height, 3.27 ft); maximum gage height, 3.56 ft Apr. 4 (backwater from ice); minimum discharge not determined.

1937-64: Maximum discharge, 2,700 cfs June 29, 1957 (gage height, 4.30 ft); minimum daily determined, 25 cfs Dec. 5, 1955, Jan. 10, 17, 18, 1957.

Remarks.--Records good except those for period of ice effect, which are poor. Diversions for irrigation of about 1,600 acres above station.

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

0.3	44	2.0	510
.5	69	2.5	820
.9	135	3.0	1,250
1.5	300	3.5	1,770

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	* 84	64					40	106	456	425	213	131
2	82	69					42	123	451	480	199	127
3	79	94					44	101	460	456	197	119
4	77	93					44	94	460	442	197	112
5	75	76					44	98	589	424	218	112
6	75	* 70	(*)				44	93	692	407	194	117
7	75	69					44	92	935	379	215	113
8	75	65					35	* 44	79	* 1,020	355	204
9	75	64					46	77	737	339	186	105
10	72	64		(*)			48	84	903	343	176	105
11	69	61					50	110	1,070	328	184	98
12	69	59					55	* 115	1,080	313	244	95
13	69	60					55	157	1,050	314	282	92
14	68	61					50	244	975	* 310	276	94
15	59	57					55	321	1,030	314	247	105
16	54	61	42	40	35		60	480	1,090	339	235	103
17	51	48					65	613	935	310	232	98
18	49	42					70	711	813	307	210	95
19	50	46					80	895	744	275	197	94
20	59	50					90	* 1,020	795	259	215	95
21	59	55					96	1,090	792	241	202	96
22	59	55					* 105	1,250	718	244	184	101
23	59	55					103	1,290	* 631	232	174	96
24	61	50					103	1,270	661	229	* 164	94
25	64	50					103	1,290	661	235	153	94
26	62	50					94	1,330	613	207	150	95
27	65	48					80	1,120	565	186	186	98
28	65	48					80	880	560	184	169	96
29	66	46					95	757	543	186	150	95
30	60	44					92	595	510	176	144	101
31	68							510		* 186	135	
Total	2,054	1,764	1,302	1,240	1,015	1,165	2,011	16,965	22,529	9,500	6,132	3,081
Mean	66.3	58.8	42	40	35	37.6	67.0	547	751	306	198	103
Ac-ft	4,070	3,500	2,580	2,460	2,010	2,310	3,990	33,650	44,690	18,840	12,160	6,110

Calendar year 1963: Max 911 Min - Mean 161 Ac-ft 116,700
 Water year 1963-64: Max 1,330 Min - Mean 188 Ac-ft 136,400

Peak discharge (base, 1,400 cfs).--May 26 (0230) 1,550 cfs (3.27 ft).

* Discharge measurement made on this day.
 Note.--Stage-discharge relation affected by ice Nov. 17 to Apr. 20 (no gage-height record Dec. 13 to Jan. 10, Jan. 22 to Mar. 5, Apr. 7, 8).

GUNNISON RIVER BASIN

9-1247. Gunnison River below Blue Mesa Dam, Colo.

Location.--Lat 38°27'08", long 107°20'52", in NE¼ sec.5, T.48 N., R.4 W., on left bank 0.2 mile downstream from Pine Creek, 0.7 mile downstream from Blue Mesa Dam, and 11 miles east of Cimarron.

Drainage area.--3,453 sq mi.

Records available.--May 1963 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 7,155.30 ft above mean sea level (Bureau of Reclamation bench mark).

Extremes.--Maximum discharge during water year, 6,570 cfs May 27 (gage height, 9.67 ft); minimum daily, 220 cfs Jan. 14. 1963-64: Maximum discharge, 6,570 cfs May 27, 1964 (gage height, 9.67 ft); minimum daily, 220 cfs Jan. 14, 1964.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by transmountain diversions, transbasin diversions, Taylor Park Reservoir (see elsewhere in this report), diversions for irrigation of about 56,000 acres, and return flow from irrigated areas.

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

-0.8	285	2.0	1,040
- .4	350	4.0	1,980
.2	470	6.0	3,220
.8	620	8.0	4,900
1.0	680	9.5	6,400

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	660	520	380	310	270	300	360	1,590	3,030	2,090	1,320	1,140
2	680	500	360	300	270	300	380	1,620	2,950	1,960	1,320	1,110
3	700	520	340	300	260	280	440	1,260	3,040	1,820	1,310	1,150
4	700	560	320	300	260	280	400	1,060	3,040	1,720	1,340	1,160
5	700	560	310	290	260	290	420	980	3,290	1,680	1,440	1,140
6	700	540	320	290	270	290	420	900	3,500	1,650	1,330	1,280
7	700	* 500	330	280	280	280	420	932	4,080	1,540	1,230	1,290
8	680	450	330	280	298	270	420	1,060	4,970	1,430	1,250	1,220
9	* 680	490	320	280	309	260	420	944	4,040	1,340	1,240	1,090
10	671	540	* 320	280	316	250	450	1,010	3,700	1,360	1,160	1,170
11	668	500	340	270	322	260	450	* 1,330	3,940	1,330	1,230	1,140
12	668	440	330	260	312	270	480	1,340	* 3,910	1,290	1,490	1,110
13	656	450	310	240	320	280	530	1,600	3,890	1,310	1,880	1,080
14	647	* 464	290	220	304	290	560	1,980	3,620	1,260	1,860	1,100
15	650	460	290	240	314	290	731	2,380	3,680	* 1,270	1,380	1,180
16	629	458	310	260	290	290	936	3,010	3,900	1,360	1,240	1,210
17	599	444	320	270	304	290	1,390	3,540	3,650	1,520	1,390	1,020
18	584	388	330	270	300	300	1,160	4,180	3,450	1,640	1,330	972
19	566	370	330	270	310	310	1,100	4,430	3,060	1,460	1,250	860
20	686	410	320	260	306	300	1,270	* 4,840	2,870	1,300	1,420	868
21	635	444	310	250	302	290	1,050	5,250	2,830	1,150	1,300	864
22	550	484	300	240	288	300	1,050	* 5,740	2,740	1,370	1,200	856
23	510	434	300	230	290	320	* 1,100	5,790	2,470	1,440	1,150	689
24	500	412	300	230	296	340	1,270	5,790	2,330	2,060	1,100	596
25	510	490	300	230	290	340	1,320	5,870	2,320	2,130	1,200	558
26	510	438	300	240	280	340	1,030	6,120	* 2,290	1,840	1,300	555
27	498	440	300	250	270	330	840	6,200	2,170	1,530	* 1,450	566
28	492	458	300	260	270	350	743	5,420	2,200	1,370	1,360	566
29	492	450	300	260	280	360	972	4,840	2,240	1,310	1,260	532
30	492	420	310	260	-----	370	1,200	3,900	2,190	* 1,190	1,200	525
31	506	-----	320	260	-----	370	-----	3,350	-----	1,230	1,170	-----
Total	18,899	14,024	9,840	8,170	8,441	9,390	23,312	98,246	95,390	46,930	41,100	28,597
Mean	610	467	317	264	291	303	777	3,169	3,180	1,514	1,326	953
Ac-ft	37,490	27,820	19,520	16,200	16,740	18,620	46,240	194,900	189,200	93,080	81,520	56,720

Calendar year 1963: Max - Min - Mean - Ac-ft -
 Water year 1963-64: Max 6,200 Min 220 Mean 1,099 Ac-ft 798,000

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-9, Nov. 1-13, Jan. 14 to Feb. 6, Feb. 25 to Mar. 31 (stage-discharge relation affected by ice during parts of periods), Aug. 21-27. Stage-discharge relation affected by ice Nov. 30 to Jan. 13, Feb. 7, Apr. 1-12.

9-1250. Curecanti Creek near Sapinero, Colo.

Location.--Lat 38°29'15", long 107°24'55", in sec.21, T.49 N., R.5 W., on downstream side of left pier of bridge on State Highway 92, 2½ miles upstream from mouth and 6 miles west of Sapinero.

Drainage area.--35.0 sq mi.

Records available.--October 1945 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 7,867.43 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1947, at site 65 ft upstream at datum 3.00 ft higher. Oct. 1, 1947, to Sept. 17, 1952, at site 65 ft upstream at datum 1.00 ft higher.

Average discharge.--19 years, 32.6 cfs (23,600 acre-ft per year).

Extremes.--Maximum discharge during year, 360 cfs May 22 (gage height, 4.00 ft); maximum gage height, 4.13 ft Apr. 15 (backwater from ice); minimum discharge not determined.

1945-64: Maximum discharge, 480 cfs June 5, 1957; maximum gage height, 4.30 ft June 28, 1957; minimum daily discharge, 2.0 cfs Aug. 1-3, 1948, but may have been less during periods of ice effect.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. One diversion above station for irrigation in Smith Fork drainage.

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

Oct. 1 to Apr. 5		Apr. 6 to Sept. 30			
2.0	1.5	2.1	3.0	2.9	44
2.1	3.0	2.3	7.5	3.2	82
2.2	5.0	2.5	15	3.5	160
2.3	7.5	2.7	27	3.9	315

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	3.0	5.2					6.5	60	136	44	7.2	5.0
2	3.0	4.6					6.5	50	136	40	7.2	4.4
3	2.8	5.0					6	40	151	36	12	4.2
4	3.0	5.5					5.5	35	157	33	7.5	4.0
5	3.0	5.8					5.5	34	181	30	7.0	4.2
6	3.0	5.0					* 5.5	33	192	26	7.8	4.8
7	3.2	* 5.5		(*)			5.2	33	203	24	6.8	6.2
8	3.2	5.0					5.0	37	215	21	5.8	5.0
9	* 3.2	4.6					4.6	35	167	20	5.8	5.0
10	3.0	4.4					4.4	48	142	18	5.8	5.0
11	3.0	4.4	(*)			3	4.4	64	* 142	16	5.2	4.2
12	3.0	4.2					4.4	* 77	142	14	5.0	3.6
13	2.8	4.2					4.4	103	133	14	13	3.6
14	2.8	4.2					4.6	128	128	* 13	8.2	4.4
15	2.8	4.0					7	174	125	13	6.2	7.5
16	3.0	4.0	3.5	3	3		15	219	130	14	6.0	6.2
17	3.0	3.8					20	231	130	15	7.0	4.8
18	3.0	3.6					20	251	118	14	5.5	4.4
19	3.4	3.6					26	267	94	10	6.8	4.6
20	6.0	3.6					26	251	82	8.9	11	4.6
21	6.2	3.8					28	283	74	8.6	7.2	4.8
22	5.0	4.0					36	* 295	* 72	10	6.0	5.5
23	4.6	4.0					* 47	287	62	11	5.2	4.6
24	4.6	3.8					54	263	58	11	4.8	4.2
25	4.6	3.8					52	275	58	10	4.6	4.2
26	4.2	4.0					41	295	60	8.2	5.0	5.0
27	4.2	4.0					30	295	57	7.0	* 11	5.5
28	4.0	3.8					27	259	57	7.0	7.0	4.8
29	4.0	3.4					34	231	53	6.2	5.5	4.6
30	4.2	3.2					44	188	49	* 6.2	5.2	4.4
31	6.5							157		6.5	4.8	
Total	115.3	128.3	108.5	93	87	104	579.5	4,998	3,504	515.6	213.1	143.3
Mean	3.72	4.28	3.5	3	3	3.4	19.3	161	117	16.6	6.87	4.78
Ac-ft	229	254	215	184	173	206	1,150	9,910	6,950	1,020	423	284

Calendar year 1963: Max 125 Min - Mean 16.8 Ac-ft 12,160
 Water year 1963-64: Max 295 Min - Mean 28.9 Ac-ft 21,000

Peak discharge (base, 250 cfs)--May 22 (0030) 360 cfs (4.00 ft).

* Discharge measurement made on this day.
 Note.--Stage-discharge relation affected by ice Nov. 12-18, Mar. 18, 19, Apr. 9-16. No gage-height record Nov. 19 to Mar. 17, Mar. 20 to Apr. 6 (stage-discharge relation affected by ice most of periods).

GUNNISON RIVER BASIN

9-1260. Cimarron Creek near Cimarron, Colo.

Location.--Lat 38°15'30", long 107°32'40", in sec.8, T.46 N., R.6 W., on right bank 0.2 mile downstream from highway bridge, 0.5 mile upstream from headgate on Cimarron ditch, 2.5 miles downstream from West Fork, and 13 miles south of Cimarron.

Drainage area.--66.8 sq mi.

Records available.--October 1954 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,650 ft (from topographic map).

Average discharge.--10 years, 88.7 cfs (64,220 acre-ft per year).

Extremes.--Maximum discharge during year, 1,310 cfs May 20 (gage height, 7.21 ft); minimum not determined.

1954-64: Maximum discharge, 1,790 cfs June 28, 1957 (gage height, 8.32 ft); minimum daily, 8 cfs Dec. 27, 28, 1962, Jan. 13, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversion above station through Owl Creek ditch into Uncompahgre River basin. Diversion below station by Cimarron ditch for water year 1963 is given below.

Month	Diversion in acre-feet	Month	Diversion in acre-feet
October.....	936	April.....	0
November.....	770	May.....	1,760
December.....	0	June.....	7,980
	-----	July.....	7,210
Calendar year 1963..	25,500	August.....	4,220
	-----	September.....	1,740
January.....	0		
February.....	0	Water year 1963-64..	24,620
March.....	0		

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 21-25, June 11, 12)

3.5	12	4.5	140
3.6	17	5.0	260
3.8	30	6.0	650
4.1	65	6.5	890

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	22	20					20	78	278	326	96	47
2	21	21	(*)				19	88	278	314	77	43
3	21	24					18	55	294	314	82	41
4	21	* 24					16	48	330	284	96	39
5	21	22					16	40	410	278	98	39
6		21					17	39	438	266	100	44
7	* 20	22					18	* 39	538	236	102	43
8	20	21				16	22	38	558	212	80	38
9	19	20					24	55	446	210	72	38
10	19	21					20	148	566	248	70	36
11	19	21					18	192	* 606	200	74	32
12	18	20					16	185	56	192	84	30
13	18	21					* 15	212	51	192	148	29
14	17	20					16	263	502	190	90	35
15	16	18					24	350	582	* 185	77	46
16	16	17	18	16	16		28	446	590	192	74	47
17	16	17					30	498	534	180	71	37
18	16	17					34	506	470	160	64	32
19	20	18					43	494	478	140	66	42
20	33	19					41	602	486	120	106	42
21	29	20					36	630	470	142	74	41
22	26	20					48	* 682	* 406	118	65	39
23	24	20					64	735	392	104	61	36
24	24	19					68	650	438	104	* 52	33
25	23	19					62	705	418	104	49	39
26	22	20					42	795	378	88	57	43
27	21	20					33	674	398	* 77	114	58
28	20	20					36	602	398	110	64	48
29	20	19					43	498	370	90	57	47
30	19	19					49	382	318	76	51	43
31	24	-----					-----	326	-----	70	49	-----
Total	645	600	558	496	464	528	936	11,055	13,432	5,522	2,420	1,207
Mean	20.8	20.0	18	16	16	17	31.2	357	448	178	78.1	40.2
Ac-ft	1,280	1,190	1,110	984	920	1,050	1,860	21,930	26,640	10,950	4,800	2,390

Calendar year 1963: Max 314 Min 8 Mean 58.6 Ac-ft 42,440
Water year 1963-64: Max 795 Min - Mean 103 Ac-ft 75,100

Peak discharge (base, 400 cfs)--May 20 (1930) 1,310 cfs (7.21 ft); June 10 (2315) 815 cfs (6.44 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16 to Dec. 3, Apr. 16-18. No gage-height record Dec. 4 to Apr. 13 (stage-discharge relation affected by ice during most of period).

9-1265. Cimarron Creek at Cimarron, Colo.

Location.--Lat 38°26'35", long 107°33'15", in SW¼SW¼ sec.5, T.48 N., R.6 W., on right bank at Cimarron, 400 ft upstream from Squaw Creek and 1 mile upstream from mouth.

Drainage area.--212 sq mi.

Records available.--October 1902 to November 1905, April 1962 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 6,884.97 ft above mean sea level, datum of 1929. Prior to Apr. 1, 1962, staff gage at site 600 ft upstream at different datum.

Average discharge.--5 years, 115 cfs (83,260 acre-ft per year).

Extremes.--Maximum discharge during year, 1,110 cfs May 20 (gage height, 4.74 ft); maximum gage height, 5.08 ft Mar. 28 (backwater from ice); minimum daily discharge, 19 cfs Apr. 13.
1902-5, 1962-64: Maximum discharge, about 1,600 cfs May 12, 13, 1962 (gage height not determined); minimum daily, 8 cfs Dec. 26, 27, 1962.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by Cimarron and Owl Creek ditches for irrigation of about 5,000 acres in the Uncompahgre River drainage, imported water from Blue Creek drainage, diversions for irrigation of about 3,000 acres, and return flow from irrigated areas.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 16 to June 9)

Oct. 1 to May 15				May 16 to Sept. 30			
3.0	18	3.4	77	2.5	20	3.6	375
3.1	26	3.7	170	2.7	45	4.0	650
3.2	37	4.0	305	3.0	105	4.3	940
				3.3	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	* 29	26	(*)				70	135	290	300	60	35				
2	27	26					65	126	270	280	62	32				
3	27	30					60	94	* 295	265	66	30				
4	28	* 30					55	88	320	235	66	29				
5	26	24					60	80	435	220	78	28				
6	25	24	35	30	28	28	60	77	468	193	64	30				
7	26	25					* 60	* 83	626	163	87	34				
8	24	24					56	94	* 731	129	62	31				
9	24	22					99	88	500	111	52	34				
10	22	22					52	114	704	167	41	34				
11	22	20					35	30	28	50	44	160	668	129	34	29
12	20	20									23	* 178	642	96	44	28
13	20	20									19	194	570	103	105	28
14	20	21									30	232	549	98	57	35
15	20	22									54	275	594	111	44	39
16	20	21	75	417	602	* 202					42	38				
17	20	22	80	487	542	143					45	32				
18	20	22	51	521	507	120					44	31				
19	26	22	61	454	442	98					47	35				
20	40	24	75	* 626	435	78					66	35				
21	36	26	75	578	405	78					54	39				
22	34	30	120	578	411	74					42	39				
23	30	32	* 156	650	411	59					41	37				
24	28	32	129	626	397	64					38	35				
25	28	30	111	740	393	66					38	35				
26	26	32	77	840	* 393	50	44	48								
27	26	34	63	* 830	399	* 48	80	87								
28	24	36	59	713	399	59	* 48	82								
29	24	36	77	618	381	66	33	78								
30	24	36	88	448	331	44	37	76								
31	30	-----	-----	-----	-----	375	-----	48	34	-----						
Total	796	791	1,085	930	812	1,220	2,104	11,569	14,100	3,897	1,660	1,203				
Mean	25.7	26.4	35	30	28	39.4	70.1	373	470	126	53.5	40.1				
Ac-ft	1,580	1,570	2,150	1,840	1,610	2,420	4,170	22,950	27,970	7,730	3,290	2,390				

Calendar year 1963: Max 246 Min 12 Mean 46.4 Ac-ft 33,590
Water year 1963-64: Max 880 Min 19 Mean 110 Ac-ft 79,670

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 13 to Nov. 4, Nov. 19 to Dec. 2, Dec. 20 to Feb. 6, Feb. 20 to Mar. 6, Mar. 13-18, Apr. 3-7 (stage-discharge relation affected by ice during most of periods). Stage-discharge relation affected by ice Nov. 17, 18, Dec. 3-19, Feb. 7-19, Mar. 7-12, Mar. 19 to Apr. 2.

GUNNISON RIVER BASIN

9-1275, Crystal Creek near Maher, Colo.

Location.--Lat 38°33'05", long 107°30'20", in SE¼ sec.35, T.50 N., R.6 W., on left bank 640 ft downstream from private bridge, half a mile upstream from diversion dam for Cattleman's ditch, 0.7 mile downstream from Dyer Creek, 7 miles upstream from mouth, and 7 miles southeast of Maher.

Drainage area.--42.2 sq mi.

Records available.--July 1945 to September 1954, October 1960 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,070 ft (from topographic map). July 6, 1945, to Sept. 30, 1954, at site 140 ft upstream at datum 1.45 ft higher.

Average discharge.--13 years, 27.8 cfs (20,130 acre-ft per year).

Extremes.--Maximum discharge during year, 412 cfs May 19 (gage height, 3.49 ft); minimum daily, 2.6 cfs Oct. 1, 2. 1945-54, 1960-64: Maximum discharge, 542 cfs Apr. 29, 1948 (gage height, 5.05 ft, site and datum then in use), from rating curve extended above 200 cfs; minimum daily, 1.8 cfs Aug. 29, 31, 1954.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Small diversions for irrigation of hay meadows above station. Diversions above station for irrigation of about 800 acres below station and about 700 acres in Iron Creek basin.

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

Oct. 1 to May 14				May 15 to Sept. 30			
0.9	1.5	1.6	29	1.0	1.0	2.1	75
1.0	3.0	1.9	61	1.1	3.0	2.5	155
1.1	5.0	2.2	106	1.2	6.0	3.0	280
1.2	8.0	2.7	205	1.6	23	3.5	415
1.4	16			1.8	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	2.6	5.3	4.8	5.0	5	5.5	9	145	89	35	11	5.4
2	2.6	5.3	5	5.0	5.5	5.5	8.5	78	96	31	11	4.8
3	2.8	6.8	5	5.0	5	5	8	61	105	28	16	4.2
4	2.8	7.4	5.5	5.0	4.6	4.8	8	54	110	27	12	3.9
5	2.8	7.1	5.5	4.8	5	5	8	51	126	25	11	3.9
6	2.8	6.5	5	4.8	5	5	7.5	48	132	22	11	4.8
7	3.0	7.1	4.6	4.8	5	5	7.5	51	148	23	10	5.7
8	3.2	6.8	5	4.8	5	5	* 7.5	* 48	138	22	8.0	4.2
9	3.4	6.5	5.5	5.0	5	5	8	45	97	21	7.2	4.2
10	* 3.0	6.8	* 5.5	4.8	5.5	5	8	65	97	* 20	6.8	4.5
11	3.2	6.8	5	4.6	5.5	* 5	8.0	95	* 97	18	6.8	3.6
12	3.2	6.2	4.8	4.4	5	5.3	8.5	116	96	17	7.2	3.0
13	3.4	* 6.2	4.6	4.2	5	5.0	9	155	89	17	1.8	2.8
14	3.6	6.5	4.4	4.0	4.8	4.8	10	187	90	15	11	4.8
15	3.6	5.9	4.8	4.2	4.8	4.8	12	242	82	15	8.8	8.8
16	3.6	6.2	4.8	4.4	5	4.8	15	278	85	17	8.8	3.2
17	3.6	5.5	5	4.6	5	4.8	20	295	78	18	9.2	6.0
18	3.8	5	5	4.8	5	5	26	308	69	16	7.2	5.4
19	4.2	5	5	5.0	5	4.8	28	330	59	14	7.6	5.4
20	8.0	5	5	5.0	5	4.6	34	350	54	13	11	5.1
21	7.4	5.3	5	5.3	4.8	4.8	32	310	48	12	7.2	5.4
22	6.5	5.9	5	5.0	4.8	5.5	47	295	47	13	6.4	5.4
23	5.3	5.5	4.8	5.0	4.8	5.5	90	282	39	22	5.7	5.1
24	5.6	5.5	5	4.8	4.8	5	131	265	* 35	25	5.1	4.8
25	5.3	5	5	4.8	5	5	93	* 250	41	24	4.8	4.8
26	4.8	5	5	5	4.6	5	53	275	45	20	5.7	5.4
27	4.6	4.8	5	5	4.8	5	34	255	44	17	* 14	5.4
28	4.4	4.8	5	5	5	5.5	41	212	44	* 15	7.2	5.4
29	4.4	4.8	5	5	5	6	67	190	41	12	5.7	4.8
30	4.6	4.8	5	5	5	8	119	135	38	11	5.4	5.1
31	6.5	5	5	5	5	2	2	108	11	11	5.1	5.1
Total	128.6	175.3	154.6	149.1	144.3	164.0	947.5	5,569	2,349	596	271.9	151.3
Mean	4.15	5.84	4.99	4.81	4.98	5.29	31.6	180	78.3	19.2	8.77	5.04
Ac-ft	255	348	307	296	286	325	1,880	11,050	4,660	1,180	539	300

Calendar year 1963: Max 92 Min 2.4 Mean 15.2 Ac-ft 11,020
 Water year 1963-64: Max 350 Min 2.6 Mean 29.5 Ac-ft 21,430

Peak discharge (base, 160 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-24	1730	2.92	250	5-26	1930	3.22	335
4-30	1400	2.75	208	6-7	1900	2.65	192
5-19	1900	3.49	412				

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17-20, Nov. 23 to Dec. 31, Jan. 11-17, 24, 25, Apr. 9, 10, 12-17. No gage-height record Jan. 26 to Mar. 11, Mar. 18 to Apr. 8 (stage-discharge relation affected by ice during most of periods).

9-1280. Gunnison River below Gunnison tunnel, Colo.

Location.--Lat 38°32', long 107°39', in NW¼ sec.10, T.49 N., R.7 W., on left bank a quarter of a mile downstream from east portal of Gunnison tunnel, 5 miles downstream from Crystal Creek, and 12 miles northeast of Montrose.

Drainage area.--3,980 sq mi, approximately.

Records available.--October 1903 to September 1964. Monthly discharge only for some periods, published in WSP 1313. Published as "at east portal of Gunnison tunnel" 1905-6 and as "at River Portal" 1907-11.

Gage.--Water-stage recorder. Datum of gage is 6,526.06 ft above mean sea level, datum of 1929. Apr. 9, 1905, to Aug. 20, 1915, staff gage at site 300 ft upstream from diversion dam at east portal of Gunnison tunnel at different datum. Aug. 21, 1915, to Jan. 19, 1943, staff gage at site 500 ft downstream from diversion dam at east portal of Gunnison tunnel at different datum. Jan. 20, 1943, to Sept. 30, 1956, water-stage recorder at same site at datum 1.0 ft higher.

Average discharge.--61 years, 1,453 cfs, unadjusted (1,052,000 acre-ft per year).

Extremes.--Maximum discharge during year, 8,020 cfs May 27 (gage height, 9.70 ft); minimum daily, 15 cfs Oct. 8, 9. 1903-64: Maximum discharge observed, 19,000 cfs June 15, 1921 (gage height, about 15.8 ft, present datum), from rating curve extended above 14,000 cfs; no flow Sept. 25, 26, 1936, Oct. 8, 1949, Sept. 5, 6, 15, 16, 1950.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by transmountain diversions, transbasin diversion (see below), Taylor Park Reservoir (see elsewhere in this report), diversions for irrigation of about 63,000 acres, and return flow from irrigated areas. Record of diversion through Gunnison tunnel for irrigation of about 75,000 acres in Uncompahgre Valley during the water year 1964 is given below:

Month	Diversion in acre-feet	Month	Diversion in acre-feet
October.....	31,870	April.....	35,210
November.....	1,740	May.....	51,970
December.....	0	June.....	51,190
Calendar year 1963....	348,300	July.....	59,310
		August.....	58,090
		September.....	46,510
January.....	0	Water year 1963-64....	338,900
February.....	0		
March.....	2,990		

Cooperation.--Record of diversion through Gunnison tunnel furnished by Uncompahgre Valley Water Users Association.

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

0.3	15	1.5	240	6.0	3,190
.5	30	2.0	420	8.0	5,460
.7	50	3.0	880	9.5	7,680
1.0	98	4.0	1,500		

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	342	350	350	280	320	480	1,110	2,800	1,510	339	172
2	21	317	350	340	290	330	500	1,160	2,580	1,350	392	160
3	26	342	340	330	290	340	500	725	2,660	1,220	384	170
4	23	540	340	320	290	340	520	412	2,660	1,070	392	184
5	20	636	320	300	280	340	540	272	3,020	994	504	132
6	18	620	330	* 290	280	350	540	191	3,280	928	* 436	261
7	* 16	552	340	300	300	360	520	196	4,010	790	342	320
8	15	* 432	330	290	300	360	450	320	5,100	656	320	286
9	15	524	310	280	300	340	310	258	4,060	536	289	163
10	18	512	330	270	290	340	296	303	3,640	572	212	181
11	24	504	340	280	300	350	286	* 740	4,120	548	226	151
12	28	492	* 300	280	300	360	334	910	* 4,240	420	460	140
13	30	496	280	260	300	340	212	1,270	4,050	448	940	130
14	30	504	260	260	310	330	258	1,720	3,880	420	924	130
15	30	500	280	280	310	320	400	2,400	4,430	388	524	216
16	30	492	300	290	310	330	685	3,230	4,180	* 600	306	303
17	30	492	300	300	310	350	1,050	3,920	3,860	680	388	373
18	36	416	310	310	330	360	832	4,730	3,600	760	400	286
19	48	370	320	310	330	360	644	5,170	3,100	620	256	199
20	75	400	330	300	320	340	838	5,710	2,740	436	504	181
21	92	400	320	300	330	350	616	6,160	2,570	258	665	268
22	113	450	310	310	330	350	552	6,780	2,500	440	500	331
23	81	420	300	310	320	320	600	6,960	2,120	500	404	205
24	65	400	300	300	330	280	* 755	6,870	2,020	1,000	240	159
25	193	450	320	280	320	220	844	7,060	1,960	1,280	157	110
26	286	420	330	300	320	140	432	7,440	1,920	946	156	80
27	278	400	340	290	* 320	140	181	7,600	1,770	624	436	184
28	272	400	340	280	320	120	163	6,440	1,800	452	* 448	190
29	261	360	340	270	310	160	226	5,450	1,770	416	306	145
30	254	340	350	260	-----	250	512	4,040	1,680	254	236	130
31	300	-----	350	260	-----	500	-----	3,260	-----	* 247	205	-----
Total	2,759	13,523	9,960	9,100	8,920	9,690	15,076	102,797	92,120	21,363	12,440	5,940
Mean	89.0	451	321	294	308	313	503	3,316	3,071	689	401	198
Ac-ft	5,470	26,820	19,760	18,050	17,690	19,220	29,900	203,900	182,700	42,370	24,670	11,780

Calendar year 1963: Max 2,420 Min 15 Mean 506 Ac-ft 366,300
 Water year 1963-64: Max 7,600 Min 15 Mean 830 Ac-ft 602,300

* Discharge measurement made on this day.
 Note.--No gage-height record Oct. 5-20, Sept. 2, 3, 12-14, 25, 26, 30. Stage-discharge relation affected by ice Nov. 20 to Apr. 9 (no gage-height record Dec. 17 to Feb. 27, Mar. 26-29).

GUNNISON RIVER BASIN

9-1285, Smith Fork near Crawford, Colo.

Location.--Lat 38°44', long 107°31', in sec.24, T.15 S., R.91 W., on left bank 20 ft upstream from county bridge, 0.4 mile upstream from Second Creek, 6 miles northeast of Crawford, and 6½ miles upstream from Iron Creek.

Drainage area.--42 sq mi, approximately.

Records available.--October 1935 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,200 ft (by barometer). Prior to Nov. 16, 1938, staff gage at same site and datum.

Average discharge.--29 years, 42.1 cfs (30,480 acre-ft per year).

Extremes.--Maximum discharge during year, 460 cfs May 17 (gage height, 4.80 ft); minimum daily, 3.8 cfs Sept. 30.

1935-64: Maximum discharge, about 1,050 cfs June 6, 1957; maximum gage height, 5.56 ft June 8, 1957; minimum daily discharge determined, 1.8 cfs July 30, 31, Aug. 1, 1963.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of a few acres of hay meadows above station. Saddle Mountain ditch diverts water above station for irrigation of about 800 acres below. One small ditch diverts from Virginia Creek to Iron Creek drainage, and Head and Ferrier ditch diverts water from Curecanti Creek drainage.

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

Oct. 1 to May 13				May 14 to Sept. 30			
2.3	1.5	3.5	80	2.1	3.0	3.5	104
2.5	7.0	3.8	130	2.3	8.5	3.9	168
2.7	15	4.0	186	2.5	17	4.3	265
3.0	33			2.9	44	4.7	410

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	8.6	6.5	6.5	5.5	5	16	119	108	50	17	10
2	6.4	7.8	6.5	6.5	5.5	5.5	16	97	103	47	20	12
3	6.4	7.8	6	6	5	5.5	14	73	111	42	31	11
4	6.1	9.4	6	5.5	4.8	5.5	13	65	109	40	20	11
5	6.1	9.8	6.5	5.5	5	5	12	62	111	37	17	11
6	6.1	9.0	6.5	6	5.5	5	11	55	109	33	15	12
7	6.4	8.6	6	6.5	5.5	5	10	53	114	30	14	14
8	6.7	8.2	6.5	6.5	5.5	5	*9.0	*54	110	28	11	12
9	6.7	7.8	7	6	5	4.8	9.0	53	86	26	9.6	13
10	*7.0	7.8	*7.4	6	5	5	12	67	86	*21	7.9	12
11	6.1	7.4	7	6	5.5	*5	12	91	*91	18	7.6	11
12	5.5	7.4	6.5	5.5	*6	5	16	112	96	17	8.2	10
13	5.8	7.8	6.5	5	6	5.8	14	166	92	16	16	9.9
14	5.5	8.2	7	4.4	5.5	6	15	220	85	16	11	12
15	6.1	*7.8	7.5	*5	5	6	25	286	84	16	8.8	14
16	6.1	9.0	8	5.5	5	6.5	42	323	84	17	10	14
17	5.8	7.0	8	6	5	7	41	370	80	18	9.2	12
18	5.5	6.1	7.5	6	5.5	8	33	386	72	17	7.9	7.0
19	5.5	7.0	7	6	5.8	7.5	38	378	69	14	9.9	5.5
20	1.2	7.0	7	6.4	5.8	7	35	358	76	14	14	5.0
21	1.2	7.4	6.7	6	5.5	6.5	35	358	74	13	11	5.5
22	1.1	7.8	6	6.1	5.2	6.5	47	326	73	12	9.6	5.2
23	9.4	6.1	5.5	5.8	5	6.5	60	334	68	13	8.5	4.2
24	9.4	7.0	6	5.5	5	7.0	76	330	*64	12	7.6	4.0
25	8.6	7.0	6	5.5	5.5	7.4	70	*323	64	12	7.3	4.0
26	7.8	5.8	6	5.5	5.5	7.0	52	274	65	10	7.6	4.5
27	7.4	6.4	6.1	5.5	5	6.7	40	271	63	9.6	*9.9	4.5
28	7.0	6	6	5	5	7	38	235	62	*9.2	7.3	4.0
29	7.0	6	6.1	5	5	8	51	195	57	8.5	6.7	4.0
30	7.0	6.5	6	5	-----	1.2	7.9	158	5.4	10	6.4	3.8
31	9.8	-----	6	5	-----	1.5	-----	124	-----	11	6.4	-----
Total	224.6	225.5	203.3	176.7	154.1	204.7	941.0	6316	2520	637.3	353.4	262.1
Mean	7.25	7.52	6.56	5.70	5.31	6.60	31.4	204	84.0	20.6	11.4	8.74
Ac-ft	445	447	403	350	306	406	1,870	12,530	5,000	1,260	701	520

Calendar year 1963: Max 189 Min 1.8 Mean 22.4 Ac-ft 16,220
 Water year 1963-64: Max 386 Min 3.8 Mean 33.4 Ac-ft 24,240

Peak discharge (base, 260 cfs).--May 17 (2045) 460 cfs (4.80 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 28 to Dec. 9, Dec. 11-20, 22-26, 28, Dec. 30 to Jan. 19, Jan. 21, 24, 25, Jan. 27 to Feb. 18 (no gage-height record Feb. 7-12), Feb. 21, 23-29, Mar. 1-12, 14-23, 28-31, Apr. 1.

9-1306. West Muddy Creek near Ragged Mountain, Colo.

Location.--Lat 39°07'50", long 107°34'30", in NW¼ sec.5, T.11 S., R.91 W., on left bank 100 ft upstream from Gold Creek and 9½ miles northwest of Ragged Mountain.

Drainage area.--7.52 sq mi.

Records available.--October 1955 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,658 ft (from topographic map).

Average discharge.--9 years, 4.63 cfs (3,350 acre-ft per year).

Extremes.--Maximum discharge during year, 178 cfs May 15 (gage height, 5.01 ft); maximum gage height, 5.55 ft Apr. 24 (backwater from ice); minimum discharge not determined.

1955-64: Maximum discharge, about 260 cfs May 10, 1962 (gage height, 5.80 ft, from floodmark); no flow at times in 1956, 1959-60.

Remarks.--Records good except those for periods of ice effect, 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)
(Shifting-control method used May 7 to July 6)

1.9	0.1	2.4	1.3	3.0	14
2.0	.2	2.5	2.4	3.5	35
2.2	.4	2.6	3.9	4.0	62
2.3	.7	2.8	8.4	4.5	100

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	0.5	0.8	}	}	}	}	(*)	18	16	3.2	1.1	0.6
2	.5	.7					16	17	2.6	.9	.6	
3	.4	.8					14	20	2.2	2.8	.6	
4	.4	1.1					12	20	1.8	1.4	.5	
5	.3	.9					11	17	1.7	2.2	.5	
6	.3	1.1	}	}	}	}	1	11	15	1.7	2.1	.5
7	.4	.9					13	18	1.4	1.3	.5	
8	.3	.9					12	21	* 1.4	1.0	.5	
9	.3	.9					13	* 16	1.2	.8	.5	
10	.3	.9					(*)	14	13	1.2	.7	.5
11	.3	.7	}	}	}	}	}	25	12	1.1	.7	.4
12	.3	.7						36	10	.9	.9	.4
13	.3	.8						55	10	.9	4.1	.5
14	.2	* .9						71	9.2	.9	1.4	.5
15	.2	.7						81	8.7	1.2	.9	.7
16	* .2	.6	}	}	}	}	}	3	70	8.2	1.1	.8
17	.2	.5						57	7.7	1.1	1.5	.6
18	.3	.6						46	8.2	1.1	.9	.6
19	.4	.7						* 41	6.7	.8	1.5	.8
20	2.0	.7						35	6.2	.7	2.0	.7
21	2.3	.7	}	}	}	}	}	32	5.4	.9	1.4	.6
22	1.3	.7						34	7.4	.9	1.4	.6
23	1.0	.7						32	* 5.8	1.2	1.3	.6
24	.9	.6						29	5.0	1.0	* 1.0	.5
25	.8	.5						28	3.8	.7	.7	.5
26	.7	.5	}	}	}	}	}	6	28	3.9	.7	.6
27	.7	.5						26	3.6	.6	1.1	.6
28	.6	.5						23	3.3	.6	.8	.6
29	.6	.4						20	5.8	.9	.8	.6
30	.6	.3						(*)	16	4.3	* 1.1	.6
31	1.0	-----	-----	-----	-----	-----	-----	16	-----	1.3	.6	-----
Total	18.6	21.3	6.2	3.1	2.9	6.2	100	935	308.2	38.1	39.6	17.1
Mean	0.60	0.71	0.2	0.1	0.1	0.2	3.3	30.2	10.3	1.23	1.28	0.57
Ac-ft	37	42	12	6.1	5.8	12	198	1,850	611	76	79	34

Calendar year 1963: Max 18 Min 0.1 Mean 2.35 Ac-ft 1,700
Water year 1963-64: Max 81 Min - Mean 4.09 Ac-ft 2,960

Peak discharge (base, 40 cfs)--May 15 (1730) 178 cfs (5.01 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16 to May 6 (no gage-height record Nov. 18 to Apr. 1, Apr. 4-14).

GUNNISON RIVER BASIN

9-1312. West Muddy Creek near Somerset, Colo.

Location--Lat 39°05'25", long 107°30'15", in N½ sec.24, T.11 S., R.91 W., on right bank 300 ft downstream from Cow Creek, 1½ miles southeast of West Muddy ranger station, and 13 miles north of Somerset.

Drainage area--50.1 sq mi.

Records available.--October 1961 to September 1964.

Gage--Water-stage recorder. Altitude of gage is 8,020 ft (from topographic map).

Extremes--Maximum discharge during year, 638 cfs May 15 (gage height, 2.55 ft); minimum not determined.
1961-64: Maximum discharge, about 900 cfs May 11, 1962 (gage height not determined); minimum daily, 0.1 cfs Aug. 1, 1963.

Remarks--Records good except those for periods of ice effect or no gage-height record, which are poor. Small diversions above station for irrigation of hay meadows. Some regulation by Overland Reservoir (capacity, 6,280 acre-ft) on Cow Creek above station. Diversion above station for use outside Muddy Creek drainage by Overland ditch.

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

Oct. 1 to Apr. 28		Apr. 29 to Sept. 30	
0.1	0.6	0.0	1.0
.2	1.6	.2	3.0
.3	2.9	.4	7.5
.4	5.5	.5	11
.5	10	.7	24
		0.9	44
		1.1	72
		1.5	170
		2.0	360

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	2.8	}	}	}	}	}	80	54	10	2.7	1.6				
2	2.1	2.6						60	57	7.8	2.7	1.7				
3	2.1	2.6						50	68	6.5	7.2	1.5				
4	1.4	3.2						48	97	6.0	4.2	1.5				
5	1.1	3.7						45	92	5.5	4.8	1.4				
6	1.4	3.7	}	}	}	}	}	47	86	4.2	6.8	1.5				
7	1.9	3.7						49	49	4.2	4.8	1.4				
8	2.0	3.4						43	62	* 4.0	4.2	2.0				
9	1.9	3.2						44	* 49	4.2	2.7	2.6				
10	1.7	3.2						(*)	72	38	4.0	2.8	2.8			
11	1.7	2.8						}	}	}	}	128	34	3.4	2.8	2.8
12	1.9	2.6										170	37	2.9	2.3	2.3
13	1.6	2.6										275	56	2.7	2.0	
14	1.5	* 2.8										303	53	2.7	6.0	2.3
15	1.3	2.6										328	38	3.8	2.9	4.2
16	* 1.1	2.4	}	}	}	}	}	351	54	3.4	3.2	4.8				
17	.9	2.2						346	43	2.9	3.0	3.0				
18	.8	2.4						299	47	3.0	2.9	2.5				
19	.9	2.4						* 275	38	2.5	2.5	2.8				
20	4.5	2.4						251	30	2.2	4.0	4.2				
21	8.2	2.4	}	}	}	}	}	243	27	2.0	2.6	5.0				
22	5.5	2.4						224	34	2.5	2.2	4.6				
23	3.4	2.2						185	* 26	2.2	1.9	4.2				
24	2.9	2.2						143	18	2.4	* 1.7	3.8				
25	2.8	2.2						120	14	1.8	1.5	3.8				
26	2.8	2.0	}	}	}	}	}	113	13	1.6	1.6	3.8				
27	2.5	2.0						110	12	1.3	2.9	4.2				
28	2.2	2.0						96	10	1.2	3.4	4.0				
29	2.1	1.8						69	15	1.3	3.4	4.2				
30	2.4	1.6						57	16	* 1.9	2.2	4.2				
31	3.2	-----	60	-----	-----	-----	-----	3.4	1.9	-----						
Total	71.8	78.1	24.8	18.6	17.4	28.2	295.0	4,674	1,267	107.5	112.8	90.7				
Mean	2.32	2.60	0.8	0.6	0.6	0.9	9.8	151	42.2	3.47	3.64	3.02				
Ac-ft	142	155	49	37	35	56	585	9,270	2,510	213	224	180				

Calendar year 1963: Max 81 Min 0.1 Mean 10.3 Ac-ft 7,460
Water year 1963-64: Max 351 Min - Mean 18.5 Ac-ft 13,460

Peak discharge (base, 250 cfs)--May (1900) 638 cfs (2.55 ft).

* Discharge measurement made on this day.
Note.--No gage-height record Nov. 14 to Apr. 29 (stage-discharge relation affected by ice most of period). Stage-discharge relation affected by ice Apr. 30 to May 4.

9-1325. North Fork Gunnison River near Somerset, Colo.

Location.--Lat 38°55'45", long 107°26'55", in sec.9, T.13 S., R.90 W., on right bank 1½ miles east of Somerset and 4 miles upstream from Hubbard Creek.

Drainage area.--521 sq mi.

Records available.--October 1933 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 6,038.6 ft above mean sea level, datum of 1929.

Average discharge.--31 years, 430 cfs (311,300 acre-ft per year).

Extremes.--Maximum discharge during year, 4,950 cfs May 20 (gage height, 4.96 ft); minimum daily, 26 cfs Jan. 14.

1933-64: Maximum discharge, 7,860 cfs June 4, 1957 (gage height, 6.14 ft); minimum daily, 17 cfs Nov. 10, 1950.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by small diversions for irrigation in nearby drainage areas, irrigation of about 3,000 acres above station, storage in Overland Reservoir (capacity, 6,280 acre-ft), and Paonia Reservoir (capacity, 18,300 acre-ft). Month-end contents of Paonia Reservoir are given below.

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

Date	Contents (acre-feet)	Date	Contents (acre-feet)
Sept. 30.....	1,500	Apr. 30.....	5,720
Oct. 31.....	450	May 31.....	19,140
Nov. 30.....	450	June 30.....	15,570
Dec. 31.....	740	July 31.....	18,510
Jan. 31.....	960	Aug. 31.....	16,360
Feb. 29.....	1,240	Sept. 30.....	9,510
Mar. 31.....	1,690		

Cooperation.--Records of contents of Paonia Reservoir furnished by North Fork Conservancy District.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second) (Shifting-control method used Apr. 6-10)

0.3	37	0.9	155	2.5	1,050
.5	65	1.5	390	3.0	1,550
.6	80	2.0	670	4.6	4,000

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	152	66	50	46	36	38	110	779	1,480	634	240	224
2	149	59	46	38	34	38	110	676	1,410	592	228	220
3	149	60	48	38	34	36	110	506	1,460	539	256	202
4	149	72	50	40	36	34	110	435	1,520	512	224	164
5	146	74	50	44	40	32	105	415	1,680	478	228	206
6	146	66	46	44	40	30	96	376	1,710	451	216	228
7	143	65	40	40	40	30	98	405	1,840	420	216	236
8	71	64	55	38	38	32	* 105	* 440	1,950	386	210	232
9	50	62	55	38	36	34	105	405	1,470	350	143	228
10	* 50	60	* 50	42	34	34	118	528	1,440	* 350	131	213
11	49	59	46	42	* 34	34	120	724	* 1,510	332	146	206
12	49	58	42	34	34	* 36	143	814	1,480	304	216	199
13	47	58	42	28	36	36	128	1,070	1,390	284	332	199
14	47	59	55	* 26	34	38	137	1,360	1,300	272	228	210
15	47	* 58	55	32	34	40	206	1,730	1,350	256	216	224
16	47	66	60	36	36	42	296	2,230	1,340	252	236	213
17	46	58	60	40	38	42	350	3,320	1,260	292	240	206
18	46	53	55	40	40	40	327	3,550	1,130	260	180	202
19	47	64	55	40	38	38	358	3,570	918	224	120	206
20	77	53	60	38	36	38	336	3,880	902	199	120	202
21	70	56	55	36	38	40	304	* 3,750	886	179	160	199
22	60	53	50	34	38	42	372	3,580	910	182	210	199
23	58	45	46	34	36	42	430	3,410	724	196	220	196
24	59	62	50	36	34	42	528	3,290	* 718	199	210	192
25	58	52	55	40	34	40	490	3,170	779	199	210	188
26	56	45	55	42	34	38	372	3,090	800	199	* 220	192
27	56	56	50	42	36	38	296	2,970	765	210	248	192
28	54	52	50	42	36	42	272	2,580	751	228	232	188
29	54	50	50	40	36	50	368	2,320	700	* 228	220	195
30	56	55	55	40	-----	* 60	598	1,860	670	236	216	182
31	74	-----	55	40	-----	90	-----	1,640	-----	236	220	-----
Total	2,362	1,760	1,591	1,190	1,050	1,246	7,498	58,873	36,243	9,679	6,492	6,133
Mean	76.2	58.7	51.3	38.4	36.2	40.2	250	1,899	1,208	312	209	204
Ac-ft	4,680	3,490	3,160	2,360	2,080	2,470	14,870	116,800	71,890	19,200	12,880	12,160

Calendar year 1963: Max 1,780 Min 36 Mean 234 Ac-ft 169,200
 Water year 1963-64: Max 3,880 Min 26 Mean 366 Ac-ft 266,000

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 30 to Mar. 31 (no gage-height record Dec. 25 to Feb. 11, Feb. 19 to Mar. 30). No gage-height record Aug. 17-26.

GUNNISON RIVER BASIN

9-1327, Hubbard Creek near Paonia, Colo.

Location.--Lat 39°03'25", long 107°37'40", in NE¼ sec.35, T.11 S., R.92 W., on left bank 100 ft upstream from Overland ditch crossing, 2 miles southwest of Hubbard Park, and 13 miles north of Paonia.

Drainage area.--1.24 sq mi.

Records available.--October 1960 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 9,710 ft (from topographic map).

Extremes.--Maximum discharge, 20 cfs June 4 (gage height, 3.23 ft); minimum daily determined, 0.1 cfs many days October to March. 1960-64: Maximum discharge, 24 cfs May 6, 1963; maximum gage height, 4.19 ft Apr. 27 (backwater from ice); minimum daily discharge determined, 0.1 cfs Oct. 1-8, 1961, many days in September to December 1963 and January to March 1964.

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

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second) (Shifting-control method used Oct. 1-31)

2.2	0.1	2.7	1.7
2.3	.2	2.8	3.0
2.4	.3	3.0	8.5
2.5	.4	3.1	13
2.6	.9		

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							0.8	5.7	2.6	0.5	0.3
2	.1							.8	7.3	2.2	.9	.3
3	.1							.7	*11	1.8	1.5	.3
4	.1							.7	11	1.6	.8	.3
5	.1							.7	9.8	1.5	.8	.3
6	.1							.7	11	1.4	.9	.3
7	.1							.6	13	1.2	.9	.3
8	.1					0.1		.4	9.8	1.1	.8	.3
9	.1							.7	7.9	1.0	.7	.4
10	.1							.9	9.4	1.2	.5	*.4
11	.1						0.3	1.2	11	1.0	.4	.3
12	.1							1.6	9.4	.8	.4	.3
13	.1							2.6	8.5	.8	3.5	.3
14	.1							3.6	8.5	*1.1	.9	.4
15	.1							4.2	8.5	.9	.6	.4
16	*.1	0.1	0.1	0.1	0.1			4.2	9.4	.8	.9	.4
17	.1							5	8.2	1.1	.9	.3
18	.1							6.5	7.0	1.1	.6	.3
19	.1							7	6.0	.8	*.8	.4
20	.1							9	6.0	.5	1.1	.4
21	.1							11	5.7	.4	.5	.4
22	.1							11	5.7	2.2	.4	.4
23	.1					.3		11	4.4	2.0	.4	.3
24	.1							12	4.4	1.0	.4	.3
25	.1							10	*4.7	.8	.3	.4
26	.1							7.5	4.7	.6	.3	.4
27	.1							8.5	4.4	.5	.4	.4
28	.1							9.5	4.4	.4	.3	.3
29	.1							7	4.2	.4	.3	.4
30	.1							6	3.2	.4	.3	.4
31	.1					**		5.5		.5	.3	
Total	3.1	3.0	3.1	3.1	2.9	6.3	12.0	150.9	224.2	33.7	22.3	10.4
Mean	0.10	0.1	0.1	0.1	0.1	0.2	0.4	4.87	7.47	1.09	0.72	0.35
Ac-ft	6.1	6.0	6.1	6.1	5.8	12	24	299	445	67	44	21

Calendar year 1963: Max 15 Min - Mean 1.27 Ac-ft 920

Water year 1963-64: Max 13 Min - Mean 1.30 Ac-ft 942

Peak discharge (base, 20 cfs).--June 4 (1600) 20 cfs (3.23 ft).

* Discharge measurement made on this day.

** Field estimate made on this day.

Note.--No gage-height record Nov. 1 to May 31 (stage-discharge relation affected by ice during most of period).

9-1328. Middle Hubbard Creek near Paonia, Colo.

Location.--Lat 39°02'55", long 107°37'10", in SW¼ sec.36, T.11 S., R.92 W., on left bank 100 ft upstream from Overland ditch crossing, 2 miles southwest of Hubbard Park, and 12 miles north of Paonia.

Drainage area.--1.65 sq mi.

Records available.--October 1960 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 9,650 ft (from topographic map).

Extremes.--Maximum discharge during year, 24 cfs June 11 (gage height, 3.85 ft); maximum gage height, 4.67 ft May 21 (backwater from ice); minimum daily discharge determined, 0.1 cfs for many days.
1960-64: Maximum discharge, 36 cfs June 21, 1962 (gage height, 4.10 ft); maximum gage height, 4.67 ft May 21, 1964 (backwater from ice); minimum daily discharge determined, 0.1 cfs for many days in each year.

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

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

2.8	0.1	3.2	2.0
2.9	.3	3.3	3.1
3.0	.7	3.5	6.8
3.1	1.2	3.7	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	0.1							0.8	3.8	3.4	1.0	0.4
2	.1							.7	5.2	3.0	1.4	.4
3	.1							.6	* 6.6	2.7	2.2	.4
4	.1							.5	9.4	2.3	1.2	.4
5	.1							.5	7.1	2.1	1.6	.4
6	.1						0.6	.5	7.8	1.8	1.9	.4
7	.1							.5	13	1.6	1.5	.4
8	.1					0.3		.5	9.0	1.4	1.2	.3
9	.1							.5	7.1	1.4	1.4	.5
10	.1							.7	11	1.6	1.3	*.5
11	.1							1.0	12	1.3	1.0	.4
12	.1							1.1	10	1.1	1.0	.3
13	.1							2.0	9.4	1.1	3.4	.3
14	.1	(*)						3.6	9.0	1.5	1.5	.4
15	.1	0.3	0.2	0.2	0.3		.7	4.0	10	*1.2	1.2	.6
16	*.1							4.0	11	1.2	1.4	.5
17	.1							4.6	9.0	2.1	1.4	.4
18	.1							6.2	7.8	1.8	1.1	.3
19	.1							6.6	6.2	1.1	*1.2	.5
20	.3							8.4	6.2	1.0	1.4	.6
21	.3							10	6.2	.8	.8	.6
22	.3							10	6.6	1.5	.7	.5
23	.3					.6		10	5.2	2.7	.6	.4
24	.3							11	5.4	1.4	.5	.4
25	.3						.8	9.4	* 5.8	1.2	.5	.5
26	.3							7.1	5.6	1.0	.5	.7
27	.3							7.8	5.4	.8	.7	.5
28	.2							8.7	5.4	.8	.6	.4
29	.2							6.4	4.6	.8	.5	.4
30	.3						(*)	5.0	4.1	.8	.5	.4
31	.3					(*)		3.8		.8	.4	
Total	5.3	9.0	6.2	6.2	8.7	14.1	21.0	136.5	224.9	47.3	35.6	13.2
Mean	0.17	0.3	0.2	0.2	0.3	0.45	0.7	4.40	7.50	1.53	1.15	0.44
Ac-ft	11	18	12	12	17	28	42	271	446	94	71	26

Calendar year 1963: Max 14 Min - Mean 1.31 Ac-ft 946
Water year 1963-64: Max 13 Min - Mean 1.44 Ac-ft 1,050

Peak discharge (base, 20 cfs)--June 11 (1730) 24 cfs (3.85 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 1 to Apr. 30 (stage-discharge relation effected by ice during most of period).

GUNNISON RIVER BASIN

9-1329, West Hubbard Creek near Paonia, Colo.

Location.--Lat 39°01'55", long 107°36'50", in SE¼ sec.1, T.12 S., R.92 W., on left bank 75 ft upstream from Overland ditch crossing, 3 miles south of Hubbard Park, and 11 miles north of Paonia.

Drainage area.--2.59 sq mi.

Records available.--October 1960 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 9,640 ft (from topographic map).

Extremes.--Maximum discharge during year, 46 cfs July 17 (gage height, 4.14 ft); minimum daily determined, 0.1 cfs Apr. 4, 8.
1960-64: Maximum discharge, 51 cfs June 12, 1962 (gage height, 4.27 ft); minimum daily determined, 0.1 cfs Apr. 4, 8, 1964.

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)

2.7	0.2	3.2	4.8
2.8	.5	3.4	11
2.9	1.0	3.7	23
3.0	1.8	4.0	38
3.1	3.0		

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	0.3	0.6					b0.4	1.0	10	5.1	1.7	1.5
2	.3	.7					.4	1.0	12	4.6	5.4	1.4
3	.3	.6					.4	.8	*15	4.1	4.6	1.4
4	.3	.5					.1	.6	19	3.7	2.8	1.3
5	.3	.5					.2	.6	19	3.4	5.5	1.3
6	.3	.5					.2	.5	20	2.9	4.8	1.3
7	.3	.4				0.4	.2	.5	30	2.6	5.4	1.3
8	.3	.5					.1	.4	24	2.5	4.1	1.3
9	.3	.5					.2	.5	18	2.4	3.9	1.6
10	.3	.5					.3	.8	23	2.8	3.2	* 1.4
11	.3	b.4					.5	1.0	25	2.6	2.6	1.2
12	.3	b.4					.6	1.2	21	2.3	2.4	1.2
13	.3	b.4					.4	1.3	19	2.3	1.2	1.2
14	.3	*.4					.3	2.4	19	2.3	5.6	1.4
15	.3	.4	0.2	0.2	0.4		.4	3.2	19	* 2.0	4.4	1.4
16	*.3	.4					.5	4.6	20	2.8	4.4	1.3
17	.4	.3					.6	7.9	19	9.9	4.1	1.2
18	.4	.2					.5	9.3	15	5.1	3.2	1.1
19	.4	.3					.4	13	13	3.0	* 3.5	1.3
20	.4	.3					.4	17	13	2.4	3.7	1.4
21	.7	.4					.4	21	12	2.3	2.6	1.3
22	.6	.4					.4	23	12	3.4	2.4	1.2
23	.6	.4				.5	.5	24	9.6	4.1	2.0	1.0
24	.6	.4					.7	26	9.3	2.5	1.9	1.0
25	.6	.4					.8	24	* 9.3	2.3	1.8	1.0
26	.6	.4					.6	22	9.0	2.0	1.8	1.0
27	.5	.4					.6	24	8.3	1.8	2.0	1.0
28	.5	.4					.6	24	7.9	1.7	1.7	1.0
29	.5	.4					.8	18	7.0	1.7	1.6	.9
30	.6	.4					*.9	13	6.2	1.6	1.6	.9
31	.6					(*)		11		1.7	1.5	
Total	13.2	12.8	6.2	6.2	11.6	14.0	13.4	297.6	463.6	93.9	108.2	36.8
Mean	0.43	0.43	0.2	0.2	0.4	0.45	0.45	9.60	15.5	3.03	3.49	1.23
Ac-ft	26	25	12	12	23	28	27	590	920	186	215	73

Calendar year 1963: Max 20 Min - Mean 2.18 Ac-ft 1,580
Water year 1963-64: Max 30 Min - Mean 2.94 Ac-ft 2,140

Peak discharge (base, 40 cfs)--June 7 (1600) 45 cfs (4.14 ft); July 17 (1700) 46 cfs (4.14 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 1-16, Nov. 14 to Mar. 31, Apr. 2-13 (stage-discharge relation affected by ice during most of periods).

9-1345. Leroux Creek near Cedaredge, Colo.

Location.--Lat 38°55'35", long 107°47'35", in NW¼ sec.16, T.13 S., R.93 W., on right bank 200 ft upstream from headgate of Overland ditch, 400 ft upstream from Cow Creek, and 7 miles northeast of Cedaredge.

Drainage area.--35.1 sq mi.

Records available.--October 1936 to September 1956, October 1960 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,160 ft (by barometer).

Average discharge.--24 years, 47.4 cfs (34,320 acre-ft per year).

Extremes.--Maximum discharge during year, 1,050 cfs May 24 (gage height, 4.57 ft); minimum daily, 2.0 cfs Jan. 13, 14.
1936-56, 1960-64: Maximum discharge, 1,310 cfs May 26, 1942 (gage height, 4.95 ft), from rating curve extended above 650 cfs; maximum gage height, 5.10 ft May 10, 1937 (backwater from diversion dam); minimum daily discharge, 1.8 cfs Nov. 10, 1950.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. One small diversion and several small reservoirs above station for irrigation below.

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

0.8	4	1.9	90
1.0	8	2.4	200
1.2	15	3.0	360
1.4	26	4.0	730
1.6	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	9.8	1.0	3.0	2.4	3.2	4.2	1.5	5.2	185	26	26	29
2	1.1	1.0	3.0	2.4	3.4	4.2	1.0	3.0	188	25	27	3.0
3	1.2	1.0	2.8	2.2	3.6	4.0	8	2.3	205	24	35	25
4	1.2	1.0	2.8	2.2	3.8	3.8	6	1.9	215	25	26	24
5	9.2	9.2	3.0	2.4	3.8	3.8	5.5	1.6	190	26	33	22
6	8.6	8.9	2.8	2.4	3.6	4.0	6	14	190	24	32	23
7	8.3	8.9	2.6	2.2	3.6	4.2	6	* 13	200	25	24	23
8	7.8	8.3	2.4	2.2	3.6	4.4	4.0	13	198	26	24	24
9	7.4	7.6	2.8	2.4	3.8	4.4	* 4.0	14	144	32	22	28
10	7.2	6.8	3.0	2.2	4.0	4.4	5.5	28	* 138	37	21	31
11	8.0	6.4	* 3.0	2.2	* 4.2	4.2	5	44	134	38	24	28
12	8.9	5.2	3.0	2.2	4.4	* 4.2	8	55	114	34	24	30
13	8.3	* 5.0	3.0	2.0	4.4	4.2	6.5	64	100	38	53	31
14	8.0	7.0	3.2	2.0	4.4	4.4	7	98	92	46	36	35
15	* 7.6	6.8	3.2	* 2.2	4.2	4.4	* 24	170	96	40	28	29
16	9.2	6.2	3.0	2.4	4.0	4.4	24	240	86	37	30	27
17	9.2	4.2	3.0	2.4	4.0	4.6	21	292	81	38	32	16
18	8.3	2.4	3.0	2.4	4.4	5.2	14	318	77	39	26	14
19	8.3	3.0	3.2	2.4	4.4	5.0	14	372	66	33	30	18
20	1.3	3.2	3.2	2.2	4.0	4.6	13	450	59	31	32	18
21	1.2	3.2	3.0	2.2	4.0	4.6	13	499	56	31	24	16
22	1.2	3.2	2.8	2.2	4.2	4.6	16	584	61	34	22	18
23	1.3	2.6	2.8	2.2	4.2	4.2	23	710	52	55	22	18
24	1.3	4.0	2.8	2.4	4.0	3.8	27	652	* 46	47	21	21
25	1.2	3.4	2.8	2.6	3.8	3.8	21	468	41	39	21	22
26	1.2	3.2	2.8	2.6	3.6	3.2	16	* 378	38	38	* 21	23
27	1.2	3.2	2.8	2.4	3.6	3.0	13	387	36	36	22	22
28	1.2	3.2	2.8	2.4	3.8	3.0	16	360	36	* 34	25	22
29	1.2	3.0	2.6	2.6	4.0	5	29	288	34	34	27	21
30	1.2	3.0	2.4	2.8	-----	9	43	225	24	28	23	20
31	1.2	-----	2.4	3.0	-----	15	-----	202	-----	28	24	-----
Total	316.1	171.1	89.0	72.8	114.0	145.8	423.5	7,078	3,162	1,048	837	708
Mean	10.2	5.70	2.87	2.35	3.93	4.70	14.1	228	105	33.8	27.0	23.6
Ac-ft	627	339	177	144	226	289	840	14,040	6,270	2,080	1,660	1,400

Calendar year 1963: Max 333 Min 2.4 Mean 28.3 Ac-ft 20,510
Water year 1963-64: Max 710 Min 2.0 Mean 38.7 Ac-ft 28,090

Peak discharge (base, 600 cfs).--May 24 (1930) 1,050 cfs (4.57 ft).

* Discharge measurement made on this data.
Note.--Stage-discharge relation affected by ice Nov. 18 to Jan. 3. No gage-height record Jan. 4 to Feb. 11, Feb. 15 to Mar. 16, Mar. 23 to Apr. 15 (stage-discharge relation affected by ice during most of periods).

GUNNISON RIVER BASIN

9-1347, Cow Creek near Cedaredge, Colo.

Location.--Lat 38°55'35", long 107°47'25", in N½ sec.16, T.13 S., R.93 W., on right bank at mouth 300 ft upstream from Overland ditch diversion headgate and 7 miles northeast of Cedaredge.

Drainage area.--6.90 sq mi.

Records available.--October 1960 to September 1964.

Gage.--Water-stage recorder.

Extremes.--Maximum discharge during year, about 350 cfs May 17 (gage height, 4.20 ft, backwater from debris); no flow for many days. 1960-64: Maximum discharge, that of May 17, 1964; no flow for many days in 1961-64.

Remarks.--Records good except those for periods of no gage-height record and May 17, which are poor. Natural flow of stream affected by one small diversion above station to Dever Creek drainage. Most of flow is water imported by Overland ditch from Overland Reservoir (capacity, 6,280 acre-ft) in West Muddy Creek drainage. Overland ditch also intercepts intermediate tributaries to North Fork Gunnison River during high flows.

Rating table, except periods of ice effect or indefinite stage-discharge relation
(gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 24 to June 1)

1.3	0	2.3	13
1.4	.2	2.5	23
1.5	.5	2.6	33
1.6	1.0	2.8	70
2.0	5.0	3.0	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	0	0					2.4	12	3.1	* 42	30	22
2	0	0					1.6	6.6	23	39	38	16
3	0	0					1.0	4.6	17	39	30	15
4	0	0.1					.8	3.9	13	38	36	13
5	0	0					.6	3.7	11	36	32	12
6	0	0					.5	3.4	22	33	52	7.6
7	0	0					.5	* 3.3	31	34	46	3.6
8	0	0				0	.5	3.4	32	45	55	0
9	0	0					** .5	3.3	19	45	45	0
10	0	0					.6	6.2	* 19	42	42	0
11	0	0	(*)		(*)		.8	13	42	48	33	0
12	0	0				(*)	1.2	20	34	39	30	0
13	0	* 0					1.6	33	32	40	32	0
14	0	0					2.6	50	31	40	31	0
15	* 0	0		(*)			* 4.4	59	24	34	44	0
16	0	0					5.0	84	26	34	38	0
17	0	0					4.6	e 70	22	50	25	0
18	0	0					3.6	76	25	61	36	0
19	0	0					3.0	63	19	50	32	0
20	.3	0				.2	2.8	66	19	48	31	0
21	0	0					2.5	44	19	39	31	0
22	0	0					3.6	27	19	40	36	0
23	0	0					4.4	17	18	52	38	0
24	0	0					4.6	12	* 22	48	40	0
25	0	0					3.5	7.9	34	40	38	0
26	0	0					2.7	* 6.2	42	38	* 34	0
27	0	0					2.2	6.6	42	40	27	0
28	0	0				1	2.6	3.8	39	* 38	33	0
29	0	0					3.9	1.8	40	38	33	0
30	0	0					5.8	1.0	40	38	33	0
31								1.9		29	31	
Total	0.3	0.1	0	0	0	8.0	74.4	713.6	779.1	1,277	1,112	89.2
Mean	0.01	0.003	0	0	0	0.26	2.48	23.0	26.0	41.2	35.9	2.97
Ac-ft	0.6	0.2	0	0	0	16	148	1,420	1,550	2,530	2,210	177

Calendar year 1963: Max 111 Min 0 Mean 9.82 Ac-ft 7,110
Water year 1963-64: Max 84 Min 0 Mean 11.1 Ac-ft 8,050

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

** Field estimate made on this day.

e Stage-discharge relation indefinite.

Note.--No gage-height record Nov. 14 to Apr. 19 (stage-discharge relation affected by ice during most of period).

9-1362, Gunnison River near Lazear, Colo.

Location.--Lat 38°47'00", long 107°50'15", in NE¼ sec.1, T.15 S., R.94 W., on left bank 300 ft downstream from North Fork Gunnison River and 3 miles west of Lazear.

Drainage area.--5,260 sq mi, approximately.

Records available.--May 1962 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 5,090 ft (from topographic map).

Extremes.--Maximum discharge during year, 11,800 cfs May 23 (gage height, 5.54 ft); minimum daily, 115 cfs Oct. 6.
1962-64: Maximum discharge, 14,800 cfs May 13, 1962 (gage height, 6.30 ft); minimum daily, 115 cfs Oct. 6, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by transmountain and transbasin diversions, storage reservoirs, and diversions for irrigation of about 150,000 acres, part of which is in Uncompahgre River basin.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 6-8, 10, 11, June 6-11)

0.7	100	3.5	3,500
1.0	200	4.0	5,100
1.4	410	5.0	9,000
2.0	960	6.0	13,500
3.0	2,460		

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	127	473	440	400	350	420	623	1,940	4,250	* 1,960	386	308
2	127	452	460	400	390	431	614	2,140	3,860	1,760	473	280
3	121	431	* 452	400	390	420	614	1,630	3,890	1,580	520	270
4	121	552	438	390	390	420	605	1,160	3,980	1,420	496	374
5	121	770	438	360	350	420	641	833	4,400	1,290	552	320
6	115	750	452	300	350	445	641	720	4,720	1,220	563	320
7	120	690	440	350	390	452	700	632	5,520	1,090	466	424
8	120	596	420	350	390	453	* 670	* 730	6,800	984	410	417
9	120	596	420	340	390	420	552	750	5,760	894	431	368
10	120	605	440	320	* 360	424	466	740	* 4,920	810	424	308
11	120	605	420	340	390	* 438	445	1,380	5,280	740	356	332
12	130	596	420	340	390	452	560	1,840	5,450	596	431	280
13	130	597	390	300	390	445	445	2,440	5,240	560	916	260
14	130	596	340	* 320	390	431	410	3,110	4,860	560	1,240	275
15	* 127	* 605	360	360	400	417	563	4,220	5,380	480	800	362
16	130	614	390	420	400	* 398	949	5,420	5,140	623	496	459
17	130	600	390	440	400	417	1,420	7,360	4,860	790	466	520
18	130	550	400	440	420	452	1,330	8,400	4,470	861	614	445
19	130	500	420	420	424	453	1,090	8,640	3,800	310	496	424
20	290	550	420	400	400	445	1,280	9,220	3,360	578	578	356
21	375	600	390	400	420	438	1,070	* 9,940	3,130	431	840	368
22	328	650	360	390	431	438	996	10,800	3,130	466	680	473
23	324	600	340	390	400	466	1,090	10,800	2,740	650	563	445
24	216	550	360	330	420	404	1,330	10,100	2,500	790	466	308
25	196	650	390	400	417	398	1,500	10,000	2,460	1,310	296	285
26	386	600	400	400	400	270	1,130	10,100	2,490	1,070	270	285
27	390	590	400	330	400	192	660	10,400	2,320	760	* 445	320
28	374	590	400	360	400	180	473	9,000	2,300	* 552	578	362
29	368	540	400	360	400	308	466	7,890	2,250	504	452	344
30	362	500	420	360	-----	396	349	6,160	2,130	410	374	314
31	338	-----	420	360	-----	605	-----	5,060	-----	356	332	-----
Total	5,066	17,568	12,580	11,560	11,372	12,560	24,278	163,595	121,380	26,905	16,422	10,606
Mean	196	586	406	373	392	405	809	5,277	4,046	868	530	354
Ac-ft	12,030	34,850	24,950	22,930	22,560	24,910	48,150	324,500	240,800	53,370	32,570	21,040

Calendar year 1963: Max 3,620 Min 115 Mean 735 Ac-ft 531,900
Water year 1963-64: Max 10,800 Min 115 Mean 1,188 Ac-ft 862,700

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 7-14, Nov. 17 to Dec. 2. Stage-discharge relation affected by ice Dec. 7 to Feb. 18, Feb. 20, 21, 23, 24, 26-29, Mar. 1, 3-5, 9.

GUNNISON RIVER BASIN

9-1378. George Creek near Grand Mesa, Colo.

Location.--Lat 38°57', long 108°02', in NW¼ sec.5, T.13 S., R.95 W., on left bank 200 ft upstream from falls on Cedar Park ditch, 3½ miles upstream from confluence with Sare Creek, 7½ miles northwest of Cedaredge, and 8 miles southwest of Grand Mesa.

Drainage area.--8.3 sq mi, approximately.

Records available.--October 1957 to September 1964.

Gage.--Water-stage recorder.

Average discharge.--7 years, 6.34 cfs (4,590 acre-ft per year).

Extremes.--Maximum discharge during year, about 50 cfs Aug. 4 (gage height, 3.02 ft, backwater from debris); minimum discharge not determined.

1957-64: Maximum discharge, 75 cfs May 11, 1958 (gage height, 1.72 ft); maximum gage height, that of Aug. 4, 1964; minimum discharge not determined.

Remarks.--Records fair except those for Aug. 4 and periods of ice effect or no gage-height record, which are poor. Natural flow of stream effected by storage reservoirs, diversions above station for municipal water supply of town of Delta, and three small diversions above station for irrigation below.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 27 to June 14, Aug. 4 to Sept. 30)

0.1	0.7	0.7	10
.3	2.4	.8	14
.5	5.6	1.0	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	2.8	2.2					2.4	16	9.8	7.8	6.8	6.1
2	2.4	2.4					2.4	10	* 9.8	7.8	10	6.6
3	2.5	2.7					2.4	7.0	9.2	7.0	12	5.8
4	2.4	3.0					2.4	5.8	8.5	7.0	e 20	6.3
5	2.3	2.8					2.4	5.2	8.0	7.0	13	6.3
6	2.0	2.7					2.6	4.5	7.5	6.8	8.5	6.3
7	2.0	2.5					2.6	* 3.4	7.0	6.6	8.8	6.3
8	1.4	2.4					2.6	3.0	8.2	6.1	8.2	6.3
9	1.6	2.2					2.6	3.1	7.5	5.8	8.2	* 6.6
10	2.2	2.0					2.6	4.5	6.8	6.3	7.8	6.1
11	2.1	2.4				1	2.6	6.6	6.8	6.3	7.5	5.8
12	2.0	2.5					2.8	8.5	7.0	6.3	8.0	5.4
13	2.0	* 2.4					2.8	9.5	6.8	8.0	13	5.6
14	2.2	2.3					3.0	11	6.8	7.5	9.2	5.6
15	* 2.2	2.1					* 6	13	7.5	6.8	8.8	5.6
16	2.4	b 1.8	1.4	1.4	1		9.0	15	8.2	6.8	8.5	5.4
17	2.3	b 1.8				(*)	7.5	16	8.0	4.9	8.2	5.4
18	2.3	1.8					4.2	16	* 7.8	7.3	* 8.2	5.2
19	2.2	1.8					5.1	19	7.3	6.3	7.5	4.9
20	4.0	1.8					5.2	16	7.0	5.8	9.0	4.9
21	4.3	1.8					5.8	15	7.3	* 6.8	8.0	4.9
22	3.8	1.8					8.8	14	7.8	5.4	7.8	4.9
23	4.2	1.8					11	13	7.5	5.4	7.3	4.7
24	4.5	1.8					11	12	7.0	5.2	7.0	4.7
25	4.2	1.8					7.0	11	6.8	5.1	6.8	4.3
26	4.0	1.8					4.2	12	6.8	4.5	7.5	4.9
27	4.0	1.8					4.0	10	6.6	5.2	7.3	4.5
28	4.0	1.8					6.3	8.8	7.5	5.4	7.0	4.5
29	4.0	1.8					10	8.0	7.5	4.9	6.8	4.7
30	3.8	1.8					12	8.8	7.5	4.9	6.6	4.5
31	3.0	-----					-----	9.8	-----	5.8	6.3	-----
Total	89.1	63.6	43.4	43.4	29	42	153.3	315.5	227.8	192.8	269.6	163.1
Mean	2.87	2.12	1.4	1.4	1	1.4	5.11	10.2	7.59	6.22	8.70	5.44
Ac-ft	177	126	86	86	58	83	304	626	452	382	535	324

Calendar year 1963: Max 14 Min - Mean 3.70 Ac-ft 2,680
Water year 1963-64: Max 20 Min - Mean 4.46 Ac-ft 3,240

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

e Stage-discharge relation indefinite.

Note.--No gage-height record Nov. 18 to Apr. 15 (stage-discharge relation affected by ice during most of period).

9-1392. Ward Creek near Grand Mesa, Colo.

Location.--Lat 38°59', long 107°58', on line between secs.25 and 26, T.12 S., R.95 W., on left bank 300 ft upstream from headgate of Lake Fork and Surface Creek Canal, 3½ miles upstream from William Creek, 4½ miles south of Grand Mesa, and 6 miles northwest of Cedaredge.

Drainage area.--14 sq mi, approximately.

Records available.--October 1957 to September 1964.

Gage.--Water-stage recorder. Prior to June 4, 1958, at site half a mile upstream at different datum.

Average discharge.--7 years, 11.2 cfs (8,110 acre-ft per year).

Extremes.--Maximum discharge during year, 92 cfs Aug. 4 (gage height, 3.55 ft, from recorded range in stage); minimum daily determined, 0.7 cfs Apr. 3-10;
1957-64: Maximum discharge, about 150 cfs May 25, 1958; minimum daily determined, that of Apr. 3-10, 1964.

Remarks.--Records good except those for periods of ice effect, indefinite stage-discharge relation, or no gage-height record, which are poor. Flow regulated by numerous small storage reservoirs. At times water is exported from Hotel Lake above station to Baron Lake in Kiser Creek basin.

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	2.2	2.4			0.8	0.8	5.1	1.3	21	18	25
2	5.1	2.2	2.4			.8	.8	3.7	* 13	21	18	24
3	5.1	2.1	2.6			.8	.7	2.6	16	21	18	24
4	5.1	2.0	2.8			.8	.7	2.4	14	21	40	22
5	6.2	1.6	3.0			.8	.7	2.5	14	21	26	21
6	6.2	1.6	3.0			.8	.7	2.4	21	21	26	22
7	6.0	1.6	3.0			.8	.7	* 2.2	21	* 21	26	22
8	5.5	1.5	3.0			.8	.7	2.4	22	21	26	22
9	5.5	1.6	3.0			.8	*.7	3.0	21	21	26	*22
10	6.9	1.6	3.0			.8	.7	3.4	20	21	26	18
11	* 6.9	1.5	* 3.0			*.8	.9	5.3	16	21	26	18
12	6.2	1.7	3.0			.8	1.0	8.5	17	21	30	18
13	6.2	* 1.6	3.0			.8	1.2	11	16	21	31	18
14	6.5	1.5	3.0			.8	1.6	15	16	22	26	19
15	7.8	1.4	3.0			.8	2.6	20	15	22	25	19
16	7.5	1.2		2.0	1.5	.8	* 3.7	22	16	23	25	19
17	6.0	1.0				.8	3.0	24	16	24	25	19
18	5.8	1.0				.8	2.3	24	* 16	24	* 25	19
19	5.1	1.2				.8	2.3	e 4.0	16	24	26	20
20	5.8	1.2				.8	2.1	e 3.0	15	26	25	19
21	5.5	1.2				.8	2.0	21	15	26	24	19
22	5.3	4.0				.8	2.5	20	15	* 25	24	19
23	5.3	4.0	2.5			.8	3.4	21	14	23	24	19
24	6.2	3.6				.8	3.8	25	14	23	24	19
25	6.2	3.4				.8	3.4	22	14	22	24	19
26	7.8	3.2				.8	3.0	26	14	21	25	9
27	7.8	3.0				.8	2.2	29	14	20	26	1.1
28	7.8	2.8				.8	3.0	23	14	20	26	2.2
29	8.8	2.6				.9	4.0	19	14	* 20	26	6.0
30	8.8	2.4				1.0	4.7	19	21	19	25	1.4
31	7.8					.9		20		19	24	
Total	198.0	61.5	83.2	62.0	43.5	25.2	59.9	474.5	483	676	736	516.6
Mean	6.39	2.05	2.68	2.0	1.5	0.81	2.00	15.3	16.1	21.8	25.4	17.2
Ac-ft	393	122	165	123	86	50	119	941	958	1,340	1,560	1,020

Calendar year 1963: Max 22 Min - Mean 8.42 Ac-ft 6,100
Water year 1963-64: Max 40 Min - Mean 9.48 Ac-ft 6,880

* Discharge measurement made on this day.
e Stage-discharge relation indefinite.

Note.--Stage-discharge relation affected by ice Nov. 16 to Dec. 6, Apr. 21, 26-28, May 3, 4, 8-10. No gage-height record Dec. 7 to Mar. 11 (stage-discharge relation affected by ice during most of period), Aug. 2-11.

GUNNISON RIVER BASIN

9-1402. Kiser Creek near Grand Mesa, Colo.

Location.--Lat 39°00', long 107°56', in N½ sec.19, T.12 S., R.94 W., on left bank a quarter of a mile upstream from unnamed tributary, ¾ miles (corrected) south of Grand Mesa, 5½ miles upstream from Cottonwood Creek, and 7 miles northwest of Cedaredge.

Drainage area.--5.3 sq mi, approximately.

Records available.--October 1957 to September 1964.

Gage.--Water-stage recorder.

Average discharge.--7 years, 8.06 cfs (5,840 acre-ft per year).

Extremes.--Maximum discharge during year, 33 cfs Aug. 27 (gage height, 3.04 ft); maximum gage height, 4.59 ft Mar. 11 (backwater from ice); minimum daily discharge determined, 0.1 cfs for many days in November, December, January.

1957-64: Maximum discharge, 83 cfs June 7, 1958 (gage height, 3.40 ft); from rating curve extended above 33 cfs; maximum gage height, that of Mar. 11, 1964; minimum daily discharge determined, 0.1 cfs for many days in November, December 1963, January 1964.

Remarks.--Records good except those for periods of ice effect, which are poor. No diversion above station. Flow regulated by numerous small storage reservoirs. At times water is imported from Hotel Lake in Ward Creek basin to Baron Lake above station.

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

Oct. 1 to June 15				June 16 to Sept. 30			
2.4	0.2	2.7	4.5	2.5	2.0	2.9	18
2.5	.6	2.8	8.0	2.6	3.8	3.0	27
2.6	2.0	2.9	14	2.7	6.8	3.1	41
				2.8	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	2.5	0.4					0.7	4.0	4.8	16	15	25
2	2.5	.2					.7	3.0	* 8.6	15	14	25
3	2.5	.2					.6	2.5	8.6	16	15	25
4	2.5	.3					.6	* 1.7	8.0	15	20	24
5	2.5	.2					.6	1.3	8.0	15	21	17
6	1.9	.2					.6	1.0	8.6	15	11	17
7	1.7	.2					.5	1.0	8.6	* 22	9.9	18
8	2.2	.2				0.2	.5	1.0	9.8	22	9.4	13
9	2.2	.2					.5	1.3	8.6	20	9.4	12
10	1.9	.2					.6	1.9	8.0	20	9.4	4.4
11	* 1.9	.2	(**)			(*)	.6	3.0	8.0	21	20	3.4
12	1.9	.2					.7	3.8	8.0	21	21	6.5
13	1.7	*.2					.8	4.2	9.2	21	30	6.5
14	2.2	.2					.9	5.6	9.2	24	30	6.5
15	2.0	.2					* 1.0	6.6	9.2	24	17	9.4
16	1.9	.2	0.1	0.1	0.2		1.2	7.0	19	23	18	9.4
17	2.0	.2					1.4	8.0	19	23	18	7.3
18	2.0	.2					1.0	8.6	* 20	26	25	6.5
19	2.0	.2					1.4	10	20	26	25	6.5
20	2.8	.2					1.4	11	10	27	27	6.5
21	2.2	.1					1.4	11	8.9	27	27	6.5
22	1.9	.1					1.2	12	9.4	27	31	12
23	1.7	.2				.6	2.2	12	16	28	31	12
24	2.0	.1					3.2	8.0	17	26	30	4.1
25	1.9	.1					2.5	5.9	15	26	30	3.4
26	2.0	.2					2.2	7.3	15	26	* 30	11
27	1.4	.2					2.0	7.0	15	26	31	11
28	1.0	.2		(**)			2.2	5.6	16	26	30	11
29	2.8	.1					3.2	4.8	16	* 26	24	7.3
30	2.2	.1					3.5	4.8	16	27	24	6.5
31	2.0	-----			-----		-----	4.8	-----	28	24	-----
Total	63.9	5.7	3.1	3.1	5.8	12.6	39.9	169.7	357.5	705	677.1	333.7
Mean	2.06	0.19	0.1	0.1	0.2	0.4	1.33	5.47	11.9	22.7	21.8	11.1
Ac-ft	127	11	6.1	6.1	12	25	79	337	709	1,400	1,340	662

Calendar year 1963: Max 31 Min - Mean 5.34 Ac-ft 3,870
 Water year 1963-64: Max 31 Min - Mean 6.49 Ac-ft 4,710

* Discharge measurement made on this day.

** Field estimate made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17 to Apr. 16 (no gage-height record Dec. 8 to Mar. 11, Mar. 16 to Apr. 15), Apr. 22, 23.

9-1407. Cottonwood Creek near Grand Mesa, Colo.

Location.--Lat 38°58', long 107°57', in SW¼ sec.30, T.12 S., R.94 W., on left bank 300 ft upstream from culvert on county highway, 3½ miles upstream from mouth, 5 miles south of Grand Mesa, and 5½ miles northwest of Cedaredge.

Drainage area.--2.5 sq mi, approximately.

Records available.--October 1957 to September 1964.

Gage.--Water-stage recorder and timber weir.

Average discharge.--7 years, 1.31 cfs (948 acre-ft per year).

Extremes.--Maximum discharge during year, 23 cfs May 19 (gage height, 1.77 ft); no flow for many days. 1957-64: Maximum discharge, about 35 cfs May 26, 1958; no flow for many days in 1949-64.

Remarks.--Records good except those for period of no gage-height record, which are poor. Flow regulated by numerous small storage reservoirs.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second) (Shifting-control method used Apr. 12-16)

0.4	0	0.8	2.3
.5	.1	1.1	6.2
.6	.2	1.3	9.2
.7	1.2	1.5	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	0					0	0.6	6.1	3.3	2.7	0.9	0
2	0					0	.6	3.0	* 3.1	2.4	1.2	0
3	0					0	.6	1.8	3.0	2.3	2.1	0
4	0					0	.6	* 1.4	2.7	2.3	2.7	0
5	0					0	.6	1.2	2.6	2.3	2.4	0
6	0					0	.7	1.0	2.3	2.2	2.1	0
7	0					0	.7	1.0	2.3	* 2.2	1.9	0
8	0					0	.8	1.0	2.8	2.1	1.5	0
9	0					0	* .8	1.1	2.4	2.1	1.3	* 0
10	0					* 0	.8	1.9	2.2	2.3	.8	0
11	* 0		(*)			0	.8	3.0	2.0	2.0	.2	0
12	0					0	1.4	3.7	1.9	1.8	.1	0
13	0	(*)				0	1.4	4.2	1.8	1.4	2.1	0
14	0					0	2.2	5.0	1.8	.7	1.4	0
15	0					0	* 4.2	5.8	1.6	.1	.9	0
16	0					0	* 4.9	6.6	2.2	0	.7	.1
17	0					.2	3.0	7.5	2.6	.1	.4	0
18	0					.4	1.6	10	* 2.6	0	.1	0
19	0					.2	2.6	13	2.3	0	.1	0
20	0					.1	1.9	13	2.3	0	.1	0
21	.1					.1	2.1	12	3.0	** 0	.1	0
22	0					.1	2.7	11	3.1	0	.1	0
23	0					.1	3.7	10	3.1	0	0	0
24	.1					.1	3.7	8.7	3.1	0	0	0
25	.1					.2	1.9	7.1	3.0	0	0	0
26	0					.3	1.2	6.6	3.1	0	* 0	0
27	0					.3	1.2	6.6	2.8	0	.1	0
28	0			(*)		.4	2.0	5.2	3.1	0	.1	0
29	0					.5	2.8	4.2	3.1	* 0	0	0
30	0					.6	3.0	4.0	3.0	.7	0	0
31	0					.5		3.9		.5	0	
Total	0.3	0	0	0	0	4.1	55.1	170.6	78.2	30.2	23.4	0.1
Mean	0.01	0	0	0	0	0.13	1.84	5.50	2.61	0.97	0.75	0.003
Ac-ft	0.6	0	0	0	0	8.1	109	338	155	60	46	0.2

Calendar year 1963: Max 5.7 Min 0 Mean 0.56 Ac-ft 405
 Water year 1963-64: Max 13 Min 0 Mean 0.99 Ac-ft 717

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

** Field estimate made on this day.

Note.--No gage-height record Dec. 11 to Apr. 9 (stage-discharge relation affected by ice part of period).

GUNNISON RIVER BASIN

9-1412. Youngs Creek near Grand Mesa, Colo.

Location--Lat 38°58', long 107°55', in S½ sec.32, T.12 S., R.94 W., on left bank 200 ft upstream from bridge, a quarter of a mile downstream from Horse Creek, 4½ miles north of Cedaredge, and 6 miles southeast of Grand Mesa.

Drainage area--10 sq mi, approximately.

Records available--October 1957 to September 1964.

Gage--Water-stage recorder.

Average discharge--7 years, 6.60 cfs (4,780 acre-ft per year).

Extremes--Maximum discharge during year, 57 cfs May 26 (gage height, 2.39 ft); minimum not determined.
1957-64: Maximum discharge, 86 cfs June 6, 1958 (gage height, 2.77 ft); minimum not determined.

Remarks--Records good except those for periods of ice effect or no gage-height record, which are poor. Flow regulated by numerous small storage reservoirs. At times water is diverted from Eureka Reservoirs No. 1 and 2 above station to Milk Creek in Surface Creek basin. Three small diversions above station for irrigation below.

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

0.8	0.7	1.6	11
1.0	1.5	2.0	30
1.2	3.0	2.2	44
1.4	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	1.2	0.9					1.4	18	16	11	8.6	5.3
2	1.4	.9					1.4	8.0	* 14	12	8.6	5.3
3	1.4	1.0					1.0	4.6	14	11	8.9	5.1
4	1.1	1.1					1.0	3.6	14	10	9.5	5.0
5	.9	1.0					1.0	3.0	13	10	8.6	5.0
6	.9	1.0					1.0	2.5	13	9.2	8.0	5.0
7	.9	1.0					1.0	* 3.8	12	* 8.3	7.8	5.0
8	.9	.9					1.0	2.9	14	8.6	7.8	4.8
9	1.0	.9					* 1.4	2.6	13	8.6	7.8	4.8
10	1.2	.9				(**)	1.7	4.2	* 17	7.0	7.8	4.8
11	* 1.0	1.0	(*)			0.6	2.0	9.5	12	6.1	7.8	4.8
12	1.0	1.0					2.0	14	9.5	5.4	8.0	4.8
13	1.0	* .9					2.0	18	8.3	7.5	11	5.0
14	1.1	.9		(*)			3.4	23	7.5	8.3	7.8	4.8
15	1.0	.8	0.5	0.6	0.6		* 6.1	33	8.0	10	7.8	5.0
16	1.2	.7					8.0	34	8.0	11	7.5	6.6
17	1.2	.7					3.8	36	8.9	10	7.0	6.8
18	1.4	.6					2.6	37	10	8.9	7.0	6.6
19	1.5	.6					3.2	38	9.2	8.6	6.8	6.8
20	2.7	.7					2.2	39	8.0	5.6	6.8	6.8
21	1.9	.7					2.2	38	8.0	5.1	6.8	7.3
22	1.6	.7					3.7	36	10	5.6	6.8	7.5
23	1.6	.7					6.6	32	9.8	5.6	6.8	7.3
24	1.8	.7					7.8	27	8.6	6.3	6.8	7.0
25	1.7	.7					4.3	26	8.3	6.6	6.6	6.8
26	1.4	.6				1.0	2.7	34	* 7.5	6.3	* 6.6	6.6
27	1.2	.6					2.4	38	7.5	* 5.1	6.3	6.3
28	1.0	.6					3.5	31	7.8	4.8	6.1	5.8
29	1.0	.6					6.3	24	8.9	7.3	5.8	5.4
30	1.1	.5					8.3	20	9.2	8.6	5.4	5.0
31	1.2							18		8.3	5.3	
Total	39.5	23.9	15.5	18.6	17.4	23.0	95.0	658.7	315.0	246.7	230.2	173.1
Mean	1.27	0.80	0.5	0.6	0.6	0.74	3.17	21.2	10.5	7.96	7.43	5.77
Ac-ft	78	47	31	37	35	46	188	1,310	625	489	457	343

Calendar year 1963: Max 20 Min - Mean 4.03 Ac-ft 2,920
Water year 1963-64: Max 39 Min - Mean 5.07 Ac-ft 3,690

* Discharge measurement made on this day.

** Field estimate made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16 to Dec. 4. No gage-height record Dec. 5 to Apr. 9 (stage-discharge relation affected by ice during most of period).

9-1430, Surface Creek near Cedaredge, Colo.

Location.--Lat 38°59', long 107°51', in NW¼ sec.25, T.12 S., R.94 W., on left bank 5 ft downstream from private bridge, 1½ miles downstream from Caesar Creek, and 7 miles northeast of Cedaredge.

Drainage area.--26.7 sq mi.

Records available.--June 1939 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 8,180 ft (by barometer).

Average discharge.--25 years, 41.4 cfs (29,970 acre-ft per year).

Extremes.--Maximum discharge during year, 304 cfs May 17 (gage height, 2.67 ft); minimum daily determined, 1.8 cfs Dec. 8, 1939-64; Maximum discharge, 578 cfs May 12, 1941 (gage height, 3.62 ft), from rating curve extended above 300 cfs; maximum gage height, 5.10 ft Apr. 13, 1958 (ice jam); minimum daily discharge determined, 1.8 cfs Dec. 8, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Flow regulated by many small reservoirs. Some water imported from Leon Leke in Plateau Creek drainage.

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

0.7	2.5	1.7	61
.9	7.0	2.1	125
1.1	14	2.4	210
1.4	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	Avg.	Sept.
1	9.7	6.0	2.8			2.8	8	30	73	58	59	51
2	9.1	4.3	3.0			2.8	6	16	71	64	60	51
3	7.3	3.9	3.0			2.6	4.6	12	74	65	62	57
4	8.5	4.1	3.0			2.6	4.0	* 9	80	64	44	57
5	8.5	4.5	3.0			2.6	3.4	7.9	78	61	41	53
6	7.9	4.1	2.8			2.8	3.6	7.3	73	60	38	52
7	8.2	4.1	2.4			2.8	3.8	6.8	76	* 84	38	52
8	14	3.9	1.8			2.8	3.0	7.0	94	88	34	31
9	14	4.1	2.4			2.8	3.0	8.8	78	91	33	30
10	9.7	4.1	3.0			2.6	3.6	16	* 84	89	34	24
11	* 9.7	4.1	4.0			2.6	4.4	29	106	77	43	23
12	7.9	4.3	* 4.8			* 2.6	6	47	106	76	45	28
13	7.6	* 4.5	4.0			2.5	4.6	68	96	76	73	28
14	7.0	3.7	3.4			2.7	6	91	91	68	59	31
15	8.5	3.7	3.0			2.7	12	121	88	62	42	38
16	8.2	2.2	2.8	2.8	3	2.7	16	148	94	52	40	38
17	7.9	2.8	2.8			2.5	12	174	92	52	40	36
18	7.3	3.2	2.6			2.5	10	177	94	49	45	35
19	7.9	3.4	2.6			2.5	8	177	92	50	51	24
20	12	3.6	2.6			2.4	8	183	73	49	49	21
21	11	3.7	2.8			2.4	6	180	69	54	45	21
22	9.4	3.5	2.8			2.4	10	177	66	60	50	25
23	8.5	3.1	2.8			2.6	18	189	51	59	50	25
24	10	3.1	2.6			2.6	24	168	48	57	49	21
25	8.8	3.1	2.6			2.6	18	153	52	51	62	21
26	13	2.9	2.6			2.6	10	* 156	* 51	50	* 65	25
27	14	2.9	2.6			2.4	8	162	50	* 50	70	26
28	13	2.9	2.6			2.2	10	130	48	76	68	26
29	12	2.9	2.4	(*)		2.6	16	101	46	80	40	37
30	13	2.8	2.4			6	24	89	57	73	38	38
31	14	-----	2.4			9	-----	80	-----	73	38	-----
Total	307.6	109.5	88.4	86.8	87	90.3	274.0	2920.8	2251	2018	1505	1025
Mean	9.92	3.65	2.85	2.8	3	2.91	9.13	94.2	75.0	65.1	48.5	34.2
Ac-ft	610	217	175	172	173	179	543	5,790	4,460	4,000	2,990	2,030

Calendar year 1963: Max 119 Min - Mean 23.8 Ac-ft 17,220
 Water year 1963-64: Max 189 Min - Mean 29.4 Ac-ft 21,340

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16-20, Nov. 30 to Dec. 25. No gage-height record Dec. 26 to Mar. 12, Mar. 21 to May 4 (stage-discharge relation affected by ice during most of periods).

GUNNISON RIVER BASIN

9-1435, Surface Creek at Cedaredge, Colo.

Location.--Lat 38°54', long 107°55', in sec.20, T.13 S., R.94 W., on left bank at Cedaredge, 500 ft east of State Highway 65 and 8½ miles upstream from mouth.

Drainage area.--39.5 sq mi.

Records available.--October 1916 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 6,500 ft (by barometer). Prior to June 8, 1917, staff gage at same site at datum 0.5 ft higher.

Average discharge.--48 years, 27.1 cfs (19,620 acre-ft per year).

Extremes.--Maximum discharge during year, 200 cfs May 14 (gage height, 1.75 ft); minimum daily, 0.8 cfs Nov. 17.

1916-64: Maximum discharge, 1,190 cfs May 13, 1941 (gage height, 2.50 ft), from rating curve extended above 640 cfs; no flow Sept. 25, 1939, and practically no flow at times in some winters.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by diversions to and from nearby streams, many small storage reservoirs, diversions for irrigation, and return flow from irrigated areas.

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

0.4	1.7	0.7	14
.5	3.7	1.0	47
.6	8.0	1.5	137

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	9.3	1.1	2.8	2.8	2.8	2.2	1.2	4.8	6.0	3.1	2.5	2.8
2	6.5	5.1	2.8	3.0	3.0	2.2	8.0	3.2	* 6.2	3.9	2.7	3.1
3	5.1	5.5	2.6	3.0	2.6	2.2	6.0	1.9	6.9	4.0	3.2	3.3
4	5.1	7.0	2.6	2.6	2.4	2.2	5.5	1.4	6.7	3.5	2.6	3.3
5	6.5	7.5	2.6	3.0	2.2	2.2	4.4	1.3	6.4	3.4	2.2	3.0
6	7.0	5.1	2.8	2.8	2.2	2.4	4.8	1.1	6.2	3.4	2.1	2.8
7	7.0	5.5	2.8	3.0	2.2	2.2	* 5.1	* 1.1	6.7	* 3.7	2.0	2.8
8	7.0	3.7	2.0	3.0	2.0	2.2	3.5	1.0	7.7	3.4	1.8	2.0
9	6.5	3.7	2.6	2.8	2.0	2.2	3.5	1.1	6.0	3.8	1.6	1.7
10	7.0	4.4	2.8	2.8	* 2.0	* 2.2	5.1	2.2	6.2	4.0	1.5	1.9
11	* 7.0	4.4	2.6	3.0	2.3	2.3	4.4	4.8	7.6	4.4	2.0	1.8
12	6.0	4.1	* 2.6	2.8	2.5	2.5	8.0	6.5	6.9	4.7	2.0	1.7
13	6.0	* 3.5	2.8	2.6	2.3	2.5	6.0	8.6	6.0	4.7	4.4	1.6
14	5.5	4.8	4.0	* 3.0	2.2	2.7	7.0	10.8	5.8	3.4	3.3	1.8
15	4.1	4.1	3.4	3.2	2.2	3.0	1.4	12.6	5.8	3.0	2.6	1.4
16	3.7	4.8	3.0	3.4	2.2	3.0	* 2.1	12.4	5.4	2.6	2.5	1.2
17	4.4	.8	3.0	3.4	2.4	3.2	2.1	11.8	5.3	2.5	2.4	1.2
18	4.8	3.0	3.0	3.2	2.4	3.2	1.3	11.6	5.2	2.5	2.6	1.3
19	5.1	3.0	3.0	3.2	2.4	3.2	1.0	11.6	5.0	2.5	3.3	1.3
20	1.5	3.0	3.0	3.0	2.4	3.2	1.0	11.6	4.2	2.3	3.3	1.1
21	1.1	3.0	3.0	3.0	2.2	3.2	7.0	10.8	4.3	3.2	2.7	1.1
22	8.6	3.2	2.8	2.8	2.4	3.0	1.2	10.1	4.4	3.8	2.7	9.3
23	7.5	2.2	2.8	2.8	2.4	2.7	2.1	10.8	3.9	3.8	2.4	7.5
24	9.3	3.0	2.8	2.8	2.2	2.5	3.2	9.9	3.5	3.5	2.3	8.0
25	8.6	3.0	3.0	2.8	2.2	2.7	2.4	9.3	3.5	3.4	2.0	8.6
26	6.5	3.0	3.0	3.0	2.0	2.5	1.3	10.6	* 3.3	3.4	* 1.8	1.0
27	6.5	3.0	3.0	3.0	2.0	2.5	9.3	10.8	3.3	* 3.4	2.8	9.3
28	6.5	3.0	3.0	2.8	2.2	2.3	1.1	8.6	3.3	3.7	2.8	9.3
29	7.0	2.8	2.8	2.8	2.2	3.2	2.2	8.1	3.2	3.5	2.4	8.6
30	9.3	2.8	2.6	2.8	-----	8.6	3.5	7.4	3.4	2.6	2.3	8.0
31	1.5	-----	2.6	2.6	-----	1.1	-----	6.9	-----	2.6	2.2	-----
Total	222.4	123.0	88.2	90.8	66.5	95.2	358.6	2,247	1,583	1,057	770	500.6
Mean	7.17	4.10	2.85	2.93	2.29	3.07	12.0	72.5	52.8	34.1	24.8	16.7
Ac-ft	441	244	175	180	132	189	711	4,460	3,140	2,100	1,530	993

Calendar year 1963: Max 77 Min 0.8 Mean 16.6 Ac-ft 11,990
 Water year 1963-64: Max 126 Min 0.8 Mean 19.7 Ac-ft 14,300

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17-20, Nov. 24 to Feb. 4 (no gage-height record Dec. 8-12, Jan. 9-28), Feb. 14-23. No gage-height record Feb. 5-10, Feb. 24 to Mar. 10 (stage-discharge relation affected by ice during most of periods).

GUNNISON RIVER BASIN

269

9-1442. Tongue Creek at Cory, Colo.

Location.--Lat 38°47', long 108°00', in S½ sec.34, T.14 S., R.95 W., on left bank at downstream side of bridge, 500 ft upstream from North Delta Canal headgate, half a mile west of Cory, and 1 mile upstream from mouth.

Drainage area.--200 sq mi, approximately.

Records available.--October 1957 to September 1964.

Gage.--Water-stage recorder (digital since Jan. 25, 1964).

Average discharge.--7 years, 26.4 cfs (19,110 acre-ft per year).

Extremes.--Maximum discharge during year, about 500 cfs Aug. 2 (gage height, 4.72 ft); minimum daily, 0.5 cfs July 15, 16, 21. 1957-64: Maximum discharge, 748 cfs June 7, 1958 (gage height, 5.32 ft); minimum daily, 0.5 cfs July 15, 16, 21, 1964.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by diversions to and from nearby streams, many small storage reservoirs, diversions for irrigation, and return flow from irrigated areas.

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	16	16	14	14	15	8.4	35	3.5	1.6	1.0	5.1
2	3.8	17	16	14	13	15	7.4	28	2.9	1.4	60	4.2
3	3.8	18	* 18	13	14	14	6.8	8.0	2.8	1.4	150	5.3
4	4.0	20	18	13	14	14	6.2	5.2	2.9	1.5	50	6.9
5	4.4	20	18	13	14	15	6.7	4.1	2.6	1.4	10	8.7
6	5.0	19	17	13	13	15	7.6	3.0	2.4	1.1	5.0	6.6
7	5.9	18	17	12	13	15	* 8.4	2.5	2.3	.8	5.0	5.7
8	6.8	* 17	15	12	13	14	7.7	* 2.6	2.6	.7	10	4.8
9	6.2	16	16	11	14	14	7.5	2.7	2.9	.8	5.0	3.9
10	* 5.9	16	17	10	14	* 15	8.5	2.3	2.8	* .7	5.0	4.2
11	3.8	16	17	12	14	14	8.5	2.0	2.6	.9	5.0	3.5
12	3.6	15	16	* 14	14	14	8.1	3.9	* 2.6	.7	5.0	3.8
13	3.6	15	15	* 16	13	15	6.1	8.1	2.8	1.5	25	3.9
14	3.6	15	15	14	14	14	4.9	17	2.9	.6	10	4.5
15	3.8	15	16	13	14	14	6.4	27	2.2	.5	9.5	6.0
16	4.0	14	16	12	15	13	* 8.6	25	2.9	.5	8.0	4.8
17	4.2	14	16	12	15	14	14	14	3.4	3.3	8.0	4.9
18	4.4	14	16	11	14	14	7.4	14	3.7	1.0	7.5	6.0
19	5.0	14	16	11	14	14	5.8	25	3.4	.9	7.0	6.1
20	18	14	16	12	14	12	5.3	51	3.1	.6	7.0	6.7
21	26	14	16	12	15	11	3.8	11	2.8	.5	7.0	6.9
22	24	14	16	12	14	11	4.0	4.5	2.7	.7	6.5	5.6
23	22	14	14	15	15	11	6.5	4.5	2.8	2.1	6.0	5.9
24	24	14	14	* 12	16	11	13	2.9	2.6	1.8	6.0	5.5
25	22	15	14	12	15	11	13	3.0	2.6	1.3	6.0	8.8
26	22	15	14	12	15	10	6.8	* 3.8	* 2.3	1.2	6.0	9.9
27	22	16	15	13	15	11	6.7	4.2	1.8	1.2	6.0	9.1
28	22	16	14	14	16	10	4.9	4.0	1.9	1.2	* 6.0	8.1
29	22	16	14	14	17	10	7.1	3.8	1.9	* 1.1	6.0	8.4
30	20	16	14	14	-----	9.6	16	3.5	2.0	1.5	5.9	9.1
31	18	-----	14	14	-----	9.0	-----	4.0	-----	.9	5.9	-----
TOTAL	347.6	473	486	393	415	398.6	232.1	329.6	80.7	35.4	460.3	182.9
MEAN	11.2	15.8	15.7	12.7	14.3	12.9	7.74	10.6	2.69	1.14	14.8	6.10
AC-FT	689	938	964	780	823	791	460	654	160	70	913	363

CALENDAR YEAR 1963	MAX	150	MIN	.8	MEAN	12.9	AC-FT	9,324
WATER YEAR 1963-64	MAX	150	MIN	.5	MEAN	10.5	AC-FT	7,605

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 16 to Nov. 8, Jan. 13, May 25-27, Aug. 2-29. Stage-discharge relation affected by ice Nov. 16, 17, Dec. 8, 12-14, 31, Jan. 3 to Feb. 10.

GUNNISON RIVER BASIN

9-1462. Uncompahgre River near Ridgway, Colo.

Location.--Lat 38°11'05", long 107°44'40", in NE¼ sec.4, T.45 N., R.8 W., on right bank 15 ft upstream from bridge, 0.7 mile upstream from Dallas Creek, and 2 miles north of Ridgway.

Drainage area.--150 sq mi, approximately.

Records available.--October 1958 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 6,877.58 ft above mean sea level (levels by Bureau of Reclamation).

Average discharge.--6 years, 149 cfs (107,900 acre-ft per year).

Extremes.--Maximum discharge during year, 1,380 cfs Aug. 13 (gage height, 4.84 ft); minimum daily, 32 cfs Feb. 21, 26, 28, Mar. 9, 11. 1958-64: Maximum discharge, 1,380 cfs Aug. 13, 1964 (gage height, 4.84 ft); minimum daily, 26 cfs Jan. 13, 1963.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation above station. Water is imported above station by Red Mountain ditch from Mineral Creek in San Juan River basin.

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

Oct. 1 to May 31				June 1 to Sept. 30			
1.5	28	3.0	325	1.9	72		
1.9	70	4.0	780	2.3	144		
2.3	130	4.5	1,120	3.0	324		
				4.0	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	56	89	59	46	42	34	108	147	318	398	197	99
2	57	84	* 56	44	43	* 39	104	145	* 315	380	185	* 93
3	55	82	55	49	* 40	39	94	119	309	373	240	88
4	54	84	54	44	38	34	103	110	324	373	* 243	86
5	54	80	54	47	38	34	102	98	402	356	250	88
6	54	79	54	42	41	37	96	93	446	* 340	243	93
7	50	75	51	47	36	37	82	84	628	324	222	104
8	49	74	50	45	38	37	76	82	623	288	204	91
9	* 49	71	51	42	38	* 32	87	79	466	280	185	93
10	48	71	52	43	40	36	94	109	614	324	178	90
11	49	70	51	43	40	32	94	136	705	306	292	85
12	48	* 69	46	40	41	34	91	165	705	288	291	85
13	50	70	46	* 38	38	37	79	244	632	288	472	80
14	55	70	46	36	40	34	84	271	574	277	300	91
15	56	65	47	34	36	35	109	328	* 710	321	245	120
16	55	66	50	34	38	37	147	424	740	318	222	112
17	55	62	50	34	36	38	145	468	655	294	209	94
18	54	60	48	36	38	42	112	507	556	274	180	91
19	54	60	46	38	38	44	100	561	524	240	171	110
20	134	60	46	40	38	40	100	* 645	560	224	207	101
21	100	63	50	40	32	40	91	720	528	261	176	101
22	87	65	50	45	36	42	114	747	502	245	159	99
23	80	62	46	45	36	41	123	769	470	237	144	93
24	86	66	50	45	34	41	128	786	502	214	130	86
25	80	69	50	40	36	40	121	834	474	202	122	99
26	76	62	46	42	32	40	96	* 1,020	438	192	130	102
27	74	65	47	42	36	40	84	840	426	178	173	94
28	69	65	46	40	32	40	90	615	434	171	130	95
29	70	59	46	42	34	48	* 121	484	442	183	120	95
30	65	58	44	42	-----	* 64	114	408	414	176	114	95
31	86	-----	48	40	-----	86	-----	372	-----	180	104	-----
Total	2,009	2,075	1,535	1,285	1,085	1,254	3,089	12,410	15,436	8,505	6,238	2,851
Mean	64.8	69.2	49.5	41.5	37.4	40.5	103	400	515	274	201	95.0
Ac-ft	3,980	4,120	3,040	2,550	2,150	2,490	6,130	24,610	30,720	16,870	12,370	5,650

Calendar year 1963: Max 464 Min 26 Mean 119 Ac-ft 85,900
 Water year 1963-64: Max 1,020 Min 32 Mean 158 Ac-ft 114,600

Peak discharge (base, 1,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-26	2015	4.64	1,230	8-11	1750	4.53	1,110
6-15	2300	4.50	1,040	8-13	0630	4.84	1,380

* Discharge measurement made on this day.
 Note.--Stage-discharge relation affected by ice Dec. 8, 12-14, 16-20, 23-26, 30, 31, Jan. 1, 2, 4, 6, 9, 12-16, 19, 21, 25-31, Feb. 1, 3-5, 7-11, 13, 15-29, Mar. 1, 4, 5, 9, 11, 12, 14.

9-1464. West Fork Dallas Creek near Ridgway, Colo.

Location.--Lat 38°04'30", long 107°51'10", in SE¼ sec.9, T.44 N., R.9 W., on right bank 100 ft downstream from unnamed tributary, 5 miles upstream from confluence with East Fork Dallas Creek, and 7½ miles southwest of Ridgway.

Drainage area.--13.2 sq mi.

Records available.--October 1955 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,400 ft (from topographic map).

Average discharge.--9 years, 12.3 cfs (8,900 acre-ft per year).

Extremes.--Maximum discharge during year, 92 cfs Aug. 5 (gage height, 3.18 ft, backwater from debris); minimum daily, 2.4 cfs Mar. 14, 1955-64; Maximum discharge, 187 cfs July 2, 1957 (gage height, 3.40 ft), from rating curve extended above 47 cfs; maximum gage height, 3.97 ft sometime during period Mar. 20 to Apr. 11, 1962 (ice jam); minimum daily discharge, 2.4 cfs Jan. 14, 1961, Mar. 14, 1964.

Remarks.--Records fair except those for periods of ice effect, which are poor. One diversion above station for irrigation below.

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	5.5	4.7	3.5	4.0	2.8	4.0	16	24	30	25	*12
2	5.5	5.2	4.6	3.5	3.7	2.6	4.0	15	23	30	26	11
3	5.5	6.1	*4.7	3.5	3.5	2.6	4.0	13	*26	29	26	10
4	5.5	6.4	4.6	3.4	3.3	2.6	4.0	12	30	30	26	10
5	5.8	6.1	4.6	3.4	3.1	2.6	4.0	12	29	30	*32	9.5
6	6.1	5.5	4.6	3.2	3.1	2.6	4.0	12	29	31	32	9.5
7	6.1	5.5	4.6	3.5	3.1	2.6	4.0	11	31	*30	30	10
8	6.1	5.2	4.4	3.4	3.1	2.6	4.0	11	31	28	27	9.9
9	*6.1	5.2	4.6	3.2	3.1	2.6	4.4	12	28	27	25	9.9
10	6.1	5.2	4.6	3.4	2.9	*2.6	4.4	13	32	28	25	9.9
11	6.1	5.0	4.4	3.5	2.9	2.8	4.7	14	34	26	24	9.1
12	6.1	5.0	4.4	3.5	2.9	2.6	4.6	16	35	25	24	8.7
13	5.8	*5.0	4.4	3.2	3.1	2.6	5.0	18	38	25	28	8.3
14	5.8	5.2	4.2	3.2	3.1	2.4	6.1	20	40	25	27	9.1
15	5.8	5.0	4.0	3.2	2.8	2.6	6.9	24	*40	26	24	9.5
16	5.8	4.7	4.0	3.4	2.8	2.6	7.6	24	37	26	22	10
17	5.8	4.6	4.0	3.4	2.8	2.6	7.6	26	37	26	22	9.5
18	5.8	4.8	4.0	3.5	2.9	2.6	6.9	30	35	27	19	8.7
19	6.1	5.0	4.0	3.3	2.9	2.6	8.0	28	36	25	19	9.1
20	8.3	5.0	4.0	3.3	2.9	2.8	7.6	*32	35	25	*20	9.1
21	6.6	5.0	4.0	3.3	2.8	3.0	8.0	33	35	24	18	9.5
22	5.8	4.8	4.0	3.3	2.8	3.1	10	30	34	23	16	9.1
23	5.5	4.6	4.0	3.3	2.9	3.1	12	33	35	23	14	8.7
24	5.8	4.6	4.0	3.3	3.1	3.1	13	38	34	24	12	8.7
25	5.8	4.7	3.7	3.3	2.9	3.1	10	*40	34	23	11	8.7
26	5.5	4.6	3.7	3.3	2.9	3.1	9	40	33	22	11	9.1
27	5.2	4.7	3.7	3.3	2.9	3.1	8.5	36	32	21	15	9.1
28	4.4	4.4	3.7	3.3	2.8	3.0	*11	33	32	20	15	8.3
29	4.4	4.4	3.7	3.5	2.8	3.0	13	30	31	20	13	8.3
30	4.7	4.4	3.7	3.5	---	3.6	13	27	31	20	13	8.3
31	5.5	---	3.7	3.7	---	3.6	---	26	---	20	12	---
Total	179.2	151.4	129.3	104.6	87.9	87.2	213.3	725	981	789	653	280.6
Mean	5.78	5.05	4.17	3.37	3.03	2.81	7.11	23.4	32.7	25.5	21.1	9.35
Ac-ft	355	300	256	207	174	173	423	1,440	1,950	1,560	1,300	557

Calendar year 1963: Max 28 Min 3.2 Mean 8.90 Ac-ft 6,450
 Water year 1963-64: Max 40 Min 2.4 Mean 12.0 Ac-ft 8,700

Peak discharge (base, 30 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-26	2130	2.50	44	7-10	0030	2.47	31
6-14	2130	2.51	43	8-5	1430	3.18	92

* Discharge measurement made on this day.
 Note.--Stage-discharge relation affected by ice Nov. 1, 17-19, 22-24, 26, 29, 30, Dec. 2, 4-12, Jan. 4-6, 8-10, 13-17, Feb. 15-17, 21, 22, 28, 29, Mar. 1, 9-12, 14, 17, 20, 21, 28-31, Apr. 1, 8, 10, 12, 21, 25-27.

GUNNISON RIVER BASIN

9-1465. East Fork Dallas Creek near Ridgway, Colo.

Location.--Lat 38°05'40", long 107°48'40", in SE 1/4 sec.2, T.44 N., R.9 W., on right bank 300 ft below private bridge, 2 miles upstream from Beaver Creek, and 5 miles southwest of Ridgway.

Drainage area.--16.8 sq mi.

Records available.--October 1947 to September 1953, October 1960 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,980 ft (from topographic map). Prior to Oct. 1, 1960, water-stage recorder at two sites three-quarters of a mile downstream at different datums. Datum raised 3.00 ft Oct. 1, 1949.

Average discharge.--10 years, 23.8 cfs (17,230 acre-ft per year).

Extremes.--Maximum discharge during year, 195 cfs June 15 (gage height, 3.40 ft), from rating curve extended above 120 cfs; minimum daily, 4.2 cfs Mar. 12, 20, 21.

1947-53, 1960-64: Maximum discharge, 297 cfs June 18, 1949 (gage height, 3.43 ft, site and datum then in use), from rating curve extended above 100 cfs; maximum gage height, 4.28 ft Dec. 13, 1961 (ice jam); minimum daily discharge determined, 3.6 cfs Mar. 11-13, 1962.

Remarks.--Records good except those for periods of ice effect, which are poor. One small diversion above station diverts water to Beaver Creek drainage for irrigation of about 50 acres of hay meadows.

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

1.9	3.5	2.7	57
2.0	6.0	3.0	110
2.1	9.5	3.5	230
2.4	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	1.6	1.3	.9	6.5	6.4	5.2	5.8	1.3	3.6	1.00	.68	*.27
2	1.6	1.2	.9	6.5	6.4	* 5.2	5.8	1.3	3.3	.96	.56	.25
3	1.6	1.3	* 8.5	6.5	5.5	5.5	5.5	1.1	* 3.3	.96	.69	.24
4	1.6	1.3	8.5	6	* 6.0	5.0	4.8	1.1	3.5	.92	.68	.23
5	1.6	1.3	8.5	6.7	6	5.2	5.5	1.2	4.4	.92	*.60	.24
6	1.5	1.3	8.5	6.4	6.0	5.2	5.5	1.2	4.9	.90	.52	.24
7	1.6	1.3	8	7.8	5.8	5.0	5.0	1.1	6.4	*.86	.49	.28
8	1.5	1.2	7.5	6.7	5.8	5.2	4.4	1.1	6.8	.76	.45	.28
9	* 1.5	1.2	7.5	6.4	5.5	5.0	5.0	1.2	5.3	.70	.41	.28
10	1.5	1.2	8	7.4	5.2	5.2	5.0	1.4	6.9	.88	.38	.28
11	1.4	1.2	7.5	7.0	5.2	4.8	6.0	1.5	8.3	.77	.44	.26
12	1.4	* 1.2	7	6.4	5.2	4.2	5.0	1.6	9.4	.63	.64	.25
13	1.4	1.2	7	* 6.4	4.8	5.5	5.8	1.7	8.1	.63	.90	.24
14	1.4	1.1	7	6.4	5.0	5.0	6.4	1.7	8.1	.62	.66	.25
15	1.3	1.1	7	6.4	5.0	5.0	7.4	1.8	* 11.8	.72	.52	.26
16	1.1	1.1	7.5	6.0	5.5	5.0	* 8.4	1.9	* 13.6	.90	.46	.27
17	1.1	1.1	7.5	6.0	5.5	4.6	8.8	2.2	11.0	.79	.41	.28
18	1.1	1.0	7	5.5	5.5	5.0	8.1	2.8	8.3	.68	.37	.27
19	1.2	1.0	7	5.8	5.5	5.2	8.8	2.9	8.5	.62	.36	.27
20	1.6	1.1	7.5	5.8	5.2	4.2	8.4	3.6	9.8	.57	.41	.25
21	1.4	1.2	7.5	5.8	5.0	4.2	9.5	* 4.1	9.4	.57	.37	.25
22	1.3	1.1	7	5.8	5.5	4.6	1.1	4.4	9.6	.56	.33	.24
23	1.2	1.0	6.5	5.5	5.5	4.8	1.2	5.1	9.8	.62	.31	.22
24	1.3	1.1	7.5	5.5	5.2	5.2	1.2	6.0	10.4	.53	.29	.22
25	1.2	1.2	7.5	6.4	5.5	5.2	9.5	* 7.2	10.2	.49	.28	.23
26	1.2	1.1	6.5	6.0	5.2	5.0	9.0	8.5	9.4	.45	.29	.24
27	1.2	1.0	7	5.5	5.5	5.0	8.0	1.08	9.4	.43	.32	.23
28	1.2	1.0	7	6.0	5.0	4.8	9.5	.68	9.8	.42	.28	.22
29	1.2	9.5	6.5	6.0	5.5	4.8	1.1	5.8	10.0	.45	.28	.22
30	1.2	.9	5.5	6.0	-----	5.0	1.1	4.7	9.8	.43	.27	.21
31	1.4	-----	7	6.4	-----	6.0	-----	4.3	-----	.47	.26	-----
Total	4.24	342.5	230.5	193.5	158.9	154.8	227.9	1.014	2.431	2.121	1.391	7.47
Mean	13.7	11.4	7.44	6.24	5.48	4.99	7.60	32.7	81.0	68.4	44.9	24.9
Ac-ft	841	679	457	384	315	307	452	2,010	4,820	4,210	2,760	1,480

Calendar year 1963: Max 76 Min - Mean 21.0 Ac-ft 15,210
 Water year 1963-64: Max 136 Min 4.2 Mean 25.8 Ac-ft 18,720

Peak discharge (base, 120 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-27	1200	3.34	190	7-1	2330	3.09	120
6-15	2330	3.40	195				

* Discharge measurement made on this day.
 Note.--Stage-discharge relation affected by ice Nov. 1, 2, 17-20, 23, 24, Nov. 26 to Jan. 4, Mar. 17, 18, 20-23, 26-30, Apr. 4, 7-10, 12, 25-27.

9-1465.5. Beaver Creek near Ridgway, Colo.

Location.--Lat 38°07'00", long 107°49'00", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.25, T.45 N., R.9 W., on left bank 10 ft below private bridge, 300 ft upstream from mouth, and 4 miles southwest of Ridgway.

Drainage area.--12.0 sq mi.

Records available.--October 1960 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,680 ft (from topographic map).

Extremes.--Maximum discharge during year, 76 cfs Aug. 5 (gage height, 3.43 ft), from rating curve extended above 12 cfs as explained below; minimum daily, 0.4 cfs Oct. 7.
1960-64: Maximum discharge, 76 cfs Aug. 5, 1964 (gage height, 3.43 ft), from rating curve extended above 12 cfs by logarithmic plotting; minimum daily, 0.4 cfs Oct. 7, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Two small diversions above station for irrigation of 130 acres of hay meadows. Water imported above station from East Fork Dallas Creek for irrigation of about 50 acres of hay meadows above station.

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

2.1	0.4
2.3	3.6
2.4	5.8
2.6	12
3.0	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	2.0	2.5	(*)			b 2.2	3.3	6.4	7.9	7.9	6.4	* 4.3				
2	1.2	2.5				b 2.3	2.8	6.7	7.9	7.9	6.1	3.8				
3	1.0	2.8				* 2.3	2.6	6.4	* 7.0	7.9	3.8					
4	1.7	2.8				b 2.0	2.8	6.4	5.8	8.5	11	3.8				
5	1.5	2.6				2.3	2.8	6.4	7.9	8.2	* 1.8	4.0				
6	.9	2.5	2.2	2.4	2.4	2.3	2.6	6.4	9.8	7.3	1.0	4.3				
7	.4	2.5				2.3	2.6	6.7	11	* 7.3	8.8	4.0				
8	.7	2.3				2.0	2.5	6.4	13	6.1	8.2	3.8				
9	* 1.0	2.3				b 1.8	3.0	6.4	11	7.0	7.3	3.8				
10	1.2	2.3				2.2	2.8	6.7	9.8	8.2	6.7	3.6				
11	1.4	2.3				2.2	2.4	2.4	b 1.6	3.3	7.0	8.2	7.0	9.2	3.3	
12	1.5	* 2.2							2.0	3.1	7.3	6.4	6.4	1.2	3.3	
13	1.5	2.2							2.0	3.4	7.6	6.4	6.4	2.1	3.3	
14	1.8	2.8							b 1.6	4.0	5.6	6.1	6.4	1.3	3.6	
15	2.5	2.2							2.0	* 4.9	2.6	* 7.6	9.1	1.2	4.3	
16	2.5	2.5	2.0	5.8	2.5				* 1.0	1.1	1.2	3.8				
17	2.5	b 2.0	2.2	* 5.6	2.6				1.0	8.8	1.2	3.4				
18	2.3	b 1.8	2.5	4.9	3.1				1.1	7.6	9.8	3.3				
19	2.5	b 2.0	2.3	5.4	3.0				1.0	7.3	8.8	4.3				
20	5.1	b 1.8	b 2.2	5.1	2.2				1.0	6.7	* 7.3	3.8				
21	3.3	2.0	2.2	2.4	2.4				b 2.0	5.1	* 1.8	1.0	7.0	7.0	3.8	
22	3.1	2.0							2.3	5.1	1.8	8.5	7.3	6.4	3.6	
23	2.8	b 1.6							2.3	5.4	2.6	7.6	6.7	6.1	3.4	
24	3.0	2.0							(*)	2.2	5.8	3.8	7.9	5.8	5.6	3.4
25	2.8	2.2							2.5	2.2	5.8	6.4	7.6	5.8	5.4	3.4
26	2.6	1.6				b 2.2	2.2	5.8	8.8	7.6	5.6	5.4	3.6			
27	2.5	1.8				b 2.2	2.2	5.8	1.0	7.6	5.6	6.1	3.6			
28	2.3	2.2				b 2.2	b 1.8	* 6.1	1.0	7.9	5.8	4.7	3.3			
29	2.3	2.0				b 2.5	b 2.0	6.4	1.1	7.6	6.1	4.5	3.3			
30	2.3	1.8				---	---	---	* 3.1	6.4	1.0	7.9	5.8	4.3		
31	2.8	---	---	---	---	3.3	---	8.2	---	5.8	4.0					
Total	65.0	66.1	68.2	74.4	69.2	67.7	131.0	182.8	257.0	220.3	267.0	110.3				
Mean	2.10	2.20	2.2	2.4	2.39	2.18	4.37	5.90	8.57	7.11	8.61	3.68				
Ac-ft	129	131	135	148	137	134	260	363	510	437	530	219				

Calendar year 1963: Max 5.6 Min 0.4 Mean 2.86 Ac-ft 2,070
Water year 1963-64: Max 21 Min 0.4 Mean 4.31 Ac-ft 3,130

Peak discharge (base, 15 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
8- 3	1630	2.71	16	8-11	2200	2.76	20
8- 4	1600	2.88	24	8-13	0630	3.11	40
8- 5	1630	3.43	76				

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--No gage-height record Nov. 24 to Feb. 24 (stage-discharge relation affected by ice during most of period).

GUNNISON RIVER BASIN

9-1466. Pleasant Valley Creek near Noel, Colo.

Location.--Lat 38°08'50", long 107°55'00", in SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.13, T.45 N., R.10 W., on right bank 3 miles north of Noel and 7 miles upstream from mouth.

Drainage area.--7.88 sq mi.

Records available.--October 1955 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 8,680 ft (from topographic map).

Average discharge.--9 years, 2.45 cfs (1,770 acre-ft per year).

Extremes.--Maximum discharge during year, 302 cfs May 1 (gage height, 3.58 ft); no flow Dec. 3-6.

1955-64: Maximum discharge, about 500 cfs July 29, 1957 (gage height, 4.60 ft), from rating curve extended above 140 cfs; no flow at times in 1958-59, 1963.

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

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

1.5	0	1.9	3.3	2.6	35
1.6	.1	2.1	7.5	2.8	68
1.7	.7	2.3	13	3.0	112
1.8	1.8	2.5	25		

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				0.8	94	2.0	0.1	0.1	0.1
2	.1	.1	.1				.7	22	1.6	.1	.1	*.1
3	.1	.1	0				.6	16	* 1.5	.1	.2	.1
4	.1	.1	0				.6	14	1.1	.1	.1	.1
5	.1	.1	0				.5	12	.8	.1	*.1	.1
6	.1	.1	0			0.1	.5	9.0	.6	.1	.1	.2
7	.1	.1					.5	11	.6	*.1	.2	.1
8	*.1	.1					.4	13	.8	.1	.1	.1
9	.1	.1					.6	18	.5	.4	.1	.1
10	.1	.1				(*)	.8	20	.3	.2	.1	.1
11	.1	.1				.1	.8	19	.3	.1	.1	.1
12	.1	.1				.1	.8	18	.3	.1	.1	.1
13	.1	*.1				.1	.8	16	.2	.1	1.3	.1
14	.1	.1				.1	1.0	14	.2	.3	.1	.1
15	.1	.1		0.1	0.1	.1	2.0	12	.1	.6	.1	.5
16	.1	.1					2.8	9.5	.1	.2	.1	.1
17	.1	.1					3.4	8.2	.1	.1	.1	.1
18	.1	.1					6	6.0	.1	.1	.1	.1
19	.1	.1	.1				9	4.7	.1	.1	.1	.1
20	2.1	.1				.2	17	* 4.3	.1	.1	.1	.1
21	.2	.1					16	3.5	.1	.1	.1	.1
22	.1	.1					40	3.0	.1	.1	.1	.1
23	.1	b .1					78	2.4	.1	.1	.1	.1
24	.1	.1					104	2.1	.1	.1	.1	.1
25	.1	.1					59	2.2	.1	.1	.1	.1
26	.1	b .1				.3	23	4.8	.1	.1	.1	.1
27	.1	b .1				.3	17	3.9	.1	.1	.3	.1
28	.1	.1				.4	72	2.0	.1	.1	.1	.1
29	.1	b .1				.5	*60	1.5	.2	.1	.1	.1
30	.1	.1				.7	*75	1.7	.2	.1	.1	.1
31	.1	---				.8	---	2.0	---	.1	.1	---
Total	5.2	3.0	2.7	3.1	2.9	6.5	593.6	369.8	12.6	4.3	4.7	3.5
Mean	0.17	0.10	0.09	0.1	0.1	0.21	19.8	11.9	0.42	0.14	0.15	0.12
Ac-ft	10	6.0	5.4	6.1	5.8	13	1,180	733	25	8.5	9.3	6.9

Calendar year 1963: Max 60 Min 0 Mean 1.40 Ac-ft 1,010
 Water year 1963-64: Max 104 Min 0 Mean 2.76 Ac-ft 2,010

Peak discharge (base, 50 cfs).--Apr. 23 (1700) 185 cfs (3.24 ft); May 1 (1415) 302 cfs (3.58 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 7 to Mar. 10, Mar. 15 to Apr. 19 (stage-discharge relation affected by ice during most of period).

9-1470. Dallas Creek near Ridgway, Colo.

Location.--Lat 38°10'30", long 107°45'40", in SE¼ sec.5, T.45 N., R.8 W., on right bank 20 ft downstream from highway bridge, 1½ miles upstream from mouth, and 1½ miles northwest of Ridgway.

Drainage area.--96.2 sq mi.

Records available.--March 1922 to October 1927, October 1955 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 6,980 ft (from topographic map). Mar. 1, 1922, to Oct. 31, 1927, staff gage at different datum.

Average discharge.--14 years, 38.7 cfs (28,020 acre-ft per year).

Extremes.--Maximum discharge during year, 452 cfs May 1 (gage height, 4.32 ft); minimum daily, 2.3 cfs Oct. 16.
1922-27, 1955-64: Maximum discharge observed, 1,120 cfs Aug. 15, 1923 (gage height, 4.40 ft, datum then in use), from rating curve extended above 160 cfs; maximum gage height, 5.14 ft Jan. 31, 1963 (backwater from ice); minimum daily discharge, 0.8 cfs Oct. 14, 1955, May 10-13, 18, 1956.

Remarks.--Records good except those for periods of ice effect, indefinite stage-discharge relation, or no gage-height record, which are poor. Diversions above station for irrigation of about 4,500 acres above and 700 acres below station. One small diversion from Leopard Creek (Dolores River basin).

Note.--Records for August and September 1960 are in error. Revised records for this period are on file in District Office and will be published in a later water supply paper.

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	32	1.9	16	17	14	60	* 175	17	50	49	26
2	2.7	29	* 1.8	15	16	* 12	42	150	17	49	38	* 21
3	2.7	32	1.8	16	* 15	12	33	100	* 16	42	82	20
4	2.7	34	1.8	15	14	13	39	100	9.4	49	* 98	18
5	2.7	30	1.8	14	12	13	38	90	9.8	49	112	21
6	2.5	28	1.8	14	13	13	30	80	10	* 49	100	34
7	2.7	26	1.7	15	13	13	27	70	22	49	95	44
8	2.8	25	1.6	15	13	13	28	80	34	42	85	34
9	* 3.0	24	1.7	14	12	12	37	100	16	43	80	34
10	2.8	23	1.7	14	11	13	33	120	21	73	75	32
11	2.8	23	1.6	14	12	12	39	110	23	38	100	30
12	2.7	* 22	1.6	14	11	13	30	110	38	29	150	27
13	2.5	21	1.5	* 13	11	14	28	100	37	29	180	27
14	2.7	22	1.5	13	12	13	43	80	24	27	120	31
15	2.7	21	1.5	12	11	13	* 55	70	* 46	34	100	37
16	2.3	22	1.6	12	13	13	70	66	58	43	90	33
17	2.5	19	1.5	11	12	12	68	68	* 55	43	80	32
18	2.5	18	1.5	12	11	13	54	50	42	34	75	31
19	2.8	18	1.5	13	12	14	60	14	37	30	70	37
20	4.0	20	1.5	14	12	11	58	* 12	44	27	76	34
21	23	22	1.6	14	11	12	54	9.8	46	62	64	38
22	20	22	1.6	14	12	13	82	8.7	46	46	57	38
23	18	22	1.5	12	12	14	118	8.0	39	39	54	34
24	20	22	1.6	12	15	14	178	8.0	38	55	49	28
25	18	22	1.7	13	12	14	130	8.7	38	30	42	30
26	16	20	1.5	13	11	13	78	28	40	25	42	32
27	16	20	1.5	14	12	14	66	62	38	22	60	32
28	16	20	1.5	15	16	15	110	30	42	22	36	36
29	16	20	1.5	16	12	20	* 140	12	54	28	30	36
30	16	19	1.5	17	-----	* 31	120	8.0	68	28	32	34
31	26	-----	1.6	19	-----	46	-----	14	-----	33	29	-----
Total	295.8	698	500	434	366	462	1,948	1,942.2	1,025.2	1,197	2,750	941
Mean	9.54	23.3	16.1	14.0	12.6	14.9	64.9	62.7	34.2	38.6	75.8	31.4
Ac-ft	587	1,380	992	861	726	916	3,860	3,850	2,030	2,370	4,660	1,870

Calendar year 1963: Max 250 Min 0.9 Mean 20.6 Ac-ft 14,930
Water year 1963-64: Max 180 Min 2.3 Mean 33.2 Ac-ft 24,100

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18-20, 23, 24, Nov. 26 to Jan. 10, Jan. 14-16, 22-31, Feb. 4, 5, 7-10, 13, 15, 17-24, 26-29, Mar. 1, 4-9, 19-23, 25, 26, 28. No gage-height record Jan. 11-13, 17-21, Feb. 1-3, Mar. 10-18 (stage-discharge relation affected by ice during all of periods), Apr. 28, Aug. 6-19. Stage-discharge relation indefinite Apr. 29 to May 14.

GUNNISON RIVER BASIN

9-1471. Cow Creek near Ridgway, Colo.

Location.--Lat 38°08'20", long 107°38'20", in N½ sec.21, T.45 N., R.7 W., on left bank 400 ft upstream from Cobbs Gulch and 6½ miles southeast of Ridgway.

Drainage area.--41.1 sq mi.

Records available.--October 1955 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,900 ft (from topographic map).

Average discharge.--9 years, 61.8 cfs (44,740 acre-ft per year).

Extremes.--Maximum discharge during year, 476 cfs June 10 (gage height, 4.40 ft); minimum not determined.
1955-64: Maximum discharge, 1,360 cfs June 28, 1957 (gage height, 7.70 ft); minimum daily, 2.0 cfs Jan. 9, 1957.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. No diversion 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	12	19	(*)		(*)	(*)	11	54	167	215	55	* 27				
2	12	19								10	47	* 163	201	44	24	
3	12	18								9.5	40	169	199	52	23	
4	12	17								9.5	37	191	191	45	21	
5	12	16									9	35	215	173	* 46	24
6	12	15	7.5	6.0	5.5		8.5	34	242	* 159	50	26				
7	12	15								8.5	32	298	147	47	24	
8	12	14								5.5	9	31	305	135	40	21
9	* 12	14								9.5	34	265	129	36	21	
10	12	14									13	48	348	145	35	20
11	12	13								(*)	12	54	368	123	52	17
12	12	* 13									18	66	371	117	45	17
13	11	13						(*)			14	111	338	115	96	16
14	11	13									17	141	348	113	56	21
15	11	12									32	179	374	115	48	32
16	11	12				6	56	215	* 377	113	47	30				
17	11	12				7	47	238	348	111	43	21				
18	11	11				7.5	30	288	308	107	38	19				
19	12	11				8	32	320	318	91	38	28				
20	21	11				7	32	* 305	312	80	52	21				
21	30	12				7	33	325	310	74	38	24				
22	19	13				7.5	48	362	280	68	35	22				
23	16	11				7	52	350	265	68	32	21				
24	18	12				7.5	55	325	260	61	30	19				
25	16	11				7	47	345	248	56	29	20				
26	14	11				7	36	395	242	50	33	22				
27	14	11				7	30	338	250	47	66	26				
28	14	10				7	* 36	280	252	54	36	21				
29	13	10				8.5	41	238	242	48	32	22				
30	13	9.5				10	44	191	223	45	29	21				
31	14	-----				12	-----	173	-----	47	28	-----				
Total	424	392.5	232.5	196	159.5	205.5	809.5	5,631	8,397	3,397	1,353	671				
Mean	13.7	13.1	7.5	6.0	5.5	6.63	27.0	182	280	109	43.6	22.4				
Ac-ft	841	779	461	369	316	408	1,610	11,170	16,660	6,720	2,680	1,330				

Calendar year 1963: Max 213 Min - Mean 37.5 Ac-ft 27,160
Water year 1963-64: Max 395 Min - Mean 59.7 Ac-ft 43,340

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

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17-27, Mar. 19-21, Mar. 28 to Apr. 1. No gage-height record Nov. 28 to Mar. 18, Mar. 22-27, Apr. 2-9 (stage-discharge relation affected by ice during most of periods).

GUNNISON RIVER BASIN

9-1475. Uncompahgre River at Colona, Colo.

Location.--Lat 38°19'50", long 107°46'40", in NW¼ sec.17, T.47 N., R.8 W., on right bank 15 ft downstream from county highway bridge, a quarter of a mile north of Colona, and 1 mile upstream from Beaton Creek.

Drainage area.--437 sq mi.

Records available.--April 1903 to November 1905, April to June 1906 (gage heights and discharge measurements only), October 1912 to September 1964. Monthly discharge only for some periods, published in WSP 1313. Published as "near Colona" 1904-6, 1922-34.

Gage.--Water-stage recorder. Datum of gage is 6,318.80 ft above mean sea level, datum of 1929. Supplementary water-stage recorder on left bank at same datum. Prior to June 24, 1921, staff or chain gages and June 24, 1921, to Oct. 28, 1938, water-stage recorder, at several sites within 5 miles of present site at various datums. Oct. 29, 1938, to Aug. 2, 1949, water-stage recorder at present site at datum 3.00 ft higher and Aug. 3 to Sept. 30, 1949, at datum 1.00 ft higher.

Average discharge.--54 years (1903-5, 1912-64), 271 cfs (196,200 acre-ft per year).

Extremes.--Maximum discharge during year, 1,980 cfs Aug. 13 (gage height, 5.27 ft); minimum daily, 27 cfs Oct. 13.

1903-5, 1912-64: Maximum daily discharge, 4,080 cfs June 13, 14, 1921; minimum daily, 12 cfs Sept. 19, 1956.

Revisions.--The maximum discharge for the water year 1963 has been revised to 1,120 cfs July 13, 1963 (gage height, 4.80 ft), superseding figure previously published.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by water diverted from West Fork Cimarron Creek, Mineral Creek (San Juan River basin), and Leopard Creek (Dolores River basin), diversions for irrigation of about 19,000 acres (part of which is below station) and return flow from irrigated areas

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 28 to Dec. 28, May 16, 17, July 15 to Aug. 13)

Oct. 1 to May 17				May 18 to Sept. 30			
2.9	23	3.6	135	3.3	90	4.0	430
3.0	28	3.8	210	3.6	180	4.5	970
3.2	45	4.0	320	3.8	270	5.0	1,650
3.4	80	4.6	890				

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	33	160	80	76	65	70	150	439	511	590	277	136
2	32	160	68	80	60	75	150	404	502	560	250	124
3	32	160	68	74	* 55	75	140	284	502	560	340	118
4	32	* 163	68	68	55	75	130	255	484	530	385	110
5	32	149	72	60	60	70	130	225	590	511	385	102
6	31	138	72	55	65	70	* 130	215	620	* 475	385	118
7	* 30	132	74	55	65	75	138	* 202	802	448	340	145
8	29	120	52	55	65	70	129	198	970	421	305	121
9	29	117	82	60	65	70	142	198	874	376	270	121
10	29	111	82	65	65	74	152	272	922	475	245	121
11	29	108	* 70	60	60	74	156	369	* 1,040	421	298	112
12	28	102	52	50	60	76	225	406	1,130	385	439	108
13	27	100	48	* 48	60	74	170	560	996	376	698	105
14	31	105	45	48	60	74	194	560	910	* 358	430	112
15	32	98	62	50	55	76	210	570	983	452	326	142
16	33	100	62	55	55	74	* 327	715	1,050	493	291	152
17	36	85	66	60	55	76	308	737	886	394	270	130
18	39	80	74	65	60	78	235	934	766	340	* 260	127
19	41	85	72	65	65	82	215	850	730	298	260	139
20	198	88	68	65	65	80	225	* 970	838	* 265	298	156
21	166	95	66	65	65	80	210	983	766	291	260	145
22	142	95	64	65	65	80	278	1,040	766	* 312	240	148
23	126	78	52	65	60	80	* 362	1,040	708	277	220	142
24	123	98	64	65	60	80	414	1,070	* 686	260	196	127
25	120	100	72	70	65	75	376	1,270	708	235	173	124
26	111	78	78	75	65	80	225	* 1,440	642	225	162	148
27	102	88	74	70	* 65	80	186	1,070	610	* 204	* 255	139
28	100	90	64	65	65	90	190	802	620	196	180	136
29	95	74	66	60	70	100	341	631	642	245	162	127
30	90	72	56	60	-----	120	334	560	600	230	156	124
31	129	-----	64	65	-----	140	-----	560	-----	240	142	-----
Total	2,107	3,229	2,057	1,939	1,795	2,493	6,572	19,829	22,854	11,443	8,898	3,859
Mean	68.0	108	66.4	62.5	61.9	80.4	219	640	762	369	287	129
Ac-ft	4,180	6,400	4,080	3,850	3,560	4,940	13,040	39,330	45,330	22,700	17,650	7,650

Calendar year 1963: Max 480 Min 27 Mean 141 Ac-ft 102,100
Water year 1963-64: Max 1,440 Min 27 Mean 238 Ac-ft 172,700

* Discharge measurement made on this day.
Note.--No gage-height record Jan. 5 to Feb. 3, Feb. 27 to Mar. 9 (stage-discharge relation affected by ice during part of periods), Mar. 20 to Apr. 6. Stage-discharge relation affected by ice Feb. 4-26.

GUNNISON RIVER BASIN

9-1495, Uncompahgre River at Delta, Colo.

Location.--Lat 38°44'20", long 108°05'10", in NE 1/4 sec. 23, T.15 S., R.96 W., on left bank 340 ft upstream from The Denver and Rio Grande Western Railroad Co. bridge at west edge of Delta and 1.3 miles upstream from mouth.

Drainage area.--1,110 sq mi, approximately.

Records available.--April 1903 to October 1931 (no winter records in most years), September 1938 to September 1964. Monthly discharge only for some periods, published in WSP 1313. Published as "near Delta" 1907-24.

Gage.--Water-stage recorder (digital since Jan. 28, 1964). Datum of gage is 4,932.57 ft above mean sea level, datum of 1929. Prior to Oct. 31, 1923, staff gage at several sites a quarter to 2 miles upstream at various datums. Apr. 26, 1924, to Nov. 2, 1931, water-stage recorder at site 250 ft downstream at different datum. Sept. 1, 1938, to May 5, 1941, water-stage recorder at site 630 ft downstream at datum 2.65 ft lower. May 9, 1941, to Apr. 25, 1946, chain gage at site 550 ft downstream at datum 2.65 ft lower. Apr. 26, 1946, to Feb. 17, 1960, water-stage recorder at site 450 ft downstream at datum 2.65 ft lower. Feb. 18, 1960, to Mar. 26, 1963, water-stage recorder at site 300 ft downstream at datum 2.65 ft lower.

Average discharge.--28 years (1907-8, 1920-21, 1938-64), 272 cfs (196,900 acre-ft per year).

Extremes.--Maximum discharge during year, 1,540 cfs Oct. 20, from rating curve extended above 760 cfs on basis of slope-area measurement of peak flow; maximum gage height, 7.35 ft Aug. 13; minimum daily discharge, 85 cfs Mar. 10.

1903-31, 1938-64: Maximum discharge recorded, 3,730 cfs May 5, 1941 (gage height, 5.90 ft, site and datum then in use), from rating curve extended above 1,900 cfs; no flow at times in 1908; minimum daily determined since beginning of diversion through Gunnison tunnel, 7 cfs July 10-15, 17, 21, 24-28, 1910.

Remarks.--Records fair. Natural flow of stream affected by water diverted from Gunnison River (see record of diversion for Gunnison River below Gunnison tunnel elsewhere in this report) and other adjacent basins, diversions for irrigation of about 90,000 acres above station, and return flow from irrigated areas.

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	160	513	130	132	107	105	259	306	494	* 389	401	111
2	165	493	128	125	127	107	371	469	399	334	379	100
3	156	481	* 121	132	102	102	265	366	443	261	426	95
4	140	485	119	121	105	95	233	256	432	211	513	95
5	134	401	121	138	109	103	214	228	482	223	774	105
6	132	285	125	125	120	108	194	204	499	189	733	124
7	138	271	125	148	107	102	* 148	181	632	131	658	175
8	138	* 297	115	135	116	96	137	* 206	872	121	618	185
9	138	305	117	125	112	95	113	198	725	119	568	230
10	136	250	142	125	117	85	211	200	710	214	501	228
11	136	232	125	128	106	91	202	310	859	222	300	196
12	136	232	125	138	113	* 88	230	282	* 832	192	437	201
13	145	326	153	* 119	106	91	216	421	755	167	962	238
14	151	204	156	115	115	92	189	543	654	163	902	351
15	* 168	190	153	111	104	91	230	524	560	163	749	552
16	200	198	130	113	121	96	385	645	605	381	713	657
17	218	201	165	130	111	102	441	729	668	295	716	488
18	226	198	153	128	110	126	351	885	619	225	* 694	407
19	232	190	156	125	98	159	231	769	479	167	653	425
20	* 813	194	150	125	100	130	279	667	503	148	628	477
21	952	180	150	125	92	126	193	715	631	140	519	474
22	757	190	150	125	110	126	209	738	626	243	405	409
23	649	177	140	121	105	131	274	687	528	202	316	405
24	645	174	150	125	107	121	311	625	480	198	231	394
25	657	187	150	130	115	143	300	* 657	414	173	156	325
26	517	177	150	117	101	190	227	776	* 344	189	114	304
27	449	162	132	119	111	287	157	1,090	297	* 164	* 274	284
28	441	165	138	* 115	99	274	106	763	297	149	242	272
29	437	162	140	120	98	303	129	558	356	202	139	273
30	429	135	130	124	-----	318	209	510	422	256	141	275
31	473	-----	148	122	-----	292	-----	580	-----	299	138	-----
TOTAL	10,268	7,655	4,287	3,881	3,145	4,375	7,014	16,088	16,617	6,530	15,000	8,855
MEAN	331	255	138	125	108	141	234	519	554	211	484	295
AC-FT	20,370	15,180	8,500	7,700	6,240	8,680	13,910	31,910	32,960	12,950	29,750	17,560

CALENDAR YEAR	1963	MAX	952	MIN	38	MEAN	196	AC-FT	141,570
WATER YEAR	1963-64	MAX	1,090	MIN	85	MEAN	283	AC-FT	205,700

* Discharge measurement made on this day.

9-1520. Kannah Creek near Whitewater, Colo.

Location.--Lat 38°59', long 108°14', in sec.34, T.12 S., R.97 W., on right bank at downstream side of private bridge, a quarter of a mile downstream from intake of pipeline for Grand Junction water supply and 12 miles east of Whitewater.

Drainage area.--61.9 sq mi.

Records available.--October 1917 to September 1921, September 1922 to September 1963. Monthly discharge only for some periods, published in WSP 1313. Prior to October 1962, published as Kannah Creek near Whitewater.

Gage.--Water-stage recorder and concrete control. Prior to Sept. 30, 1932, staff gage and Sept. 30, 1932, to Oct. 14, 1935; water-stage recorder, at site 300 ft upstream at different datum.

Average discharge (combined flow).--46 years, 39.5 cfs (28,600 acre-ft per year).

Extremes (combined flow).--Maximum discharge during year, 760 cfs May 20; minimum daily, 5.8 cfs Mar. 6, 9. 1917-21, 1922-64: Maximum discharge observed, 1,640 cfs June 6, 1921 (gage height, 4.5 ft, site and datum then in use), from rating curve extended above 700 cfs; minimum daily, 4.3 cfs Dec. 19, 1939.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for municipal supply of Grand Junction and by Raber ditch for irrigation of about 60 acres below station. Records of these diversions furnished by State engineer and monthly figures are adjusted to show total flow of stream. Regulation by a few small reservoirs 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 24-26)

0.3	0.5	0.7	9.5	1.7	180
.4	1.0	.9	24	2.0	285
.5	2.5	1.1	45	2.5	500
.6	5.5	1.4	100		

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	0.8	0.5	0.5	0.3	0.3	2.0	18	115	* 29	15	10
2	.9	.8	.6	.5	.3	.4	1.8	15	94	21	17	10
3	.9	.8	.8	.4	.3	.3	1.6	8.7	92	18	20	15
4	.9	1.4	.8	.4	.3	.2	1.2	6.7	88	19	* 17	15
5	.9	1.0	.6	.4	.3	.2	1.0	5.2	84	21	17	15
6	.9	.9	.6	.4	.2	1.0	.6	* 4.9	68	20	8.3	15
7	.9	.8	.8	.4	.2	.4	.5	4.9	58	19	5.5	14
8	.9	.8	1.2	.4	.3	.2	.4	4.0	* 62	21	4.3	* 11
9	.9	.8	.8	.4	.4	.2	* .3	3.4	52	22	3.7	7.5
10	.9	.7	.6	.4	* .4	.3	.3	4.3	40	23	5.5	8.3
11	.9	.7	.6	.3	.6	.3	.5	7.5	35	18	5.5	* 7.5
12	.9	.6	.6	.3	.6	.3	.4	9.5	31	19	6.3	7.1
13	.8	.6	.6	* .3	.4	.3	1.0	15	30	22	18	6.7
14	.8	.6	.5	.2	.3	.3	.8	18	28	26	13	13
15	.8	* .6	.5	.2	.4	.3	1.0	* 30	27	24	11	15
16	.8	1.0	* .5	.2	.4	.4	* 7.9	76	24	22	11	13
17	.8	1.0	.5	.3	.4	.5	6.7	162	22	22	8.3	9.1
18	.8	.8	.5	.3	.4	.6	3.1	* 215	22	22	10	8.3
19	.8	.6	.5	.4	.4	.6	3.4	293	25	21	11	8.3
20	2.4	.4	.5	.4	.4	.4	4.3	389	25	* 20	* 11	7.1
21	* 1.4	.4	.5	.5	.3	.4	3.1	385	25	18	11	4.6
22	.9	.4	.5	.8	.3	.4	5.9	317	26	18	9.5	2.8
23	.8	.8	.5	.6	.3	.4	10	353	28	23	9.3	2.2
24	1.0	.6	.5	.4	.3	* .3	11	333	28	21	12	5.2
25	.9	.4	.5	.4	.2	.4	8.7	* 264	30	20	12	5.2
26	.8	1.0	.5	.4	.2	.4	4.9	264	29	18	11	5.2
27	.8	.6	.5	.3	.2	.5	3.1	222	29	12	12	5.2
28	.8	.8	.5	.3	* .2	.8	3.7	177	28	10	* 25	5.5
29	.8	1.0	.5	.3	.2	.8	8.7	187	30	9.5	15	5.2
30	.8	1.0	.5	.3	-----	.6	13	145	30	12	14	4.9
31	1.3	-----	.5	.3	-----	1.2	-----	128	-----	14	* 10	-----
Total	29.2	22.7	18.1	11.7	9.5	13.7	110.9	4,065.1	1,305	604.5	379.2	261.9
Mean	0.94	0.76	0.58	0.38	0.33	0.44	3.70	131	43.5	19.5	12.2	8.73
Ac-ft	58	45	36	23	19	27	220	8,060	2,590	1,200	752	519

Adjusted for diversions

Mean	9.55	8.23	7.51	7.03	6.63	6.63	11.2	142	51.4	29.3	22.2	18.3
Ac-ft	587	490	462	432	382	408	667	8,730	3,060	1,810	1,360	1,090

Observed

Calendar year 1963:	Max 180	Min 0.2	Mean 7.50	Ac-ft 5,430
Water year 1963-64:	Max 389	Min 0.2	Mean 18.7	Ac-ft 13,550

Adjusted

Calendar year 1963:	Mean 15.6	Ac-ft 11,290
Water year 1963-64:	Mean 26.8	Ac-ft 19,480

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18 to Dec. 9, Mar. 29-31. No gage-height record Dec. 10 to Mar. 28, Apr. 1-15 (stage-discharge relation affected by ice during most of periods), Aug. 18 to Sept. 2.

GUNNISON RIVER BASIN

9-1525. Gunnison River near Grand Junction, Colo.

Location.--Lat 38°59', long 108°27', near center of sec.14, T.2 S., R.1 E., Ute meridian, on right bank 180 ft upstream from bridge on State Highway 141, 0.4 mile downstream from Whitewater Creek, 0.5 mile south of Whitewater, and 8 miles southeast of G-and Junction.

Drainage area.--7,870 sq mi, approximately.

Records available.--October 1894 to December 1895 (gage heights only), October 1896 to September 1899, October 1901 to October 1906, October 1916 to September 1964. Monthly discharge only for some periods, published in WSP 1313. Published as "at Whitewater" 1901-6.

Gage.--Water-stage recorder. Datum of gage is 4,628.12 ft above mean sea level, datum of 1929. Prior to Apr. 11, 1895, staff gage 13 miles downstream near mouth at different datum. Apr. 11, 1895, to July 6, 1901, and Apr. 10, 1902, to October 1906 staff or chain gage at present site at datum 1.04 ft lower. Apr. 1, 1917, to June 24, 1934, staff gage and June 25, 1934, to Sept. 30, 1959, water-stage recorder, at site 11½ miles downstream at datum 72.98 ft lower.

Average discharge.--56 years (1896-99, 1901-6, 1916-64), 2,593 cfs (1,877,000 acre-ft per year).

Extremes.--Maximum discharge during year, 13,600 cfs May 27 (gege height, 9.13 ft); minimum daily, 500 cfs Jan. 14, 15. 1896-99, 1901-6, 1916-64: Maximum discharge observed, 35,700 cfs May 23, 1920 (gage height, 14.95 ft, site and datum then in use), from rating curve extended above 22,000 cfs; minimum daily, 106 cfs July 20, 1934.

Remarks.--Records good except those for period of ice effect, which are poor. Records show flow that enters Colorado River from Gunnison River basin except for about 60 cfs diverted below gage during irrigation season. Natural flow of river affected by diversions for irrigation of about 233,000 acres above station, storage reservoirs, and return flow from irrigated lands.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second) (Shifting-control method used Aug. 2-12)

2.7	610	6.0	6,000
3.0	840	8.0	10,800
3.5	1,400	9.0	13,400
4.0	2,180		

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	652	* 1,270	867	750	750	673	1,070	2,320	5,900	2,940	85E	760
2	638	1,290	858	750	750	680	1,200	3,750	5,320	2,650	1,67C	* 688
3	638	1,270	849	800	800	666	1,120	3,220	4,960	2,380	1,62C	631
4	631	1,270	840	800	800	659	1,070	2,110	5,200	2,040	1,94C	610
5	617	1,440	824	750	800	666	1,000	1,560	5,320	1,910	* 2,06C	696
6	610	1,370	824	750	750	666	1,040	* 1,390	5,820	1,800	1,66C	704
7	610	1,260	840	800	800	666	990	1,150	6,380	1,550	1,55C	760
8	610	1,200	824	750	800	659	1,030	1,100	* 7,650	1,360	1,36C	885
9	610	1,100	840	700	800	652	* 930	1,290	7,950	1,320	1,20C	921
10	610	1,130	867	700	* 750	659	816	1,160	6,280	1,190	1,12C	921
11	610	1,070	921	700	800	638	940	1,550	6,380	1,300	93C	840
12	624	1,060	840	650	750	652	885	2,590	6,830	1,110	98C	832
13	631	1,040	750	600	850	666	1,050	3,340	6,580	970	3,64C	824
14	638	1,030	700	500	800	666	885	4,560	6,320	1,000	3,12C	867
15	652	* 1,030	700	* 500	850	666	903	* 5,840	6,380	970	2,72C	1,490
16	680	1,060	* 700	600	800	666	* 1,300	7,100	6,420	921	1,98C	1,480
17	736	1,080	700	700	800	666	2,100	9,120	* 6,440	1,240	1,79C	1,500
18	736	1,050	750	750	800	696	2,450	* 10,800	6,140	1,300	1,72C	1,340
19	752	980	800	750	800	760	1,880	11,000	5,500	1,290	1,700	1,240
20	1,030	930	800	750	850	768	1,520	11,600	4,880	* 1,130	1,55C	1,250
21	* 2,030	980	850	750	850	736	1,840	12,300	4,620	912	1,60C	1,220
22	1,580	1,030	850	800	850	728	1,400	12,500	4,620	909	1,62C	1,240
23	1,360	1,110	800	700	850	744	1,540	12,800	4,340	990	1,32C	1,260
24	1,260	1,010	800	650	850	* 744	1,870	12,300	3,640	970	1,16C	1,200
25	1,210	990	750	650	800	704	2,180	* 12,100	3,490	1,270	970	1,020
26	1,140	1,080	750	650	750	704	2,110	12,000	3,430	1,600	776	970
27	1,140	1,030	750	700	680	704	1,390	13,000	3,260	1,270	776	970
28	1,110	950	750	700	* 659	680	921	12,000	3,010	960	980	960
29	1,110	990	750	750	652	659	720	9,930	3,060	824	990	980
30	1,130	940	800	750	-----	720	1,050	8,350	3,010	858	885	930
31	1,190	-----	800	750	-----	849	-----	6,790	-----	840	832	-----
Total	27,575	33,040	24,744	21,900	22,841	21,462	39,200	210,620	159,130	41,774	47,077	29,989
Mean	890	1,101	798	706	788	692	1,307	6,794	5,304	1,348	1,519	1,000
Ac-ft	54,690	65,530	49,080	43,440	45,300	42,570	77,750	417,800	315,600	82,860	93,380	59,480

Calendar year 1963: Max 4,730 Min 390 Mean 1,231 Ac-ft 891,500
 Water year 1963-64: Max 13,000 Min 500 Mean 1,856 Ac-ft 1,347,000

* Discharge measurement made on this day.
 Note.--Stage-discharge relation effected by ice Dec. 13 to Feb. 26.

9-1635. Colorado River near Colorado-Utah State line

Location.--Lat 39°09', long 108°57', in sec.25, T.10 S., R.104 W., on right bank 4.8 miles downstream from Salt Creek, 6½ miles southwest of Mack, Colo., and 7¼ miles upstream from Colorado-Utah State line.

Drainage area.--17,900 sq mi, approximately.

Records available.--May 1951 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 4,370 ft (from river-profile map).

Average discharge.--13 years, 5,655 cfs (4,094,000 acre-ft per year).

Extremes.--Maximum discharge during year, 27,300 cfs May 27 (gage height, 10.80 ft); minimum daily, 1,470 cfs Jan. 14. 1951-64: Maximum discharge, 56,800 cfs June 9, 1957 (gage height, 16.40 ft); minimum daily, 960 Sept. 7, 1956.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, and diversions for irrigation. (Records include all return flow from irrigated areas.)

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 31 to Apr. 1)

2.5	1,010	7.0	11,000
3.0	1,570	9.0	18,600
4.0	3,060	11.0	28,300
5.0	5,140		

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	1,900	3,190	2,350	1,940	1,720	1,810	* 2,930	2,440	13,600	8,960	4,200	* 2,440
2	1,850	3,170	2,230	1,940	1,770	1,900	3,350	4,540	12,000	* 8,110	4,800	2,230
3	1,850	3,150	2,170	1,980	1,760	1,910	3,590	5,090	11,200	7,600	4,200	2,160
4	1,900	3,190	2,100	2,010	1,830	* 1,960	2,970	4,180	11,800	6,940	* 3,600	1,950
5	1,850	3,150	2,090	1,820	1,740	1,880	2,800	3,430	12,100	6,550	5,000	1,880
6	1,800	3,300	2,120	1,850	1,730	1,860	2,800	2,830	13,200	6,100	4,430	1,920
7	1,800	3,200	2,090	1,770	1,790	1,860	2,900	2,430	13,700	5,800	4,160	2,100
8	1,800	3,450	2,020	1,900	1,790	1,830	2,680	2,380	16,700	5,310	3,710	2,160
9	1,780	3,350	1,960	1,700	1,780	1,830	2,590	2,360	19,800	4,810	3,300	2,260
10	1,780	3,200	* 1,700	1,630	1,850	1,860	2,480	2,440	15,100	4,410	2,950	2,410
11	1,780	2,990	1,760	1,630	2,010	1,780	2,430	2,350	14,300	4,470	2,710	2,300
12	1,780	2,860	1,770	1,690	2,020	1,830	2,410	3,150	15,800	4,220	2,660	2,160
13	1,800	2,740	1,810	1,640	1,940	1,870	2,690	3,990	15,900	3,830	6,220	2,090
14	1,800	2,930	1,760	1,470	1,960	1,950	2,360	5,310	15,400	3,610	5,000	2,120
15	1,800	2,860	1,910	1,610	1,820	1,980	2,380	6,940	14,400	3,550	5,120	2,610
16	1,850	2,880	1,910	1,640	1,870	1,950	2,430	9,400	14,400	3,370	4,110	3,320
17	1,900	3,170	2,160	1,700	1,850	1,990	3,020	12,200	15,300	3,570	3,690	3,200
18	2,100	2,930	2,230	1,910	1,880	2,020	3,970	15,800	* 14,300	3,790	3,730	3,170
19	1,900	* 2,810	2,200	2,130	1,880	2,050	3,910	18,500	13,800	3,810	3,710	3,020
20	2,100	2,610	2,200	2,240	1,900	2,090	3,570	19,900	11,200	3,510	3,410	2,990
21	2,600	2,660	2,200	2,170	1,830	2,090	3,590	22,400	10,500	3,200	3,470	3,010
22	3,500	2,850	2,240	2,160	1,830	2,060	3,300	24,400	10,300	2,800	3,810	3,100
23	2,900	2,850	2,160	2,240	1,830	2,080	3,130	26,200	10,500	2,600	3,410	3,100
24	* 2,640	2,810	2,130	2,100	1,820	2,240	3,150	25,600	8,960	3,400	2,920	3,060
25	2,680	2,640	2,020	1,900	1,850	1,950	3,610	24,800	8,320	3,000	2,520	2,800
26	2,610	2,660	1,980	1,870	1,650	2,100	3,910	* 25,300	8,770	3,710	2,160	2,690
27	2,540	2,690	1,990	1,950	1,700	1,980	3,430	26,600	9,240	3,410	2,020	2,620
28	2,610	2,510	2,020	1,950	1,550	2,080	* 2,810	26,000	8,990	3,000	2,160	2,590
29	2,900	2,440	2,090	1,860	1,690	1,980	2,190	22,100	9,240	2,600	2,590	2,590
30	2,740	2,480	2,080	1,830	-----	2,220	2,050	19,300	9,050	2,300	2,570	2,620
31	2,930	-----	2,050	1,780	-----	2,510	-----	15,700	-----	2,600	2,490	-----
Total	67,770	87,720	63,500	58,010	52,640	61,500	89,430	388,060	377,870	134,940	110,830	76,670
Mean	2,186	2,924	2,048	1,871	1,815	1,984	2,981	12,520	12,600	4,353	3,575	2,556
Ac-ft	134,400	174,000	126,000	115,100	104,400	122,000	177,400	769,700	749,500	267,600	219,800	152,100

Calendar year 1963: Max 11,000 Min 1,020 Mean 3,246 Ac-ft 2,350,000
Water year 1963-64: Max 26,600 Min 1,470 Mean 4,287 Ac-ft 3,112,000

* Discharge measurement made on this day.
Note.--No gage-height record Oct. 1-24, July 21-25, July 28 to Aug. 4.

DOLORES RIVER BASIN

9-1650. Dolores River below Rico, Colo.

Location.--Lat 37°38'20", long 108°03'35", in SW¼ sec.15, T.39 N., R.11 W., on left bank at upstream side of bridge on State Highway 145, at Dolores-Montezuma County line, half a mile upstream from Ryman Creek, and 4 miles southwest of Rico.

Drainage area.--105 sq mi.

Records available.--October 1951 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 8,422.23 ft above mean sea level, datum of 1929.

Average discharge.--13 years, 127 cfs (91,940 acre-ft per year).

Extremes.--Maximum discharge during year, 1,220 cfs May 26 (gage height, 5.09 ft); minimum not determined.

1951-64: Maximum discharge, 2,120 cfs June 10, 1952 (gage height, 6.15 ft); minimum daily, 7.0 cfs Nov. 16, 17, 1956, Feb. 6, 7, 1961.

Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records good except those for periods of ice effect, 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)

2.0	14	3.0	136
2.2	26	3.5	250
2.4	44	4.0	490
2.7	83	5.0	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	28	20	14					70	315	108	167	42
2	28	20	13				(*)	72	325	100	128	40
3	28	25	12					63	360	90	* 147	* 37
4	27	25	* 11					63	* 490	85	134	35
5	26	25	12			(*)		63	592	77	112	36
6	26	23	11				20	62	598	72	107	40
7	* 26	25						54	700	71	100	50
8	27	22						52	550	* 65	97	40
9	26	22		(*)				58	430	67	83	43
10	25	21					(*)	88	490	74	76	46
11	25	20					20	138	465	78	95	38
12	24	18					24	185	430	70	144	34
13	24	20					22	290	355	62	318	33
14	22	* 21					32	410	305	63	195	40
15	22	18		11	11	11	50	568	330	95	147	56
16	22	21					75	694	330	123	126	48
17	22	15					* 74	818	* 274	100	110	40
18	22	11			(*)		60	* 853	226	86	97	38
19	28	12	12				56	825	205	71	88	42
20	40	15					44	888	195	63	97	43
21	35	18					50	846	181	71	77	48
22	32	15					72	* 874	167	68	68	51
23	30	14					22	944	151	76	62	55
24	29	17					88	930	142	80	56	47
25	26	16					65	937	130	67	53	46
26	25	14					48	1040	121	56	51	48
27	25	15					* 44	944	114	53	59	50
28	23	16		(*)			59	778	114	54	50	45
29	25	15					82	610	123	76	48	43
30	23	13					65	450	123	78	44	44
31	25	---	---	---	---	---	---	375	---	134	43	---
Total	816	552	373	341	319	341	1,322	15,042	9,331	2,433	3,179	1,298
Mean	26.3	18.4	12.0	11	11	11	44.1	485	311	78.5	103	43.3
Ac-ft	1,620	1,090	740	676	633	676	2,620	29,840	18,510	4,830	6,310	2,570

Calendar year 1963: Max 646 Min - Mean 85.8 Ac-ft 62,120
 Water year 1963-64: Max 1,040 Min - Mean 96.6 Ac-ft 70,120

Peak discharge (base, 800 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-17	2000	5.01	1,180	6- 6	2130	4.66	902
5-26	1715	5.09	1,220				

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 1, 2, Nov. 17 to Apr. 16 (no gage-height record Dec. 7 to Apr. 10).

9-1665. Dolores River at Dolores, Colo.

Location.--Lat 37°28', long 108°30', in sec.16, T.37 N., R.15 W., on left bank 70 ft downstream from bridge on State Highway 184 in Dolores and a quarter of a mile upstream from Lost Canyon Creek.

Drainage area.--556 sq mi.

Records available.--June 1895 to October 1903, August 1910 to November 1912, October 1921 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 6,918.74 ft above mean sea level, datum of 1929. June 23, 1895, to Oct. 31, 1903, staff gage at site a quarter of a mile upstream at different datum. Aug. 27, 1910, to Nov. 30, 1912, and Apr. 11, 1922, to Mar. 26, 1934, chain gage, staff gage, or water-stage recorder on downstream side of bridge 70 ft upstream at different datums. Mar. 27, 1934, to Oct. 7, 1952, water-stage recorder at site 340 ft upstream at datum 6.17 ft higher.

Average discharge.--53 years, 433 cfs (313,500 acre-ft per year).

Extremes.--Maximum discharge during year, 3,380 cfs May 27 (gage height, 8.91 ft); minimum daily, 24 cfs Dec. 14. 1895-1903, 1910-12, 1921-64: Maximum discharge, 10,000 cfs Oct. 5, 1911 (gage height, 10.2 ft, site and datum then in use), from rating curve extended above 2,800 cfs; minimum daily, 8 cfs Aug. 16, 1896.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 2,000 acres above station. Flow partly regulated by Ground Hog Reservoir (capacity, 21,710 acre-ft).

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

Oct. 1 to Apr. 10				Apr. 11 to Sept. 30			
3.0	30	3.6	90	3.7	96	6.0	1,050
3.1	37	4.0	160	4.0	145	7.0	1,750
3.2	45			4.5	286	8.2	2,640
				5.0	494		

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	67	38					439	882	* 264	560	201
2	75	53	38				(*)	453	828	240	448	190
3	78	54	36					336	852	218	* 471	* 178
4	70	67	36					372	966	201	422	178
5	69	66	* 34			(*)		360	1,210	190	352	176
6	69	63	36				60	332	1,170	178	309	178
7	* 69	57	34					316	1,460	162	272	196
8	52	59	32					301	1,330	151	264	139
9	46	56	32					316	* 930	156	257	149
10	44	54	36				(*)	409	1,030	244	210	210
11	59	53	34				90	630	996	234	231	196
12	63	51	34				100	774	948	237	471	178
13	63	50	32				110	1,060	882	224	738	173
14	63	* 51	24				120	1,280	756	272	625	188
15	62	52	30				185	1,530	762	244	453	173
16	59	52	32	32			297	1,910	* 786	340	352	171
17	60	44	34				348	2,190	726	254	309	130
18	63	28	36		(*)		290	* 2,390	615	257	257	116
19	74	34	36				272	2,300	540	196	224	115
20	110	36	36				257	2,310	526	190	228	121
21	100	50	38				228	2,110	503	180	207	126
22	76	46	36				316	* 2,280	457	207	173	136
23	68	36	36				405	2,420	405	193	185	120
24	66	48	36				453	2,420	380	244	183	112
25	63	50	36				344	2,340	340	231	173	102
26	58	39	* 36				240	2,600	316	185	185	107
27	56	42	36				* 198	2,590	290	188	215	115
28	56	53	38	(*)			247	1,960	282	228	212	109
29	54	40	38				439	1,510	275	240	193	99
30	55	36	36				376	1,150	290	244	185	96
31	60	-----	36				-----	966	-----	360	-----	-----
Total	2,019	1,487	1,082	992	870	930	5,915	42,354	21,733	6,952	9,544	4,478
Mean	65.1	49.6	34.9	32	30	30	197	1,366	724	224	308	149
Ac-ft	4,000	2,950	2,150	1,970	1,730	1,840	11,730	84,010	43,110	13,790	18,930	8,880

Calendar year 1963: Max 1,670 Min 24 Mean 235 Ac-ft 170,300
 Water year 1963-64: Max 2,600 Min 24 Mean 269 Ac-ft 195,100

Peak discharge (base, 1,800 cfs)--May 18 (0130) 3,250 cfs (8.80 ft); May 27 (0030) 3,380 cfs (8.91 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17-20, 22, 25, 27, Nov. 29 to Apr. 14 (no gage height record Dec. 26 to Apr. 10).

DOLORES RIVER BASIN

9-1681. Disappointment Creek near Dove Creek, Colo.

Location.--Lat 37°52', long 108°35', in SE¼ sec.25, T.42 N., R.16 W., a quarter of mile downstream from ford, 6½ miles southeast of Cedar, and 19 miles northeast of town of Dove Creek.

Drainage area.--145 sq mi.

Records available.--August 1957 to September 1964.

Gage.--Water-stage recorder.

Average discharge.--7 years, 14.7 cfs (10,640 acre-ft per year).

Extremes.--Maximum discharge during year, 2,240 cfs July 30 (gage height, 10.95 ft), from rating curve extended above 250 cfs as explained below; no flow for many days.

1957-64: Maximum discharge, 2,240 cfs July 30, 1964 (gage height, 10.95 ft), from rating curve extended above 250 cfs on basis of slope-area measurements at gage heights 7.18, 9.86, and 10.95 ft; no flow for several days in 1959-64.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Several small reservoirs and ponds above station. Small diversions for irrigation above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 15-19, June 22 to July 13)

0.9	0	2.0	21
1.1	1.0	2.5	50
1.3	2.8	3.0	89
1.4	4.0	4.0	230
1.7	10		

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	2.4					*41	24	30	1.1	141	0.6
2	0	1.4					34	22	30	.8	81	.5
3	0	1.2				(*)	16	12	30	.6	70	*.4
4	0	1.0	(*)			(*)	11	12	*30	.5	*41	.3
5	0	1.0			(*)		10	11	35	.3	9.0	.2
6	0	1.0					10	10	33	.1	6.2	.1
7	0	.9					9	9.0	37	0	16	.2
8	*0	.9				0.6	8.5	9.0	33	*0	54	0
9	0	.9					8	9.8	30	3.1	6.0	0
10	0	.9					8.5	10	27	10	8.3	0
11	0	.8					14	12	24	6.6	38	0
12	0	.8					35	17	20	6.8	36	0
13	0	*.8					31	28	18	67	201	0
14	0	.8					55	42	16	9.2	13	17
15	0	.8		(*)	0.2		65	62	14	26	8.4	21
16	0	.8	0.4	0.1	0.2		*63	76	12	*95	6.2	3.0
17	0	.7					53	78	11	8.7	5.0	2.0
18	0	.6					42	96	9.8	5.4	4.5	1.0
19	0	.4					42	*83	8.4	4.4	*4.0	1.0
20	1.7	.4					30	89	7.4	4.4	3.6	.5
21	2.5	.8					22	77	5.6	7.0	2.9	4.6
22	1.6	.8				3.0	30	78	4.8	7.2	2.3	5.6
23	1.0	.6					32	86	4.6	117	1.9	2.0
24	.9	.8					36	80	3.8	72	1.6	1.9
25	.8	1.0					17	70	2.9	1.4	1.4	1.9
26	.8	.6					12	80	2.6	1.3	1.2	2.8
27	.7	.6					*9.6	70	2.6	1.3	1.2	2.4
28	.7	.6					11	58	2.2	20	1.0	.1
29	.6	.5					2.9	22	4.4	2.0	.9	.1
30	.6	.6					7.2	17	35	1.7	*164	.8
31	7.4						21	30		179	.7	
Total	34.6	25.4	12.4	3.1	5.8	79.1	784.6	1,409.8	494.4	854.2	768.1	110.7
Mean	1.12	0.85	0.4	0.1	0.2	2.55	26.2	45.5	16.5	27.6	24.8	3.69
Ac-ft	69	50	25	6.1	12	157	1,560	2,800	981	1,690	1,520	220

Calendar year 1963: Max 176 Min 0 Mean 8.42 Ac-ft 6,080

Water year 1963-64: Max 201 Min 0 Mean 12.5 Ac-ft 9,090

Peak discharge (base, 560 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-16	1800	7.62	915	8-1	0030	8.33	1,110
7-23	1900	7.03	768	8-2	1800	7.59	908
7-24	1600	6.94	748	8-13	0300	9.52	1,520
7-30	1730	10.95	2,240				

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

Note.--No gage-height record Oct. 22-30, Nov. 2-12, Nov. 30 to Mar. 28 (stage-discharge relation affected by ice during most of period), Apr. 4-10, July 5-8, Aug. 17-19, Sept. 16-20, 28-30.

9-1712, San Miguel River near Telluride, Colo.

Location.--Lat 37°56'55", long 107°52'35", in NW¼ sec.33, T.43 N., R.9 W., on left bank 0.1 mile upstream from Remine Creek, 0.3 mile downstream from bridge on State Highway 145, 0.5 mile downstream from Prospect Creek, 1.6 miles upstream from South Fork, and 3.5 miles west of Telluride.

Drainage area.--42.8 sq mi.

Records available.--October 1959 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 8,622.81 ft above mean sea level (levels by Bureau of Reclamation).

Average discharge.--5 years, 59.8 cfs (43,290 acre-ft per year).

Extremes.--Maximum discharge during year, 442 cfs May 24 (gage height, 4.49 ft); minimum daily determined, 12 cfs Mar. 9, 11, 1959-64; Maximum discharge, 605 cfs June 17, 1960 (gage height, 5.01 ft); minimum daily determined, 12 cfs Mar. 8, 1961, Mar. 9, 11, 1964.

Remarks.--Records good except those for periods of ice effect, which are poor. Several small diversions for irrigation of hay meadows above station.

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

1.9	15	3.0	110
2.1	20	3.5	190
2.2	25	4.0	310
2.5	48	4.5	445

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	24	(*)			14	*17	38	130	162	76	32			
2	24	25				15	16	37	120	156	64	* 30			
3	24	27				15	16	33	*118	154	*77	29			
4	24	27				(*)	*13	16	32	128	143	67	27		
5	22	26				14	16	31	155	136	61	28			
6	22	26	17	15	14	14	16	30	174	136	56	30			
7	22	26				15	16	29	250	*118	54	29			
8	*22	25				14	16	29	228	100	50	28			
9	22	24				12	16	29	196	95	47	28			
10	22	24				13	16	30	270	100	49	28			
11	22	24				12	16	35	305	93	54	27			
12	22	24				14	17	40	312	84	63	27			
13	22	24				15	17	54	250	82	131	27			
14	22	* 24				13	19	67	232	78	102	29			
15	22	24				14	23	90	310	87	76	32			
16	21	24	17	15	14	15	31	122	322	100	69	34			
17	21	22				15	33	156	*262	99	61	33			
18	21	20				16	36	*182	206	84	54	33			
19	22	20				15	46	196	225	76	51	35			
20	22	22				16	37	240	260	70	58	36			
21	27	23				16	39	268	245	75	52	37			
22	25	22				15	41	308	220	71	49	37			
23	24	20				15	43	352	212	64	45	39			
24	25	22				15	42	378	220	56	42	38			
25	24	22				(*)	15	34	391	202	51	38	43		
26	23	20	17	15	14	16	29	*400	180	48	38	51			
27	23	22				16	*29	328	176	46	39	54			
28	23	20				16	33	262	168	46	38	49			
29	23	20				16	34	215	160	47	36	48			
30	23	20				16	34	168	150	47	34	45			
31	26	-----				17	-----	150	-----	52	33	-----			
Total	718	693				527	465	406	457	794	4,720	6,386	2,756	1,764	1,043
Mean	23.2	23.1				17	15	14	14.7	26.5	152	213	88.9	56.9	34.8
Ac-ft	1,420	1,370				1,050	922	805	906	1,570	9,360	12,670	5,470	3,500	2,070

Calendar year 1963: Max 228 Min - Mean 46.8 Ac-ft 33,840
 Water year 1963-64: Max 400 Min - Mean 56.6 Ac-ft 41,110

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

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17-19, 23, Nov. 26 to Mar. 1, Mar. 4-12, 14-25, 28-30 (no gage-height record Nov. 27 to Feb. 25).

DOLORES RIVER BASIN

9-1725. San Miguel River near Placerville, Colo.

Location.--Lat 38°02'05", long 108°07'15", in NW¼SW¼ sec.30, T.44 N., R.11 W., on right bank 0.7 mile downstream from Specie Creek and 4 miles northwest of Placerville.

Drainage area.--308 sq mi.

Records available.--January to December 1909, September 1910 to December 1912, April 1930 to September 1934, April 1942 to September 1964. Monthly discharge only for some periods, published in WSP 1313. Published as "at Placerville" 1910-12.

Gage.--Water-stage recorder. Datum of gage is 7,055.80 ft above mean sea level (Bureau of Reclamation bench mark). Jan. 1 to Dec. 31, 1909, staff gage at site 3.3 miles downstream at different datum. Aug. 27, 1910, to Nov. 30, 1912, staff gage and Apr. 25, 1930, to Sept. 30, 1934, water-stage recorder, at site 3.2 miles upstream at different datums. Apr. 1, 1942, to Oct. 21, 1958, at site 0.7 mile upstream at datum 40.64 ft higher.

Average discharge.--28 years (1910-12, 1930-34, 1942-64), 228 cfs (165,100 acre-ft per year).

Extremes.--Maximum discharge during year, 1,400 cfs May 26 (gage height, 5.23 ft); minimum not determined. 1909-12, 1930-34, 1942-64: Maximum discharge, 10,000 cfs Sept. 5, 1909 (result of failure of Trout and Middle Reservoir Dams); minimum daily, 26 cfs Jan. 5, 1960.

Remarks.--Records good except those for period of ice effect, which are poor. Diversions for irrigation of about 1,700 acres above station. One diversion from Fall Creek for irrigation of about 2,000 acres in Beaver and Salgado Creek basins. One small ditch diverts water from Leopard Creek to Uncompahgre River basin. Slight regulation by Lake Hope and Trout Lake of Western Colorado Power Co. (combined capacity, 5,040 acre-ft).

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

2.4	49	4.0	415
2.8	95	4.5	720
3.3	190	5.5	1,720
3.7	295		

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	98	82	(*)		(*)	48	* 75	* 592	487	425	274	100
2	91	77				50	71	440	392	235	* 94	
3	82	83				* 55	67	312	455	370	* 293	85
4	92	102				46	68	280	*498	342	264	82
5	82	101				44	64	262	587	316	210	81
6	76	101	55	50	55	50	68	245	622	316	208	90
7	83	102				55	64	232	800	* 292	210	101
8	* 86	94				55	63	235	736	248	208	90
9	87	94				46	63	265	587	235	185	91
10	75	88				50	74	334	728	271	176	94
11	66	96				50	74	334	760	248	181	86
12	77	88				50	77	320	784	218	202	83
13	75	* 92				55	75	370	720	210	383	81
14	82	90				48	83	402	650	205	283	91
15	80	88				55	118	450	744	225	230	115
16	70	96	60	161	520	*784	271	208	125			
17	67	96	60	185	594	692	240	195	115			
18	63	87	60	192	699	550	228	178	102			
19	63	83	60	260	*752	556	205	183	113			
20	95	83	60	255	832	601	190	198	107			
21	91	83	60	250	864	580	185	176	108			
22	86	82	62	342	916	550	188	152	115			
23	81	69	59	406	997	514	192	133	115			
24	82	80	62	430	1,040	520	190	124	112			
25	75	81	57	330	1,100	492	161	120	122			
26	71	67	55	222	* 1,210	430	152	118	140			
27	70	82	56	202	1,030	435	148	127	140			
28	75	75	59	* 248	864	445	148	113	133			
29	78	69	60	342	706	435	165	110	131			
30	78	65	68	358	608	415	163	104	125			
31	94	---	71	---	550	---	198	98	---			
Total	2,471	2,566	1,705	1,550	1,595	1,726	5,287	18,355	17,617	7,337	5,879	3,167
Mean	79.7	85.5	55	50	55	55.7	176	592	587	237	190	106
Ac-ft	4,900	5,090	3,380	3,070	3,160	3,420	10,490	36,410	34,940	14,550	11,660	6,280

Calendar year 1963: Max 608 Min - Mean 156 Ac-ft 112,600
 Water year 1963-64: Max 1,210 Min - Mean 189 Ac-ft 137,400

Peak discharge (base, 900 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5- 1	1900	4.98	1,170	6-15	2345	4.82	988
5-26	2230	5.23	1,400	8- 3	1830	4.73	952

* Discharge measurement made on this day.
 Note.--Stage-discharge relation affected by ice Nov. 30 to Mar. 20 (no gage-height record Dec. 1 to Mar. 3).

9-1730. Beaver Creek near Norwood, Colo.

Location.--Lat 37°58'10", long 108°11'40", in sec.28, T.43 N., R.12 W., on left bank 20 ft downstream from county highway bridge, 805 ft upstream from Goat Creek and 13 miles southeast of Norwood.

Drainage area.--35.2 sq mi.

Records available.--October 1941 to September 1961, October 1962 to September 1964. Monthly discharge only for some pe-riods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 8,016.81 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Oct. 1, 1948, at site 335 ft downstream at datum 6.00 ft lower. Oct. 1, 1948, to July 16, 1952, at site 335 ft downstream at datum 8.00 ft lower. July 17, 1952, to Sept. 30, 1961, at site 285 ft downstream at datum 8.00 ft lower.

Average discharge.--22 years, 17.2 cfs (12,450 acre-ft per year).

Extremes.--Maximum discharge during year, 314 cfs May 23 (gage height, 3.53 ft), from rating curve extended above 115 cfs; no flow for several days in September.

1941-61, 1962-64: Maximum discharge, 750 cfs June 9 or 10, 1952 (gage height, 5.67 ft, from floodmarks, site and datum then in use), from rating curve extended above 370 cfs; no flow at times in 1946, 1950-51, 1954, 1956, 1959, 1963-64.

Remarks.--Records good except those for periods of ice effect or no gage-height record and during period July 15-28, which are poor. Gurley ditch diverts water above station to Gurley Reservoir (capacity, 8,800 acre-ft, 3,200 acre-ft prior to September 1948) for irrigation of about 12,000 acres in Naturita Creek drainage.

Rating tables, except periods of ice effect (gage height, in feet, and discharge in cubic feet per second)
(Shifting-control method used May 23 to July 28, Aug. 1)

Oct. 1 to May 2			May 3 to July 15				July 16 to Sept. 30		
1.6	0.4	2.1 13	1.6	0.4	2.3 25	2.0	0.1	2.6 1.7	
1.7	1.3	2.3 25	1.7	1.3	2.6 58	2.1	.1	2.7 3.0	
1.8	3.0	2.6 57	1.8	3.0	3.0 125	2.2	.2	2.8 5.0	
1.9	5.7		1.9	5.7	3.5 255	2.4	.7		
			2.1	13					

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	1.3					5	31	14	2.0	5.0	0.1
2	3.0	1.0					4.1	*28	13	1.5	2.4	*.1
3	3.3	1.1					3.0	19	12	1.2	2.1	0
4	3.3	1.2	(*)		(*)		2.6	18	*12	1.0	1.6	0
5	3.5	1.2					2.7	18	12	.9	1.2	0
6	3.3	1.0	1.0				2.7	17	12	.8	1.2	0
7	3.3	.9					2.5	16	12	*.7	.9	.1
8	* 3.5	.9					2.2	15	12	.8	.6	.1
9	3.5	.8					2.6	17	10	.8	.5	.1
10	3.3	.8					3.0	25	9.7	2.7	.4	.1
11	3.3	.8					3.0	26	9.3	1.8	.5	0
12	3.3	.8					4.0	28	9.9	1.1	.6	0
13	3.3	*.8					5	33	8.6	1.0	2.8	
14	3.3	.9		(*)			6.5	39	7.9	1.0	1.6	
15	3.3	.8		2.4	2.2	2.4	9	49	7.5	**1.6	.8	
16	3.3	.8					* 11	55	* 6.8	** 3.8	.6	
17	3.3	.7					14	77	6.4	2.4	.5	
18	3.8	.8					14	92	6.8	1.5	.4	
19	4.1	.6					16	* 111	6.4	.9	.3	
20	3.9	.6					16	87	5.7	.6	.4	
21	8.2	.6	2.8				15	66	3.8	.6	.4	.2
22	6.1	.6					19	74	3.0	.8	.3	
23	4.9						26	179	3.8	.8	.2	
24	4.9						28	90	3.3	1.3	.2	
25	4.4						18	*40	2.8	.8	.1	
26	4.1	.8					14	44	2.5	.4	.2	
27	1.3						11	66	2.3	.3	.2	
28	.8						13	20	2.0	.7	.1	
29	.8						17	17	2.0	*.8	.1	
30	.6						18	16	2.3	.8	.1	
31	1.3					(*)		16		1.2	.1	
Total	110.6	25.4	68.8	74.4	63.8	74.4	307.9	1,429	220.8	36.6	26.4	4.2
Mean	3.57	0.85	2.2	2.4	2.2	2.4	10.3	46.1	7.36	1.18	0.85	0.14
Ac-ft	219	50	136	148	127	148	611	2,830	438	73	52	8.3

Calendar year 1963: Max 51 Min 0 Mean 4.50 Ac-ft 3,250
Water year 1963-64: Max 179 Min 0 Mean 6.67 Ac-ft 4,840

* Discharge measurement made on this day.

** Field estimate made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17, 19-22, Apr. 1, 4, 8-16, 20-26. No gage-height record Nov. 23 to Mar. 31 (stage-discharge relation affected by ice during most of period), Sept. 13-30.

DOLORES RIVER BASIN

9-1755. San Miguel River at Naturita, Colo.

Location.--Lat 38°13'10", long 108°34'00", in SE¼SW¼ sec.19, T.46 N., R.15 W., on left bank 20 ft downstream from bridge on State Highway 97 in Naturita and 1.2 miles downstream from Naturita Creek.

Drainage area.--1,080 sq mi, approximately.

Records available.--October 1917 to September 1929, May 1940 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 5,392.85 ft above mean sea level, datum of 1929. Apr. 26, 1918, to Sept. 2, 1926, chain gage and Sept. 3, 1926, to Sept. 30, 1929, water-stage recorder, at same site at different datums. Oct. 1, 1940, to Dec. 9, 1941, staff gage at same site and datum.

Average discharge.--36 years, 350 cfs (253,400 acre-ft per year).

Extremes.--Maximum discharge during year, 2,820 cfs May 2 (gage height, 5.75 ft); minimum daily, 12 cfs Oct. 12. 1917-29, 1940-64: Maximum discharge, 7,100 cfs Apr. 15, 1942 (gage height, 9.80 ft), from rating curve extended above 3,800 cfs; minimum daily, 5.8 cfs Sept. 25-28, 30, 1956.

Remarks.--Records good. Natural flow of stream affected by storage reservoirs, diversions for irrigation of about 22,000 acres above station and 4,000 acres below, and return flow from irrigated areas.

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

0.6	9.0	2.5	345
1.0	45	3.0	535
1.5	107	4.0	1,100
2.0	205	5.0	1,950

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	115	76	60	55	61	*198	*1,520	580	351	227	31
2	37	100	72	74	57	63	198	1,380	508	333	227	28
3	33	94	67	72	58	*67	153	675	490	294	*219	*22
4	25	103	*70	63	61	56	121	625	*474	398	352	15
5	32	117	69	42	*60	53	109	482	571	247	294	14
6	28	121	60	45	60	60	103	422	558	239	224	15
7	22	118	64	52	58	63	100	351	740	217	177	29
8	*22	117	54	54	52	58	86	330	788	*177	179	36
9	28	110	49	52	54	48	93	396	576	169	165	30
10	28	106	79	38	57	56	96	504	640	337	143	27
11	22	106	70	30	61	54	110	645	692	181	137	31
12	12	110	56	40	61	52	165	562	746	151	198	33
13	15	*104	47	49	61	69	153	635	722	132	515	24
14	13	106	29	44	57	61	186	686	571	125	366	167
15	15	103	25	*38	57	54	300	740	660	127	237	127
16	18	106	52	46	56	63	*533	860	758	205	222	85
17	19	110	38	55	61	61	660	908	660	215	212	79
18	30	97	43	64	58	64	504	1,060	530	177	151	70
19	40	99	54	72	62	70	595	*1,120	482	136	*121	61
20	62	96	60	69	52	43	698	1,160	540	113	137	70
21	86	96	75	64	58	52	566	1,140	526	97	130	70
22	67	100	75	64	53	54	878	1,180	499	90	107	80
23	79	88	58	63	55	29	1,150	1,320	450	94	85	76
24	101	83	40	60	57	30	1,300	1,390	458	132	68	75
25	97	83	57	58	57	72	932	1,300	438	94	61	73
26	89	56	66	58	60	66	530	1,420	400	73	58	89
27	85	29	67	58	55	64	357	1,580	354	58	96	96
28	84	39	72	57	53	64	*403	1,140	382	56	66	93
29	90	33	69	55	50	75	878	956	372	63	53	89
30	90	62	66	57	---	101	908	776	360	66	44	88
31	103	---	70	56	---	143	---	728	---	134	38	---
Total	1,499	2,807	1,849	1,709	1,666	1,925	13,023	27,991	16,525	5,071	5,289	1,823
Mean	48.4	93.6	59.6	55.1	57.4	62.1	434	903	551	164	171	60.8
Ac-ft	2,970	5,570	3,670	3,390	3,300	3,820	25,830	55,520	32,780	10,060	10,490	3,620

Calendar year 1963: Max 1,300 Min 12 Mean 157 Ac-ft 113,800
 Water year 1963-64: Max 1,580 Min 12 Mean 222 Ac-ft 161,000

Peak discharge (base, 1,800 cfs)

* Discharge measurement made on this day.

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-24	0130	5.35	2,350	5-26	1,500	4.89	1,880
5-2	0045	5.75	2,820				

9-1775. Taylor Creek near Gateway, Colo.

Location.--Lat 38°31', long 109°07', in sec.24, T.26 S., R. 25 E., in Utah, on left bank at downstream side of bridge, a quarter of a mile downstream from South Taylor Creek and 12 miles southwest of Gateway.

Drainage area.--12 sq mi, approximately.

Records available.--October 1944 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 8,120 ft (by barometer). Prior to Aug. 31, 1949, at site 770 ft downstream at datum 6.00 ft lower.

Average discharge.--20 years, 3.35 cfs (2,430 acre-ft per year), unadjusted.

Extremes.--Maximum discharge during year, 160 cfs Apr. 16 (gage height, 4.07 ft); no flow May 17, 18.

1944-64: Maximum discharge, 555 cfs Apr. 18, 1948, from rating curve extended above 220 cfs; maximum gage height, 5.72 ft Aug. 6, 1945, site and datum then in use; no flow at times June to August 1946, Sept. 29, 1949, May 17, 18, 1964.

Remarks.--Records fair except those for periods of ice effect, no gage-height record, or indefinite stage-discharge relation, which are poor. Diversions by Hubbard ditch (see table below) above station to John Brown Creek basin began in spring of 1956.

Monthly diversion, in acre-feet, water year October 1963 to September 1964			
Month	Diversion	Month	Diversion
October.....	0	April.....	124
November.....	0	May.....	432
December.....	0	June.....	107
Calendar year 1963.....	348	July.....	0
		August.....	1.4
January.....	0	September.....	0
February.....	0	Water year 1963-64.....	664
March.....	0		

Rating table, except periods of ice effect or indefinite stage-discharge relation (gage height, in feet, and discharge, in cubic feet per second) (Shifting-control method used Apr. 7-16, Apr. 26 to June 7)

1.8	0	2.6	10
1.9	.10	2.8	19
2.0	.70	3.0	33
2.2	2.5	3.3	70
2.4	5.2		

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	0.1						1.2	5.4	0.7	0.3	0.3	0.1
2	.1						1.0	4.8	.5	.2	.3	*.1
3	.1						.8	4.3	.5	.2	.4	.1
4	.1						2.0	3.3	.4	.2	7.8	.1
5	.1						2.4	1.9	.3	.1	*.5	.2
6	.1						1.2	1.8	.2	.1	.3	.2
7	.1						2.4	1.9	.2	.1	.9	.2
8	.1					0.5	2.5	1.8	.2	.2	.5	.2
9	.1						2.7	2.1	.2	.2	.2	.2
10	.1						3.1	1.9	.2	.2	.2	.2
11	.1						3.3	1.2	.2	.2	7.0	.2
12	.1						4.1	* 1.8	.3	.2	.7	.2
13	.1						4.3	1.5	.3	.3	2.2	.2
14	.1						5.8	1.9	.3	.5	.4	.5
15	.1						* 5.6	2.0	.3	.5	.3	.3
16	.1						6.0	.1	.3	.4	.3	.3
17	.1						3.5	0	*.3	.2	.3	.2
18	.1						1.8	0	.4	.2	.3	.2
19	.2						1.6	.7	*.4	.2	.3	.2
20	.3						1.4	1.2	.5	*.1	.3	.1
21	.2						1.4	.8	.6	.1	.3	.1
22	*.1	(*)					1.3	.6	.6	.1	.3	.1
23	.1					1.0	1.2	.7	.5	.2	.2	.1
24	.1						7.4	.5	.5	.4	.2	.1
25	.1						7.0	.3	.5	.2	.2	.1
26	.1						7.2	.3	.4	.1	.2	.1
27	.1						7.2	.4	.3	.2	.2	.1
28	.1						7.0	.4	.3	.2	.2	.1
29	.1						6.7	.5	.3	.2	.1	.1
30	.1						5.9	.3	.4	.2	.1	.1
31	.2					(*)		.6		.5	.1	
Total	3.6	6.0	6.2	3.1	2.9	23.5	587.8	45.0	11.1	7.3	25.6	5.0
Mean	0.12	0.2	0.2	0.1	0.1	0.76	19.6	1.45	0.37	0.24	0.83	0.17
Ac-ft	7.1	12	12	6.1	5.8	47	1,170	89	22	14	51	9.9

Calendar year 1963: Max 27 Min 0.1 Mean 1.38 Ac-ft 1,000
 Water year 1963-64: Max 60 Min 0 Mean 1.99 Ac-ft 1,450

Peak discharge (base, 40 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-16	1630	4.07	160	8-11	1500	3.60	114
8-4	1130	3.87	154				

* Discharge measurement made on this day.
 Nota.--Stage-discharge relation indefinite Oct. 1 to Nov. 15. Stage-discharge relation affected by ice Nov. 16 to Apr. 6 (no gage-height record Mar. 19-31). No gage-height record June 8-19.

GREEN RIVER BASIN

9-2360. Yampa River near Toponas, Colo.

Location.--Lat 40°03', long 107°04', in NW¼ sec.20, T.1 N., R.86 W., on left bank at Stillwater campground, three-quarters of a mile downstream from Mandall Creek, three-quarters of a mile upstream from Dome Creek, and 14 miles west of Toponas.

Drainage area.--23 sq mi, approximately.

Records available.--October 1952 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 9,710 ft (from river-profile map).

Average discharge.--12 years, 40.0 cfs (28,960 acre-ft per year).

Extremes.--Maximum discharge during year, 184 cfs June 28 (gage height, 4.58 ft); minimum not determined.
1952-64: Maximum discharge, 436 cfs July 2, 1957 (gage height, 6.39 ft); minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Flow regulated by Stillwater Reservoir (capacity, 6,200 acre-ft). No diversion 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. 14 to Nov. 16)

2.9	15
3.2	26
3.5	45
4.0	99
4.4	162

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	16						15	56	162	75	35
2	24	16	(*)					15	59	157	74	35
3	25	16						15	77	153	66	35
4	25	16						15	94	139	58	35
5	24	* 16						* 15	95	133	56	34
6	22	16						* 15	104	* 107	54	34
7	24	16						16	116	104	53	34
8	* 25	15					1.2	16	99	104	51	35
9	25	15						16	* 82	130	43	45
10	24	15						16	88	133	42	45
11	24	15						17	95	120	40	45
12	23	15						22	91	124	40	44
13	20	15						26	94	128	40	44
14	20	15						30	92	130	39	55
15	19	15						35	92	118	39	86
16	19	15	14	12	12	11		41	100	117	43	85
17	19					(*)		49	107	104	43	87
18	19							53	140	100	41	87
19	19							68	123	98	43	90
20	20							79	120	97	43	89
21	20							95	118	94	39	68
22	18							104	* 120	90	40	67
23	18	14					1.4	99	112	96	39	66
24	17							97	111	109	39	65
25	17							100	118	106	* 38	64
26	17							91	118	103	39	63
27	17							85	120	82	42	59
28	16							* 85	155	* 75	40	47
29	16							77	158	75	41	37
30	16							65	153	75	36	38
31	16							58		75	36	
Total	632	443	434	372	348	341	390	1,530	3,207	3,438	1,412	1,653
Mean	20.4	14.8	14	12	12	11	13	49.4	107	111	45.5	55.1
Ac-ft	1,250	879	861	738	690	676	774	3,030	6,360	6,820	2,800	3,280

Calendar year 1963: Max 114 Min - Mean 30.6 Ac-ft 22,160
Water year 1963-64: Max 162 Min - Mean 38.8 Ac-ft 28,160

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 17 to Mar. 17, Mar. 24 to May 6 (stage-discharge relation affected by ice most of periods). Stage-discharge relation affected by ice Mar. 18-23, May 7-14.

GREEN RIVER BASIN

9-2375. Yampa River near Oak Creek, Colo.

Location.--Lat 40°17', long 106°50', in SE¼ sec.29, T.4 N., R.84 W., on left bank just upstream from Upper Yampa damsite, 1 mile upstream from Morrison Creek, and 6½ miles east of town of Oak Creek.

Drainage area.--227 sq mi.

Records available.--September 1939 to September 1944, October 1956 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,100 ft (from river-profile map). Prior to Nov. 16, 1939, staff gage at same site and datum.

Average discharge.--13 years, 81.8 cfs (59,220 acre-ft per year).

Extremes.--Maximum discharge during year, 332 cfs Apr. 19 (gage height, 4.56 ft); maximum gage height, 6.79 ft Apr. 16 (ice jam); minimum daily discharge, 19 cfs Oct. 2.
1939-44, 1956-64: Maximum discharge, 1,400 cfs Apr. 16, 1962 (gage height, 7.56 ft), from rating curve extended above 540 cfs; minimum daily, 8.9 May 22, 1963.

Remarks.--Records good except those for period of ice effect, which are poor. Diversions for irrigation of about 12,000 acres above station. Natural flow of stream affected by 2 diversions for irrigation to Egeria Creek in Colorado River basin and by storage in Stillwater Reservoir (capacity, 6,200 acre-ft).

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 4-10)

2.6	15	3.5	113
2.8	27	4.5	305
3.1	56		

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	38	34	44	42	50	55	116	81	152	94	44
2	19	39	34	44	42	48	60	119	72	123	94	42
3	20	40	* 30	44	40	44	60	99	88	107	91	43
4	23	45	32	42	38	46	60	84	113	94	90	38
5	23	* 48	34	44	40	46	60	86	108	85	94	40
6	24	48	34	44	42	46	* 60	78	111	79	97	40
7	24	52	34	* 44	42	46	60	78	123	* 64	90	38
8	* 24	50	34	42	44	46	65	85	167	60	81	36
9	26	55	32	38	44	46	70	85	* 134	66	72	33
10	26	54	34	40	44	46	75	85	97	103	64	33
11	28	53	34	38	46	44	80	* 108	110	85	61	33
12	29	50	32	36	48	44	90	96	102	76	58	32
13	28	49	32	32	46	42	85	99	94	76	66	32
14	29	52	32	34	44	44	90	119	100	99	61	33
15	30	49	34	38	46	42	120	119	86	105	58	35
16	29	50	36	38	46	44	150	134	72	88	58	34
17	29	46	38	38	46	46	180	167	72	81	63	35
18	29	42	40	38	46	48	207	183	72	84	62	35
19	31	44	40	40	46	50	245	175	75	79	61	38
20	32	48	40	44	42	50	185	191	79	76	74	36
21	37	48	40	44	40	48	* 121	193	85	71	71	34
22	34	48	38	42	40	46	138	219	91	68	63	33
23	35	48	36	40	40	44	134	191	* 96	75	58	33
24	38	46	36	38	42	46	134	167	76	79	55	35
25	36	42	36	40	* 44	48	127	189	66	72	* 49	37
26	36	40	36	42	42	46	97	183	63	71	44	38
27	36	40	38	42	44	42	84	163	60	76	49	44
28	36	38	40	* 44	46	44	85	* 141	75	* 76	50	44
29	36	38	42	40	48	44	100	119	209	76	55	41
30	37	36	38	40	-----	46	115	94	157	86	50	40
31	38	-----	40	42	-----	48	-----	86	-----	97	46	-----
Total	928	1,376	1,110	1,256	1,260	1,420	3,190	4,051	2,934	2,629	2,085	1,109
Mean	29.9	45.9	35.8	40.5	43.4	45.8	106	131	97.8	84.8	67.3	37.0
Ac-ft	1,840	2,730	2,200	2,490	2,500	2,820	6,330	8,040	5,820	5,210	4,140	2,200

Calendar year 1963: Max 167 Min 8.9 Mean 48.7 Ac-ft 35,280
Water year 1963-64: Max 245 Min 19 Mean 63.8 Ac-ft 46,320

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17 to Apr. 17 (no gage-height record Feb. 26 to Mar. 26).

GREEN RIVER BASIN

9-2395. Yampa River at Steamboat Springs, Colo.

Location.--Lat 40°29', long 106°50', in sec.17, T.6 N., R.84 W., on right bank 30 ft downstream from First Street Bridge in Steamboat Springs and a quarter of a mile upstream from Soda Creek.

Drainage area.--604 sq mi.

Records available.--May 1904 to October 1906, October 1909 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 6,695.47 ft above mean sea level, datum of 1929. Prior to May 8, 1905, staff gage at bridge a quarter of a mile upstream at datum 4.16 ft higher. May 8, 1905, to Oct. 31, 1906, chain gage on bridge 30 ft upstream at datum 0.44 ft higher. Mar. 8, 1910, to Sept. 11, 1934, water-stage recorder at present site at datum 0.44 ft higher.

Average discharge.--57 years, 467 cfs (338,100 acre-ft per year).

Extremes.--Maximum discharge during year, 2,980 cfs June 7 (gage height, 4.89 ft); minimum daily, 48 cfs Jan. 13, 1904-6, 1909-64: Maximum discharge, 6,820 cfs June 14, 1921 (gage height, 7.08 ft, present datum), from rating curve extended above 4,800 cfs; minimum daily, 4 cfs Sept. 8, 1934, Sept. 10-13, 1944.

Remarks.--Records good except those for periods of ice effect, which are poor. Natural flow of stream affected by 2 diversions for irrigation to Egeria Creek in Colorado River basin, 1 diversion for irrigation from Trout Creek drainage to Oak Creek drainage, irrigation of about 19,700 acres above station, and storage in Stillwater Reservoir (capacity, 6,200 acre-ft).

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

0.8	52	2.0	400
.9	63	3.0	1,030
1.2	113	4.0	1,910
1.5	195	5.0	3,040

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	109	55	70	65	78	79	747	1,720	1,060	171	81
2	54	78	50	70	65	73	88	686	1,820	859	171	73
3	53	71	*50	70	65	76	93	524	1,970	747	165	73
4	53	83	50	65	60	76	97	425	2,200	650	180	68
5	54	*97	55	70	*65	75	97	410	2,250	572	186	67
6	54	90	55	70	65	76	99	360	2,300	475	195	68
7	54	90	55	*70	70	75	*93	365	2,560	*385	177	68
8	*55	88	55	65	70	75	101	450	2,640	318	150	64
9	54	86	50	60	70	75	105	445	*1,950	277	135	66
10	55	90	55	65	70	72	113	420	1,910	323	115	61
11	56	88	55	60	75	70	122	590	1,860	289	105	58
12	59	86	55	55	75	70	144	*530	1,780	248	95	58
13	59	78	50	48	75	68	135	584	1,780	216	101	55
14	59	83	50	55	70	70	133	775	1,840	186	103	53
15	60	83	55	60	75	68	165	1,010	1,750	240	95	56
16	61	88	60	60	75	72	258	1,250	1,710	212	93	61
17	61	70	60	60	75	75	480	1,600	1,600	186	113	61
18	62	65	65	60	73	75	542	1,810	1,490	183	113	*61
19	60	65	65	65	75	75	584	1,970	1,210	168	111	71
20	64	70	65	70	70	80	626	2,250	1,240	150	156	71
21	70	75	65	70	65	80	*495	2,400	1,250	131	126	67
22	72	75	60	65	65	76	512	2,590	1,210	122	111	64
23	68	70	55	65	65	68	584	*2,580	*1,240	120	101	62
24	75	75	60	60	65	76	716	2,400	1,090	147	93	63
25	78	70	60	65	*65	*76	650	2,540	1,090	138	*83	63
26	78	65	60	65	65	71	415	2,460	1,100	126	78	63
27	76	65	65	65	70	68	332	2,390	1,060	120	93	66
28	75	65	65	*65	75	70	435	2,430	1,150	*117	109	70
29	71	70	65	60	75	70	626	2,180	1,420	115	141	67
30	73	60	60	65	-----	72	754	1,770	1,110	135	131	67
31	83	-----	65	65	-----	76	-----	1,730	-----	165	99	-----
Total	1,962	2,348	1,790	1,978	2,013	2,277	9,673	42,671	49,300	9,180	3,895	1,946
Mean	63.3	78.3	57.7	63.8	69.4	73.5	322	1,376	1,643	296	126	64.9
Ac-ft	3,890	4,660	3,550	3,920	3,990	4,520	19,190	84,640	97,790	18,210	7,730	3,860

Calendar year 1963: Max 1,780 Min 50 Mean 264 Ac-ft 191,100

Water year 1963-64: Max 2,640 Min 48 Mean 353 Ac-ft 256,000

Peak discharge (base, 3,000 cfs)--No peak above base.

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17 to Feb. 16 (no gage-height record Jan. 14-18), Feb. 20-29, Mar. 7-9, 11, 12, 17, 20, 21.

9-2410. Elk River at Clark, Colo.

Location.--Lat 40°43'03", long 106°54'55", in NW¼ sec.27, T.9 N., R.85 W., on left bank 30 ft downstream from bridge on State Highway 129, 0.8 mile north of Clark, and 2 miles upstream from Cottonwood Gulch.

Drainage area.--206 sq mi.

Records available.--May 1910 to September 1922 (published as "near Clark"), April 1930 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 7,267.75 ft above mean sea level (State Highway Department bench mark). May 1910 to September 1922, chain gage at site 30 ft upstream at datum 0.15 ft lower. Apr. 23, 1930, to Sept. 27, 1934, water-stage recorder at present site at datum 0.15 ft lower.

Average discharge.--46 years, 340 cfs (246,100 acre-ft per year).

Extremes.--Maximum discharge during year, 2,570 cfs May 21 (gage height, 4.56 ft); minimum daily, 22 cfs Dec. 12.

1910-22, 1930-64: Maximum daily discharge, 4,470 cfs June 6, 9, 1912; minimum daily determined, 22 cfs Dec. 12, 1963, but a lesser discharge may have occurred during periods of no gage-height record prior to 1939.

Remarks.--Records good except those for period of ice effect, which are poor. Diversions above station for irrigation of about 230 acres above and about 460 acres below station.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Nov. 4-16, July 28-30)

0.6	25	2.0	340
.7	32	2.5	590
.9	53	3.0	930
1.2	100	4.0	1,900
1.5	168	4.5	2,470

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	31	28				38	223	1,140	1,290	158	95
2	39	32	26				40	236	1,130	1,200	145	86
3	38	37	* 24			(*)	42	196	1,250	1,090	147	82
4	36	41	24				42	179	1,320	1,030	142	74
5	36	* 46	26		(*)		43	174	1,390	1,030	135	66
6	36	43	26				42	160	1,530	906	142	63
7	37	45	26	(*)			* 42	176	1,790	* 794	124	86
8	37	42	26				41	179	1,860	710	112	74
9	* 37	41	24				41	163	* 1,410	620	106	77
10	37	43	26				41	185	1,390	585	98	72
11	36	45	26				45	236	1,420	525	89	63
12	37	39	22				43	* 264	1,250	485	86	60
13	43	36	24				41	415	1,370	440	95	54
14	42	38	24				42	731	1,410	405	98	53
15	43	38	26				51	1,060	1,260	415	84	54
16	40	40	28	30	34		66	1,300	1,480	360	84	56
17	38	30	28				76	1,590	1,500	345	95	53
18	35	32	30				76	1,630	1,370	312	80	53
19	33	32	32				84	1,770	1,000	288	112	84
20	37	32	30				98	1,910	1,040	260	142	77
21	57	34	30				* 100	2,100	1,140	236	102	65
22	45	36	28				102	* 2,160	1,140	226	89	60
23	38	34	26				108	1,990	* 1,070	250	80	57
24	40	36	28				129	1,890	978	260	72	53
25	40	34	28				147	1,920	1,070	211	* 68	52
26	38	32	30				129	1,860	1,230	190	68	46
27	40	32	30				106	1,820	1,340	179	118	42
28	36	32	32				32	1,760	1,480	* 160	110	41
29	35	34	30				34	1,18	1,590	1,510	158	193
30	36	30	28				34	171	1,420	1,430	158	150
31	40	-----	30		-----		36	-----	1,280	-----	152	-----
Total	1,201	1,097	846	930	986	1,108	2,250	32,567	39,698	15,270	3,440	1,881
Mean	38.7	36.6	27.3	30	34	35.7	75.0	1,051	1,323	493	111	62.7
Ac-ft	2,380	2,180	1,680	1,840	1,960	2,200	4,460	64,600	78,740	30,290	6,820	3,730

Calendar year 1963: Max 1,530 Min 22 Mean 213 Ac-ft 153,900
Water year 1963-64: Max 2,160 Min 22 Mean 277 Ac-ft 200,900

Peak discharge (base, 1,900 cfs).--May 21 (2130) 2,570 cfs (4.56 ft); June 7 (2030) 2,130 cfs (4.18 ft).

* Discharge measurement made on this day.

Nota.--Stage-discharge relation affected by ice Nov. 17 to Apr. 4 (no gage-height record Dec. 23 to Mar. 27).

GREEN RIVER BASIN

9-2441. Fish Creek near Milner, Colo.

Location.--Lat 40°20'10", long 107°08'20", in NW¼ sec.11, T.4 N., R.87 W., on left bank 200 ft downstream from highway bridge, a quarter of a mile upstream from Coyote Creek, and 12 miles southwest of Milner.

Drainage area.--34.5 sq mi.

Records available.--October 1955 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,930 ft (from topographic map). Prior to Apr. 8, 1958, at site 200 ft upstream at different datum. Apr. 8 to Aug. 14, 1958, at site 200 ft upstream at datum 3.14 ft higher.

Average discharge.--9 years, 12.7 cfs (9,190 acre-ft per year).

Extremes.--Maximum discharge during year, 146 cfs May 17 (gage height, 4.70 ft); minimum daily, 0.4 cfs Sept. 22. 1955-64: Maximum discharge, 255 cfs Mar. 27, 1960 (gage height, 5.63 ft), from rating curve extended above 110 cfs; maximum gage height, 6.13 ft Feb. 1, 1963 (ice jam); minimum daily discharge, 0.4 cfs Sept. 22, 1964.

Remarks.--Records fair except those for period of ice effect, which are poor. Diversions above station for irrigation.

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

Oct. 1 to Dec. 4			Dec. 5 to Sept. 30		
3.0	1.2		2.7	0.2	3.4
3.1	2.1		2.8	.8	3.6
3.2	3.5		2.9	2.0	4.0
3.3	5.5		3.1	6.2	4.5
					18
					28
					56
					116

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	1.7	2.4	2.4	3.0	4.2	6	5.5	29	29	7.2	5.5	2.0
2	1.7	2.7	2.2	3.0	4.4	6.5	5.5	27	30	5.5	4.9	1.9
3	1.7	2.9	2.2	2.8	4.4	* 7	5.5	18	33	5.5	5.5	1.9
4	1.7	3.5	2.2	2.8	4.4	7	5	16	37	3.4	4.7	1.9
5	1.7	4.1	* 2.4	2.6	* 4.4	6	5.5	17	33	2.8	4.0	1.9
6	1.8	3.4	2.2	2.4	4.4	5.5	6	16	27	2.2	4.9	1.9
7	1.8	3.5	2.2	2.2	4.2	5.5	* 6	15	29	1.9	4.2	2.0
8	1.8	* 3.2	2.2	2.8	4.2	5	6	18	30	5.5	4.2	1.9
9	1.9	3.2	2.4	* 3.2	4.0	5	5.5	16	22	* 5.8	3.6	2.6
10	1.8	3.2	2.4	3.2	4.0	5.5	6	21	20	6.5	3.4	1.8
11	* 1.9	3.2	2.2	2.8	4.2	6	6.5	29	18	5.8	3.0	1.8
12	1.8	3.1	2.0	2.4	4.2	6	7	22	* 18	5.5	2.8	1.8
13	1.8	2.9	2.2	2.0	4.0	6	7.5	33	17	6.0	3.6	1.9
14	1.9	3.1	2.4	2.6	4.0	5.5	9	* 51	18	7.2	2.8	2.0
15	2.0	2.9	2.4	3.0	4.0	5.5	10	61	15	6.9	2.4	2.4
16	2.0	3.1	2.4	3.4	4.0	5.5	14	74	12	5.8	2.6	.7
17	2.4	3.0	2.6	3.8	4.2	5.5	18	86	9.5	5.3	2.6	1.4
18	2.1	2.8	2.8	4.0	4.4	5.5	24	84	11	5.5	2.2	1.8
19	2.2	2.8	3.0	4.2	4.4	5	29	84	8.5	4.7	3.2	2.2
20	2.4	3.0	3.2	4.2	4.2	5	22	83	8.8	4.4	3.4	1.8
21	2.7	3.2	3.2	4.2	4.0	5	21	63	9.2	4.2	2.6	.6
22	2.4	3.2	3.0	4.0	3.8	5.5	* 22	54	13	4.9	2.2	.4
23	2.4	3.0	2.8	3.8	3.8	5.5	21	48	12	5.1	1.8	.6
24	2.5	2.8	2.8	3.6	4.0	5.5	25	44	8.2	4.4	1.4	.5
25	2.7	2.8	3.0	3.6	4.4	5	23	46	* 7.2	3.8	1.4	.6
26	2.5	2.8	3.0	3.6	4.6	4.8	16	46	7.2	3.4	1.4	.5
27	2.5	2.8	3.0	3.6	5.5	4.8	14	39	7.5	3.6	* 3.0	.6
28	2.4	3.0	2.8	3.6	6	4.8	15	38	7.8	3.2	2.8	.6
29	2.4	3.0	2.6	3.6	6	5	21	33	7.8	3.0	4.7	.6
30	2.4	2.6	2.0	3.8	-----	5.5	26	30	8.5	* 3.6	3.4	.7
31	2.7	-----	2.8	4.0	-----	5.5	-----	26	-----	6.0	2.6	-----
Total	65.7	91.2	79.0	101.8	126.3	171.4	407.5	1,267	514.2	148.6	100.8	43.3
Mean	2.12	3.04	2.55	3.28	4.36	5.53	13.6	40.9	17.1	4.79	3.25	1.44
Ac-ft	130	181	157	202	251	340	808	2,510	1,020	295	200	86
Calendar year 1963:	Max 35		Min 1.0		Mean 5.39		Ac-ft 3,900					
Water year 1963-64:	Max 86		Min 0.4		Mean 8.52		Ac-ft 6,180					

Peak discharge (base, 180 cfs).--No peak above base.

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17 to Apr. 17 (no gage-height record Feb. 24 to Mar. 3, Apr. 4-7).

9-2443. Grassy Creek near Mount Harris, Colo.

Location.--Lat 40°26'45", long 107°08'38", in SE¼ sec.28, T.6 N., R.87 W., on right bank 60 ft downstream from bridge, 150 ft downstream from small tributary, 2½ miles south of Mount Harris, and 3 miles upstream from mouth.

Drainage area.--25.8 sq mi.

Records available.--October 1958 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 6,580 ft (from topographic map).

Average discharge.--6 years, 1.30 cfs (941 acre-ft per year).

Extremes.--Maximum discharge during year, 99 cfs Apr. 16 (gage height, 3.42 ft); no flow for many days.

1958-64: Maximum discharge, 235 cfs Apr. 6, 1960 (gage height, 5.05 ft); no flow for many days each year.

Revisions.--The maximum discharge for the water year 1963 has been revised to 15 cfs Aug. 12 (gage height, 1.71 ft), superseding figure previously published.

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

Revised peak discharge.--1963: Apr. 8 (1230) 14 cfs (1.69 ft); Aug. 12 (1700) 15 cfs (1.71 ft).

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

0.6	0	1.0	1.1	1.5	9.5
.7	.1	1.1	1.7	1.8	17
.8	.3	1.2	2.8	2.0	23
.9	.6	1.3	4.6	2.4	39

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	3.7	0.2	0.1	0	
2							0	4.1	.2	.1	0	
3						(*)	0	2.0	.2	.1	0	
4							0	1.1	.2	.1	0	
5			(*)		(*)		.1	.9	.1	0	0	
6				(*)			.1	.6	.1	0	0	
7		(*)					*.1	.6	.1	0	0	
8							b.2	.8	.3	0	0	
9							b.3	.9	.2	* 0	0	
10							b.4	.6	.1	.1	0	
11	(*)						b1.4	.8	.1	.1	0	
12							b1.2	.6	*.1	0	0	
13							b.8	.5	.1	0	0	
14							b.8	*.4	.1	.1	0	
15							b1.4	.3	.1	.1	0	
16							37	.2	.1	0	0	
17							21	.1	.1	.1	0	
18							18	.1	.1	.1	0	
19							25	.1	.2	0	0	
20							12	.1	.2	0	0	
21							11	.1	.2	0	0	
22							* 14	.1	.4	0	0	
23							12	.1	.3	0	0	
24							8.8	.1	.2	0	0	
25						(*)	9.8	.1	*.2	0	0	
26							5.6	.1	.2	0	0	
27							5.3	.2	.2	0	* 0	
28							3.5	.1	.2	0	0	
29							4.2	.1	.2	0	.1	
30							4.1	.1	.2	* 0	0	
31								.1		0	0	
Total	0	0	0	0	0	0	198.1	19.7	5.2	1.0	0.1	0
Mean	0	0	0	0	0	0	6.60	0.64	0.17	0.03	0.03	0
Ac-ft	0	0	0	0	0	0	393	39	10	2.0	0.2	0

Calendar year 1963: Max 5.8 Min 0 Mean 0.18 Ac-ft 132
 Water year 1963-64: Max 37 Min 0 Mean 0.61 Ac-ft 444

Peak discharge (base, 8.0 cfs)--Apr. 16 (1530) 99 cfs (3.42 ft).

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

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 5 to Apr. 7 (stage-discharge relation affected by ice during part of period).

GREEN RIVER BASIN

9-2445, Elkhead Creek near Clark, Colo.

Location.--Lat 40°44'00", long 107°10'20", in SE¼ sec.17, T.9 N., R.87 W., on left bank 0.5 mile downstream from South Fork, 13 miles west of Clark, and 17 miles north of Hayden.

Drainage area.--45.4 sq mi.

Records available.--October 1942 to March 1943 (monthly discharge only, published in WSP 1313), July 1943 to September 1944, October 1958 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,800 ft (from topographic map). Prior to October 1958, water-stage recorder at site 40 ft downstream at different datum.

Average discharge.--7 years (1943-44, 1958-64), 30.2 cfs (21,860 acre-ft per year).

Extremes.--Maximum discharge during year, 977 cfs May 17 (gage height, 5.92 ft), from rating curve extended above 240 cfs; maximum gage height, 6.98 ft May 16 (backwater from ice); minimum discharge not determined.
1942-44, 1958-64: Maximum discharge, that of May 17, 1964; maximum gage height, that of May 16, 1964; minimum daily discharge, 0.3 cfs Aug. 23, 28, 29, 1961.

Remarks.--Records good except those for period of ice effect, which are poor. No diversion above station.

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

Oct. 1 to May 16			May 17 to Sept. 30			
1.4	1.0		1.4	1.5	2.2	57
1.5	2.0		1.5	2.4	2.5	102
1.6	4.0		1.7	10	3.5	312
1.7	7.5		1.9	24	5.0	696

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	2.8	(*)				2.8	60	134	23	4.6	2.3
2	2.4	2.6					3.0	75	122	4.6	2.3	
3	2.4	2.8					3.2	65	116	4.6	2.0	
4	2.0	4.4					3.4	60	106	4.6	2.0	
5	1.9	5.4					3.4	55	100	4.2	2.0	
6	1.8	* 4.7	1.8	2.2	2.4	3.4	46	99	13	4.2	2.0	
7	1.9	4.7				3.2	46	94	12	3.5	2.4	
8	2.0	4.0				3.6	48	144	* 10	3.1	2.8	
9	2.0	4.0				3.8	50	112	10	2.4	3.5	
10	2.0	4.0				4.0	70	92	12	2.4	3.1	
11	* 1.9	3.8				4.2	100	* 87	10	2.2	2.1	
12	2.0	3.6				4.6	150	73	9.6	2.2	2.0	
13	2.2	3.4				4.6	250	66	10	2.3	2.0	
14	2.6	3.4				4.8	400	66	13	2.4	2.0	
15	2.4	3.2				6	590	58	10	2.2	2.2	
16	2.4	3.0	9	620	52	9.2	2.3	2.2				
17	2.2	2.6	14	626	47	8.2	3.1	2.0				
18	2.0	2.4	(*)	16	577	54	8.7	2.4	* 2.2			
19	2.2	2.4	2.6	18	599	47	7.8	5.3	5.3			
20	2.8	2.6	2.6	17	580	47	6.9	6.4	5.5			
21	3.8	2.8	2.8	17	537	42	6.4	3.5	3.1			
22	3.0	2.8	2.6	20	463	66	6.0	2.4	2.2			
23	3.2	2.6	2.4	22	403	66	6.0	2.3	2.2			
24	4.4	2.0	2.4	26	355	53	7.4	2.1	2.2			
25	3.6	2.0	2.6	30	322	* 42	5.3	2.1	2.0			
26	3.0	2.2	2.8	26	259	35	4.6	2.1	2.0			
27	3.0	2.2	2.6	28	* 268	30	4.2	4.6	2.0			
28	2.8	2.2	2.4	24	229	28	4.2	4.2	2.0			
29	2.8	2.0	2.6	36	190	27	3.5	6.4	2.0			
30	3.2	2.0	2.6	46	160	27	* 3.8	4.9	2.0			
31	3.2	-----	2.8	-----	152	-----	4.2	3.1	-----			
Total	79.7	92.6	55.8	68.2	69.6	80.6	407.0	8,405	2,132	296.0	106.7	71.6
Mean	2.57	3.09	1.8	2.2	2.4	2.60	13.6	271	71.1	9.55	3.44	2.39
Ac-ft	158	184	111	135	138	160	807	16,670	4,230	587	212	142

Calendar year 1963: Max 410 Min 1.2 Mean 24.2 Ac-ft 17,510
Water year 1963-64: Max 626 Min - Mean 32.4 Ac-ft 23,530

Peak discharge (basa, 300 cfs).--May 17 (2000) 977 cfs (5.92 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16 to May 16 (no gage-height record Nov. 27 to Mar. 18).

9-2450. Elkhead Creek near Elkhead, Colo.

Location.--Lat 40°40'15", long 107°17'10", in NW¼ sec.8, T.8 N., R.88 W., on right bank 0.2 mile upstream from North Fork Elkhead Creek, ½ miles northwest of Elkhead, and 12 miles north of Hayden.

Drainage area.--64.2 sq mi.

Records available.--January to November 1910 and May to November 1920 (monthly discharge only, published in WSP 1313; published as "at Hayes Ranch"), April 1953 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,830 ft (from topographic map). Prior to Nov. 30, 1920, staff gage or water-stage recorder at site 675 ft upstream at different datum.

Average discharge.--11 years (1953-64), 45.4 cfs (32,870 acre-ft per year).

Extremes.--Maximum discharge during year, 1,160 cfs May 17 (gage height, 6.63 ft); minimum daily, 1.0 cfs Oct. 1, 1910, 1920, 1953-64: Maximum daily discharge, 1,660 cfs May 22, 1920; no flow Sept. 1, 1954, Sept. 12-19, 24, 1955, Aug. 27-29, 1961.

Remarks.--Records fair except those for periods of ice effect, 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)
(Shifting-control method used May 17-27, June 10-15)

2.2	0.6	3.1	52
2.3	2.0	3.5	111
2.4	4.0	4.0	215
2.5	6.8	5.0	500
2.7	16	6.0	850
2.9	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	1.0	3.0	2.4	3.2			3.8	84	200	33	4.6	2.8
2	1.3	2.6	2.0	3.2			4.2	101	181	28	4.6	2.2
3	1.6	2.4	2.0	3.2			4.4	90	170	26	4.6	2.2
4	1.3	4.0	2.2	3.0			4.6	83	154	22	4.8	1.4
5	1.4	6.0	* 2.4	3.2			4.8	72	144	21	4.3	1.3
6	1.2	5.7	2.2	3.2			4.8	60	136	19	4.3	1.3
7	1.2	5.1	2.4	3.2			4.6	60	126	18	4.0	1.7
8	1.3	* 4.6	2.4	3.0			4.8	66	175	*16	3.6	2.6
9	1.4	4.3	2.2	2.8			5	68	150	15	3.0	3.4
10	* 1.6	4.0	2.4	3.0			5.5	94	118	16	2.6	3.2
11	1.6	4.0	2.4	2.8		3.6	6	160	* 109	15	2.4	2.6
12	1.6	3.8	2.4	2.4			6.5	198	92	13	2.0	1.7
13	2.0	3.6	2.2	2.0			6.5	320	84	12	2.2	1.4
14	2.0	3.6	2.2	2.4			7	* 515	83	15	2.4	1.3
15	2.0	3.6	2.6	2.6		3.2	8	718	76	14	2.4	1.6
16	2.0	3.4	2.6				12	790	65	12	2.4	1.9
17	2.0	3.2	2.8				20	774	57	10	3.4	1.7
18	2.0	3.0	3.0				22	782	66	10	3.4	1.6
19	2.0	3.0	3.0			(*)	25	798	58	9.3	5.1	3.4
20	2.6	3.2	3.0			3.8	24	790	58	8.1	9.3	4.6
21	3.8	3.4	3.0			3.8	24	752	52	6.8	* 5.1	3.2
22	4.0	3.4	2.8			3.6	30	* 686	83	6.8	3.6	3.0
23	3.4	3.2	2.6	3.0		3.4	32	560	94	6.5	2.8	2.4
24	4.8	3.4	2.8			3.6	36	500	78	7.2	2.2	2.4
25	4.6	3.2	2.8			3.6	42	458	* 57	6.5	1.9	2.2
26	3.4	3.0	3.0			3.4	36	* 404	48	5.4	1.9	1.9
27	3.2	3.0	3.0			3.2	42	374	42	5.1	3.2	1.9
28	2.8	3.0	3.0			3.4	31	335	39	4.6	4.8	1.7
29	2.8	3.2	2.8			3.4	50	282	38	4.0	5.7	1.9
30	2.8	2.8	2.8			3.4	61	242	36	* 4.0	5.7	1.9
31	3.4	-----	2.6		-----	3.6	-----	222	-----	4.3	-----	-----
Total	72.1	107.7	80.0	91.2	92.8	110.6	567.5	11,438	2,869	393.6	116.6	66.4
Mean	2.33	3.59	2.58	2.94	3.2	3.57	18.9	369	95.6	12.7	3.76	2.21
Ac-ft	143	214	159	181	184	219	1,130	22,690	5,690	781	731	132

Calendar year 1963: Max 581 Min 0.4 Mean 33.9 Ac-ft 24,570
Water year 1963-64: Max 798 Min 1.0 Mean 43.7 Ac-ft 31,750

Peak discharge (base, 800 cfs).--May 17 (2215) 1,160 cfs (6.63 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16 to Apr. 18, Apr. 20, 21, 23, 24 (no gage-height record Jan. 15 to Mar. 19).

GREEN RIVER BASIN

9-2455, North Fork Elkhead Creek near Elkhead, Colo.

Location.--Lat 40°40'50", long 107°17'10", in NW¼ sec.5, T.8 N., R.88 W., on right bank 70 ft upstream from small tributary, 0.8 mile upstream from mouth, and 13 miles north of Hayden.

Drainage area.--21 sq mi, approximately.

Records available.--January to November 1910 and May to November 1920 (monthly discharge only, published in WSP 1313; published as "at Hayes Ranch"), October 1958 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,990 ft (from topographic map). January to November 1910 and May to September 1920, staff gage and October to November 1920, water-stage recorder, at site 0.6 mile downstream at different datum.

Average discharge.--6 years (1958-64), 14.1 cfs (10,210 acre-ft per year).

Extremes.--Maximum discharge during year, 575 cfs May 19 (gage height, 4.53 ft); minimum daily, 0.1 cfs Aug. 10-13, 16. 1910, 1920, 1958-64: Maximum discharge, that of May 19, 1964; no flow at times in 1910, 1959-63.

Revisions.--The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede figures published in the water-supply papers indicated.

State Report or WSP	Water year	Date	Discharge (cfs)	Gage height (feet)
WSP 1633	1959	May 13, 1959	262	3.81
WSP 1713	1960	May 12, 1960	293	3.99
SR 1961	1961	May 11, 1961	212	3.68
SR 1962	1962	Apr. 20, 1962	557	4.35
SR 1963	1963	May 10, 1963	251	3.92

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 100 acres of hay meadows.

Revisions.--Revised figures of discharge, in cubic feet per second; for the water year 1962, superseding those previously published, are given herewith:

1962	1962-Con.	1962-Con.
Apr. 16..... 192	Apr. 22..... 221	May 6..... 195
17..... 203	23..... 240	7..... 200
18..... 234	24..... 265	8..... 203
19..... 248	25..... 230	9..... 190
20..... 301	26..... 195	10..... 175
21..... 248	May 5..... 185	11..... 165

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
April 1962.....	3,576.5	301	4	119	7,090
May.....	2,974	203	43	95.9	5,900
Water year 1961-62.....	-	301	0	21.3	15,400
Calendar year 1962.....	-	301	0	21.0	15,170

Revised peak discharge.--1958-59: May 13 (1900) 262 cfs (3.81 ft).

1959-60: Apr. 12 (0900) 224 cfs (3.83 ft); Apr. 22 (1900) 265 cfs (3.94 ft); May 12 (1830) 293 cfs (3.99 ft).

1960-61: May 11 (1830) 212 cfs (3.68 ft).

1961-62: Apr. 20 (1830) 557 cfs (4.35 ft); May 6 (1800) 350 cfs (4.02 ft).

1962-63: May 10 (1730) 251 cfs (3.92 ft).

9-2455. North Fork Elkhead Creek near Elkhead, Colo.--Continued

Rating tables, except periods of ice effect (gage height, in feet,
and discharge, in cubic feet per second)
(Shifting-control method used May 17-19)

Oct. 1 to May 18				May 19 to Sept. 30			
1.9	0.3	2.4	13	1.8	0.1	2.4	16
2.0	1.2	2.7	35	1.9	.3	2.7	43
2.1	2.6	3.0	67	2.0	1.2	3.0	80
2.2	4.6	3.5	144	2.1	2.7	3.5	175
2.3	7.8	4.5	365	2.2	5.4	4.0	350
				2.3	9.4		

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

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Avg.	Sept.
1	0.8	1.3	0.8				2.4	76	67	10	0.3	0.3
2	.8	1.3	.8				3.0	50	66	8.6	.3	.3
3	.6	1.6	.8				3.4	26	64	6.6	.3	.3
4	.7	2.2	.7				3.8	22	61	5.8	.3	.3
5	.7	2.3	* .6				3.4	26	58	5.1	.3	.2
6	.7	2.0	.5				3.4	22	61	4.6	.2	.2
7	.8	2.2	.4				2.8	30	60	4.0	.2	.4
8	.8	* 1.9	.4				2.8	32	70	* 3.5	.2	.5
9	.8	1.9	.5				3.0	33	59	2.7	.2	.4
10	* .9	1.9	.6			1.8	3.0	63	48	3.2	.1	.4
11	.8	1.9					3.6	91	* 44	2.6	.1	.2
12	.9	1.8					3.0	99	37	2.2	.1	.2
13	1.3	1.6					2.8	139	35	2.1	.1	.2
14	1.3	1.8		1.2			3.0	* 190	34	2.1	.2	.2
15	1.1	1.8			1.4		5	208	30	2.2	.2	.2
16	1.0	1.9					10	236	29	1.8	.1	.3
17	.9	1.5					14	302	27	1.5	.2	.2
18	1.1	1.4					13	338	28	1.4	.2	.2
19	1.1	1.4				(*)	11	337	22	1.2	.9	1.1
20	1.3	1.2				1.8	9.4	323	22	1.0	* 1.8	.8
21	2.0	1.4	.9			1.8	7.2	* 318	21	.8	.8	.6
22	1.5	1.4				1.8	6.5	* 240	33	.7	.7	.5
23	1.1	1.2				1.8	11	215	36	.7	.4	.5
24	2.0	1.4				1.8	26	198	* 29	.8	.3	.4
25	2.2	1.4				1.8	24	190	22	.4	.2	.4
26	1.6	1.4				1.9	11	* 150	18	.3	.2	.3
27	1.8	1.2				1.9	8.3	142	16	.2	.8	.3
28	1.5	1.0				1.9	10	125	16	.2	.8	.4
29	1.3	1.0				2.0	30	106	14	.2	1.5	.4
30	1.5	.8				2.0	54	88	12	* .2	.9	.4
31	1.5					2.2		73		.2	.6	
Total	36.4	47.1	25.0	37.2	40.6	56.9	293.8	4,488	1,139	76.9	13.5	11.1
Mean	1.17	1.57	0.81	1.2	1.4	1.84	9.79	145	38.0	2.48	0.44	0.37
Ac-ft	72	93	50	74	81	113	583	8,900	2,260	153	27	22

Calendar year 1963: Max 140 Min 0 Mean 11.1 Ac-ft 8,030
 Water year 1963-64: Max 338 Min 0.1 Mean 17.1 Ac-ft 12,430

Peak discharge (base, 200 cfs).--May 19 (1730) 575 cfs (4.53 ft); May 27 (1730) 200 cfs (3.57 ft).

* Discharge measurement made on this day.
 Note.--Stage-discharge relation affected by ice Nov. 18 to Dec. 10, Mar. 30, 31, Apr. 1-5, 7, 8, 10, 12-17. No gage-height record Dec. 11 to Mar. 19.

GREEN RIVER BASIN

9-2486. East Fork of Williams Fork above Willow Creek, Colo.

Location.--Lat 40°15'40", long 107°17'35", in NE¼ sec.5, T.3 N., R.88 W., on right bank 3½ miles south of Willow Creek store, 3.8 miles upstream from Willow Creek, and 16 miles south of Hayden.

Drainage area.--108 sq mi.

Records available.--October 1956 to September 1964.

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

Average discharge.--8 years, 113 cfs (81,810 acre-ft per year).

Extremes.--Maximum discharge during year, 972 cfs May 19 (gage height, 6.35 ft); minimum daily, 15 cfs Dec. 11.

1956-64: Maximum discharge, about 1,500 cfs June 25, 1957; maximum gage height, 6.85 ft May 12, 1962; minimum daily discharge determined, 15 cfs Dec. 11, 1963.

Remarks.--Records good except those for periods of ice effect or indefinite stage discharge relation, which are poor. Diversions for irrigation of about 800 acres above station.

Rating table, except periods of ice effect or indefinite stage discharge relation
(gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 4-28, June 29 to Aug. 9)

3.6	20	4.8	185
3.8	33	5.2	315
4.0	51	5.6	510
4.4	100	6.0	790

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	20	19	20	22	20	26	120	339	234	24	39
2	24	22	18	22	20	20	24	109	360	210	81	37
3	24	27	19	22	* 20	* 22	24	79	435	162	80	34
4	23	30	19	20	18	20	24	70	450	175	84	33
5	22	30	* 19	20	18	20	26	71	498	168	80	32
6	22	28	18	20	20	19	26	66	e 500	156	77	32
7	21	30	17	22	20	19	28	73	e 630	142	77	33
8	21	* 27	17	22	20	17	28	77	e 600	134	72	31
9	21	28	18	20	20	18	* 26	80	e 410	* 134	65	32
10	21	27	17	* 22	22	19	28	114	504	149	61	31
11	* 22	24	15	20	20	19	30	132	538	126	58	29
12	22	22	16	19	20	19	30	116	* 480	116	55	27
13	23	20	17	16	19	18	28	170	462	118	66	28
14	23	20	17	18	20	19	30	264	e 430	142	53	30
15	24	20	17	18	19	18	30	* 355	e 400	113	50	34
16	22	20	18	20	19	19	40	498	e 450	109	49	32
17	22	17	19	22	19	* 20	61	e 540	e 440	111	54	30
18	23	20	20	22	19	20	58	e 590	e 440	109	48	28
19	24	22	20	20	20	20	60	*e 690	e 330	98	61	36
20	28	22	20	24	19	19	54	e 700	e 310	92	60	32
21	31	20	20	24	19	20	53	e 700	315	88	49	30
22	27	20	20	24	20	19	58	e 740	295	90	46	29
23	27	20	20	22	18	18	62	e 700	264	91	43	29
24	27	20	18	20	18	20	* 72	e 640	247	86	41	28
25	27	20	18	20	20	19	71	e 700	* 261	80	32	27
26	27	19	18	20	18	19	56	699	268	78	39	29
27	26	20	20	20	19	19	48	636	261	74	* 49	31
28	24	20	20	20	20	19	49	608	287	70	44	32
29	25	19	20	20	20	19	72	517	299	66	60	32
30	25	19	19	20	-----	19	104	420	283	73	51	31
31	27	-----	18	20	-----	22	-----	351	-----	* 96	41	-----
Total	749	673	571	638	566	598	1,326	11,625	11,786	3,690	1,827	938
Mean	24.2	22.4	18.4	20.6	19.5	19.3	44.2	375	393	119	58.9	31.3
Ac-ft	1,490	1,330	1,130	1,270	1,120	1,190	2,630	23,060	23,380	7,320	3,620	1,860

Calendar year 1963: Max 504 Min 15 Mean 61.4 Ac-ft 44,470
Water year 1963-64: Max 740 Min 15 Mean 95.6 Ac-ft 69,400

Peak discharge (base, 450 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-19	2130	6.35	972	6-10	2100	5.93	755
6-7	2200	6.23	1960	6-17	2130	5.80	1670

* Discharge measurement made on this day.
e Stage-discharge relation indefinite.
Note.--Stage-discharge relation affected by ice Nov. 11 to Apr. 16 (no gage-height record Jan. 26 to Mar. 17).

9-2490, East Fork of Williams Fork near Pagoda, Colo.

Location.--Lat 40°18'45", long 107°19'15", in SW¼ sec.18, T.4 N., R.88 W., on right bank 20 ft downstream from private road bridge, half a mile upstream from Dowden Gulch, 1½ miles downstream from Willow Creek, and 5½ miles southeast of Pagoda.

Drainage area.--150 sq mi, approximately.

Records available.--October 1953 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,830 ft (from topographic map).

Average discharge.--11 years, 111 cfs (80,360 acre-ft per year).

Extremes.--Maximum discharge during year, 978 cfs May 19 (gage height, 3.58 ft); minimum daily, 16 cfs Dec. 11.
1953-64: Maximum discharge, 1,620 cfs June 26, 1957; maximum gage height, 4.82 ft June 6, 1957; minimum daily discharge, 12 cfs Aug. 28, Sept. 22, 1954.

Remarks.--Records good except those for period of ice effect, which are poor. Diversions for irrigation of about 900 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 Oct. 1 to Nov. 15, Sept. 8-30)

1.4	19	2.6	240
1.5	24	3.0	430
1.8	56	3.4	780
2.2	124		

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	22	22	20	22	24	22	28	149	382	244	92	38
2	22	25	19	24	22	22	26	149	388	213	78	36
3	22	29	20	24	*22	* 22	24	110	465	187	75	31
4	22	31	20	22	20	22	24	95	465	171	83	29
5	22	32	*20	22	20	20	24	101	496	163	80	29
6	21	29	19	24	22	20	26	92	540	152	75	28
7	20	31	18	24	22	20	26	95	652	142	72	27
8	21	*27	18	24	22	18	26	104	625	131	72	26
9	22	29	19	22	22	19	*26	104	444	*126	61	26
10	22	27	18	*24	24	20	26	133	479	144	56	27
11	*22	25	16	22	22	20	28	168	500	122	54	25
12	24	24	17	20	22	20	30	137	*486	115	51	24
13	24	22	18	17	20	19	28	187	458	117	64	24
14	24	26	19	18	22	20	28	278	437	144	54	27
15	24	24	20	20	20	19	32	*370	418	117	49	31
16	24	24	19	22	20	20	50	500	479	111	49	31
17	24	22	20	24	20	*22	78	556	472	111	55	28
18	24	22	22	24	20	22	75	625	437	108	48	26
19	24	22	22	22	22	22	32	703	350	99	58	34
20	29	22	20	26	20	20	80	*714	330	93	64	31
21	34	22	22	26	20	20	72	714	330	96	50	29
22	29	22	22	26	22	22	78	780	316	88	46	28
23	28	22	20	24	20	20	80	736	282	90	44	27
24	29	22	19	22	20	22	*99	681	270	86	42	26
25	29	22	19	22	20	20	99	758	278	77	39	26
26	28	20	20	22	18	20	78	670	*278	75	38	26
27	28	22	22	22	20	20	67	598	270	70	*46	29
28	26	22	22	22	22	19	66	572	278	66	45	30
29	27	20	22	22	22	20	93	532	299	62	56	30
30	26	20	20	22	---	22	126	437	274	64	51	29
31	28	---	20	22	---	26	---	394	---	*93	43	---
Total	771	729	612	699	612	640	1,625	12,242	12,168	3,667	1,790	858
Mean	24.9	24.3	19.7	22.5	21.1	20.6	54.2	395	406	118	57.7	28.6
Ac-ft	1,530	1,450	1,210	1,390	1,210	1,270	3,220	24,280	24,130	7,270	3,550	1,700

Calendar year 1963: Max 444 Min 16 Mean 64.8 Ac-ft 46,890
Water year 1963-64: Max 780 Min 16 Mean 99.5 Ac-ft 72,210

Peak discharge (base, 500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-19	2100	3.58	978	6-10	2300	3.33	703
6-7	2330	3.48	868	6-17	2200	3.28	643

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 16 to Apr. 16 (no gage-height record Mar. 2-17).

GREEN RIVER BASIN

9-2500, Milk Creek near Thornburg, Colo.

Location.--Let 40°12', long 107°44', in NE¼ sec.32, T.3 N., R.92 W., on right bank 2½ miles northwest of Thornburg and 3 miles upstream from Little Creek.

Drainage area.--65 sq mi, approximately.

Records available.--October 1952 to September 1964.

Gage.--Water-stage recorder. Altitude of gege is 6,450 ft (by barometer).

Average discharge.--12 years, 20.9 cfs (15,130 acre-ft per year).

Extremes.--Maximum discharge during year, 288 cfs May 18 (gage height, 4.00 ft); minimum daily, 0.2 cfs Oct. 15.

1952-64: Maximum discharge, 491 cfs May 10, 1957; maximum gage height, 5.52 ft June 1, 1957; minimum daily discharge, 0.2 cfs Oct. 5-7, 1956, Aug. 10, 11, Oct. 15, 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)

1.9	0.1	2.6	27
2.0	.5	2.9	57
2.1	1.7	3.1	85
2.2	4.0	4.0	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	0.4	1.1	1.9	}	}	}	26	57	82	17	6.0	4.4				
2	.3	1.1	1.9				22	72	84	13	6.0	3.5				
3	.3	1.1	* 1.9				20	45	88	11	4.8	3.8				
4	.3	1.3	1.5				16	36	93	11	6.4	3.1				
5	.3	* 1.9	1.5				14	33	80	11	8.0	2.2				
6	.3	2.6	1.5				}	}	}	14	29	72	10	1.1	1.7	
7	.3	2.4	1.4							16	28	70	* 9.6	8.0	1.7	
8	* .3	2.2	1.2							18	31	92	9.6	5.2	1.7	
9	.3	2.2	1.2							(*)	20	29	*74	9.1	3.8	1.7
10	.3	2.2	1.2							24	41	56	8.6	3.3	1.6	
11	.3	2.2	1.0	}	}	}				31	62	52	6.8	2.6	1.5	
12	.3	1.9	1.0							26	57	46	6.4	2.8	1.3	
13	.3	2.2	1.0							18	* 86	43	7.2	4.0	1.2	
14	.3	1.9	1.2							23	116	45	12	4.8	1.7	
15	.2	1.9	1.4							42	162	39	8.6	3.8	1.7	
16	.3	1.8	1.4				}	}	}	49	178	37	6.8	4.0	2.6	
17	.3	1.4	1.4							33	205	34	6.4	5.2	2.2	
18	.3	1.4	1.4							27	222	36	5.2	3.8	1.7	
19	.3	1.6	1.4							(*)	31	218	29	4.8	5.6	2.4
20	.5	1.8	1.2							30	228	28	4.0	8.6	3.8	
21	.6	1.8	1.2	}	}	}				22	* 220	28	4.0	5.6	2.2	
22	.7	2.0	1.4							26	215	28	3.8	4.4	1.7	
23	.7	2.2	1.6							29	188	*25	3.8	3.3	1.6	
24	.7	2.4	1.6							4.0	*41	166	24	4.8	2.6	1.6
25	.7	2.4	1.6							42	166	21	5.6	2.6	1.6	
26	.7	2.2	1.6				29	152	17	6.4	* 2.2	1.6				
27	.7	2.2	1.6				22	136	14	6.0	2.4	1.6				
28	.7	2.0	1.6				19	122	15	* 4.4	3.1	1.6				
29	1.0	1.8	1.4				22	111	15	4.4	4.8	1.6				
30	1.0	1.8	1.4				38	94	16	4.4	5.6	1.6				
31	1.1	-----	1.6	-----	-----	86	-----	4.8	5.2	-----						
Total	14.8	57.0	44.2	55.8	46.4	91.0	790	3,591	1,383	230.5	149.5	62.2				
Mean	0.48	1.90	1.43	1.8	1.6	2.9	26.3	116	46.1	7.44	4.82	2.07				
Ac-ft	29	113	88	111	92	180	1,570	7,120	2,740	457	297	123				

Calendar year 1963: Max 80 Min 0.2 Mean 6.97 Ac-ft 5,050
 Water year 1963-64: Max 228 Min 0.2 Mean 17.8 Ac-ft 12,920

Peak discharge (base, 250 cfs)--May 18 (0700) 288 cfs (4.00 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16-23, 27-30, Dec. 7 to Apr. 10 (no gage-height record Nov. 18-22, Dec. 8-19, Jan. 12 to Feb. 25).

9-2510. Yampa River near Maybell, Colo.

Location.--Lat 40°30'10", long 108°01'45", in NW¼ sec.2, T.6 N., R.95 W., on left bank 100 ft downstream from bridge on U. S. Highway 40, 2 miles downstream from Lay Creek, and 3 miles east of Maybell.

Drainage area.--3,410 sq mi, approximately.

Records available.--April 1904 to October 1905, June 1910 to November 1912, April 1916 to September 1964. Monthly discharge only for some periods, published in WSP 1313. No winter records prior to 1917.

Gage.--Water-stage recorder. Datum of gage is 5,900.23 ft above mean sea level, datum of 1929. Prior to Apr. 24, 1916, staff or chain gage at Thornburgh Bridge 14 miles downstream at different datum. Apr. 24, 1916, to Nov. 3, 1917, chain gage and Ncv. 4, 1917, to Mar. 8, 1937, water-stage recorder, at site 700 ft downstream, at datum 0.92 ft higher prior to Oct. 1, 1932, and at present datum thereafter.

Average discharge.--48 years (1916-64), 1,549 cfs (1,121,000 acre-ft per year).

Extremes.--Maximum discharge during year, 9,990 cfs May 22 (gage height, 8.03 ft); minimum daily, 75 cfs Oct. 13. 1904-5, 1910-12, 1916-64: Maximum discharge observed, 17,900 cfs May 19, 1917 (gage height, 10.4 ft, from floodmarks, site and datum then in use), from rating curve extended above 12,000 cfs; minimum daily, 2 cfs July 17-19, 1934.

Remarks.--Records good except those for periods of ice effect and Apr. 17 to May 14, which are poor. Natural flow of stream affected by transbasin diversions, numerous storage reservoirs, and diversions above station for irrigation of about 65,000 acres above and about 800 acres below station.

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

1.2	73	3.0	950
1.4	115	4.0	2,060
1.7	205	5.0	3,640
2.0	325	7.0	7,400
2.5	600	9.0	12,300

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	125	164	130	140	140	180	340	2,150	5,370	4,220	395	400
2	118	167	120	150	150	180	360	3,210	5,050	3,830	436	299
3	118	180	110	150	160	* 180	380	3,310	4,960	3,420	452	240
4	113	216	*110	140	160	180	440	2,880	5,340	3,050	452	208
5	104	226	120	130	* 170	180	440	2,140	5,470	2,720	420	191
6	97	*222	130	130	170	180	440	1,880	5,850	2,540	447	180
7	89	248	130	*150	160	180	420	1,680	5,920	2,360	447	177
8	85	256	130	150	150	180	480	1,690	6,900	1,840	464	167
9	* 85	240	130	130	160	180	550	1,880	7,540	*1,590	425	170
10	81	233	140	110	170	180	650	1,990	* 5,980	1,420	375	174
11	79	230	150	100	170	200	750	2,030	5,430	1,320	335	177
12	77	226	150	100	170	200	900	2,220	5,450	1,220	298	155
13	75	230	130	100	170	200	800	2,540	4,920	1,090	272	146
14	79	230	130	110	160	200	719	* 3,010	5,030	1,100	240	146
15	91	208	140	130	150	200	684	4,340	5,250	950	236	146
16	97	233	150	150	150	220	922	5,660	4,830	887	236	135
17	95	244	160	170	160	240	1,430	6,610	5,120	845	236	132
18	100	200	160	170	160	240	1,610	7,890	5,100	761	236	132
19	106	170	150	170	160	220	1,690	8,980	4,870	775	240	177
20	108	170	150	160	150	200	1,770	* 9,030	3,790	691	260	155
21	111	180	150	150	150	220	2,050	9,560	3,620	600	*280	149
22	120	180	140	140	160	240	* 1,800	9,780	3,930	534	375	164
23	130	170	130	130	160	240	1,840	9,850	4,120	510	320	184
24	149	180	130	130	150	240	1,860	9,490	* 3,860	474	268	174
25	161	190	140	140	160	240	1,980	8,910	3,570	492	230	161
26	164	190	150	150	170	250	2,330	8,600	3,500	552	202	155
27	174	180	150	150	170	270	1,860	8,380	3,880	469	198	155
28	177	170	150	140	170	280	1,440	* 7,930	3,960	415	180	155
29	180	150	140	130	170	300	1,340	7,830	4,170	390	208	161
30	177	140	130	130	-----	310	1,570	6,960	4,710	* 370	298	161
31	170	-----	130	130	-----	* 330	-----	5,860	-----	350	365	-----
Total	3,635	6,023	4,260	4,260	4,650	6,840	33,845	168,260	147,490	41,785	9,826	5,316
Mean	117	201	137	137	160	221	1,128	5,428	4,916	1,348	317	177
Ac-ft	7,210	11,950	8,450	8,450	9,220	13,570	67,130	333,700	292,500	82,880	19,490	10,540

Calendar year 1963: Max 5,880 Min 50 Mean 842 Ac-ft 609,700
 Water year 1963-64: Max 9,850 Min 75 Mean 1,192 Ac-ft 865,100

Peak discharge (base, 7,000 cfs)--May 22 (1400) 9,990 cfs (8.03 ft); June 9 (1200) 7,760 cfs (7.15 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18 to Apr. 13.

GREEN RIVER BASIN

9-2530, Little Snake River near Slater, Colo.

Location.--Lat 41°00'00", ong 107°08'35", in NW¼ sec.15, T.12 N., R.87 W., on left bank just downstream from highway bridge at Focus Ranch, a quarter of a mile downstream from Spring Creek and 12 miles east of Slater.

Drainage area.--285 sq mi.

Records available.--October 1942 to September 1947, October 1950 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 6,831.00 ft above mean sea level, datum of 1929.

Average discharge.--19 years, 212 cfs (153,500 acre-ft per year).

Extremes.--Maximum discharge during year, 2,530 cfs May 21 (gage height, 7.60 ft); minimum daily, 14 cfs Oct. 2, 5, 1942-47, 1950-64: Maximum discharge, 3,230 cfs June 7, 1957 (gage height, 8.27 ft); minimum daily, 8.6 cfs Sept. 10, 1944.

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

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

3.3	14	4.5	198
3.6	31	4.8	310
3.9	68	5.5	680
4.2	118	7.5	2,420

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	19	20	24	24	22	28	315	1,140	566	44	25
2	14	18	20	24	24	* 24	30	330	1,120	485	41	22
3	15	21	* 18	24	24	24	32	217	1,160	425	41	22
4	15	28	20	22	* 22	22	32	192	1,220	375	44	20
5	14	30	20	24	24	24	34	201	1,270	330	40	19
6	15	* 29	20	24	24	24	34	193	1,410	278	39	19
7	15	30	20	26	24	22	32	208	1,570	* 234	37	39
8	15	27	19	* 28	24	22	* 34	220	1,730	204	32	31
9	* 15	28	18	24	24	24	34	198	1,380	183	31	28
10	15	29	17	22	24	24	36	258	* 1,280	183	30	26
11	15	29	16	20	26	22	38	360	1,250	151	28	22
12	15	25	17	19	26	24	40	* 325	1,110	136	25	20
13	16	25	18	18	24	24	38	535	1,110	125	28	19
14	20	26	18	17	24	24	38	820	1,100	127	30	18
15	19	25	20	19	24	24	55	1,020	1,050	140	28	21
16	18	24	20	20	24	24	75	1,270	1,050	112	26	20
17	17	20	22	22	24	26	94	1,530	1,040	97	29	19
18	16	20	22	22	24	26	103	1,640	988	92	29	18
19	16	22	22	24	24	26	125	1,700	799	84	28	28
20	18	24	20	24	24	26	133	* 1,880	757	76	45	27
21	27	22	20	26	22	28	116	2,020	729	69	32	23
22	23	22	18	24	22	26	114	2,020	841	67	29	22
23	21	22	18	22	22	24	* 125	1,920	* 820	72	27	20
24	26	22	19	22	22	26	165	1,840	708	82	25	20
25	25	22	20	24	22	26	177	1,870	694	64	22	19
26	24	24	20	24	20	26	133	1,770	701	57	* 20	18
27	26	22	20	24	22	24	107	1,710	701	54	35	17
28	22	22	22	24	22	24	105	1,670	729	53	33	17
29	23	22	22	22	22	24	138	1,490	687	* 49	64	18
30	22	20	22	24	-----	26	240	1,360	632	48	46	18
31	23	-----	22	24	-----	26	-----	1,250	-----	44	30	-----
Total	580	719	610	707	678	758	2,485	32,392	30,776	5,062	1,038	655
Mean	18.7	24.0	19.7	22.8	23.4	24.5	82.8	1,045	1,026	163	33.5	21.8
Ac-ft	1,150	1,430	1,210	1,400	1,340	1,500	4,930	64,250	61,040	10,040	2,060	1,300
Calendar year 1963:	Max 1,100	Min 11	Mean 134	Ac-ft 96,930								
Water year 1963-64:	Max 2,090	Min 14	Mean 209	Ac-ft 151,600								

Peak discharge (base, 1,600 cfs) May 21 (2200) 2,530 cfs (7.60 ft); June 7 (2000) 1,830 cfs (6.91 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16 to Apr. 16.

9-2550. Slater Fork near Slater, Colo.

Location.--Lat 40°59', long 107°23', in SW¼ sec.21, T.12 N., R.89 W., on right bank 25 ft downstream from highway bridge. 1 mile upstream from mouth, and 1½ miles south of Slater.

Drainage area.--161 sq mi.

Records available.--May to October, December 1910, March to October 1911, and April to May 1912 (published as Slater Creek), July 1931 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 6,600 ft (from river-profile map). May 28, 1910, to May 25, 1912, staff gage at site 1½ miles upstream at different datum. July 9, 1931, to May 6, 1932, chain gage at site a quarter of a mile downstream at different datum.

Average discharge.--33 years (1931-64), 69.9 cfs (50,610 acre-ft per year).

Extremes.--Maximum discharge during year, 1,010 cfs May 20 (gage height, 8.80 ft); minimum daily, 2.2 cfs Aug. 4.

1910-12, 1931-64: Maximum discharge observed, 1,700 cfs May 19, 1912 (gage height, 5.00 ft, site and datum then in use); no flow Aug. 2-10, 1934, Aug. 18, 25-27, 1936, Aug. 29 to Sept. 3, 1954.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 500 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 Oct. 1 to Dec. 3)

Oct. 1 to Apr. 7		Apr. 8 to Sept. 30			
1.0	4.5	0.8	2.0	2.5	59
1.2	8.0	1.1	6.0	3.5	129
1.7	22	1.4	13	4.5	216
		1.6	19	6.0	418
		2.0	34	8.0	814

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	5.6	9.2	11	13	12	14	15	174	215	117	7.6	8.0
2	5.7	7.6	9.0	14	12	* 14	16	206	221	104	7.8	7.2
3	5.6	12	9.0	14	12	14	18	126	227	90	7.0	6.6
4	5.7	15	* 10	13	* 12	15	19	101	247	76	2.2	6.4
5	6.2	18	11	14	12	15	19	102	254	69	4.4	5.7
6	6.2	* 19	11	14	13	15	20	92	290	59	5.1	5.4
7	6.8	18	12	14	13	14	22	101	327	* 48	3.8	9.6
8	6.6	15	8.6	* 13	13	14	* 27	109	376	42	4.6	10
9	* 6.8	15	10	12	13	14	28	101	299	37	4.0	9.2
10	7.8	15	10	13	14	14	26	127	* 235	34	3.2	8.0
11	8.0	16	8	12	14	13	28	172	234	30	3.0	6.6
12	8.8	16	9	11	15	13	30	151	202	27	2.6	6.2
13	9.8	15	10	9.5	15	13	28	* 226	194	23	2.8	5.8
14	12	15	10	10	14	13	28	366	209	24	3.8	5.0
15	12	15	11	11	14	13	38	447	189	25	4.6	5.4
16	12	17	11	12	14	14	54	568	203	22	5.0	6.0
17	11	12	12	12	14	14	66	658	198	19	6.6	5.7
18	11	8.4	13	12	14	15	66	698	175	18	7.0	5.8
19	11	14	12	13	14	14	85	676	143	17	6.4	11
20	12	19	12	13	13	15	84	733	151	14	24	12
21	17	17	12	13	13	15	66	* 724	143	13	13	9.6
22	15	15	12	13	12	15	68	676	181	12	9.4	8.2
23	13	8.4	11	12	12	13	* 71	554	215	12	7.8	7.6
24	16	20	11	12	13	14	91	473	182	12	6.4	7.6
25	16	13	11	12	12	14	101	480	* 152	10	5.6	6.8
26	13	9.8	11	12	12	14	76	448	152	9.0	* 5.4	6.4
27	13	16	12	12	13	13	61	386	151	8.2	7.4	6.6
28	11	12	13	12	14	13	61	388	143	7.4	9.8	6.6
29	11	9.6	12	12	14	13	87	325	136	* 7.2	21	6.8
30	11	11	12	12	-----	14	131	272	125	9.6	18	6.2
31	11	-----	12	12	-----	15	-----	232	-----	8.6	11	-----
Total	317.6	423.0	338.6	383.5	382	433	1530	10892	6169	1004.0	230.3	218.0
Mean	10.2	14.1	10.9	12.4	13.2	14.0	51.0	351	206	32.4	7.43	7.27
Ac-ft	630	839	672	761	758	859	3,030	21,600	12,240	1,990	457	432

Calendar year 1963: Max 392 Min 0.7 Mean 40.6 Ac-ft 29,410
Water year 1963-64: Max 733 Min 2.2 Mean 61.0 Ac-ft 44,270

Peak discharge (base, 430 cfs).--May 20 (0300) 1,010 cfs (8.80 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 9 to Apr. 6, Apr. 10-12.

GREEN RIVER BASIN

9-2580. Willow Creek near Dixon, Wyo.

Location.--Lat 40°55'00", long 107°31'10", in SW¼ sec.8, T.11 N., R.90 W., in Colorado on right bank 6 miles south of Colorado-Wyoming State line, 7 miles south of Dixon, and 8 miles upstream from mouth.

Drainage area.--24 sq mi, approximately.

Records available.--October 1953 to September 1964.

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

Average discharge.--11 years, 8.44 cfs (6,110 acre-ft per year).

Extremes.--Maximum discharge during year, 111 cfs Apr. 30 (gage height, 4.13 ft); minimum daily, 0.6 cfs Oct. 1-6. 1953-64: Maximum discharge, 195 cfs May 10, 1957 (gage height, 4.97 ft); no flow Sept. 17-19, 1955.

Remarks.--Records good except those for periods of ice effect, which are poor. No diversion above station, Regulation by Elk Lake (capacity, 400 acre-ft).

Rating table, except periods of ice effect (gage height, in feet,
and discharge, in cubic feet per second)
(Shifting-control method used Oct. 5-8, Oct. 24 to Nov. 6)

1.9	0.3	2.5	8.4
2.0	.8	2.7	14
2.1	1.7	3.0	29
2.3	4.6	3.6	66

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	1.2	1.4	2.0	1.5	1.6	2.6	59	20	30	5.0	6.0			
2	.6	.9	1.4	1.8			3.6	64	22	26	5.0	6.2			
3	.6	1.3	1.4	1.7			5.0	20	23	22	5.0	6.2			
4	.6	1.7	*1.4	1.6			4.0	13	26	24	5.0	6.0			
5	.6	2.0	1.4	1.6			3.6	16	32	23	4.8	5.7			
6	.6	1.7	1.4	1.5			3.4	9.7	38	20	5.0	5.7			
7	.8	*1.8	1.2	1.5			3.4	14	44	16	4.4	8.6			
8	.8	1.4	1.2	*1.6			3.6	14	50	*14	4.4	6.0			
9	*.8	1.3	1.2	1.6			4.0	12	38	12	4.2	5.5			
10	.9	1.5	1.0	1.6			4.8	18	*33	12	4.0	3.7			
11	.9	1.4	.9	1.7	1.5	1.6	9.1	24	29	9.7	3.8	1.3			
12	1.0	1.5	1.0	1.6			7.4	20	26	8.4	4.0	1.2			
13	1.2	1.4	1.0	1.6			5.1	*34	30	7.4	5.3	1.1			
14	1.4	1.4	1.0	1.6			6.2	39	34	8.0	4.4	1.1			
15	1.2	1.4	1.0	1.7			15	37	34	7.4	4.2	1.2			
16	1.2	1.2	1.2	1.6			1.5	1.6	24	36	42	6.4	4.3	1.2	
17	1.2	1.0	1.4						20	36	42	5.7	4.2	1.1	
18	1.3	1.2	1.6						16	33	36	5.3	3.7	1.1	
19	1.3	1.4	1.6						27	32	28	4.6	1.2	3.7	
20	1.5	1.4	1.8						(*)	22	35	27	4.2	6.4	2.4
21	1.8	1.4	1.8		1.8	9.7			*37	26	3.8	3.0	1.7		
22	1.6	1.4	1.7		1.8	21			36	39	3.7	2.4	1.6		
23	1.5	1.4	1.6		1.6	*26			36	33	3.8	2.0	1.5		
24	2.3	1.2	1.7		1.8	30			32	*32	3.8	1.7	1.4		
25	1.8	1.2	1.8		2.0	20			35	30	3.1	1.5	1.3		
26	1.7	1.4	1.8	1.6	1.5	1.6	2.0	11	32	34	2.7	*1.4	1.1		
27	1.8	1.4	1.8				2.0	9.1	32	38	2.4	2.5	1.3		
28	1.6	1.4	2.0				2.0	24	32	38	2.3	2.5	1.4		
29	1.5	1.2	2.0				2.2	36	28	36	*2.5	5.3	1.4		
30	1.4	1.2	2.0				2.4	50	25	35	4.3	3.4	1.3		
31	1.6	-----	2.0				-----	-----	2.4	-----	20	-----	5.1	2.8	-----
Total	37.7	41.3	45.7				50.3	43.5	54.0	426.6	910.7	995	303.6	127.6	89.0
Mean	1.22	1.38	1.47				1.62	1.5	1.74	14.2	29.4	33.2	9.79	4.12	2.97
Ac-ft	75	82	91				100	86	107	846	1,810	1,970	602	253	177

Calendar year 1963: Max 32 Min 0.3 Mean 5.12 Ac-ft 3,710
Water year 1963-64: Max 64 Min 0.6 Mean 8.54 Ac-ft 6,200

Peak discharge (base, 70 cfs)--Apr. 30 (1830) 111 cfs (4.13 ft); Aug. 19 (1630) 80 cfs (3.81 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16 to Dec. 19, Jan. 16 to Apr. 10 (no gage-height record Mar. 9-20).

9-2597. Little Snake River near Baggs, Wyo.

Location.--Lat 41°00'00", long 107°55'10", in NE¼ sec.24, T.12 N., R.94 W., in Wyoming, on left bank 600 ft upstream from Wyoming-Colorado State line, half a mile upstream from Scandinavian Wash, and 15 miles west of Baggs.

Drainage area.--3,020 sq mi, approximately.

Records available.--October 1961 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,050 ft (from topographic map). Prior to Apr. 12, 1962, at site 800 ft downstream at datum 3.00 ft lower.

Extremes.--Maximum discharge during year, 4,670 cfs May 23 (gage height, 5.14 ft); minimum daily, 1.4 cfs Sept. 5.
1961-64: Maximum discharge, about 10,000 cfs Mar. 28, 1962 (gage height, 8.0 ft, from floodmark, present datum); minimum daily, 0.1 cfs Sept. 14-20, 1962.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 15,000 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	9.8	38	36	55	55	60	180	1,030	2,110	286	3.5	2.0
2	8.4	52	34	55	50	70	170	1,260	1,950	890	3.5	2.0
3	5.8	47	32	50	46	* 70	160	1,310	1,920	766	3.5	1.8
4	8.4	52	* 28	50	* 50	65	150	829	1,980	647	3.9	1.6
5	7.8	56	32	50	55	70	160	717	2,130	582	3.5	1.4
6	6.5	74	34	55	55	70	170	627	2,310	498	4.2	1.6
7	7.2	* 76	36	55	55	65	190	536	2,610	396	3.5	1.8
8	7.2	72	36	55	55	60	* 200	654	3,070	* 318	3.4	2.0
9	4.5	70	34	* 50	60	60	110	661	3,290	275	3.0	2.0
10	* 2.8	66	34	55	65	65	92	661	* 2,480	240	2.4	2.0
11	2.8	64	32	50	60	70	136	858	2,170	216	2.0	2.0
12	2.8	64	30	44	55	75	194	1,000	2,050	190	2.0	3.0
13	3.9	64	30	34	50	75	181	* 1,040	1,880	153	2.0	9.1
14	4.5	62	34	38	50	70	139	1,560	1,990	133	2.0	7.2
15	4.2	60	38	42	50	70	161	2,350	1,970	121	2.0	6.2
16	3.9	55	44	46	50	70	245	2,990	1,880	110	2.0	4.8
17	3.9	40	46	48	55	65	408	3,570	1,860	112	2.0	* 4.5
18	3.9	30	46	50	60	65	402	3,970	1,800	95	3.0	4.8
19	4.8	32	42	55	60	70	450	* 4,020	1,630	84	2.0	2.8
20	7.2	34	38	55	60	80	1,170	* 4,170	1,450	66	4.0	1.0
21	8.4	36	36	55	55	85	815	4,330	1,400	60	4.5	6
22	8.4	38	36	50	55	80	* 668	4,370	1,590	35	4.0	4.0
23	10	38	40	44	55	70	703	4,260	1,950	31	4.0	3.5
24	12	38	44	42	55	70	724	3,830	* 1,700	13	3.2	3.0
25	14	38	48	46	50	70	829	3,540	1,420	12	3.0	2.5
26	18	36	48	50	46	75	745	3,650	1,360	6.2	* 3.0	2.5
27	23	34	48	50	50	80	556	3,410	1,320	5.2	2.8	2.5
28	28	34	46	46	55	90	492	3,160	1,250	5.5	2.4	2.0
29	34	34	42	46	55	110	582	2,930	1,200	* 5.5	2.0	2.0
30	46	34	42	50	-----	130	759	2,560	1,030	5.2	2.0	2.0
31	41	-----	46	55	-----	150	-----	2,370	-----	4.5	2.0	-----
Total	353.1	1,468	1,192	1,526	1,572	2,375	11,941	72,223	56,750	7,061.1	144.3	127.8
Mean	11.4	48.9	38.5	49.2	54.2	76.6	398	2,330	1,892	228	4.65	4.26
Ac-ft	700	2,910	2,360	3,030	3,120	4,710	23,680	143,300	112,600	14,010	286	253

Calendar year 1963: Max 2,310 Min 0.2 Mean 257 Ac-ft 186,200

Water year 1963-64: Max 4,370 Min 1.4 Mean 428 Ac-ft 311,000

Peak discharge (base, 3,400 cfs)--May 23 (0100) 4,670 cfs (5.14 ft); June 8 (1830) 3,500 cfs (4.53 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16 to Apr. 9. No gage-height record Aug. 8-18, 22, 23, Aug. 25 to Sept. 12, Sept. 20-30.

GREEN RIVER BASIN

9-2600. Little Snake River near Lily, Colo.

Location.--Lat 40°32'50", long 108°25'25", in NW¼NE¼ sec.20, T.7 N., R.98 W., on left bank 170 ft downstream from highway bridge, 6 miles north of Lily, and 10 miles upstream from mouth.

Drainage area.--3,730 sq mi, approximately.

Records available.--June to August 1904 (published as "near Maybell"), October 1921 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 5,685 ft (from river-profile map). June 9 to Aug. 14, 1904, chain gage and May 5, 1922, to Nov. 30, 1935, water-stage recorder, at site 300 ft upstrem at different datums.

Average discharge.--43 years (1921-64), 561 cfs (406,100 acre-ft per year).

Extremes.--Maximum discharge during year, 4,830 cfs May 21 (gage height, 5.46 ft); minimum daily, 1.7 cfs Sept. 14, 28. 1904, 1921-64: Maximum discharge, 14,200 cfs May 27, 1926 (gage height, 10.5 ft, site and datum then in use), from rating curve extended above 3,600 cfs; maximum gage height, 11.1 ft (from floodmark, backwater from ice), Feb. 13, 1962; no flow at times in many years.

Remarks.--Records good except those for period of ice effect, which are poor. Diversions for irrigation of about 21,000 acres above station.

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

0.3	0.4	1.0	66	4.0	2,360
.4	1.8	1.5	185	5.0	3,920
.5	5.5	2.0	370	6.0	5,730
.6	11	2.5	705		
.8	30	3.0	1,170		

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	13	17	36	50	60	60	200	817	2,400	1,120	13	2.9
2	9.9	26	40	55	55	60	200	1,090	2,190	1,020	36	2.5
3	9.9	27	40	50	55	60	170	1,310	1,990	956	37	1.8
4	7.7	38	* 40	50	* 60	* 60	160	1,440	1,950	835	8.8	1.8
5	6.0	53	36	50	65	65	150	994	1,990	697	9.4	1.8
6	5.1	* 51	34	50	65	70	140	790	2,100	610	9.5	1.8
7	5.1	49	36	* 50	60	70	140	799	2,250	529	9.9	9.9
8	5.1	58	38	50	55	65	140	817	2,580	450	9.5	9.4
9	* 5.5	78	40	55	60	65	130	722	3,080	* 375	10	4.8
10	6.0	78	40	55	65	70	120	730	* 3,050	321	8.8	3.3
11	6.0	78	38	50	60	75	110	722	2,300	274	7.7	2.5
12	5.1	76	36	46	55	80	150	817	2,090	246	10	2.2
13	4.8	74	34	40	55	80	150	1,100	1,960	229	12	1.8
14	4.8	76	36	40	50	75	140	* 1,050	1,820	206	13	1.7
15	4.8	76	38	44	50	70	130	1,770	1,890	179	7.2	7.2
16	5.1	82	40	48	55	70	140	2,510	1,880	152	153	4.8
17	5.1	34	40	50	55	75	200	3,020	1,770	132	182	4.0
18	4.4	26	40	55	60	75	350	3,630	1,820	121	28	2.5
19	5.1	40	40	60	65	80	420	4,140	1,760	121	17	1.7
20	7.2	70	38	65	65	85	500	* 4,070	1,670	105	* 13	6.6
21	7.7	60	36	60	60	90	1,200	4,200	1,520	82	8.2	4.0
22	6.0	60	34	55	60	90	* 899	4,360	1,560	72	6.0	3.3
23	5.1	32	36	50	55	85	657	4,360	1,610	68	12	4.8
24	6.6	50	40	50	55	80	730	4,220	* 1,940	62	8.8	5.1
25	7.2	40	44	46	50	75	782	3,770	1,710	44	4.4	4.8
26	7.2	40	46	50	50	80	853	3,610	1,450	35	3.6	2.9
27	8.8	36	46	55	50	90	890	3,650	1,350	24	3.3	2.5
28	9.9	34	46	50	55	95	673	* 3,290	1,330	18	4.0	1.7
29	10	34	44	50	55	110	595	3,160	1,270	13	4.0	2.2
30	12	30	44	50	-----	130	595	2,910	1,250	* 12	2.2	2.2
31	14	-----	48	55	-----	* 160	-----	2,600	-----	15	5.1	-----
Total	220.2	1,523	1,224	1,584	1,660	2,495	11,714	72,468	57,530	9,123	664.9	123.8
Mean	7.10	50.8	39.5	51.1	57.2	80.5	390	2,338	1,918	294	21.4	4.13
Ac-ft	437	3,020	2,430	3,140	3,290	4,950	23,230	143,700	114,100	18,100	1,320	246

Calendar year 1963: Max 2,370 Min 0.2 Mean 279 Ac-ft 201,900
Water year 1963-64: Max 4,360 Min 1.7 Mean 438 Ac-ft 318,000

Peak discharge (base, 3,500 cfs).--May 21 (1400) 4,830 cfs (5.46 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17 to Apr. 20 (no gage-height record Jan. 10 to Mar. 4).

9-3024. White River below Trapper's Lake, Colo.

Location.--Lat 39°59'50", long 107°13'50", in sec.2, T.1 S., R.88 W., on right bank 200 ft below Trapper's Lake, 1 mile upstream from Skinny Fish Creek, and 21 miles east of Buford.

Drainage area.--21.4 sq mi.

Records available.--October 1956 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 9,600 ft (from topographic map).

Average discharge.--8 years, 27.5 cfs (19,910 acre-ft per year).

Extremes.--Maximum discharge during year, 196 cfs June 17 (gage height, 6.87 ft); minimum daily, 2.9 cfs Sept. 2.

1956-64: Maximum discharge, 481 cfs July 4, 1957 (gage height, 8.03 ft), from rating curve extended above 250 cfs; minimum daily, 2.9 cfs Sept. 2, 1964, caused by temporary storage behind moss jam at lake outlet upstream.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station. Natural regulation by Trapper's Lake.

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

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Avg.	Sept.
1	9.0	8.6	8.6				10	13	103	107	20	3.4
2	9.0	8.8	8.6				10	14	93	98	20	2.9
3	8.8	8.8	8.6				10	15	90	87	21	3.6
4	8.8	9.8	8.6				11	14	86	76	22	7.0
5	8.8	10	9.2				12	14	85	69	22	12
6	8.8	11	*9.8				12	13	90	62	22	12
7	9.2	11	b 10				11	13	109	57	22	13
8	9.2	* 11	b 10			9	11	13	151	50	20	13
9	9.2	11	10				9.8	13	141	49	20	20
10	9.4	10	b 9				9.6	13	126	* 48	19	21
11	* 9.2	9.8	b 9				9.6	14	* 129	47	18	15
12	9.0	9.4	b 9				12	14	136	41	17	11
13	9.0	9.4					12	14	146	39	19	9.6
14	9.0	9.2					11	16	156	41	18	9.2
15	8.6	9.0		9	9		10	18	156	36	17	9.6
16	8.2	8.8					* 10	22	181	34	16	9.8
17	8.2	9.6					11	26	192	34	18	9.2
18	8.4	10					11	30	182	34	16	9.2
19	8.4	10					11	36	146	33	16	9.8
20	8.6	9.6					12	49	122	32	19	10
21	8.8	9.4					12	59	109	30	17	9.4
22	8.6	9.6	9				13	* 72	105	28	16	9.0
23	8.4	9.4					12	85	92	26	15	9.8
24	8.6	9.2				10	11	90	83	25	14	11
25	8.6	9.0					13	102	90	24	14	11
26	8.4	8.8					13	112	* 104	23	* 13	11
27	8.2	9.2					14	116	108	20	14	12
28	8.0	9.2					13	117	114	21	11	12
29	9.8	9.0					13	120	129	20	4.8	12
30	9.2	8.8					12	114	119	20	6.6	12
31	9.2							107		* 20	5.4	
Total	272.6	286.4	281.4	279	261	295	342.0	1,468	3,673	1,331	512.8	319.5
Mean	8.79	9.55	9.08	9	9	9.5	11.4	47.4	122	42.9	16.5	10.6
Ac-ft	541	568	558	553	518	585	678	2,910	7,290	2,640	1,020	634

Calendar year 1963: Max 143 Min 7.8 Mean 18.2 Ac-ft 13,190
 Water year 1963-64: Max 192 Min 2.9 Mean 25.5 Ac-ft 18,500

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 13 to Apr. 3 (stage-discharge relation affected by ice during part of period), July 9, 10, 18-24.

GREEN RIVER BASIN

9-3028, White River near Buford, Colo.

Location.--Lat 40°02', long 107°31', in SW¼ sec.20, T.1 N., R.90 W., on right bank a third of a mile upstream from highway bridge, three-quarters of a mile downstream from Ute Creek, and 6½ miles northeast of Buford.

Drainage area.--223 sq mi.

Records available.--July 1903 to December 1906, October 1956 to September 1964. Monthly discharge only for some periods, published in WSP 1313. Published as North Fork White River near Buford prior to 1956. Records for May 1910 to December 1915 and July 1919 to December 1920 at site 6½ miles downstream not equivalent owing to inflow between the sites.

Gage.--Water-stage recorder. Prior to October 1956, staff gage at highway bridge a third of a mile downstream at different datum.

Average discharge.--11 years, 302 cfs (218,600 acre-ft per year).

Extremes.--Maximum discharge during year, 1,360 cfs May 17 (gage height, 4.80 ft); maximum gage height, 5.22 ft sometime between Jan. 14 and Feb. 6 (backwater from ice); minimum daily discharge, 90 cfs Jan. 13, 14.

1903-6, 1956-64: Maximum daily discharge, 1,950 cfs June 8, 1905; minimum daily, 90 cfs Jan. 13, 14, 1964.

Remarks.--Records good except those for period of ice effect, which are poor. Diversions above station for irrigation of a few hay meadows.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 24 to Apr. 5)

2.8	100	4.0	700
3.0	165	4.5	1,120
3.5	400		

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	134	134	124	120	110	130	* 137	232	749	611	265	169
2	134	134	121	120	120	140	137	223	742	563	241	162
3	130	137	124	110	120	140	127	185	826	521	241	158
4	134	144	137	110	110	130	121	173	818	474	275	162
5	134	148	* 124	110	120	140	127	169	826	450	275	158
6	134	144	127	120	* 120	* 130	121	158	886	428	260	154
7	130	* 144	112	110	120	120	115	169	1030	390	241	158
8	130	140	100	* 100	110	120	118	177	1100	* 365	236	158
9	130	144	100	95	110	110	118	177	913	350	223	162
10	* 130	148	95	95	120	110	124	223	913	355	218	154
11	134	140	100	100	120	110	121	270	* 958	330	201	151
12	137	137	100	95	130	120	127	* 275	922	325	205	151
13	137	137	100	90	130	120	124	375	949	335	218	151
14	137	137	110	90	130	120	121	527	958	345	201	154
15	137	134	110	95	120	130	140	661	976	315	197	169
16	134	137	120	100	120	130	162	802	1060	300	197	165
17	134	127	120	110	120	120	169	931	1080	300	201	154
18	134	127	120	110	130	120	154	949	1040	295	189	162
19	134	127	110	110	130	130	154	967	826	290	210	177
20	151	134	110	120	130	130	154	976	756	280	218	169
21	144	134	100	120	130	120	148	* 1030	742	260	193	169
22	137	127	110	110	120	120	151	1060	728	255	189	165
23	134	127	110	110	120	120	* 158	1050	661	260	185	165
24	148	130	110	110	120	124	173	1050	629	250	177	165
25	140	124	120	110	120	121	177	1100	* 605	241	169	165
26	134	124	120	110	120	124	158	1040	668	236	* 169	162
27	134	134	120	110	120	121	148	1000	661	232	201	158
28	130	124	110	110	120	124	148	967	700	223	185	158
29	130	127	110	110	130	124	169	931	756	* 223	201	158
30	134	127	110	110	-----	130	205	818	680	255	189	158
31	137	-----	110	110	-----	130	-----	763	-----	275	173	-----
Total	4,191	4,032	3,494	3,330	3,520	3,858	4,306	19,428	25,158	10,332	6,543	4,821
Mean	135	134	113	107	121	124	144	627	839	333	211	161
Ac-ft	8,310	8,000	6,930	6,600	6,980	7,650	8,540	38,530	49,900	20,490	12,980	9,560

Calendar year 1963: Max 810 Min 95 Mean 205 Ac-ft 148,700
Water year 1963-64: Max 1,100 Min 90 Mean 254 Ac-ft 184,500

Peak discharge (base, 1,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-17	2130	4.80	1,360	6-16	2200	4.62	1,230
6-7	2100	4.68	1,260				

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 8 to Mar. 23 (no gage-height record Jan. 14 to Mar. 6).

9-3030. White River at Buford, Colo.

Location.--Lat 39°59', long 107°37', in NW¼ sec.9, T.1 S., R.91 W., on right bank 600 ft east of Buford and 1¼ miles upstream from South Fork White River.

Drainage area.--254 sq mi.

Records available.--May 1910 to December 1915, July 1919 to December 1920, October 1951 to September 1964. Monthly discharge only for some periods, published in WSP 1313. Published as North Fork White River near Buford prior to 1951. Records for July 1903 to December 1906 at site 6½ miles upstream not equivalent owing to inflow between sites.

Gage.--Water-stage recorder. Altitude of gage is 7,010 ft (from topographic map). May 24, 1910, to May 27, 1914, staff gage at site 1½ miles upstream at different datum. May 28, 1914, to Dec. 7, 1915, and July 1, 1919, to Oct. 9, 1920, staff gage at present site at different datum.

Average discharge.--19 years, 314 cfs (227,300 acre-ft per year).

Extremes.--Maximum discharge during year, 1,510 cfs May 19 (gage height, 6.15 ft); maximum gage height observed, 6.57 ft Mar. 18 (backwater from ice); minimum daily discharge, 100 cfs Jan. 12, 13.

1910-15, 1919-20, 1951-64: Maximum daily discharge, 3,150 cfs May 30, 1912; maximum gage height, 7.22 ft Jan. 9, 1961 (backwater from ice); minimum daily discharge, 90 cfs Feb. 21, 1955.

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 900 acres above and 300 acres below 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	148	148	130	130	130	150	150	296	859	598	304	212
2	148	148	130	120	130	150	150	280	852	545	276	205
3	146	155	130	120	130	150	140	222	943	510	276	202
4	148	160	130	120	120	150	140	202	915	485	316	202
5	148	160	* 130	120	130	150	140	196	936	470	308	199
6	146	158	120	130	* 140	* 140	130	187	943	445	300	193
7	148	* 158	110	120	130	130	130	196	1,040	410	284	202
8	146	150	110	* 110	120	130	130	202	1,120	* 405	276	199
9	145	152	110	110	120	130	* 140	202	943	385	268	199
10	* 146	155	110	110	130	130	145	252	922	395	256	193
11	146	150	110	110	140	130	143	304	* 943	365	233	190
12	148	148	110	100	140	140	155	* 308	915	352	240	190
13	150	146	120	100	140	140	141	430	922	356	256	190
14	150	146	120	110	140	140	143	570	943	380	236	193
15	150	146	130	110	130	140	165	704	936	338	233	205
16	148	155	130	120	130	140	202	852	999	324	233	196
17	148	152	130	120	140	140	205	1,020	1,010	329	236	193
18	148	158	120	120	140	* 140	184	1,110	992	316	222	196
19	148	162	120	130	140	140	187	1,160	817	304	268	212
20	168	165	120	130	140	140	181	1,190	740	292	272	199
21	160	168	110	130	140	130	170	* 1,230	722	284	236	193
22	152	148	120	120	140	140	178	1,270	710	276	233	190
23	152	141	120	120	130	140	* 193	1,220	644	276	222	190
24	165	146	130	120	130	130	226	1,210	604	272	212	196
25	160	145	130	120	130	140	222	1,280	* 614	268	205	190
26	155	141	130	120	130	140	187	1,180	638	264	* 208	187
27	152	140	130	120	140	140	170	1,110	632	260	248	184
28	150	140	120	120	150	140	170	1,080	662	252	230	184
29	150	140	120	120	150	140	216	1,050	728	* 244	260	184
30	150	130	120	120	-----	150	268	957	662	272	236	184
31	155	-----	130	120	-----	150	-----	894	-----	316	219	-----
Total	4,674	4,511	3,780	3,670	3,900	4,340	5,101	22,364	25,306	10,988	7,802	5,852
Mean	151	150	122	118	134	140	170	721	844	354	252	195
Ac-ft	9,270	8,950	7,500	7,280	7,740	8,610	10,120	44,360	50,190	21,790	15,480	11,610

Calendar year 1963: Max 894 Min 110 Mean 219 Ac-ft 158,600
 Water year 1963-64: Max 1,280 Min 100 Mean 279 Ac-ft 202,900

Peak discharge (base, 1,000 cfs).--May 19 (2300) 1,510 cfs (6.15 ft); June 7 (2300) 1,250 cfs (5.83 ft).

* Discharge measurement made on this day.
 Note.--Stage-discharge relation affected by ice Nov. 27 to Jan. 14. No gage-height record Jan. 15 to Apr. 9 (stage-discharge relation affected by ice during most of period).

GREEN RIVER BASIN

9-3040. South Fork White River at Buford, Colo.

Location.--Lat 39°58', long 107°38', in NW¼ sec.17, T.1 S., R.91 W., on left bank 300 ft downstream from highway bridge, three-quarters of a mile upstream from mouth, and 1 mile south of Buford.

Drainage area.--170 sq mi, approximately.

Records available.--July 1919 to December 1920 (monthly discharge only, published in WSP 1313), October 1951 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,970 ft (from topographic map). Prior to Nov. 30, 1920, staff gage at site 300 ft upstream at different datum.

Average discharge.--14 years, 259 cfs (187,500 acre-ft per year).

Extremes.--Maximum discharge during year, 2,010 cfs June 8 (gage height, 6.04 ft); minimum daily, 65 cfs Jan. 13.
1919-20, 1951-64: Maximum discharge, about 3,000 cfs June 30, 1957; maximum gage height, 7.07 ft June 30, 1957; minimum daily discharge determined, 60 cfs Feb. 21, 1955.

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 1,100 acres above station and a few acres below.

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

3.0	96	4.5	620
3.3	137	5.0	1,020
3.6	205	5.6	1,580
4.0	355	6.0	1,970

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	104	100	85	85	90	100	120	147	1,000	470	182	132
2	103	102	85	85	90	100	110	147	1,000	430	173	128
3	100	105	90	80	90	100	100	136	1,060	386	178	128
4	100	107	85	80	85	95	100	126	1,050	360	182	126
5	99	107	* 80	80	90	100	110	128	1,250	335	190	124
6	100	104	75	85	* 95	* 100	110	125	1,320	319	173	124
7	100	* 105	70	80	90	95	100	125	1,550	299	168	120
8	100	104	70	* 75	85	90	100	125	1,830	* 279	173	118
9	99	105	70	70	85	90	100	124	1,260	255	164	120
10	* 99	104	70	70	85	90	110	131	1,200	303	159	116
11	99	104	70	70	90	90	110	151	* 1,440	251	153	112
12	100	102	75	70	95	95	100	* 141	1,490	229	153	112
13	100	102	80	65	95	100	100	157	1,500	226	157	110
14	100	103	85	70	90	100	100	214	1,460	239	151	112
15	100	103	85	70	85	100	110	303	1,280	220	149	119
16	99	106	85	75	85	95	120	396	1,470	208	147	118
17	99	b 20	85	75	90	95	130	512	1,400	208	151	114
18	99	90	85	80	95	* 100	120	602	1,140	217	145	114
19	100	95	80	85	95	110	120	725	832	195	155	124
20	108	100	75	85	90	105	120	885	784	190	171	119
21	108	100	75	85	90	113	110	* 1,060	776	185	151	118
22	104	95	75	80	90	110	110	1,340	725	185	145	114
23	104	95	80	80	90	112	* 120	1,360	584	198	139	114
24	108	100	85	75	90	107	* 130	1,310	590	190	137	114
25	107	95	85	75	85	106	139	1,540	* 641	182	134	112
26	105	95	85	80	85	106	125	1,580	634	182	* 132	112
27	104	100	85	80	90	104	120	1,430	578	171	145	112
28	103	95	80	80	95	106	118	1,320	590	166	141	112
29	103	95	80	80	95	112	130	1,370	614	* 168	145	112
30	103	90	80	80	-----	113	141	1,220	524	168	143	110
31	104	-----	85	85	-----	118	-----	1,130	-----	182	136	-----
Total	3,161	2,998	2,480	2,415	2,605	3,157	3,433	20,060	31,572	7,596	4,822	3,520
Mean	102	99.9	80.0	77.9	89.8	102	114	647	1,052	245	156	117
Ac-ft	6,270	5,950	4,920	4,790	5,170	6,260	6,810	39,790	62,620	15,070	9,560	6,980

Calendar year 1963: Max 1,580 Min 70 Mean 95 Ac-ft 141,100
Water year 1963-64: Max 1,830 Min 65 Mean 240 Ac-ft 174,200

Peak discharge (base, 1,300 cfs).--May 26 (0430) 1,730 cfs (5.79 ft); June 8 (0630) 2,010 cfs (6.04 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 18 to Mar. 18, Apr. 2-24 (stage-discharge relation affected by ice during most of periods).

9-3041. Big Beaver Creek near Buford, Colo.

Location.--Lat 39°58', long 107°39', in NW¼ sec.18, T.1 S., R.91 W., on right bank 165 ft upstream from bridge on County Highway 132, 500 ft upstream from mouth, and 2 miles southwest of Buford.

Drainage area.--34.6 sq mi.

Records available.--October 1955 to September 1964 (discontinued).

Gage.--Water-stage recorder. Prior to Sept. 7, 1957, at site 35 ft upstream at same datum.

Average discharge.--9 years, 14.9 cfs (10,790 acre-ft per year).

Extremes.--Maximum discharge during year, 263 cfs May 21 (gage height, 3.08 ft); minimum daily, 0.2 cfs Oct. 4-19, July 26-29, 1955-64; Maximum discharge, 395 cfs June 3, 1957 (gage height, 4.46 ft); no flow at times in 1956, 1961.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Small diversions above station for irrigation of hay meadows. One diversion above station for irrigation below station along the White River.

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

Oct. 1 to Mar. 18		Mar. 19 to Sept. 30	
1.3	0.2	1.0	0.0
1.4	.8	1.1	.3
1.5	1.6	1.2	1.0
1.6	3.5	1.3	3.0
		1.4	5.5
		1.5	9.0
		1.7	20
		2.0	41
		2.3	76
		2.7	145
		3.0	215

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	0.4	(*)	}	(*)	}	5	30	62	6.2	0.6	0.4
2	.3	.3					4.8	33	58	4.5	.7	.4
3	.3	1.3					4.4	24	66	3.0	.7	.4
4	.2	2.2					4.2	19	61	1.2	.8	.4
5	.2	2.4					4.2	17	50	.9	.8	.3
6	.2	2.6	}	(*)	}	4.0	15	38	.9	1.0	.3	
7	.2	* 2.4				3.8	15	33	* .6	1.2	.4	
8	.2	2.4				3.8	19	41	.4	.6	.3	
9	.2	2.2				* 3.8	16	39	.4	.6	.3	
10	* .2	2.0				4.4	21	28	.3	.6	.3	
11	.2	2.0	}	}	}	5	30	25	.3	.5	.3	
12	.2	2.0				6	* 32	* 23	.3	.5	.3	
13	.2	2.0				6.6	50	19	.3	.6	.3	
14	.2	2.0				6.9	79	21	.4	.6	.3	
15	.2	2.0				13	108	16	.4	.6	.4	
16	.2	2.0	}	}	}	3.4	22	133	14	.4	.6	.4
17	.2	1.6				3.6	23	147	13	.4	.6	.4
18	.2	1.4				3.8	18	153	18	.4	.5	.4
19	.2	1.4				* 4.0	20	172	16	.3	.7	.5
20	.4	1.6				3.2	18	175	11	.3	1.6	.5
21	.4	1.8	}	}	}	2.4	15	* 185	10	.3	.9	.5
22	.4	1.8				2.8	18	178	14	.3	.6	.5
23	.4	1.8				3.0	19	155	10	.4	.5	.4
24	.5	2.0				3.2	22	151	8.0	.3	.5	.4
25	.4	1.8				3.0	22	141	* 6.6	.3	.4	.4
26	.4	1.8	}	}	}	3.0	16	117	6.6	.2	* .3	.4
27	.4	2.0				3.0	13	114	5.8	.2	.4	.4
28	.4	1.8				3.2	12	96	4.2	.2	.4	.4
29	.3	1.8				3.6	15	86	4.8	* .2	.4	.4
30	.3	1.6				4.0	22	72	5.2	.3	.4	.4
31	.4	-----	-----	-----	-----	4.6	-----	66	-----	.5	-----	-----
Total	8.8	54.4	49.6	55.8	69.6	101.8	354.9	2,649	727.2	25.1	19.6	11.5
Mean	0.28	1.81	1.6	1.8	2.4	3.28	11.8	85.5	24.2	0.81	0.63	0.38
Ac-ft	17	108	98	111	138	202	704	5,250	1,440	50	39	23

Calendar year 1963: Max 77 Min 0.1 Mean 5.42 Ac-ft 3,930
 Water year 1963-64: Max 185 Min 0.2 Mean 11.3 Ac-ft 8,180

Peak discharge (base, 200 cfs).--May 21 (2200) 263 cfs (3.08 ft).

* Discharge measurement made on this day.
 Note.--Stage-discharge relation affected by ice Nov. 16 to Jan. 11, Apr. 10-12. No gage-height record Jan. 12 to Mar. 19, Mar. 22 to Apr. 9 (stage-discharge relation affected by ice during most of periods).

GREEN RIVER BASIN

9-3042. White River above Coal Creek, near Meeker, Colo.

Location.--Lat 40°00'20", long 107°49'30", on base line between sec.33, T.1 N., and sec.3, T.1 S., R.93 W., on right bank 16 ft upstream from county road bridge, 2 miles upstream from Coal Creek, and 5 miles southeast of Meeker.

Drainage area.--660 sq mi, approximately.

Records available.--October 1961 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,400 ft (from topographic map).

Extremes.--Maximum discharge during year, 2,980 cfs May 23 (gage height, 5.01 ft); minimum daily, 170 cfs Oct. 17, Sept. 11. 1961-64: Maximum discharge, 3,580 cfs May 13, 1962 (gage height, 5.41 ft); minimum daily, 127 cfs July 30 to Aug. 1, 1963.

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 8,000 acres above station and about 4,000 acres below.

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	219	233	260	230	230	290	344	480	1,660	853	369	272
2	216	233	260	240	240	300	340	505	1,630	748	344	256
3	212	244	260	230	250	300	300	428	1,780	672	374	248
4	205	256	250	220	* 240	280	284	392	1,750	618	356	236
5	205	268	* 240	230	240	* 280	296	387	1,880	575	387	226
6	212	268	240	240	250	280	292	369	1,920	530	348	212
7	196	* 272	240	240	260	270	272	382	2,180	480	364	205
8	184	280	220	230	240	260	268	400	2,550	* 450	374	193
9	172	284	220	* 220	240	240	272	382	* 2,070	428	328	190
10	* 172	288	220	200	250	250	292	432	1,910	460	312	178
11	172	284	210	200	260	240	288	535	2,090	418	300	170
12	175	280	200	190	260	250	312	510	2,090	428	292	175
13	178	276	220	180	260	260	284	* 660	2,120	432	296	175
14	178	280	230	190	250	272	284	908	2,130	450	248	178
15	178	276	240	200	240	268	332	1,210	1,960	410	252	199
16	181	292	240	220	250	268	392	1,570	2,090	392	260	226
17	170	276	240	230	260	260	396	1,880	2,060	392	272	226
18	184	268	240	240	260	272	356	2,110	1,900	405	260	226
19	208	280	230	250	270	272	356	* 2,260	1,490	369	288	264
20	236	288	220	250	280	256	348	2,460	1,300	356	350	268
21	244	296	220	250	270	268	* 320	2,610	1,240	320	320	272
22	236	292	220	240	260	272	324	2,770	1,270	288	300	284
23	236	252	220	230	250	268	340	2,710	* 1,060	304	290	280
24	256	300	230	220	240	264	374	2,590	990	296	280	280
25	260	280	240	220	240	268	396	2,720	1,000	280	* 280	276
26	233	268	240	220	250	260	348	2,640	1,040	272	268	276
27	230	284	240	220	260	260	344	2,450	980	272	292	292
28	230	280	230	220	270	252	340	2,280	1,000	260	288	296
29	230	270	220	220	280	268	382	2,230	1,130	* 264	296	288
30	230	260	220	220	-----	292	441	1,990	964	272	296	284
31	240	-----	220	220	-----	* 320	-----	1,820	-----	360	280	-----
Total	6,478	8,208	7,180	6,910	7,350	8,360	9,917	45,070	49,224	13,054	9,564	7,151
Mean	209	274	232	223	253	270	331	1,454	1,641	421	309	238
Ac-ft	12,850	16,280	14,240	13,710	14,580	16,580	19,670	89,400	97,630	25,890	18,970	14,180

Calendar year 1963: Max 2,020 Min 127 Mean 380 Ac-ft 275,200
 Water year 1963-64: Max 2,770 Min 170 Mean 488 Ac-ft 354,000

Peak discharge (base, 2,000 cfs)--May 23 (0130) 2,980 cfs (5.01 ft); June 8 (0330) 2,700 cfs (4.81 ft)

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 29 to Mar. 13 (no gage-height record Jan. 13 to Mar. 5). No gage-height record Aug. 20-25.

9-3043. Coal Creek near Meeker, Colo.

Location.--Lat 40°05'30", long 107°46'05", in NE¼ sec.1, T.1 N., R.93 W., on right bank 200 ft downstream from unnamed tributary, 300 ft above headgate of ditch, 1.3 miles below Ninemile Draw, and 8 miles northeast of Meeker.

Drainage area.--25 sq mi, approximately.

Records available.--October 1957 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 6,820 ft (from topographic map).

Average discharge.--7 years, 5.34 cfs (3,870 acre-ft per year).

Extremes.--Maximum discharge during year, 54 cfs May 19 (gage height, 3.77 ft); minimum daily, 0.8 cfs Sept. 27.
1957-64: Maximum discharge, 102 cfs May 11, 1958 (gage height, 4.37 ft); minimum daily, 0.4 cfs Sept. 9, 10, Nov. 20-23, 1959, Aug. 24, 1961.

Remarks.--Records good except those for period of ice effect, which are poor. Slight regulation by two small storage reservoirs above station. Diversions for irrigation of a few acres of hay meadows above station.

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

2.2	0.5	3.0	15
2.3	1.0	3.4	29
2.4	2.0	3.6	39
2.6	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	1.7	1.3					5.0	6.0	14	4.5	2.2	1.9
2	1.8	1.2					5.5	6.2	13	3.5	1.5	1.9
3	1.8	1.2	(*)			(*)	5.0	5.2	13	2.8	1.7	1.9
4	1.7	1.3			(*)		5.6	4.5	13	2.7	2.2	1.9
5	1.7	* 1.3					5.2	4.1	12	2.5	2.0	1.9
6	1.8	1.0					5.2	3.7	22	2.0	2.8	1.9
7	1.9	1.0					5.0	3.7	23	* 1.9	2.0	1.8
8	* 1.8	1.0				2	4.8	3.9	29	1.7	1.7	1.8
9	1.7	1.1		(*)			5.0	4.3	* 20	1.7	1.6	1.8
10	1.7	1.1					4.6	3.7	18	1.6	1.5	1.7
11	1.7	1.1					5.0	4.5	21	1.6	1.6	1.7
12	1.4	1.1					5.0	4.8	19	1.5	1.7	1.7
13	1.1	1.2					3.4	* 7.8	16	1.6	1.8	1.7
14	1.2	1.2					3.5	12	17	1.8	1.8	1.8
15	1.2	1.2					5.4	20	15	2.0	1.8	1.8
16	1.0	1.2	1.3	1.4	1.6		7.6	27	14	1.5	2.0	1.7
17	1.0	1.2					7.0	32	13	1.4	1.9	1.7
18	1.0	1.1					5.6	34	13	1.3	1.7	1.8
19	1.0	1.1					6.2	36	10	1.6	2.3	2.0
20	1.4	1.2					5.2	36	9.3	1.5	2.2	1.7
21	1.3	1.3					4.5	* 34	9.0	1.4	2.0	1.7
22	1.0	1.3					5.4	32	10	1.3	2.0	1.7
23	1.0	1.2				2.5	6.0	29	* 8.3	1.5	1.9	1.4
24	1.0	1.2					* 5.8	26	7.0	1.5	1.9	1.1
25	1.0	1.2					5.6	25	6.0	1.1	1.9	1.0
26	1.0	1.2					4.5	25	5.6	1.1	* 1.9	1.0
27	1.0	1.1					3.9	26	5.0	1.1	2.2	.8
28	1.1	1.1					4.6	21	4.3	* 1.1	2.0	.9
29	1.1	1.2					5.2	18	4.1	1.0	2.2	.9
30	1.2	1.2					5.4	16	4.8	1.2	2.0	.9
31	1.4	-----				(*)	-----	16	-----	1.4	1.9	-----
Total	41.7	35.1	40.3	43.4	46.4	70.0	156.7	527.4	388.4	54.4	59.9	47.5
Mean	1.35	1.17	1.3	1.4	1.6	2.3	5.22	17.0	12.9	1.75	1.93	1.58
Ac-ft	83	70	80	86	92	139	311	1,050	770	108	119	94

Calendar year 1963: Max 14 Min 0.6 Mean 2.68 Ac-ft 1,940
Water year 1963-64: Max 36 Min 0.8 Mean 4.13 Ac-ft 3,000

Peak discharge (base, 50 cfs).--May 19 (2130) 54 cfs (3.77 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16 to Apr. 2 (no gage-height record Nov. 29 to Mar. 31).

GREEN RIVER BASIN

9-3045. White River near Meeker, Colo.

Location.--Lat 40°02'00", long 107°51'35", in NE¼ sec.30, T.1 N., R.93 W., on left bank 1 mile upstream from Curtis Creek and 2½ miles east of Meeker.

Drainage area.--762 sq mi.

Records available.--June 1901 to December 1906, October 1909 to September 1964. Monthly discharge only for some periods, published in WSP 1313. Published as "at Meeker" 1901-13.

Gage.--Water-stage recorder. Altitude of gage is 6,320 ft (from topographic map). Prior to Oct. 31, 1906, and May 7 to Aug. 13, 1910, staff gage and Aug. 14, 1910, to Oct. 19, 1913, water-stage recorder, at site 2½ miles downstream at different datum. Oct. 20, 1913, to Sept. 30, 1933, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge.--60 years, 628 cfs (454,700 acre-ft per year).

Extremes.--Maximum discharge during year, 3,070 cfs May 23 (gage height, 3.35 ft); minimum daily, 190 cfs Jan. 13. 1901-6, 1909-64: Maximum discharge observed, 6,370 cfs June 16, 1921 (gage height, 5.60 ft, present datum), from rating curve extended above 4,700 cfs; minimum daily, 112 cfs July 17, 1934.

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 12,000 acres above station and about 3,000 acres below.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 1-22)

0.1	220	2.0	1,190
.4	295	3.0	2,440
1.0	530	3.2	2,780
1.5	780		

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	265	274	289	250	240	300	469	534	1,700	944	485	319
2	265	271	277	250	250	310	445	566	1,630	829	441	301
3	260	286	* 271	240	260	310	353	477	1,820	744	461	292
4	252	301	b 260	230	* 250	290	316	425	1,830	690	437	283
5	258	313	b 250	240	250	* 290	329	421	1,930	660	473	274
6	258	313	b 250	250	260	290	329	398	1,980	616	441	271
7	245	* 310	b 250	250	270	280	307	401	2,220	557	449	268
8	234	316	b 220	240	250	270	301	421	2,760	* 534	457	248
9	230	319	b 230	* 230	250	250	304	397	* 2,150	508	393	245
10	* 232	319	b 230	210	260	260	* 329	437	1,950	539	369	236
11	232	310	b 220	210	280	250	333	544	2,170	503	345	228
12	236	307	b 210	200	280	260	327	521	2,180	490	333	226
13	242	304	b 230	190	270	280	379	* 650	2,200	494	345	230
14	245	304	b 240	200	270	280	319	850	2,250	521	301	232
15	252	304	b 250	220	250	280	385	1,180	2,000	490	307	255
16	255	322	b 250	230	260	270	473	1,530	2,210	473	313	295
17	245	298	b 250	240	270	* 268	494	1,840	2,180	457	329	295
18	252	280	b 250	250	270	280	433	2,030	2,040	473	319	289
19	274	295	b 240	260	280	280	421	* 2,180	1,620	441	349	325
20	310	310	b 230	260	290	280	425	2,380	1,420	417	433	337
21	322	316	230	260	280	265	* 377	2,540	1,360	377	369	337
22	301	319	230	250	270	280	381	2,780	1,370	325	361	333
23	295	274	240	240	260	271	393	2,740	* 1,170	341	349	329
24	313	329	240	230	250	268	425	2,540	1,090	337	329	333
25	316	307	240	240	250	271	461	2,730	1,100	316	* 313	329
26	289	283	250	240	260	265	401	2,640	1,150	322	313	322
27	280	310	260	240	270	260	401	2,440	1,090	322	331	341
28	286	304	240	230	280	260	397	2,240	1,090	319	349	341
29	283	274	240	240	290	280	421	2,220	1,260	* 333	353	333
30	283	286	230	240	-----	319	481	2,000	1,100	341	353	333
31	295	-----	230	240	-----	381	-----	1,880	-----	469	333	-----
Total	3,305	9,058	7,527	7,300	7,670	8,698	11,609	44,932	52,010	15,182	11,533	8,780
Mean	268	302	243	235	264	281	387	1,449	1,734	490	372	293
Ac-Ft	16,470	17,970	14,930	14,480	15,210	17,250	23,030	89,120	103,200	30,110	22,880	17,410

Calendar year 1963: Max 2,030 Min 180 Mean 416 Ac-ft 301,400
Water year 1963-64: Max 2,780 Min 190 Mean 526 Ac-ft 382,100

Peak discharge (base, 2,100 cfs).--May 23 (0400) 3,070 cfs (3.35 ft); June 8 (0830) 2,960 cfs (3.25 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 20 to Mar. 16 (stage-discharge relation affected by ice during most of period), Mar. 27-29.

9-3048. White River below Meeker, Colo.

Location.--40°00'30", long 108°06'00", in center of sec.31, T.1 N., R.95 W., on left bank 30 ft downstream from county tridge, 3½ miles downstream from Strawberry Creek, and 10 miles west of Meeker.

Drainage area.--1,040 sq mi, approximately.

Records available.--October 1961 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is about 5,900 ft (estimated from nearby level line).

Extremes.--Maximum discharge during year, 3,110 cfs May 23 (gage height, 3.70 ft); minimum daily, 200 cfs Jan. 13.
1961-64: Maximum discharge, 3,580 cfs May 13, 1962 (gage height, 3.88 ft); minimum daily, 200 cfs Jan. 13, 1964.

Remarks.--Records good except those for period of ice effect, which are poor. Diversions above station for irrigation of about 22,000 acres above and a few acres below.

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

0.7	235	2.5	1,400
.9	280	3.0	2,050
1.2	400	3.5	2,890
2.0	940		

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	270	307	307	270	270	320	597	544	1,530	1,010	556	346
2	270	298	304	280	280	330	562	615	1,470	884	532	326
3	270	304	* 292	270	280	330	400	532	1,670	804	520	310
4	265	326	265	260	* 270	320	342	454	1,730	748	532	292
5	260	* 334	268	250	260	* 300	342	436	1,730	720	608	298
6	265	334	272	270	270	310	355	406	1,860	678	587	301
7	260	326	275	280	280	300	330	400	2,100	594	556	301
8	* 247	326	258	* 270	270	290	314	412	2,750	* 587	568	289
9	243	330	251	250	280	280	314	406	* 2,350	601	502	283
10	241	330	280	230	290	290	* 346	412	1,900	671	478	278
11	243	326	240	240	300	280	355	526	2,050	629	442	270
12	241	322	230	230	310	280	406	538	2,130	568	424	251
13	245	318	240	200	300	300	355	* 622	2,080	568	442	258
14	255	318	260	220	290	300	338	839	2,230	580	380	258
15	262	314	270	230	270	290	385	1,120	1,940	544	380	278
16	270	334	280	240	280	290	472	1,380	2,070	514	390	298
17	268	318	280	250	290	300	538	1,710	2,110	502	406	298
18	270	292	270	260	300	300	460	1,980	2,040	520	390	298
19	283	310	260	270	310	300	430	* 2,180	1,620	490	406	365
20	298	318	250	280	310	300	460	2,400	1,390	454	514	370
21	334	330	240	280	300	300	* 400	2,570	1,320	406	454	355
22	307	342	240	280	290	300	400	2,800	1,390	360	424	365
23	298	298	250	270	280	300	400	2,700	* 1,210	375	400	360
24	307	342	260	260	280	300	442	2,410	1,100	390	385	370
25	318	326	270	260	280	300	508	2,600	1,090	390	* 370	365
26	301	295	280	260	280	290	460	2,570	1,140	390	355	355
27	286	310	280	260	290	280	448	2,350	1,070	370	365	370
28	298	310	280	260	300	290	442	2,150	1,080	* 360	380	385
29	301	298	270	260	300	310	436	2,070	1,210	370	365	380
30	301	295	260	260	-----	* 360	490	1,820	1,140	395	390	380
31	310	-----	250	260	-----	496	-----	1,700	-----	496	-----	-----
Total	8,597	9,531	8,232	7,960	8,300	9,536	12,517	43,652	50,500	16,968	13,871	9,653
Mean	277	318	266	257	286	308	417	1,408	1,683	547	447	322
Ac-ft	17,030	18,900	16,330	15,790	16,460	18,910	24,830	86,580	100,200	33,660	27,510	19,150

Calendar year 1963: Max 1,960 Min 223 Mean 439 Ac-ft 317,500
Water year 1963-64: Max 2,800 Min 200 Mean 545 Ac-ft 395,400

Peak discharge (base, 2,000 cfs).--May 23 (0800) 3,110 cfs (3.70 ft); June 8 (1330) 2,890 cfs (3.55 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 11 to Mar. 30 (no gage-height record Jan. 8 to Mar. 25).

GREEN RIVER BASIN

9-3065. White River near Watson, Utah

Location.--Lat 39°59', long 109°11', in sec.2, T.10 S., R.24 E., Salt Lake meridian, on right bank 350 ft downstream from bridge on State Highway 45, 1 mile downstream from Evacuation Creek, and 7 miles north of Watson.

Drainage area.--4,020 sq mi, approximately.

Records available.--April 1904 to October 1906 (no winter records), May to November 1918, April 1923 to September 1964. Monthly discharge only for some periods, published in WSP 1313. Published as "near Dragon" 1906 and as "near Rangely, Colo." 1904-5, 1918.

Gage.--Water-stage recorder. Datum of gage is 4,946.78 ft above mean sea level, datum of 1929. Apr. 15, 1904, to Oct. 31, 1905, and May 19 to Nov. 23, 1918, staff gage at site 25 miles upstream (half a mile northwest of Rangely, Colo.) at different datum. Apr. 1 to Oct. 31, 1906, staff or chain gages at site 350 ft upstream at different datum. Apr. 1, 1923, to Oct. 3, 1938, water-stage recorder at site 350 ft upstream at datum 4.48 ft higher; Oct. 4, 1938, to Apr. 17, 1939, at site 1,450 ft upstream at different datum; Apr. 18, 1939, to Sept. 6, 1956, at site 100 ft upstream at datum 3.00 ft higher; Sept. 7, 1956, to Oct. 26, 1959, at site 250 ft upstream at datum 3.00 ft higher.

Average discharge.--41 years (1923-64), 709 cfs (513,300 acre-ft per year).

Extremes.--Maximum discharge during year, 2,880 cfs May 24; maximum gage height, 5.76 ft June 9; minimum daily discharge, 120 cfs Dec. 11.

1904-6, 1918, 1923-64: Maximum daily discharge, 8,160 cfs July 15, 1929; maximum gage height, 13.1 ft Feb. 11, 1962, from floodmark in well (backwater from ice); minimum discharge, 52 cfs July 19, 20, 1934; minimum daily, 53 cfs July 19, 1934.

Remarks.--Records good except those for period of ice effect, which are poor. 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 Mar. 26 to Apr. 2, June 7 to July 3)

2.5	110	4.0	1,100
2.8	210	5.0	2,100
3.0	300	6.0	3,150
3.5	630		

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	230	295	290	300	320	340	1,070	466	1,870	1,100	392	295
2	226	300	280	300	320	340	950	522	1,660	990	438	280
3	226	295	280	280	320	340	910	522	1,590	870	452	255
4	222	438	* 220	280	320	* 320	630	543	1,760	737	431	242
5	222	350	220	260	* 300	320	543	480	1,790	678	445	246
6	206	* 345	230	260	300	320	522	438	1,780	646	480	238
7	218	330	240	* 240	300	320	445	438	1,860	606	566	459
8	222	320	240	260	320	320	473	424	2,050	508	543	238
9	* 206	320	200	280	320	320	445	431	2,570	* 487	501	218
10	194	320	150	260	340	320	494	438	* 2,140	459	424	214
11	190	325	120	260	340	320	424	417	1,810	515	362	202
12	186	325	180	240	340	340	424	487	1,970	515	340	194
13	186	320	240	240	340	340	466	543	2,000	480	392	182
14	194	315	180	260	320	360	424	* 582	2,020	566	386	204
15	206	310	240	260	320	360	380	764	2,100	466	345	295
16	226	320	300	260	320	400	392	1,110	1,810	452	335	214
17	234	335	300	280	340	500	466	1,370	1,950	410	543	206
18	238	335	280	300	340	550	529	1,670	2,040	392	380	226
19	238	295	280	300	340	550	480	1,940	1,940	392	* 410	218
20	270	295	260	300	340	550	431	* 2,070	1,570	380	543	275
21	265	315	260	300	340	600	445	2,280	1,380	345	459	300
22	305	330	260	300	340	543	* 410	2,450	1,340	320	404	295
23	300	340	280	280	320	494	398	2,640	1,370	310	368	300
24	290	335	280	280	320	515	386	2,700	* 1,210	555	356	300
25	285	320	300	280	320	466	431	2,500	1,080	305	330	300
26	300	340	300	280	320	424	487	2,640	1,060	290	305	300
27	300	315	300	280	320	424	480	2,670	1,080	285	305	295
28	275	305	300	280	340	438	473	2,470	1,040	285	300	300
29	285	325	280	300	340	452	452	2,250	1,070	260	310	310
30	285	305	260	300	-----	522	424	2,200	1,180	* 270	295	315
31	290	-----	280	300	-----	* 719	-----	2,000	-----	362	305	-----
Total	7,520	9,718	7,830	8,600	9,460	13,127	15,284	42,455	50,090	15,236	12,445	7,916
Mean	243	324	253	277	326	423	509	1,370	1,670	491	401	264
Ac-ft	14,920	19,280	15,530	17,060	18,760	26,040	30,320	84,210	99,350	30,220	24,680	15,700

Calendar year 1963: Max 1,720 Min 120 Mean 431 Ac-ft 312,200
Water year 1963-64: Max 2,700 Min 120 Mean 546 Ac-ft 396,100

Peak discharge (base, 2,900 cfs).--No peak above base.

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 4 to Mar. 21.

9-3399, East Fork San Juan River above Sand Creek, near Pagosa Springs, Colo.

Location.--Lat 37°23'25", long 106°50'25", in NE¼ sec.4, T.36 N., R.1 E., on right bank 0.3 mile upstream from Sand Creek, 4 miles upstream from West Fork San Juan River, and 13 miles northeast of Pagosa Springs.

Drainage area.--64.1 sq mi.

Records available.--October 1956 to September 1964. Prior to October 1959, published as San Juan River above Sand Creek, near Pagosa Springs.

Gage.--Water-stage recorder. Altitude of gage is 8,900 ft (from topographic map).

Average discharge.--8 years, 81.3 cfs (58,860 acre-ft per year).

Extremes.--Maximum discharge during year, 583 cfs May 24 (gage height, 4.94 ft); minimum daily determined, 4.5 cfs Nov. 18, 23. 1956-64: Maximum discharge, 1,210 cfs June 6, 1957 (gage height, 6.32 ft); minimum daily determined, 3.4 cfs Dec. 26, 1958. Maximum flood known occurred Oct. 5, 1911.

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)

2.5	5.0	3.6	116
2.8	18	4.0	210
3.0	33	4.5	390
3.3	68	5.0	610

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	14					28	85	160	58	92	31
2	* 16	14					24	85	149	51	111	27
3	16	14					19	70	151	47	129	22
4	15	14					16	* 75	160	44	* 96	18
5	15	* 14					14	71	195	41	79	23
6	14	14				8	13	65	231	39	69	26
7	14	14					12	63	261	* 37	62	28
8	14	13					12	59	237	41	67	22
9	14	13					14	72	* 190	42	68	* 23
10	14	12					16	98	195	40	62	22
11	13	12					24	125	200	53	63	20
12	13	12				b 7.5	36	158	195	67	129	18
13	13	12				b 8	36	202	185	75	268	19
14	13	11				9	44	210	175	90	178	25
15	13	11				9	65	250	172	67	142	30
16	13	12	9	8.5	8	8.5	90	314	170	75	118	30
17	13	b 5				8.5	80	354	153	68	98	24
18	13	b 4.5				9.5	60	374	134	59	84	23
19	20	b 5				11	46	350	125	51	75	22
20	27	b 6.5				11	42	* 338	116	47	85	22
21	20	7.8				10	46	366	107	42	68	31
22	18	8.2				10	65	426	96	41	60	33
23	16	b 4.5				9.5	95	444	90	43	53	30
24	15	b 6				9	100	466	84	53	48	25
25	14	9.0				8.5	85	452	76	54	44	28
26	14					9	65	439	69	45	41	29
27	14					9.5	65	426	65	42	39	34
28	13	10				9.5	85	374	63	40	36	30
29	13					11	95	300	63	37	33	29
30	13					15	85	234	67	43	30	28
31	15					24		185		64	28	
Total	464	312.5	279	263.5	232	295.0	1,477	7,530	4,334	1,596	2,555	772
Mean	15.0	10.4	9	8.5	8	9.52	49.2	243	144	51.5	82.4	25.7
Ac-ft	920	620	553	523	460	585	2,930	14,940	8,600	3,170	5,070	1,530

Calendar year 1963: Max 314 Min - Mean 50.4 Ac-ft 36,500
 Water year 1963-64: Max 466 Min - Mean 54.9 Ac-ft 39,900

Peak discharge (base, 500 cfs).--May 24 (1945) 583 cfs (4.94 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 26 to Mar. 11, Mar. 14 to May 4 (stage-discharge relation affected by ice during most of periods).

SAN JUAN RIVER BASIN

9-3400. East Fork San Juan River near Pagosa Springs, Colo.

Location.--Lat 37°22'00", long 106°53'30", in NW¼SW¼ sec.7, T.36 N., R.1 E., on right bank a quarter of a mile upstream from private highway bridge, half a mile upstream from West Fork, and 9.5 miles northeast of Pagosa Springs.

Drainage area.--86.9 sq mi.

Records available.--May 1935 to September 1964. Prior to October 1959, published as San Juan River near Pagosa Springs.

Gage.--Water-stage recorder. Datum of gage is 7,597.63 ft above mean sea level, datum of 1929. Prior to Sept. 8, 1938, at site a quarter of a mile downstream at different datum.

Average discharge.--29 years, 117 cfs (84,700 acre-ft per year).

Extremes.--Maximum discharge during year, 820 cfs May 24 (gage height, 3.69 ft); minimum daily, 8 cfs Dec. 14.

1935-64: Maximum discharge, 2,070 cfs May 12, 1941 (gage height, 4.84 ft), from rating curve extended above 1,300 cfs; minimum daily, 5.5 cfs Dec. 20, 1939.

Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation of a few hundred acres of hay meadows below station.

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

1.0	8	2.0	106
1.2	14	2.5	245
1.4	24	3.0	450
1.7	54	3.5	705

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	22	19	13	13	9.5	9.8	36	110	220	76	133	40
2	* 22	19	* 13	13	9.5	10	* 30	104	204	69	158	34
3	20	19	11	13	9.5	11	24	90	214	64	189	31
4	20	20	* 10	11	* 9.5	9.6	20	96	224	60	* 133	27
5	20	* 19	10	12	9.6	9.6	18	* 98	262	57	106	32
6	19	19	9.5	* 10	9.8	10	17	88	300	56	92	41
7	19	18	9	11	9.4	10	15	86	332	* 50	79	42
8	18	17	8.5	11	9.4	10	15	81	304	60	81	30
9	18	17	9	11	9.6	10	17	104	* 245	56	76	* 34
10	18	16	11	10	9.6	* 11	20	138	252	57	68	35
11	18	16	12	9.5	9.8	9.8	30	172	259	74	68	29
12	17	16	12	9.5	10	9.8	46	228	256	94	201	26
13	18	16	12	9	10	10	46	292	238	94	369	26
14	17		8	9	10	12	60	308	228	117	214	35
15	17		10	8.5	9.6	11	86	369	224	88	180	49
16	17		11	8.5	10	11	113	455	220	102	143	44
17	17		12	8.5	9.8	11	98	520	195	92	119	36
18	17		12	9.5	9.6	12	74	560	172	79	104	32
19	32		12	10	9.6	14	58	530	161	69	92	30
20	41		12	10	9.8	14	52	* 480	148	60	108	30
21	30		13	11	9.6	12	57	535	136	57	83	39
22	26	13	12	12	9.6	13	84	630	124	57	71	49
23	23		11	12	9.8	12	117	650	117	63	64	44
24	20		13	11	9.8	11	130	656	110	68	57	38
25	19		13	10	10	11	106	615	102	69	53	37
26	19		13	10	10	11	78	585	94	60	50	39
27	18		12	11	10	12	78	545	88	56	49	42
28	17		11	11	9.8	12	119	* 475	86	58	44	39
29	17		12	11	9.8	14	121	378	84	50	43	38
30	17		11	10	-----	20	110	296	88	57	39	37
31	20	-----	12	10	-----	30	-----	252	-----	92	38	-----
Total	633	452	350.0	326.0	282.0	373.6	1,875	10,526	5,687	2,161	3,304	1,085
Mean	20.4	15.1	11.3	10.5	9.72	12.1	62.5	340	190	69.7	107	36.2
Ac-ft	1,260	897	694	647	559	741	3,720	20,880	11,280	4,290	6,550	2,150

Calendar year 1963: Max 423 Min 8 Mean 67.0 Ac-ft 48,540
 Water year 1963-64: Max 656 Min 8 Mean 73.9 Ac-ft 53,670

Peak discharge (base, 600 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-17	2100	3.55	738	8-13	0400	† 3.57	705
5-24	2200	3.69	820				

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 14 to Dec. 2, Jan. 26 to Feb. 4 (stage-discharge relation affected by ice during part of period), Aug. 12, 13. Stage-discharge relation affected by ice Dec. 3 to Jan. 25, Mar. 18-21, 25-31, Apr. 1-4, 7-11, 13, 14.

† About.

9-3425. San Juan River at Pagosa Springs, Colo.

Location.--Lat 37°15'50", long 107°00'40", in S½ sec.13, T.35 N., R.2 W., on right bank at former bridge site in Pagosa Springs, 0.2 mile upstream from McCabe Creek, 0.6 mile downstream from bridge on U. S. Highway 160, and 2 miles upstream from Mill Creek.

Drainage area.--298 sq mi.

Records available.--October 1910 to December 1914, May 1935 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 7, 052.04 ft above mean sea level, datum of 1929. Jan. 29 to Mar. 6, 1911, staff gage at site half a mile upstream at different datum. Mar. 7 to Oct. 4, 1911, staff gage at present site at different datum. Nov. 23, 1911, to Nov. 14, 1914, staff gage at site 300 ft downstream at different datum.

Average discharge.--33 years, 369 cfs (267,100 acre-ft per year).

Extremes.--Maximum discharge during year, 2,240 cfs May 24 (gage height, 5.35 ft); minimum daily, 15 cfs Dec. 8. 1910-14, 1935-64: Maximum discharge, about 25,000 cfs Oct. 5, 1911 (gage height, 17.8 ft, from floodmarks), from velocity-area study; minimum daily, 9.7 cfs Oct. 5, 6, 1956. Maximum stage known, that of Oct. 5, 1911. Flood of June 29, 1927, reached a stage of 13.5 ft (discharge, about 16,000 cfs), 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 several thousand acres above station.

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

1.5	12	3.0	360
1.6	17	3.5	600
2.0	61	4.0	940
2.4	140	5.5	2,400

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

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Avg.	Sept.
1	56	54	41	40	29	31	197	338	618	149	243	85
2	* 54	56	41	39	29	34	122	320	590	128	465	74
3	51	54	* 38	40	29	35	* 87	255	612	118	540	67
4	50	59	* 36	34	29	31	75	279	648	109	374	61
5	47	* 59	37	38	* 28	31	69	* 275	811	101	* 307	67
6	46	57	35	b 28	28	35	65	243	940	97	251	81
7	46	56	32	*b 34	27	35	65	235	1,030	87	218	81
8	46	54	15	b 32	27	35	65	214	956	* 99	188	* 65
9	45	51	31	b 30	27	32	74	235	727	103	214	67
10	44	51	39	a 28	27	* 37	93	342	* 769	115	188	83
11	44	50	38	a 28	29	32	113	441	776	140	185	64
12	45	49	40	a 28	30	34	152	606	727	204	441	57
13	45	49	39	a 26	30	36	158	811	678	188	832	55
14	44	47	27	a 26	29	31	197	924	624	311	575	77
15	44	45	35	a 24	27	36	279	1,040	606	167	470	120
16	42	47	39	a 24	29	38	396	1,280	585	182	374	109
17	42	35	38	a 24	30	41	378	1,440	530	170	303	81
18	41	31	39	23	29	45	267	1,470	441	140	243	71
19	68	40	39	30	29	54	224	1,330	405	125	210	68
20	130	42	39	31	30	53	214	* 1,370	360	111	263	72
21	93	45	42	32	30	53	200	1,410	320	99	200	89
22	77	46	39	34	29	61	255	1,610	283	97	167	118
23	67	37	35	34	31	49	360	1,720	243	103	149	132
24	61	42	40	34	30	45	418	1,770	224	128	130	111
25	57	51	39	a 28	31	42	374	1,740	207	122	113	194
26	53	38	39	30	32	44	239	1,670	188	97	107	200
27	53	44	39	a 31	31	48	224	* 1,560	173	89	103	239
28	51	47	37	31	30	59	311	1,350	158	83	93	204
29	50	44	39	31	30	103	432	1,130	155	85	89	167
30	49	40	35	30	-----	143	311	908	170	81	83	149
31	56	-----	37	30	-----	176	-----	734	-----	130	77	-----
Total	1,697	1,420	1,139	958	846	1,559	6,414	29,050	15,554	3,958	8,195	3,108
Mean	54.7	47.3	36.7	30.9	29.2	50.3	214	937	518	128	264	104
Ac-ft	3,370	2,820	2,260	1,900	1,680	3,090	12,720	57,620	30,850	7,850	16,250	6,160

Calendar year 1963: Max 1,290 Min 15 Mean 187 Ac-ft 135,400
 Water year 1963-64: Max 1,770 Min 15 Mean 202 Ac-ft 146,600

Peak discharge (base, 1,500 cfs)--May 17 (2300) 1,980 cfs (5.12 ft); May 24 (2200) 2,240 cfs (5.35 ft).

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

SAN JUAN RIVER BASIN

9-3430. Rio Blanco near Pagosa Springs, Colo.

Location.--Lat 37°12'46", long 106°47'38", in center of sec.1, T.34 N., R.1 E., on right bank 40 ft downstream from highway bridge, 0.4 mile upstream from Leche Creek, 1½ miles downstream from Fish Creek, and 12.5 miles southeast of Pagosa Springs.

Drainage area.--58.0 sq mi.

Records available.--May 1935 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 7,950 ft (from topographic map).

Average discharge.--29 years, 83.9 cfs (60,740 acre-ft per year).

Extremes.--Maximum discharge during year, 1,140 cfs Aug. 13 (gage height, 3.33 ft); minimum daily, 7.5 cfs Jan. 15, 16.

1935-64: Maximum discharge, about 1,600 cfs July 26 or 27, 1957; maximum gage height, 4.12 ft June 18, 1949; minimum daily discharge, 3.0 cfs Oct. 10, 1956.

Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records good except those for periods of ice effect, no gage-height record, or indefinite stage-discharge relation, which are poor. Diversions for irrigation of about 350 acres above station.

Rating tables, except periods of ice effect or indefinite stage-discharge relation
(gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 16 to May 11, Aug. 2-12)

Oct. 1, to May 26		May 27 to Sept. 30			
1.3	8.0	0.8	20	1.5	153
1.4	15	1.0	37	2.0	375
1.5	27	1.2	68	2.5	640
1.7	75				

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	19	13	13	9.5	9.5	* 64	108	* 150	36	186	23
2	14	19	13	13	9.5	10	35	99	150	34	232	22
3	13	16	* 11	13	* 9.5	11	30	90	165	32	271	21
4	12	* 16	10	11	9.5	9.5	24	* 87	192	30	111	21
5	11	19	10	12	9	9.5	20	78	235	28	* 80	24
6	10	21	9	10	9	11	19	78	248	26	66	31
7	10	20	9	* 11	8.5	11	18	75	240	26	55	39
8	9.4	17	8.5	10	8.5	11	19	75	* 188	* 26	106	* 24
9	8.7	16	9	9.5	8.5	* 9	22	102	146	31	86	29
10	8.0	16	12	9	8.5	10	26	117	161	36	119	27
11	8.0	16	11	9	9	10	30	159	165	61	113	24
12	8.0	15	10	9	9.5	11	33	180	157	95	526	21
13	8.0	15	10	8.5	9.5	11	42	220	156	105	602	21
14	7.7	15	8	8	9	10	55	250	119	112	226	24
15	7.7	14	9.5	7.5	8.5	11	* 90	290	119	61	143	36
16	7.7	15	11	7.5	9	12	159	340	113	111	102	29
17	8.0	14	12	8	9.5	13	151	380	86	75	82	24
18	8.0	9.5	12	9	9.5	14	120	400	77	52	64	22
19	33	12	12	9.5	9.5	14	117	* 390	* 80	47	54	21
20	56	14	12	10	9.5	13	108	370	70	40	66	21
21	42	14	13	10	9.5	12	110	380	60	35	46	26
22	27	14	12	11	9.5	13	123	400	50	31	38	41
23	22	12	11	11	9.5	14	139	450	38	32	34	28
24	19	14	13	11	9	13	155	480	36	33	29	24
25	19	15	13	9	9.5	12	135	490	40	33	26	25
26	17	12	13	9.5	10	11	110	480	40	33	26	24
27	16	13	12	10	9.5	13	108	* 430	38	29	26	28
28	15	15	12	10	9	15	123	380	38	32	24	25
29	15	13	13	10	9	16	120	307	36	30	23	24
30	15	12	11	10	-----	26	102	231	36	31	22	22
31	16	-----	12	9.5	-----	55	-----	180	-----	89	22	-----
Total	485.2	452.5	347.0	308.5	267.0	420.5	2,407	8,096	3,409	1,472	3,606	771
Mean	15.7	15.1	11.2	9.95	9.21	13.6	80.2	261	114	47.5	116	25.7
Ac-ft	962	898	688	612	530	834	4,770	16,060	6,760	2,920	7,150	1,530

Calendar year 1963: Max 378 Min 7.5 Mean 53.2 Ac-ft 38,520

Water year 1963-64: Max 602 Min 7.5 Mean 60.2 Ac-ft 43,710

Peak discharge (base, 800 cfs)--Aug. 12 (0330) 1,040 cfs (3.22 ft); Aug. 13 (0615) 1,140 cfs (3.33 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 17-19, 23, 24, Nov. 26 to Jan. 14, Jan. 22 to Mar. 31, Apr. 3-11, 13-15, 21, 26. No gage-height record Jan. 15-21, May 22-27, June 19 to July 7. Stage-discharge relation indefinite May 12-21.

9-3440. Navajo River at Banded Peak Ranch, near Chrono, Colo.

Location.--Lat 37°05'07", long 106°41'20", in NW¼ sec.24, T.33 N., R.2 E., on left bank at downstream side of private bridge on Banded Peak Ranch, half a mile downstream from Aspen Creek, 4 miles downstream from East Fork, and 9 miles northeast of Chrono.

Drainage area.--69.8 sq mi.

Records available.--October 1936 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 7,940.6 ft above mean sea level (river-profile survey). Prior to Oct. 1, 1949, at datum 3.00 ft higher.

Average discharge.--28 years, 102 cfs (73,840 acre-ft per year).

Extremes.--Maximum discharge during year, 772 cfs May 22; maximum gage height, 3.78 ft Aug. 12; minimum daily discharge, 15 cfs Jan. 17. 1936-64: Maximum discharge, 1,340 cfs May 13, 1941 (gage height, 7.02 ft, present datum); minimum daily, 8.4 cfs Sept. 29, 1960, result of temporary blockage by channel alteration upstream. Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 430 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 10, Aug. 11 to Sept. 30)

0.8	16	2.3	185
1.3	50	3.0	405
1.8	100	3.5	640

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	* 29	29	22	24	19	20	* 41	118	154	64	148	22
2	29	29	22	24	19	22	32	96	154	62	135	38
3	31	29	* 24	24	* 20	22	30	82	170	57	* 192	36
4	29	* 32	24	25	21	20	29	* 88	203	55	120	36
5	28	30	24	24	20	20	29	92	254	52	101	38
6	28	29	26	22	20	22	29	92	276	* 41	92	38
7	27	29	24	* 24	17	21	28	94	295	32	80	41
8	27	29	20	22	18	22	28	94	* 237	44	92	* 37
9	27	28	22	20	18	* 22	29	122	187	52	89	40
10	24	27	25	18	19	23	32	143	201	56	96	38
11	22	27	24	19	19	22	34	177	194	69	93	36
12	23	27	24	19	20	22	36	257	179	92	193	35
13	24	26	22	18	20	23	38	326	166	101	251	34
14	27	26	18	17	21	22	48	358	151	82	183	36
15	27	26	20	16	18	22	71	405	147	63	128	40
16	27	26	20	16	19	23	100	468	131	61	101	38
17	26	23	22	15	19	24	92	500	120	60	86	35
18	26	20	24	16	19	24	68	450	112	56	78	34
19	40	23	24	18	19	25	62	* 417	104	56	69	34
20	48	23	24	19	19	24	58	409	98	56	70	35
21	42	24	26	19	19	24	67	476	92	56	63	41
22	38	26	25	20	18	25	82	540	84	53	55	43
23	34	22	22	20	19	22	96	525	75	61	52	39
24	33	24	22	19	18	24	106	530	70	56	48	36
25	32	25	22	18	19	24	90	505	73	56	48	36
26	32	22	24	18	21	24	67	535	72	58	47	35
27	32	24	24	19	19	26	64	476	70	53	46	42
28	32	24	22	19	19	24	94	* 389	68	59	42	37
29	31	24	24	19	19	28	108	298	67	52	36	36
30	30	22	22	18	18	32	100	224	66	57	30	35
31	32	---	24	18	---	36	---	177	---	106	---	---
Total	937	775	712	607	555	734	1,788	9,463	4,270	1,878	2,837	1,101
Mean	30.2	25.8	23.0	19.6	19.1	23.7	59.6	305	142	60.6	93.1	36.7
Ac-ft	1,860	1,540	1,410	1,200	1,100	1,460	3,550	18,770	8,470	3,720	5,730	2,180

Calendar year 1963: Max 369 Min 18 Mean 66.7 Ac-ft 48,280
 Water year 1963-64: Max 540 Min 15 Mean 70.2 Ac-ft 50,990

Peak discharge (base, 500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-17	2030	3.55	700	5-26	2100	3.60	736
5-22	2030	3.72	772	8-12	2315	3.78	688

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18, 23, 24, 26-30, Dec. 1-9, 12-20, 23-28, 30, 31, Jan. 1, 2, 6, 8-21, 24-31, Feb. 1-3, 5, 7-11, 15-25, 27-29, Mar. 1, 3-6, 9, 11, 12, 14, 15, 18, 20, 21, 23, 25, 26, 28-31. No gage-height record Aug. 28 to Sept. 1.

SAN JUAN RIVER BASIN

9-3443. Navajo River above Chromo, Colo.

Location.--Lat 37°01'55", long 106°43'56", in NE¼ sec.9, T.32 N., R.2 E., on right bank 5 ft downstream from private road bridge, 6 miles east of Chromo, and 7 miles upstream from Little Navajo River.

Drainage area.--96.4 sq mi.

Records available.--October 1956 to September 1964. Published as "near Chromo" 1956-58.

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

Average discharge.--8 years, 113 cfs (81,810 acre-ft per year).

Extremes.--Maximum discharge during year, 714 cfs May 17 (gage height, 5.18 ft); maximum gage height, 5.77 Feb. 5 (backwater from ice); minimum daily discharge determined, 16 cfs Oct. 9, 11, 12.

1956-64: Maximum discharge, 1,340 cfs June 7, 1957 (gage height, 5.95 ft); maximum gage height, 6.13 ft during period Feb. 1-8, 1957 (ice jam); minimum daily discharge, 6.4 cfs Sept. 2, 1962.

Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions above station for irrigation of about 750 acres above station and about 250 acres below.

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

3.3	15	4.0	110
3.5	34	4.3	220
3.8	68	5.0	630

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	* 30	33	26	26	20	22	* 58	160	160	58	168	20
2	27	32	26	26	20	24	45	125	152	54	137	36
3	27	31	* 24	26	* 22	24	40	105	176	52	* 196	37
4	27	* 30	24	28	22	22	38	* 110	208	48	119	34
5	26	31	26	26	20	22	37	113	275	48	88	36
6	25	31	28	24	19	24	35	113	295	* 42	76	36
7	23	31	26	* 26	19	26	33	119	315	30	71	41
8	17	31	22	24	20	26	33	116	* 280	39	83	* 36
9	16	32	24	22	22	* 26	35	172	200	46	82	40
10	17	31	26	20	24	24	39	188	220	52	82	38
11	16	31	26	22	24	24	42	230	225	72	88	35
12	16	31	24	22	24	24	47	305	212	94	192	34
13	20	30	22	20	24	25	47	380	200	98	319	33
14	22	31	20	19	22	24	59	404	184	82	196	35
15	24	31	22	18	20	24	* 90	446	180	62	140	40
16	24	32	22	18	22	24	137	488	160	56	100	39
17	25	31	24	17	22	24	122	524	148	53	83	35
18	25	24	24	18	20	26	90	506	140	50	71	33
19	34	26	24	20	20	28	80	* 458	* 128	48	64	32
20	52	26	26	22	22	26	76	446	119	42	67	33
21	47	28	28	22	22	26	82	482	108	38	60	40
22	42	30	28	22	22	29	108	574	98	40	55	43
23	40	26	26	22	22	27	131	554	83	48	51	39
24	38	28	24	22	24	27	148	542	71	48	47	36
25	37	29	24	20	26	28	125	524	68	45	45	36
26	35	26	24	20	26	26	85	536	65	51	44	36
27	35	28	24	22	24	26	82	500	60	48	42	41
28	34	28	24	22	22	26	119	* 422	62	51	40	38
29	34	28	26	22	22	34	148	338	60	45	33	36
30	34	24	24	22	-----	44	128	260	60	48	29	35
31	34	-----	26	22	-----	54	-----	200	-----	83	20	-----
Total	903	881	764	682	638	836	2,339	10,440	4,712	1,671	2,888	1,083
Mean	29.1	29.4	24.6	22.0	22	27.0	78.0	337	157	53.9	93.2	36.1
Ac-ft	1,790	1,750	1,520	1,350	1,270	1,660	4,640	20,710	9,350	3,310	5,730	2,150

Calendar year 1963: Max 404 Min - Mean 76.3 Ac-ft 55,260
 Water year 1963-64: Max 574 Min - Mean 76.1 Ac-ft 55,230

Peak discharge (base, 550 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-17	2130	5.18	714	8-13	0015	4.83	554
5-23	2100	5.17	707				

* Discharge measurement made on this day.
 Note.--Stage-discharge relation affected by ice Nov. 18-20, 23, 24, Nov. 26 to Mar. 12 (no gage-height record Dec. 14-16, 28-31, Jan. 1-4, 6-17, 23-31, Feb. 1-3, Feb. 8 to Mar. 9), Mar. 14-21, 25-28.

9-3460. Navajo River at Edith, Colo.

Location.--Lat 37°00'10", long 106°54'25", in NW¼ sec.24, T.32 N., R.1 W., on right bank 290 ft downstream from highway bridge, 0.15 mile southeast of Edith, 0.5 mile upstream from Colorado-New Mexico State line, and 1.3 miles upstream from Coyote Creek.

Drainage area.--172 sq mi.

Records available.--September 1912 to September 1964. Monthly or yearly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 7,033.00 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Jan. 1, 1929, staff gage at site 240 ft upstream at different datum. June 2, 1935, to June 27, 1941, water-stage recorder at sites 210 and 240 ft upstream at datum 2.0 ft higher. June 28, 1941, to June 20, 1961, at site 50 ft downstream at same datum.

Average discharge.--52 years, 157 cfs (113,700 acre-ft per year).

Extremes.--Maximum discharge during year, 750 cfs May 22 (gage height, 4.91 ft); maximum gage height, 5.43 ft Mar. 30 (ice jam); minimum daily discharge, 19 cfs Jan. 17, 1935-64; Maximum discharge, 2,840 cfs Apr. 23, 1942 (gage height, 6.55 ft), from rating curve extended above 1,100 cfs; minimum daily, 8 cfs Sept. 25, 1953. Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 1,700 acres above station.

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

Oct. 1 to Mar. 31		Apr. 1 to Sept. 30	
2.8	16	2.8	17
2.9	24	3.0	36
3.1	50	3.4	90
3.4	112	4.8	670

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	36	28	28	24	24	* 140	173	203	61	200	23
2	31	34	28	28	24	26	100	155	185	56	182	37
3	22	34	* 26	28	* 24	28	75	130	203	55	* 229	36
4	22	* 36	26	30	24	24	60	* 145	215	40	142	34
5	21	36	28	28	24	24	55	150	286	50	103	32
6	21	34	30	26	22	28	50	150	306	* 39	84	32
7	23	34	28	* 28	22	28	50	158	318	27	77	37
8	23	34	24	26	22	28	55	152	* 306	25	80	* 34
9	23	34	26	24	22	* 26	60	179	212	37	88	36
10	23	34	28	22	22	28	65	226	229	44	80	38
11	21	32	28	24	24	28	70	250	229	74	88	30
12	20	32	26	24	24	28	80	342	212	95	198	28
13	22	31	26	22	24	30	88	400	197	112	750	26
14	22	32	22	22	24	26	99	415	176	108	274	33
15	24	32	24	20	22	28	* 135	455	176	74	203	43
16	24	35	24	20	24	30	173	512	158	63	142	46
17	25	30	26	19	24	30	161	500	145	60	119	38
18	28	26	26	20	24	32	132	494	130	51	99	37
19	42	28	26	22	24	34	121	* 455	117	48	87	37
20	75	28	28	24	24	34	115	465	110	50	90	37
21	65	30	30	24	24	34	110	488	104	45	82	43
22	53	30	30	24	24	36	142	593	95	46	76	51
23	47	30	26	24	24	34	155	572	87	46	66	46
24	43	30	28	24	24	32	173	558	74	56	60	42
25	43	37	28	22	24	30	167	551	66	48	54	40
26	40	29	28	22	24	34	126	607	70	51	50	36
27	39	31	28	24	24	38	104	586	63	54	46	42
28	37	30	26	24	24	48	130	* 465	64	56	43	42
29	37	30	28	24	24	70	182	380	67	59	43	39
30	37	28	26	24	-----	100	140	302	64	52	35	37
31	39	-----	28	24	-----	120	-----	246	-----	79	31	-----
Total	1,023	957	834	745	684	1,140	3,313	11,254	4,867	1,761	3,501	1,112
Mean	33.0	31.9	26.9	24.0	23.6	36.8	110	363	162	56.8	113	37.1
Ac-ft	2,030	1,900	1,650	1,480	1,360	2,260	6,570	22,320	9,650	3,490	6,940	2,210

Calendar year 1963: Max 376 Min 20 Mean 86.5 Ac-ft 62,640
 Water year 1963-64: Max 607 Min 19 Mean 85.2 Ac-ft 61,860

Peak discharge (base, 600 cfa)--May 15 (2300) 686 cfs (4.83 ft); May 22 (2315) 750 cfs (4.91 ft).

* Discharge measurement made on this day.
 Note.--Stage-discharge relation affected by ice Nov. 19-22, Nov. 28 to Jan. 14, Feb. 4-26, Mar. 10-22, 29-31, Apr. 1. No gage-height record Jan. 15 to Feb. 3, Feb. 27 to Mar. 9, Mar. 23-28, Apr. 2-12 (stage-discharge relation affected by ice during most of periods).

SAN JUAN RIVER BASIN

9-3464. San Juan River near Carracas, Colo.

Location.--Lat 37°00'47", long 107°18'39", in SE $\frac{1}{4}$ SW $\frac{1}{4}$ 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, 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.

Cooperation.--Records furnished by New Mexico district.

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	a 650	774	a 1,300	260	790	139
2	116	122	87	90	70	90	540	727	a 1,100	226	1,300	139
3	111	127	80	95	70	90	301	603	a 1,100	211	1,400	132
4	100	126	62	80	65	80	232	581	a 1,150	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	a 1,150	267	518	160
12	78	120	75	80	70	80	438	1,170	a 1,100	366	1,200	130
13	80	116	80	80	70	90	390	1,560	a 1,050	468	2,060	114
14	76	112	55	75	70	100	441	1,870	a 950	564	1,470	114
15	82	110	50	70	65	90	591	1,840	a 900	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	a 2,900	278	197	183	306
28	125	98	85	70	70	212	522	a 2,500	260	205	176	335
29	118	108	95	70	70	a 400	954	a 2,000	246	211	163	272
30	120	94	80	70	-----	a 550	720	a 1,700	263	217	157	250
31	119	-----	80	70	-----	a 650	-----	a 1,400	-----	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	31,360	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.

9-3495. Piedra River near Piedra, Colo.

Location.--Lat 37°13'20", long 107°20'30", in NW¼ sec.17, T.34 N., R.4 W., on right bank 0.1 mile downstream from bridge on U. S. Highway 160, 0.4 mile upstream from Yellow Jacket Creek, and 1½ miles northwest of Piedra.

Drainage area.--371 sq mi.

Records available.--October 1911 to September 1912, October 1938 to September 1964. Monthly discharge only for some periods, published in WSP 1313. Published as "at Piedra" 1912.

Gage.--Water-stage recorder. Altitude of gage is 6,510 ft (from topographic map). Nov. 26, 1911, to July 22, 1912, staff gages near present site at different datums. Jan. 11, 1939, to Mar. 19, 1940, chain gage 0.3 mile upstream at different datum. Mar. 20, 1940, to May 9, 1941, water-stage recorder at site 2 miles upstream at different datum. May 10 to Sept. 27, 1941, chain gage and Sept. 28, 1941, to Sept. 18, 1962, water-stage recorder, 0.3 mile upstream at different datum.

Average discharge.--27 years, 313 cfs (226,600 acre-ft per year).

Extremes.--Maximum discharge during year, 1,840 cfs May 25 (gage height, 4.10 ft); minimum daily, 25 cfs Dec. 14. 1911-12, 1938-64: Maximum discharge not determined, occurred Oct. 5, 1911. Maximum discharge determined, 6,870 cfs July 26, 1957 (gage height, 8.60 ft, site and datum then in use), from rating curve extended above 2,800 cfs; minimum daily, 17 cfs Nov. 11, 1950. Maximum flood known, that of Oct. 5, 1911. Another major flood occurred June 29, 1927.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 2,220 acres above station. Also two small ditches divert water above station for irrigation below. Piedra Pass and Squaw Pass ditches (see elsewhere in this report) export small amount of water above station to Rio Grande basin.

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

1.1	36	2.3	290
1.3	56	2.8	560
1.7	125	3.8	1,490

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	* 107	65	40	40	34	34	140	275	518	107	188	82
2	97	61	42	40	34	38	110	298	518	87	571	80
3	93	61	40	38	34	36	* 100	275	511	77	568	69
4	91	* 66	* 36	36	34	36	95	294	478	68	390	65
5	83	66	38	34	* 32	36	89	* 298	592	64	* 380	66
6	80	64	34	34	32	38	93	287	600	61	281	87
7	77	62	32	36	30	36	80	269	672	56	263	77
8	74	62	26	* 34	32	36	72	254	680	* 54	254	71
9	71	60	32	36	32	34	69	251	511	57	233	75
10	69	61	38	32	32	36	91	294	* 525	172	221	138
11	68	59	36	32	32	* 38	123	380	532	119	239	* 97
12	65	57	38	32	34	38	233	532	490	111	266	82
13	62	55	36	30	32	40	245	680	448	132	472	69
14	61	54	25	28	32	38	294	738	395	182	360	91
15	60	53	32	28	32	36	345	846	380	150	284	188
16	59	55	36	28	30	40	365	1050	350	128	239	175
17	57	47	40	28	32	41	355	1170	314	138	212	130
18	59	39	40	30	34	45	281	* 1240	272	145	188	109
19	77	42	42	32	34	49	251	1010	* 242	119	172	99
20	138	48	42	34	34	42	251	1080	224	111	192	111
21	111	52	43	36	36	42	209	1080	198	97	175	113
22	93	54	40	38	36	46	230	1120	178	87	145	155
23	89	38	36	38	36	44	269	1290	158	93	128	160
24	82	38	44	36	38	44	298	1320	140	95	115	142
25	79	59	44	32	36	42	290	1420	130	97	105	148
26	75	40	40	34	36	40	239	* 1410	128	82	99	175
27	75	38	40	36	34	44	239	1230	121	79	111	180
28	72	47	38	36	34	55	269	1040	111	77	103	172
29	69	46	38	36	34	90	330	846	103	72	91	152
30	66	42	40	34	-----	120	275	664	97	82	82	148
31	62	-----	42	34	-----	130	-----	584	-----	168	77	-----
Total	2,421	1,591	1,170	1,052	972	1,464	6,330	23,525	10,616	3,167	7,204	3,506
Mean	78.1	53.0	37.7	33.9	33.5	47.2	211	759	354	102	232	117
Ac-ft	4,800	3,160	2,320	2,090	1,930	2,900	12,560	46,660	21,060	6,280	14,270	6,950

Calendar year 1963: Max 1,020 Min 25 Mean 175 Ac-ft 127,000
 Water year 1963-64: Max 1,420 Min 25 Mean 172 Ac-ft 125,000

Peak discharge (base, 1,300 cfs)--May 18 (0045) 1,720 cfs (4.00 ft); May 25 (0030) 1,840 cfs (4.10 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 23, 24, 26, 27, Dec. 1-20, Dec. 22 to Jan. 16, Feb. 6-10, Mar. 14, 15, 20, 21. No gage-height record Jan. 17 to Feb. 5, Feb. 11 to Mar. 11, Mar. 27 to Apr. 3 (stage-discharge relation affected by ice during part of periods).

SAN JUAN RIVER BASIN

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 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.

Cooperation.--Records furnished by New Mexico district.

Rating table, except periods 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 SW $\frac{1}{4}$ 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, 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 (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.

Cooperation.--Records furnished by New Mexico district.

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	*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.

SAN JUAN RIVER BASIN

9-3529. Vallecito Creek near Bayfield, Colo.

Location.--Lat 37°28'45", long 107°32'35", in NW¼ sec.16, T.37 N., R.6 W. (projected), on right bank 60 ft upstream from Fall Creek, 0.7 mile downstream from Bear Creek, 7 miles north of Vallecito Dam, and 18 miles north of Bayfield.

Drainage area.--72.1 sq mi.

Records available.--October 1962 to September 1964.

Gage.--Water-stage recorder and concrete control. Datum of gage is 7,906.08 ft above mean sea level, datum of 1929.

Extremes.--1962-63: Maximum discharge during water year, 1,130 cfs May 7 (gage height, 3.08 ft); minimum daily, 15 cfs Dec. 26.
 1963-64: Maximum discharge during water year, 1,230 cfs May 23 (gage height, 3.17 ft); minimum daily, 11 cfs for several days in January, February, March.
 Major floods occurred in October 1911 and June 1927.

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

Rating table, Oct. 1, 1962, to Sept. 30, 1964, except periods of ice effect
 (gage height, in feet, and discharge, in cubic feet per second)

0.5	12	1.6	145
.8	26	2.0	310
1.1	50	2.5	620
1.4	95	3.0	1,040

Discharge, in cubic feet per second, water year October 1962 to September 1963

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.		
1	50		35	b 20	* 18	16	145	123	340	97	34	204		
2			33	b 20	18	17	117	131	290	97	43	152		
3			34	b 22	22	17	b 90	* 196	224	* 102	55	* 128		
4			33	24	24	17	91	334	212	131	107	108		
5			* 31	24	24	b 17	90	472	224	113	110	117		
6					30	24	23	* 19	91	641	* 212	97	104	152
7					29	23	24	17	113	754	196	88	128	142
8					29	24	24	19	148	786	208	115	99	128
9					27	24	24	18	148	* 641	188	137	88	106
10					27	23	24	20	128	478	152	176	81	97
11	75	45	b 24	22	23	19	120	460	134	139	106	95		
12			26		22	19	156	436	156	134	104	86		
13			26		22	18	228	496	220	117	95	81		
14			* 24		* 20	18	300	430	270	99	81	113		
15			26		20	19	* 285	430	248	88	79	99		
16			26		18	18	208	585	212	79	81	90		
17			24		16	19	152	634	159	74	86	82		
18			24		16	19	123	592	166	68	82	90		
19			25		19	18	106	578	* 166	62	77	86		
20			22		18	20	95	557	173	58	86	95		
21	75	38	b 20	20	18	23	86	502	184	62	84	156		
22			b 22		17	31	77	472	180	91	90	123		
23			b 22		17	38	88	* 418	166	77	108	108		
24			38	b 20	18	46	120	370	152	68	115	95		
25			37	18	18	* 57	156	340	139	61	108	88		
26			* 36	b 15	18	74	142	340	134	56	139	81		
27			36	b 16	17	104	125	406	125	52	346	74		
28			34	b 17	17	115	110	412	117	47	208	68		
29			34	b 18		106	106	388	110	43	152	62		
30			35	b 19		113	113	* 108	382	99	* 39	145	58	
31	-----	*b 20	-----	-----	-----	131	-----	358	-----	36	-----	-----		
Total	1,950	1,270	762	650	559	1,202	4,052	14,142	5,556	2,703	3,409	3,164		
Mean	62.9	42.3	24.6	21.0	20.0	38.8	135	456	185	87.2	110	105		
Ac-ft	3,870	2,520	1,510	1,290	1,110	2,380	8,040	28,050	11,020	5,360	6,760	6,280		

Calendar year 1962: Max - Min - Mean - Ac-ft -
 Water year 1962-63: Max 786 Min 15 Mean 108 Ac-ft 78,190

Peak discharge (base, 1,000 cfs).--May 7 (1900) 1,130 cfs (3.08 ft).

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

Note.--No gage-height record Oct. 1 to Nov. 21, Jan. 12 to Feb. 1, Feb. 25-28.

9-3529. Vallecito Creek near Bayfield, Colo.--Continued

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	55	29	24	17	12	11	20	82	176	* 128	240	55
2	51	30	22	17	12	12	18	95	196	123	240	61
3	* 48	31	22	17	12	12	17	81	200	113	200	50
4	46	32	* 22	15	12	11	16	79	240	110	176	* 45
5	43	32	21	16	12	11	16	76	328	104	156	47
6	41	31	20	14	12	12	16	71	358	95	137	47
7	38	32	19	13	11	12	16	* 65	442	93	123	64
8	37	31	14	* 14	12	12	* 15	60	352	95	110	51
9	36	31	20	13	12	12	16	58	275	102	137	65
10	34	30	20	15	12	12	18	77	370	120	113	82
11	34	29	19	15	12	12	18	120	388	224	110	64
12	32	27	17	13	11	* 12	22	166	* 412	204	* 170	56
13	31	27	16	12	12	12	21	275	340	212	328	52
14	31	27	17	12	12	12	25	340	328	204	224	84
15	30	* 27	16	13	11	13	38	454	376	180	173	137
16	29	28	19	14	12	12	60	592	346	184	139	125
17	29	22	20	13	11	12	68	* 676	265	192	125	108
18	29	24	20	a 12	12	14	55	648	212	173	104	97
19	38	25	20	a 12	12	15	48	669	220	137	93	90
20	47	24	19	13	12	14	44	810	224	115	106	90
21	44	26	19	13	12	15	41	770	220	102	91	90
22	42	26	17	13	12	13	50	786	196	99	77	104
23	39	24	17	13	11	12	72	794	184	91	70	131
24	38	26	17	11	11	12	82	802	184	93	64	123
25	37	27	18	11	12	13	71	746	166	113	58	125
26	36	23	17	12	11	16	57	746	148	99	57	131
27	35	24	17	12	11	15	56	* 557	145	91	66	123
28	34	25	17	12	12	15	60	436	139	84	60	115
29	33	22	17	* 12	11	16	82	346	137	99	55	113
30	32	24	17	13	-----	18	72	240	134	113	51	97
31	34	-----	17	12	-----	12	-----	196	-----	134	47	-----
Total	1,163	816	577	414	339	409	1,210	11,913	7,701	4,026	3,500	2,622
Mean	37.5	27.2	18.6	13.4	11.7	13.2	40.3	384	257	130	126	87.4
Ac-ft	2,310	1,620	1,140	821	672	811	2,400	23,630	15,270	7,990	7,740	5,200

Calendar year 1963: Max 786 Min 14 Mean 104 Ac-ft 75,360
 Water year 1963-64: Max 810 Min 11 Mean 95.9 Ac-ft 69,600

Peak discharge (base, 1,000 cfs).--May 23 (2015) 1,230 cfs (3.17 ft).

* Discharge measurement made on this day.

a No gage-height record.

Note.--Stage-discharge relation affected by ice Dec. 12-16, Jan. 4-9, 28, 29, Feb. 12, 15, 17-19, 21-24, 26-29, Mar. 1, 9, 11, 14, 15, 20, 21, 25, 26, 28.

SAN JUAN RIVER BASIN

9-3530, Vallecito Reservoir near Bayfield, Colo.

Location.--Lat 37°23'00", long 107°34'30", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.18, T.36 N., R.6 W., in gatehouse above outlet gates at Vallecito Dam on Los Pinos (Pine) River, 300 ft left of spillway, a quarter of a mile upstream from Little Red Creek, and 11 miles northeast of Bayfield.

Records available.--April 1941 to September 1964.

Gage.--Float gage read once a day. Datum of gage is 7,580 ft above mean sea level (Bureau of Reclamation bench mark); gage readings have been reduced to elevations above mean sea level.

Extremes.--Maximum contents observed during year, 73,880 acre-ft June 16 (elevation, 7,644.02 ft); minimum observed, 27,180 acre-ft Oct. 22-24 (elevation, 7,617.84 ft).

1941-64: Maximum contents observed, 128,200 acre-ft July 27, 1957 (elevation, 7,665.72 ft); minimum observed, 1,520 acre-ft Oct. 24, 25, 1944 (elevation, 7,584.10 ft). No usable storage prior to April 1941.

Remarks.--Reservoir is formed by an earth- and rock-fill dam; dam completed in March 1941. Capacity of reservoir, 126,300 acre-ft between elevations 7,580 (sill of outlet gate) and 7,665 ft (top of spillway gates). Dead storage, 3,395 acre-ft. Figures given herein represent usable contents. Reservoir is used to store water for irrigation in Los Pinos (Pine) River basin.

Cooperation.--Records furnished by Bureau of Reclamation.

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.....	7,625.29	37,720	-
Oct. 31.....	7,618.18	27,610	-10,110
Nov. 30.....	7,619.97	29,950	+2,340
Dec. 31.....	7,620.75	31,020	+1,070
Calendar year 1963.....	-	-	-19,320
Jan. 31.....	7,621.08	31,470	+450
Feb. 29.....	7,621.34	31,840	+370
Mar. 31.....	7,621.75	32,420	+580
Apr. 30.....	7,624.78	36,920	+4,500
May 31.....	7,642.95	71,490	+34,570
June 30.....	7,640.75	66,700	-4,790
July 31.....	7,630.95	47,290	-19,410
Aug. 31.....	7,630.02	45,630	-1,660
Sept. 30.....	7,622.27	33,160	-12,470
Water year 1963-64.....	-	-	-4,560

[†] Elevation at 0800.

9-3535. Los Pinos River near Bayfield, Colo.
(Locally known as Pine River)

Location.--Lat 37°23'00", long 107°34'30", in SW¼ sec.18, T.36 N., R.6 W., on left side of outlet flume from Vallecito Reservoir, a quarter of a mile upstream from Little Red Creek, 2 miles upstream from Red Creek, and 11 miles north of Bayfield.

Drainage area.--270 sq mi, approximately.

Records available.--October 1927 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder and concrete weir. Datum of gage is 7,582.54 ft above mean sea level (Bureau of Reclamation bench mark). Oct. 26, 1927, to Aug. 17, 1956, at sites 2½ miles downstream with datum of gage at 7,415.58 ft above mean sea level, adjustment of 1912, prior to July 8, 1934, and at 7,415.08 ft above mean sea level July 9, 1934, to Aug. 17, 1956. Since Aug. 18, 1956, supplementary water-stage recorder at former site 2½ miles downstream for use when upper spillway at Vallecito Reservoir is operating.

Average discharge.--37 years, 346 cfs (250,500 acre-ft per year).

Extremes.--Maximum discharge during year, 659 cfs June 23-25 (gage height, 2.08 ft); minimum daily, 27 cfs Apr. 6-22.
1927-64: Maximum discharge, 13,800 cfs July 27, 1957 (gage height, 12.2 ft, from floodmarks at supplementary gage), from rating curve extended above 2,500 cfs on basis of slope-area measurement of peak flow (result of automatic spillway gates releasing from Vallecito Reservoir); minimum daily, 3.2 cfs Feb. 11, 1951 (result of storage in Vallecito Reservoir); minimum daily prior to construction of Vallecito Reservoir, 38 cfs Dec. 21, 22, 1937.
Maximum flood known prior to construction of Vallecito Reservoir occurred Oct. 5, 1911.

Remarks.--Records good. Flow regulated by storage in Vallecito Reservoir (see preceding page). Transmountain diversions above station by Raber-Lohr and Fuchs ditches (see elsewhere in this report).

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

0.2	18	1.0	205
.3	31	1.5	393
.4	49	2.0	618
.7	115	3.0	1,200

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	318	35	35	35	35	35	38	28	654	642	465	482
2	318	35	35	35	35	35	38	28	654	649	430	496
3	337	35	35	35	35	35	38	28	654	644	291	491
4	393	35	35	35	35	35	47	55	633	638	199	487
5	414	35	35	35	35	35	42	72	618	638	167	487
6	414	35	35	35	35	35	27	72	618	633	170	482
7	409	35	35	35	35	36	27	* 72	618	628	192	478
8	405	35	35	35	35	36	27	72	613	628	192	478
9	401	35	35	35	35	36	27	108	613	628	192	469
10	401	35	35	35	35	36	27	128	608	623	192	465
11	401	35	35	35	35	36	27	158	628	608	222	469
12	397	35	35	35	35	38	27	240	644	584	247	465
13	393	35	35	35	35	38	27	264	644	570	195	465
14	393	35	35	35	35	38	27	268	649	551	173	434
15	389	35	35	35	35	38	27	294	649	536	173	393
16	385	35	35	35	35	38	27	326	649	522	173	373
17	349	35	35	35	35	38	27	345	649	522	173	353
18	306	* 35	35	35	35	38	27	385	649	522	186	334
19	247	35	35	35	35	38	27	460	649	518	264	326
20	212	35	35	35	35	38	27	500	649	518	291	326
21	170	35	35	35	35	38	27	527	644	509	349	326
22	115	35	35	35	35	38	27	580	649	500	397	326
23	100	35	35	35	35	38	28	644	652	496	422	306
24	77	35	35	35	35	38	28	649	659	496	460	272
25	64	35	35	35	35	38	28	654	659	491	460	258
26	64	35	35	35	35	38	28	633	654	491	447	247
27	64	35	35	35	35	38	28	623	654	491	456	247
28	62	35	35	35	35	38	28	628	654	491	422	247
29	45	35	35	35	35	38	28	638	649	487	422	247
30	35	35	35	35	-----	38	28	654	649	487	465	247
31	35	-----	35	35	-----	38	-----	654	-----	482	460	-----
Total	9,113	1,050	1,085	1,085	1,015	1,150	886	10,787	19,272	17,230	9,347	11,476
Mean	262	35.0	35.0	35.0	35.0	37.1	29.5	348	642	556	302	383
Ac-ft	16,090	2,080	2,150	2,150	2,010	2,280	1,760	21,400	38,230	34,180	18,540	22,760

Calendar year 1963: Max 633 Min 35 Mean 253 Ac-ft 183,000
Water year 1963-64: Max 659 Min 27 Mean 225 Ac-ft 163,600

* Discharge measurement made on this day.

SAN JUAN RIVER BASIN

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 and 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 I733.

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.

Cooperation.--Records furnished by New Mexico district.

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.

Cooperation.--Records furnished by New Mexico district.

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	1.2	22	0.6	4.5	1.5	51
.7	2.6	1.6	54	.8	10	2.0	100
.8	4.6	2.0	98	1.1	24	2.6	191
1.0	12	2.2	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	28	9.6	5	5	3.5	2.5	3.4	8.4	4.3	4.2	4.3	3.7
2	27	9.6	5	5	3.5	2.5	5.2	7.0	4.3	3.9	7.0	3.8
3	26	9.6	5	5	3	2.5	6.1	5.5	4.4	3.6	1.83	3.9
4	29	9.9	5	4	3	2.5	5.8	4.6	4.6	3.7	a30	3.5
5	35	9.6	5	4	3	3	4.4	4.4	4.1	4.5	a15	3.8
6	39	9.2	5	4	3	3	12	4.6	3.6	4.4	a10	4.1
7	34	8.4	5	4	2.6	3	15	4.6	3.6	3.5	a8	4.6
8	34	8.4	4	4	2.5	3	12	4.9	3.6	3.5	a7.5	4.5
9	31	7.9	4.5	3	3	2.5	5.8	6.1	3.1	4.4	a7.5	5.2
10	32	7.9	4.6	3	3.5	3	5.8	5.5	3.2	5.1	a7	5.6
11	31	9.2	4.9	2.5	3.5	3	5.2	7.6	3.2	7.0	a7	4.9
12	32	8.4	4	2	3.5	4	5.5	6.7	3.3	7.2	156	4.6
13	34	8.4	3.5	2	3	3.5	3.2	17	3.9	5.6	52	4.7
14	35	8.8	3	2	3	4.2	2.3	21	3.9	4.9	a20	5.8
15	35	8.8	3	2	2.5	4.6	2.6	19	3.5	5.4	a12	6.5
16	38	11	3	a2	2.5	5.5	3.6	17	3.3	4.8	a8	4.9
17	45	11	3	a2	2.5	7	3.6	17	3.4	4.7	7.1	4.2
18	40	10	3	a2	2.6	10	4.6	16	3.6	4.4	6.8	3.8
19	112	8.8	3.2	a2	2.8	10	7.0	16	3.8	4.2	13	4.1
20	122	5.2	3.8	a2	3.0	8	4.2	20	3.5	4.2	15	4.3
21	35	5.5	4.0	2.5	2.5	6	3.2	21	3.0	3.6	15	5.6
22	20	7.0	3.8	3	2.3	5	2.3	21	3.3	3.5	15	5.3
23	a10	7.9	3.6	2.5	2.5	4.2	2.2	21	3.4	4.0	22	3.8
24	12	7.0	3.2	2	2.5	3.8	2.0	26	3.2	2.6	25	3.5
25	16	7.3	4.0	2	2.5	4.0	9.9	25	3.1	3.3	31	3.5
26	a12	8.4	4.2	2.5	2.5	5.5	3.8	28	3.2	3.1	31	3.4
27	a8	6.7	4.6	2.7	2.5	4.4	3.4	28	3.4	3.1	3.6	3.1
28	a5	6.1	4.2	3	2.5	4.2	2.2	26	3.9	2.8	3.5	3.1
29	a4	5.2	4.6	3.5	2.5	3.6	3.4	28	3.7	2.5	3.4	2.9
30	4.0	5	5	3.5	---	3.6	6.4	31	3.9	2.6	3.3	2.8
31	4.6	---	5	3.5	---	3.4	---	4.3	---	3.7	4.0	---
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.

9-3575. Animas River at Howardsville, Colo.

Location.--Lat 37°50'00", long 107°36'00", in sec.12, T.41 N., R.7 W., on right bank 1,000 ft downstream from bridge on State Highway 110, 0.4 mile southwest of Howardsville, and half a mile downstream from Cunningham Creek.

Drainage area.--55.9 sq mi.

Records available.--October 1935 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 9,616.98 ft above mean sea level, adjustment of 1912. Prior to Aug. 18, 1939, at datum 1.00 ft higher.

Average discharge.--29 years, 104 cfs (75,290 acre-ft per year).

Extremes.--Maximum discharge during year, 833 cfs May 21 (gage height, 3.31 ft); minimum daily, 9 cfs Feb. 15, Mar. 9.
1935-64: Maximum discharge, 1,980 cfs June 18, 1949, from rating curve extended above 950 cfs; maximum gage height, 5.24 ft Feb. 18, 1958 (backwater from snowslide); minimum daily discharge, 9 cfs Jan. 10, 1957, Feb. 15, Mar. 9, 1964.
Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records good except those for periods of ice effect, 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)

0.7	7.0	1.7	100
.9	15	2.1	205
1.1	27	2.5	365
1.4	55	3.0	630

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	29	18	14	14	12	11	14	44	178	190	98	* 37
2	29	18	* 16	15	12	* 10	13	40	* 199	181	77	33
3	29	18	14	14	* 12	10	13	32	199	175	68	31
4	28	19	14	12	11	11	13	28	233	163	62	29
5	26	19	14	14	11	11	13	26	312	157	* 62	29
6	25	19	14	12	10	11	12	24	378	* 142	58	29
7	24	19	13	13	10	11	12	23	465	128	53	29
8	24	18	12	12	10	10	11	* 24	352	116	50	28
9	24	18	13	11	10	3	12	25	308	106	46	29
10	* 24	18	14	12	10	10	13	33	455	102	44	28
11	23	18	14	13	10	10	13	48	475	108	45	26
12	23	* 18	13	13	10	10	14	65	470	97	53	25
13	22	18	12	* 12	10	10	14	112	435	92	78	25
14	21	18	11	10	9.5	9.5	15	163	425	90	65	29
15	20	18	13	11	9	10	17	233	* 470	88	56	31
16	20	17	14	12	10	9.8	20	316	425	93	56	30
17	20	16	14	12	11	12	20	365	365	93	53	28
18	20	15	14	13	12	11	19	420	300	98	47	28
19	23	15	14	13	11	10	19	485	316	78	47	29
20	26	16	14	12	10	10	19	552	334	71	58	29
21	25	16	13	12	11	10	20	* 618	312	80	47	33
22	24	16	12	13	11	9.5	23	618	284	82	44	33
23	23	14	13	13	11	10	28	612	272	77	41	33
24	23	13	14	11	11	11	30	624	280	74	39	30
25	22	15	15	12	10	11	25	606	248	64	38	33
26	22	15	14	12	11	10	21	* 612	222	56	39	40
27	21	14	13	12	11	10	21	450	222	54	47	41
28	20	15	13	12	11	10	26	356	216	60	40	40
29	20	15	14	11	11	11	30	296	199	62	39	42
30	20	14	13	11	-----	* 12	34	222	187	56	36	41
31	21	-----	14	11	-----	14	-----	199	-----	62	36	-----
Total	721	500	419	380	308.5	324.8	554	8,271	9,536	3,085	1,622	948
Mean	23.3	16.7	13.5	12.3	10.6	10.5	18.5	267	318	99.5	52.3	31.6
Ac-ft	1,430	992	831	754	612	644	1,100	16,410	18,910	6,120	3,220	1,880

Calendar year 1963: Max 460 Min 11 Mean 72.6 Ac-ft 52,580
Water year 1963-64: Max 624 Min 9 Mean 72.9 Ac-ft 52,900

Peak discharge (base, 700 cfs).--May 21 (2015) 833 cfs (3.31 ft); June 15 (1830) 728 cfs (3.17 ft).

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 17-19, Nov. 22 to Feb. 11 (no gage-height record Nov. 25 to Dec. 2, Jan. 10 to Feb. 3), Feb. 13 to Mar. 1, Mar. 3-9, 11, 12, 14, 15, 17, 18, 20-30, Apr. 8, 9.

9-3610. Hermosa Creek near Hermosa, Colo.

Location.--Lat 37°25'20" (revised), long 107°50'40" (revised), in NW¼ sec.3, T.36 N., R.9 W., on right bank 20 ft downstream from private bridge, 1 mile northwest of Hermosa, and 2 miles upstream from mouth.

Drainage area.--172 sq mi.

Records available.--November and December 1911 (gage heights and discharge measurements only), January 1912 to September 1914, October 1919 to September 1928, October 1939 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 6,705.88 ft above mean sea level, datum of 1929. Prior to September 1914, staff gage and April 1920 to September 1928, water-stage recorder (staff or chain gages for short periods), within half a mile at different datums.

Average discharge.--36 years, 139 cfs (100,600 acre-ft per year).

Extremes.--Maximum discharge during year, 706 cfs May 26 (gage height, 2.82 ft); minimum daily determined, 10 cfs Dec. 8, 14. 1912-14, 1919-28, 1939-64: Maximum discharge, 2,980 cfs May 12, 1941 (gage height, 6.02 ft); maximum gage height, 8.50 ft Sept. 12, 1927, from floodmarks, site and datum then in use; minimum daily discharge, 4.0 cfs Dec. 9, 1956.

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

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

0.5	13	1.7	210
.8	33	2.0	320
1.0	52	3.0	810
1.3	98		

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

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Avg.	Sept.
1	24	23	16	16			60	103	214	55	70	31
2	24	20	16	16			51	110	207	* 49	82	30
3	* 24	20	14	16			34	93	210	46	91	28
4	24	21	13	14			27	103	224	43	133	27
5	24	* 23	15	13			25	98	245	43	94	27
6	24	23	* 14	11	(*)		23	94	256	41	* 74	29
7	24	21	13	13			21	84	266	39	74	36
8	22	22	10	13			19	* 80	234	38	69	28
9	22	23	11	12			19	89	195	39	63	28
10	22	23	15	11		15	24	120	195	42	60	31
11	23	21	14				25	192	183	40	71	27
12	23	21	15				47	252	* 168	44	171	24
13	22	20	15				50	304	153	48	212	24
14	22	21	10				* 64	352	136	57	150	32
15	22	21	13				133	* 336	128	49	112	39
16	22	22	14				192	476	120	52	91	31
17	21	18	14				165	520	112	49	77	27
18	21	16	14				110	520	103	49	66	25
19	24	20	15			(*)	70	505	91	41	58	25
20	34	16	15			17	67	520	85	38	63	27
21	36	17	16				17	74	505	80	37	25
22	33	17	15				18	130	555	74	37	36
23	31	14	13				19	159	565	69	41	34
24	29	18	15				18	153	535	66	44	29
25	28	21	15				17	98	* 530	62	38	27
26	27	14	15				* 16	75	610	59	40	30
27	25	15	* 15				14	67	560	57	39	31
28	24	16	14			(*)	14	105	440	56	42	27
29	24	16	14				15	162	356	59	45	34
30	23	15	14				20	98	288	59	38	25
31	25	-----	14	(*)	-----	40	-----	248	-----	67	* 31	-----
Total	771	578	436	387	348	510	2,347	10,143	4,166	1,378	2,318	864
Mean	24.9	19.3	14.1	12.5	12	16.5	78.2	327	139	44.5	74.8	28.8
Ac-ft	1,530	1,150	865	768	690	1,010	4,660	20,120	8,260	2,730	4,600	1,710

Calendar year 1963: Max 427 Min 10 Mean 59.6 Ac-ft 43,170
 Water year 1963-64: Max 610 Min - Mean 66.2 Ac-ft 48,090

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

* Discharge measurement made on this day.
Note.--No gage-height record Oct. 4-10, Dec. 27 to Jan. 3, Jan. 11 to Mar. 19, Mar. 25, 26 (stage-discharge relation affected by ice most of winter period). Stage-discharge relation affected by ice Nov. 18, 20-24, Nov. 26 to Dec. 26, Jan. 4-10, Mar. 20-22, 30, 31, Apr. 1.

SAN JUAN RIVER BASIN

9-3612. Falls Creek near Durango, Colo.

Location.--Lat 37°22'00", long 107°52'00", in SW¼ sec.21, T.36 N., R.9 W., on right bank 1.2 miles upstream from mouth and 6.5 miles north of Durango.

Drainage area.--7.18 sq mi.

Records available.--October 1959 to September 1964.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,120 ft (from topographic map).

Average discharge.--5 years, 1.35 cfs (977 acre-ft per year).

Extremes.--Maximum discharge during year, 7.4 cfs Mar. 31 (gage height, 3.58 ft); minimum daily, 0.1 cfs for many days.
1959-64: Maximum discharge, 23 cfs May 13, 1960 (gage height, 3.95 ft); minimum daily, 0.1 cfs for many days in most years.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Small diversions above station for irrigation of meadows.

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

3.1	0.1
3.2	.7
3.3	1.6
3.5	4.6
3.6	7.1

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	0.2	0.2	0.1		0.1	2.3	1.6	2.2	0.7	0.5	0.1
2	.2	.2	.2	.1		.1	1.2	1.7	2.0	*.7	.5	.1
3	*.2	.2	.2	.1		.1	.7	1.7	2.0	.6	.3	.1
4	.2	.3	.2	.1		.1	.5	1.9	1.7	.6	.3	.1
5	.2	*.7	.2	.1		.1	.3	1.7	1.6	.6	.3	.1
6	.2	.2	*.1	.1		.1	.2	1.7	1.5	.6	*.3	.1
7	.2	.2	.1			.1	.2	1.6	1.5	.6	.3	.1
8	.2	.2	.1			.1	.4	1.6	1.3	.6	.3	.1
9	.2	.2	.1			.2	1.0	1.6	1.3	.6	.3	.1
10	.2	.2	.1			.2	.6	1.9	1.3	.5	.3	.1
11	.2	.1	.2			.2	.4	2.2	1.2	.5	.3	.1
12	.3	.1	b.2			.2	.8	2.4	*1.2	.5	.7	.1
13	.3	.1	.2			.2	.6	2.7	1.1	.5	*.7	.1
14	.3	.1	b.2			.2	*1.3	3.5	1.0	.5	.3	.3
15	.3	.1	b.1			.2	2.0	*4.1	1.0	.6	.3	.2
16	.3	.2	.2			.2	2.6	4.4	1.0	.5	.3	.2
17	.3	.2	.1	.1		.2	1.9	4.8	1.0	.5	.3	.2
18	.2	.2	.1			1.1	1.4	4.8	1.0	.5	.2	.2
19	.2	.2	.1			.6	.8	4.4	.9	.5	.2	.2
20	.3	.2	.1			(*)	.7	4.4	.9	.4	.3	.2
21	.2	.2	.1			.9	*1.2	4.1	.9	.3	.2	.2
22	.2	.2	.1			.3	1.6	4.0	.7	.3	.2	.2
23	.2	.2	b.1			.2	1.9	3.8	.7	.3	.2	.2
24	.2	.2	.1			.2	1.6	3.5	.7	.3	.2	.2
25	.2	.2	.1			.1	1.2	3.0	.7	.3	.2	.2
26	.2	.2	.1			.1	1.2	3.3	.7	.3	.2	.2
27	.2	.2	*.1	(*)		*.1	1.3	3.2	.7	.3	.2	.2
28	.2	.2	.1			b.1	1.6	2.9	.7	.3	.2	.2
29	.2	.2	.1	*.1		.1	.2	2.2	.7	.3	.2	.2
30	.2	.2	.1	.1		1.1	1.5	2.3	.7	.3	.2	.2
31	.2	-----	.1	.1		2.0	-----	2.4	-----	.3	*.2	-----
Total	7.0	5.6	4.1	3.1	2.9	10.2	35.2	89.8	33.9	14.4	9.2	4.8
Mean	0.23	0.19	0.13	0.1	0.1	0.33	1.17	2.90	1.13	0.46	0.30	0.16
Ac-ft	14	11	8.1	6.1	5.8	20	70	178	67	29	18	9.5

Calendar year 1963: Max 4.1 Min 0.1 Mean 0.65 Ac-ft 469
Water year 1963-64: Max 4.8 Min 0.1 Mean 0.60 Ac-ft 436

Peak discharge (base, 12 cfs).--No peak above base.

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Jan. 7-28, Feb. 1-26 (stage-discharge relation affected by ice during part of period).

9-3614. Junction Creek near Durango, Colo.

Location.--Lat 37°20'05", long 107°54'30", in sec.36, T.36 N., R.10 W., on left bank 4½ miles upstream from mouth and 4½ miles northwest of Durango.

Drainage area.--26.3 sq mi.

Records available.--October 1959 to September 1964.

Gage.--Water-stage recorder. Datum of gage is 7,045.65 ft above mean sea level (Bureau of Reclamation bench mark).

Average discharge.--5 years, 15.1 cfs (10,930 acre-ft per year).

Extremes.--Maximum discharge during year, 213 cfs Aug. 12 (gage height, 3.91 ft); maximum gage height, 3.95 ft Jan. 13 (backwater from ice); minimum daily discharge, 0.9 cfs Dec. 8.

1959-64: Maximum discharge, about 230 cfs May 13, 1960 (gage height not determined); maximum gage height, 4.95 ft Dec. 14, 1961 (backwater from ice); minimum daily discharge, 0.9 cfs Sept. 3-5, 10-13, 18, 1962, Dec. 8, 1963.

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

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Dec. 28, 29, Feb. 28, 29, Mar. 1, Aug. 11-15)

Oct. 1 to Aug. 10				Aug. 11 to Sept. 30			
2.4	1.2	3.3	44	2.3	1.7	3.4	61
2.6	5.5	3.6	80	2.5	5.5	3.7	106
2.8	11	4.0	155	2.7	11	4.0	185
3.0	20			3.0	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	4.4	2.6	1.6	2.4		1.6	8.5	25	30	7.2	15	4.7
2	4.1	2.6	1.8	2.4			9	26	29	* 7.0	32	4.1
3	* 3.9	2.4	1.8	2.6			8.3	23	32	6.5	24	3.9
4	3.7	2.6	1.6	2.0			7.5	23	37	6.2	18	3.7
5	3.7	* 2.6	1.6	2.0			7.5	23	38	6.0	14	3.9
6	3.7	2.6	1.6	1.6	1.4		7.2	23	38	5.3	* 14	4.1
7	3.4	2.6	1.4	1.8			6.8	20	37	5.3	12	4.1
8	3.0	2.6	0.9	1.6			6	18	31	5.3	11	3.7
9	3.0	2.4		1.6			6.0	21	26	5.0	12	4.3
10	3.0	2.4		1.6			6.2	32	25	5.5	15	4.1
11	3.0	2.2		1.4		1.6	6.8	45	25	9.2	6.0	3.3
12	3.0	2.2		1.4			7.8	61	* 22	13	11.3	3.1
13	3.0	2.0		1.4	* 1.4		11	71	21	10	* 8.0	3.1
14	2.8	1.8			1.4		* 16	* 75	19	12	48	5.1
15	2.8	1.8			1.4		30	95	18	10	35	6.2
16	2.6	1.8		(*)	1.4		4.3	99	16	9.2	25	4.9
17	2.6	1.4			1.4		38	107	15	9.8	20	4.3
18	2.6	1.6	1.8				28	104	13	8.9	15	3.9
19	5.0	1.6					20	104	13	7.5	13	3.7
20	7.0	1.6					18	106	12	6.8	15	3.7
21	6.0	1.6				1.4	* 19	* 106	12	6.0	1.0	4.7
22	5.5	1.2		1.4	1.6	1.6	28	110	10	5.8	8.6	5.5
23	5.0	1.0			1.6	1.6	34	102	10	5.5	7.5	5.1
24	4.6	1.0			2.0	2.0	33	94	9.5	6.2	6.8	4.5
25	4.1	1.2			1.6	1.6	25	94	9.5	6.2	6.2	4.5
26	3.7	1.0				* 1.8	20	99	8.6	6.5	6.2	4.7
27	3.4	1.0	(*)	(*)	(*)	2.6	20	80	8.3	6.2	6.8	5.3
28	3.4	1.0	2.4	(*)	1.8	3.0	27	65	8.0	6.0	5.5	4.9
29	3.2	1.0	2.6	(*)	1.6	3.8	38	53	8.0	5.8	5.3	4.7
30	3.0	1.8	2.0			5.8	26	41	7.8	6.2	4.9	4.5
31	3.0		2.6			6.5		34		1.5	* 4.7	
Total	115.2	55.2	56.1	49.0	43.2	63.7	561.6	1,969	588.7	231.1	663.5	130.3
Mean	3.72	1.84	1.81	1.58	1.49	2.05	18.7	63.5	19.6	7.45	21.4	4.34
Ac-ft	228	109	111	97	86	126	1,110	3,910	1,170	458	1,320	258

Calendar year 1963: Max 62 Min 0.9 Mean 9.99 Ac-ft 7,230
Water year 1963-64: Max 113 Min 0.9 Mean 12.4 Ac-ft 8,980

Peak discharge (base, 120 cfs)--May 17 (1930) 144 cfs (3.88 ft); Aug. 12 (0330) 213 cfs (3.91 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16-18, 23, 24, 26-30, Dec. 1-8, 30, 31, Jan. 1-13, Mar. 21, 25, 26, 28, 29, Apr. 1, 2, 8. No gage-height record Dec. 9-27, Jan. 14 to Feb. 12, Feb. 18-27, Mar. 2-20 (stage-discharge relation affected by ice during most of periods).

SAN JUAN RIVER BASIN

9-3615. Animas River at Durango, Colo.

Location.--Lat 37°16'45", long 107°52'47" (revised), in SW¼ sec.20, T.35 N., R.9 W., on left bank at Western Colorado Power Co.'s plant at Durango, three-quarters of a mile upstream from Lightner Creek.

Drainage area.--692 sq mi.

Records available.--June to December 1895, April 1896 to December 1898, April 1899 to December 1900, March to May 1901, April to November 1902, March to April 1902 (gage heights only, erroneously stated as discredited in WSP 1563), May to October 1903, July 1904 to December 1905, January to December 1910 (gage heights only), January to September 1911, January 1912 to September 1964. Monthly or yearly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 6,501.57 ft above mean sea level, datum of 1929. Prior to Dec. 31, 1905, staff gages at several sites three-quarters of a mile downstream at various datums. Jan. 1, 1910, to Aug. 12, 1911, staff gage at present site at different datum. Jan. 1, 1912, to Mar. 2, 1921, staff gage or water-stage recorder at present site and datum.

Average discharge.--59 years (1896-1900, 1904-5, 1910-64), 851 cfs (616,100 acre-ft per year).

Extremes.--Maximum discharge during year, 4,450 cfs May 24 (gage height, 5.80 ft); minimum daily, 125 cfs Mar. 9. 1895-1905, 1910-64; Maximum discharge, 25,000 cfs Oct. 5, 1911 (gage height, 11 ft, present site and datum), from rating curve extended above 13,000 cfs; minimum daily, 94 cfs Mar. 2, 1913. Maximum flood known, that of Oct. 5, 1911.

Remarks.--Records good except those for periods of ice effect, which are fair. Diversions for irrigation of about 4,000 acres above station. Natural regulation by many lakes and regulation for power above station.

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

1.8	120	3.5	1,170
2.2	245	4.0	1,740
2.5	395	5.0	3,080
3.0	740	6.0	4,700

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	310	275	* 184	190	172	145	245	476	1,170	* 748	600	241
2	290	245	187	194	166	148	255	557	1,140	732	684	233
3	270	245	194	190	160	148	221	470	1,200	668	622	221
4	280	260	184	194	169	140	205	439	1,200	660	615	209
5	275	217	184	169	172	140	199	417	1,670	608	578	205
6	270	241	181	157	172	142	199	400	1,560	585	550	205
7	265	209	197	172	b 160	142	193	375	2,180	543	502	213
8	265	237	172	132	b 160	138	187	355	2,170	496	456	213
9	250	233	175	132	b 160	125	181	355	1,440	482	428	213
10	250	229	184	160	151	142	187	395	* 1,730	463	406	233
11	245	225	187	154	160	140	199	571	2,020	476	422	229
12	250	217	172	b 150	169	140	205	764	2,020	522	630	217
13	250	217	172	b 140	157	151	229	999	1,960	476	820	213
14	255	217	138	b 150	160	140	237	1,320	1,620	476	876	229
15	237	217	160	b 150	b 130	138	290	1,630	1,780	463	692	300
16	229	217	172	b 150	b 140	142	417	2,250	1,910	482	592	320
17	229	217	175	169	b 140	145	529	2,610	1,610	489	536	310
18	237	193	175	172	b 160	145	463	2,960	1,250	489	476	290
19	280	193	178	166	166	151	385	2,890	1,140	434	434	280
20	325	199	178	163	160	151	360	3,410	1,230	400	434	285
21	335	202	181	175	151	154	340	* 3,650	1,220	370	434	295
22	320	202	175	187	b 160	148	395	3,660	1,140	370	390	330
23	305	199	172	b 170	145	151	* 482	3,870	1,030	370	355	340
24	295	190	175	140	145	160	564	3,840	1,040	365	330	335
25	290	199	178	157	142	157	508	* 3,740	990	390	315	325
26	280	193	172	175	140	151	417	3,910	892	365	285	350
27	280	190	178	175	* 151	154	365	3,600	828	325	285	370
28	275	193	178	163	157	160	365	2,610	836	320	295	365
29	275	* 190	190	157	151	172	522	2,180	820	340	270	355
30	* 275	184	* 190	160	-----	* 187	476	1,620	* 756	* 340	250	* 360
31	270	-----	184	* 169	-----	205	-----	1,350	-----	400	* 237	-----
Total	8,462	6,445	5,502	5,062	4,526	4,652	9,820	57,673	41,552	14,647	14,799	8,284
Mean	273	215	177	163	156	150	327	1,860	1,385	472	477	276
Ac-ft	16,780	12,780	10,910	10,040	8,980	9,230	19,480	114,400	82,420	29,050	29,350	16,430

Calendar year 1963: Max 2,850 Min 138 Mean 515 Ac-ft 372,700
 Water year 1963-64: Max 3,910 Min 125 Mean 496 Ac-ft 359,800

Peak discharge (base, 4,000 cfs).--May 24 (0630) 4,450 cfs (5.80 ft).

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

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, N. Mex.

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, approximately 20,000 acre-ft), storing started in November 1963.

Cooperation.--Records furnished by New Mexico district.

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	797	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	585	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	1,287	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	585	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	397	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	38,867	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.

SAN JUAN RIVER BASIN

9-3655. La Plata River at Hesperus, Colo.

Location.--Lat 37°17'20", long 108°02'05", in sec.14, T.35 N., R.11 W., on right bank at Hesperus 700 ft downstream from U. S. Highway 160.

Drainage area.--37 sq mi, approximately.

Records available.--June to August 1904, May 1905 to September 1906, August to November 1910, June 1917 to September 1964. Monthly discharge only for some periods, published in WSP 1313. Records for Nov. 11 to Dec. 31, 1910, published in WSP 289, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Datum of gage is 8,104.71 ft above mean sea level, datum of 1929. Prior to May 1, 1920, staff gage and May 1, 1920, to May 24, 1927, water-stage recorder, at several sites about 600 ft downstream at different datums. May 25, 1927, to Sept. 30, 1938, water-stage recorder at site 60 ft downstream and Oct. 1, 1938, to Sept. 30, 1941, at present site at datum 1.00 ft higher.

Average discharge.--48 years (1905-6, 1917-64), 45.3 cfs (32,800 acre-ft per year).

Extremes.--Maximum discharge during year, 449 cfs May 21 (gage height, 3.14 ft); minimum not determined.
1904-6, 1910, 1917-64: Maximum discharge, 1,880 cfs Sept. 22, 1941 (gage height, 4.30 ft, present datum), from rating curve extended above 620 cfs on basis of slope-area measurement of peak flow; minimum not determined.
Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records fair except those for period of no gage-height record, which are poor. One diversion above station for irrigation of about 2,000 acres along Cherry Creek below station.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 13-15, Aug. 17 to Sept. 30)

Oct. 1 to May 15, Aug. 17 to Sept. 30				May 16 to Aug. 17			
1.0	2.5	1.6	58	1.8	6.0	2.4	95
1.1	6.0	1.8	114	2.0	25	2.6	160
1.2	11	2.0	188	2.1	38	3.0	365
1.3	18	2.3	340	2.3	75		
1.4	27						

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	8.5					5.0	*44	*45	*23	57	*16
2	13	8.5	(*)				4.6	42	61	20	101	14
3	13	8.0					4.6	37	73	20	132	14
4	13	8.5					4.6	39	95	19	85	12
5	12	8.5					5.3	36	77	19	77	10
6	12	8.0					5.6	34	77	28	55	10
7	12	8.0					6.0	32	73	13	48	10
8	12	7.5					6.5	31	53	8.7	43	9.5
9	14	7.5					*6.0	32	45	9.6	48	10
10	12	7.5					6.0	53	*53	9.6	67	8.0
11	11	7.0					6.5	95	53	15	89	8.0
12	10	7.0					6.5	*136	53	22	240	8.0
13	9.5	7.0					8.0	*205	52	33	250	8.5
14	*9.5	6.5					8.5	*196	53	35	192	15
15	8.5	6.0					15	169	53	20	136	23
16	*7.5	6.5	4.5	3.5	3.7	4.5	27	*178	61	19	107	20
17	7.0	6.5					31	265	55	24	*84	16
18	7.0	5.6					27	305	48	19	*58	16
19	12	5.6					30	*280	46	20	51	14
20	12	5.6					37	265	45	17	*56	14
21	12	5.6					37	240	43	18	45	18
22	11	5.6					*49	280	37	*15	39	19
23	10	5.3					68	270	*30	14	34	17
24	9.5	5.0					76	*235	33	18	*32	14
25	*9.0	5.0					49	265	25	21	26	14
26	9.0	5.0					37	240	24	19	25	17
27	8.5	5.0	(*)				31	164	26	17	24	18
28	8.5	5.0					31	*122	29	20	22	21
29	8.5	5.3					66	98	26	17	19	*18
30	8.5	5.3				6.0	49	73	26	16	17	17
31	8.5					6.0		67		52	17	
Total	324.0	195.9	139.5	108.5	107.3	142.5	743.7	4,528	1,470	620.9	2,276	4,290
Mean	10.5	6.53	4.5	3.5	3.7	4.60	24.8	146	49.0	20.0	73.4	14.3
Ac-ft	643	389	277	215	213	283	1,480	8,980	2,920	1,230	4,510	851

Calendar year 1963: Max 169 Min - Mean 26.8 Ac-ft 19,390
Water year 1963-64: Max 305 Min - Mean 30.3 Ac-ft 21,990

Peak discharge (base, 230 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-18	2030	3.05	425	8-12	0930	2.99	401
5-21	2000	3.14	449				

* Discharge measurement made on this day.
Note.--No gage-height record Dec. 1 to Mar. 29 (stage-discharge relation affected by ice during most of period).

9-3665. La Plata River at Colorado-New Mexico State line

Location.--Lat 37°00'00", long 108°11'20", in sec.10, T.32 N., R.13 W., on right bank at Colorado-New Mexico State line, 3 miles north of Pendleton, N. Mex.

Drainage area.--331 sq mi.

Records available.--January 1920 to September 1964. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 5,975.15 ft above mean sea level, datum of 1929. Prior to Apr. 30, 1920, staff gage at site 2 miles upstream at different datum. May 1 to June 18, 1920, staff gage and June 19, 1920, to Sept. 30, 1924, water-stage recorder, at present site at datum 1.26 ft higher. Oct. 1, 1924, to Mar. 16, 1934, water-stage recorder at present site at datum 0.26 ft higher.

Average discharge.--44 years, 33.7 cfs (24,400 acre-ft per year).

Extremes.--Maximum discharge during year, 680 cfs Aug. 4 (gage height, 4.07 ft), from rating curve extended above 120 cfs; no flow July 8-10, 12.

1920-64: Maximum discharge, 4,750 cfs Aug. 24, 1927 (gage height, 11.36 ft, present datum), from rating curve extended above 750 cfs on basis of slope-area measurement of peak flow; no flow at times in many years.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Diversions above station for irrigation of about 15,000 acres, mostly 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. 16-31, Aug. 15 to Sept. 30)

0.0	0	0.6	8.0
.1	.1	1.1	33
.2	.6	1.6	81
.3	1.6	2.0	131
.4	3.0	2.5	230
.5	5.0		

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	4.4						39	*24	*46	*4.2	6.0	4.2
2	4.2						60	21	37	6.5	6.5	3.6
3	4.2		(*)				24	15	45	7.7	28	3.2
4	4.0						14	12	62	7.4	150	3.0
5	4.0						16	13	70	7.7	83	3.4
6		3.8					16	12	47	7.7	26	3.8
7		3.8					11	12	105	2.9	14	3.8
8		3.4				4.5	7.1	12	38	0	12	3.4
9		3.4					*5.6	12	36	0	34	4.8
10		3.4					10	18	36	0	31	5.0
11		3.2					12	39	37	.1	38	4.2
12		3.2					19	*48	35	0	105	3.8
13		3.0					14	*72	36	11	55	3.6
14		*3.0					13	*52	34	82	45	9.6
15		3.2					14	38	32	10	28	8.4
16	*3.4		4.5	3.5	4.0	*3.6	16	101	35	7.4	66	3.4
17	3.4					2.7	20	79	*36	8.8	*57	2.9
18	3.4					2.4	14	92	30	8.0	23	2.4
19	6.5					4.6	8.4	76	27	7.7	12	2.4
20	7.7			(*)		7.1	6.5	100	24	6.5	*11	2.4
21	4.8					11	14	88	22	5.6	18	2.6
22	4.0					23	*16	115	18	7.4	24	*4.0
23	4.0					18	31	108	16	5.9	24	2.9
24	4.0					12	51	105	13	4.8	*22	2.4
25	4.0					9.6	32	87	10	5.9	18	2.0
26	4.0					7.7	25	105	8.4	4.6	8.4	2.2
27	4.0		(*)			88	20	108	6.5	4.4	5.6	1.9
28	4.0					7.4	14	*76	5.0	2.9	5.3	1.9
29	4.0					4.6	24	65	5.6	4.4	4.8	1.7
30	4.0					*5.9	31	66	4.4	5.0	4.4	1.9
31	4.2					8.0		55		6.2	4.4	
Total	123.6	135.0	108.5	108.5	116.0	203.9	597.6	1826	956.9	242.7	970.4	104.8
Mean	3.99	4.5	3.5	3.5	4.0	6.58	19.9	58.9	31.9	7.83	31.3	3.49
Ac-ft	245	268	215	215	230	404	1,190	3,620	1,900	481	1,920	208

Calendar year 1963: Max 121 Min 0.2 Mean 14.9 Ac-ft 10,810
Water year 1963-64: Max 150 Min 0 Mean 15.0 Ac-ft 10,900

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 1-27, Dec. 27 to Mar. 15 (stage-discharge relation affected by ice during part of periods), Aug. 1, 2. Stage-discharge relation affected by ice Nov. 28 to Dec. 26.

SAN JUAN RIVER BASIN

9-3710, Mancos River near Towaoc, Colo.

Location.--Lat 37°02', long 108°43', in NW¼ sec.18, T.32 N., R.17 W., on left bank 750 ft upstream from bridge on U. S. Highway 666, 6 miles upstream from Aztec Creek, and 12 miles south of Towaoc.

Drainage area.--550 sq mi, approximately.

Records available.--October 1920 to September 1943, February 1951 to September 1964. Monthly discharge only for some periods published in WSP 1313.

Gage.--Water-stage recorder at present site Oct. 13, 1941, to Sept. 30, 1943, and since Mar. 11, 1954. Datum of gage is 5,055.98 ft above mean sea level, datum of 1929. Prior to Mar. 15, 1940, staff gage or water-stage recorder 2½ miles downstream at different datum. Mar. 15, 1940, to Oct. 12, 1941, and Feb. 16, 1951, to Mar. 10, 1954, water-stage recorder at site 600 ft downstream at datum 4.95 ft lower.

Average discharge.--36 years, 52.1 cfs (37,720 acre-ft per year).

Extremes.--Maximum discharge during year, 875 cfs July 12 (gage height, 4.00 ft); no flow for many days. 1920-43, 1951-64: Maximum discharge, 5,300 cfs Oct. 14, 1941 (gage height, 7.30 ft, present site and datum), from rating curve extended above 200 cfs on basis of slope-area measurement of peak flow; no flow at times in most year.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 10,000 acres above station. One diversion above station for irrigation of about 100 acres below. Regulation for irrigation by Jackson Gulch Reservoir (capacity, 10,000 acre-ft) since March 1949.

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

1.2	0	1.7	11
1.3	.1	2.0	42
1.5	2.0	2.5	126
1.6	5.0	3.0	245

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 0.2	5.6	4.0	3.8	9.5	1.1	7.2	26	9.8	* 0	1.76	* 0.1
2	a .2	6.2	4.0	4.2	9	1.0	6.4	3.0	9.2	0	6.2	.1
3	a 2	6.2	4.0	4.0	8.5	1.8	4.1	2.9	8.6	0	16.4	.1
4	a 2	* 6.2	4.0	3.8	9.5	9.5	3.2	1.4	9.2	0	3.6	0
5	a 2	7.4	* 3.8	3.2	9.5	9.8	3.0	7.4	9.2	0	4.8	0
6	a .2	7.4	4.0	3.0	9	* 1.6	3.8	* 7.4	1.2	0	2.4	0
7	* a 2	8.6	4.0	2.6	8.5	1.5	* 3.5	6.8	9.2	0	1.9	0
8	a .1	8.0	3.4	2.4	9.5	1.3	3.5	3.5	1.6	0	1.6	0
9	a .1	8.0	4.1	3.0	9.5	9.2	3.4	1.6	9.2	0	1.9	.5
10	a 0	8.0	4.4	3.2	1.1	1.3	3.7	1.7	2.6	0	1.8	1.1
11	a 0	8.0	4.0	3.0	1.1	1.0	3.7	2.5	1.0	2.4	9.1	2.0
12	.3	8.0	3.4	2.6	1.0	1.2	4.1	9.4	.7	16.4	7.4	1.9
13	.6	7.4	2.4	2.0	9.5	1.6	3.6	7.2	.5	3.1	13.1	1.6
14	.5	7.4	2.2	1.2	9	1.2	3.1	2.5	0	1.3	5.3	7.2
15	.6	7.4	2.4	2.0	9.5	1.0	3.5	3.0	0	1.1	2.7	9.5
16	.8	7.4	3.0	2.2	9.5	1.4	4.3	5.6	* 0	1.5	2.5	5.8
17	1.0	8.0	4.0	6	* 9	2.8	5.0	5.6	0	.8	3.4	2.2
18	1.1	7.4	5	8	1.0	5.5	4.1	4.2	0	.2	2.8	1.6
19	1.3	6.8	6	7	1.1	7.2	3.4	2.8	0	a 0	* 2.0	1.2
20	7.8	6.8	7	8	1.0	3.5	3.0	2.3	0	* a 0	2.1	1.0
21	2.1	7.4	8.6	1.0	9	3.0	2.3	2.1	0	0	2.1	8.9
22	9.2	8.6	7.5	9.5	9	3.7	2.0	4.7	0	0	1.5	15.1
23	6.8	8.6	6.5	9	8	2.9	2.2	1.6	0	0	1.2	2.9
24	6.2	7.4	5	7.5	7	2.6	2.5	1.0	0	0	1.0	1.6
25	6.2	8.0	5.5	8.5	6	1.8	2.7	1.3	0	0	6.8	1.3
26	5.6	8.6	* 5	9	9	1.7	2.1	1.1	0	0	3.8	2.0
27	5.6	8.0	4.2	9	9	1.6	1.5	8.6	0	0	.9	1.9
28	5.0	5.5	4.2	9	9	1.5	9.2	* 5.0	0	0	.7	1.3
29	4.7	6	4.2	9	1.0	1.5	6.2	1.1	0	5.5	.5	1.2
30	5.0	5	4.2	* 9	-----	2.1	3.1	6.2	0	5.4	.4	1.1
31	5.6	-----	3.4	9	-----	* 6.4	-----	8.0	-----	* 1.2	.3	-----
Total	178.4	219.3	137.4	173.7	268.0	676.5	995.4	597.4	97.2	317.9	1,157.4	663.4
Mean	5.75	7.31	4.43	5.60	9.24	21.8	33.2	19.3	3.24	10.3	37.3	22.1
Ac-ft	354	435	272	345	532	1,340	1,970	1,180	193	631	2,300	1,320

Calendar year 1963: Max 611 Min 0 Mean 14.4 Ac-ft 10,430
 Water year 1963-64: Max 176 Min 0 Mean 15.0 Ac-ft 10,870

Peak discharge (base, 700 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-12	0145	4.00	875	8-11	2115	3.98	859
8-3	0600	3.78	700				

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

a No gage-height record.

Note.--Stage-discharge relation affected by ice Nov. 28 to Dec. 8, Dec. 10-20, Dec. 22 to Mar. 2, Mar. 4.

9-3720. McElmo Creek near Colorado-Utah State line

Location.--Lat 37°19'27", long 109°00'54", in NE¼ sec.2, T.35 N., R.20 W., on right bank 1½ miles upstream from Colorado-Utah State line, 2 miles upstream from Yellowjacket Creek, and 2 miles west of former town of McElmo.

Drainage area.--350 sq mi, approximately.

Records available.--March 1951 to September 1964.

Gage.--Water-stage recorder. Altitude of gage is 4,890 ft (from topographic map).

Average discharge.--13 years, 37.0 cfs (26,790 acre-ft per year).

Extremes.--Maximum discharge during year, 1,320 cfs July 12 (gage height, 6.45 ft); minimum daily, 1.4 cfs May 25.
1951-64: Maximum discharge, 1,700 cfs Aug. 29, 1951, July 27, 1957 (gage height, 7.05 ft), from rating curve extended above 320 cfs on basis of slope-area measurements at gage heights 4.78 and 7.05 ft; minimum daily, 0.1 cfs for several days in 1951, 1956.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 1,000 acres above station. One diversion above station for irrigation of about 60 acres below.

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

2.3	1.0	2.9	36
2.4	2.0	3.2	81
2.5	4.0	3.5	131
2.6	9.0	4.0	228
2.7	16	4.5	370

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	8.5	36	22	20	16	19	65	40	34	* 20	206	* 9.0
2	9.0	33	22	20	16	23	56	36	37	22	97	8.5
3	11	34	20	21	16	24	43	40	27	20	155	8.0
4	12	35	20	18	15	22	43	30	27	15	104	9.0
5	12	37	* 20	19	16	24	38	22	25	8.5	83	5.0
6	12	33	19	20	17	* 28	46	* 18	20	7.0	58	9.7
7	* 12	29	19	19	13	25	50	16	13	3.0	33	15
8	12	29	19	18	14	24	48	12	25	3.2	24	11
9	12	33	20	14	15	21	46	12	30	3.2	20	17
10	9.7	37	24	15	21	22	50	2.8	20	66	24	17
11	6.5	42	22	16	19	18	50	2.2	17	39	18	14
12	6.0	34	19	15	20	22	55	3.8	20	159	30	12
13	5.5	26	18	16	20	26	50	4.0	16	92	329	13
14	7.0	26	13	16	21	22	46	4.0	15	44	181	32
15	8.0	26	18	16	15	18	50	8.0	12	22	100	101
16	10	25	20	16	18	22	50	3.2	* 16	15	75	143
17	12	25	20	15	* 22	40	55	6.0	15	14	60	62
18	13	* 26	22	18	19	60	50	7.0	25	13	52	42
19	17	27	22	17	19	70	46	10	27	11	44	35
20	49	26	20	18	21	65	40	4.0	30	5.5	49	28
21	68	26	22	19	18	55	32	4.5	36	3.2	47	28
22	47	28	22	18	17	65	32	3.6	29	2.4	25	149
23	35	28	20	19	19	55	36	2.0	21	2.8	22	67
24	32	27	20	12	18	46	38	1.8	23	34	22	39
25	28	27	20	17	19	34	40	1.4	29	8.0	21	34
26	27	27	* 22	20	19	30	36	2.6	37	3.4	20	34
27	26	26	19	18	18	26	22	7.5	28	3.6	19	53
28	26	24	20	19	18	26	18	* 15	25	3.2	18	39
29	27	23	21	20	19	36	19	11	26	93	20	33
30	27	22	17	* 20	-----	60	38	12	21	34	15	33
31	29	-----	18	19	-----	* 73	-----	65	-----	* 13	12	-----
Total	615.2	877	619	548	518	1,101	1,288	407.4	776	763.0	1,923	1,100.2
Mean	19.9	29.2	20.0	17.7	17.9	35.5	42.9	13.1	25.9	24.6	64.0	36.7
Ac-ft	1,220	1,740	1,230	1,090	1,030	2,180	2,550	808	1,540	1,510	3,930	2,180

Calendar year 1963: Max 445 Min 0.6 Mean 29.7 Ac-ft 21,510
Water year 1963-64: Max 329 Min 1.4 Mean 29.0 Ac-ft 21,010

Peak discharge (base, 500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-12	2245	6.45	1,320	8- 1	1230	5.06	567
7-24	1700	5.44	735	8-13	1800	5.20	624

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 30, Dec. 1-22, 27, Jan. 5-30, Feb. 3, 7, 8, 15, 16, 18-29, Mar. 1, 2. No gage-height record Mar. 11-30, Apr. 5 to May 6.

Transmountain diversions from Colorado River basin in Colorado

There are 22 tunnels or ditches, all of which are equipped with water-stage recorders and Parshall flumes or sharp-crested weirs. Records furnished by State engineer. The locations of these diversions are given in the following list.

9-100. Grand River ditch diverts water from tributaries of Colorado River to La Poudre Pass Creek (tributary to Cache la Poudre River) in NW $\frac{1}{4}$ sec.21, T.6 N., R.75 W., in Platte River basin. Two collection ditcher beginning at headgates located in sec.28, T.5 N., R.76 W., and sec.29, T.6 N., R.75 W., intercept all tributaries upstream on each side of the Colorado River and converge at La Poudre Pass.

9-120. Eureka ditch diverts water from tributaries of Tonahutu Creek between headgate in sec.7, T.4 N., R.74 W., and Sprague Pass, in Colorado River basin, to Spruce Creek (tributary to Big Thompson River) in sec.16, T.4 N., R.74 W., in Platte River basin.

9-130. Alva B. Adams tunnel diverts water from Grand Lake and Shadow Mountain Lake in NW $\frac{1}{4}$ sec.9, T.3 N., R.75 W., in Colorado River basin, to Lake Estes (Big Thompson River) in sec.30, T.5 N., R.72 W., in Platte River basin. For daily discharge, see elsewhere in this report.

9-215. Berthoud Pass ditch diverts water from tributaries of Fraser River between headgate in sec.33, T.2 S., R.75 W., and Berthoud Pass, in Colorado River basin, to Hoop Creek (tributary to West Fork Clear Creek) in sec.10, T.3 S., R.75 W., in Platte River basin.

9-225. Moffat water tunnel diverts water from tributaries of Fraser River in Colorado River basin to South Boulder Creek in sec.2, T.2 S., R.74 W., in Platte River basin by means of three collection ditches extending from the right bank of St. Louis Creek in sec.20, T.2 S., R.76 W., right bank of Vasquez Creek in sec.18, T.2 S., R.75 W., right bank of Fraser River in sec.23, T.2 S., R.75 W., left bank of North Fork Ranch Creek in sec.24, T.1 S., R.75 W., and intercepting intermediate tributaries to the west portal of the tunnel. Since July 1959, water diverted by Jones Pass tunnel from tributaries of Williams Fork in Colorado River basin between headgates on right bank of Bobtail Creek in sec.28, T.3 S., R.76 W., and headgate on left bank of McQueary Creek in sec.16, T.3 S., R.76 W., has been rediverted through Vasquez tunnel to Vasquez Creek in the Fraser River basin in sec.1, T.3 S., R.76 W., thence via collection ditch to the west portal of Moffat water tunnel where it is diverted to South Boulder Creek in sec.2, T.2 S., R.74 W., in Platte River basin. (see table of diversions by Jones Pass tunnel published with records for Williams Fork near Leal, Colo.)

9-420. Hoosier Pass tunnel diverts water from tributaries of Blue River in Colorado River basin to Montgomery Reservoir (Middle Fork South Platte River) in sec.14, T.8 S., R.78 W., in Platte River basin; this water is again diverted to South Catamount Creek (tributary to Catamount Creek) in SE $\frac{1}{4}$ sec.14, T.13 S., R.69 W., in the Arkansas River basin. Collection conduits extending from the right bank of Crystal Creek (tributary to Spruce Creek) in sec.14, T.7 S., R.78 W., right bank of Spruce Creek in sec.23, T.7 S., R.78 W., right bank of McCullough Gulch in sec.26, T.7 S., R.78 W., right bank of Monte Cristo Creek in SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.2, T.8 S., R.78 W., left bank of Bemrose Creek in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.6, T.8 S., R.77 W., and intercepting intermediate tributaries, transport diversions to north portal of the tunnel.

9-460. Boreas Pass ditch diverts water from tributaries of Blue River between headgate in sec.26, T.7 S., R.77 W., and Boreas Pass, in Colorado River basin, to Tarryall Creek in sec.26, T.7 S., R.77 W., in Platte River basin.

9-485. Fremont Pass ditch diverts water from tributaries of Tenmile Creek in secs.2 and 3, T.8 S., R.79 W., in Blue River basin, to East Fork Arkansas River in sec.11, T.8 S., R.79 W., in Arkansas River basin.

9-505.9. Harold D. Roberts tunnel diverts water from Dillon Reservoir (Blue River) in sec.18, T.5 S., R.77 W., in Blue River basin, to North Fork South Platte River (tributary to South Platte River), in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.4, T.7 S., R.74 W., in Platte River basin. Figures include a small amount of ground-water inflow between Dillon Reservoir and east portal of tunnel.

9-615. Columbine ditch diverts water from tributaries of Eagle River in sec.5, T.8 S., R.79 W., in Colorado River basin, to Chalk Creek (tributary to East Fork Arkansas River) in NW $\frac{1}{4}$ sec.9, T.8 S., R.79 W., in Arkansas River basin.

9-620. Ewing ditch diverts water from Piney Creek in sec.11, T.8 S., R.80 W., in Eagle River basin, to Thayer Gulch (tributary to Tennessee Creek) in sec.11, T.8 S., R.80 W., in Arkansas River basin.

9-625. Wurtz ditch diverts water from tributaries of Eagle River between headgate in sec.32, T.7 S., R.80 W., and Tennessee Pass, in Colorado River basin, to West Tennessee Creek (tributary to Tennessee Creek) in sec.17, T.8 S., R.80 W., in Arkansas River basin.

9-730. Twin Lakes tunnel diverts water from tributaries of Roaring Fork between headgates (in sec.21, T.11 S., R.83 W., and sec.11, T.11 S., R.82 W.), and west portal of Twin Lakes tunnel (in sec.24, T.11 S., R.83 W.), in Colorado River basin, to North Fork Lake Creek in sec.22, T.11 S., R.82 W., in Arkansas River basin.

9-775. Busk-Ivanhoe tunnel diverts water from Ivanhoe Lake (Ivanhoe Creek), tributary to Fryingpan River in sec.13, T.9 S., R.82 W., in Roaring Fork basin, to Busk Creek (tributary to Lake Fork) in sec.20, T.9 S., R.81 W., in Arkansas River basin.

9-1150. Larkspur ditch diverts water from tributaries of Tomichi Creek between headgates (in sec.11, T.48 N., R.6 E., and sec.1, T.47 N., R.6 E.), and Marshall Pass, in Gunnison River basin, to Poncha Creek (tributary to South Arkansas River) in SE $\frac{1}{4}$ sec.24, T.48 N., R.6 E., in Arkansas River basin.

Transmountain diversions from Colorado River basin in Colorado--Continued

9-1182. Tarbell ditch diverts water from Lake Fork Cochetopa Creek (tributary to Cochetopa Creek), in NW $\frac{1}{4}$ sec.18, T.43 N., R.2 E., in Gunnison River basin, to Lake Fork Saguache Creek (tributary to Middle Fork Saguache Creek) in NE $\frac{1}{4}$ sec.18, T.43 N., R.2 E., in Rio Grande basin. All records available prior to October 1960 published in WSP 1733.

9-1210. Tabor ditch diverts water from tributaries of Cebolla Creek in secs.29 and 36, T.43 N., R.3 W., in Gunnison River basin, to Big Spring Creek, tributary to North Clear Creek in sec.35, T.43 N., R.3 W., in Rio Grande basin.

9-3410. Treasure Pass ditch diverts water from tributaries of Wolf Creek between headgates (in sec.31, T.38 N., R.2 E., and sec.6, T.37 N., R.2 E.), and Wolf Creek Pass, in San Juan River basin, to tributary of South Fork Rio Grande in sec.31, T.38 N., R.2 E., in Rio Grande basin.

9-3470. Piedra Pass ditch (Harley Fuchs ditches 1 and 2) diverts water from tributaries of Piedra River between headgates (in NW $\frac{1}{4}$ sec.4, T.38 N., R.1 W., and SW $\frac{1}{4}$ sec.33, T.39 N., R.1 W.), and Piedra Pass, in San Juan River basin, to South River in sec.4, T.38 N., R.1 W., in Rio Grande basin.

9-3480. Squaw Pass ditch diverts water from Williams Creek (tributary to Piedra River) in sec.13, T.39 N., R.3 W., in San Juan River basin, to Squaw Creek in sec.10, T.39 N., R.3 W., in Rio Grande basin.

9-3510. Fuchs ditch diverts water from North Fork Los Pinos River (tributary to Los Pinos River) in sec.4, T.39 N., R.4 W., in San Juan River basin, to Weminuche Creek in sec.33, T.40 N., R.4 W., in Rio Grande basin.

9-3515. Raber-Lohr ditch diverts water from left bank of Rincon la Vaca Creek (tributary to Los Pinos River) in sec.5, T.39 N., R.4 W., in San Juan River basin, to Weminuche Creek in sec.33, T.40 N., R.4 W., in Rio Grande basin.

TRANSMOUNTAIN DIVERSIONS

Transmountain diversions from Colorado River basin in Colorado

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

Diversion	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Water Year
TO PLATTE RIVER BASIN													
Grand River ditch.....	0	0	0	0	0	0	0	123	7,660	6,900	1,540	503	16,730
Eureka ditch.....	0	0	0	0	0	0	0	0	34	29	13	0	76
Alva B. Adams tunnel.....	25,160	28,200	30,810	30,750	28,550	31,100	22,950	25,290	17,150	21,030	31,340	26,050	318,400
Berthoud Pass ditch.....	0	0	0	0	0	0	0	0	332	322	8.9	0	663
Mofat water tunnel.....	2,550	1,780	1,280	1,100	916	821	891	12,920	24,420	10,410	4,660	2,270	64,020
Boreas Pass ditch.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Harold D. Roberts tunnel.....	263	234	230	237	247	264	279	305	579	3,360	10,580	10,220	29,800
Total.....	27,970	30,210	32,320	32,090	29,710	32,180	24,120	38,640	50,180	42,050	48,140	39,040	426,700
TO ARKANSAS RIVER BASIN													
Hoosier Pass tunnel.....	311	0	0	0	0	0	0	1,850	3,500	2,530	1,450	11	9,650
Fremont Pass ditch.....	0	0	0	0	0	0	0	379	641	183	47	0	0
Columbine ditch.....	0	0	0	0	0	0	0	228	367	145	75	0	1,250
Ewing ditch.....	0	0	0	0	0	0	0	737	844	144	35	0	815
Wurtz ditch.....	0	0	0	0	0	0	0	9,300	17,690	8,710	3,270	454	1,760
Twin Lakes tunnel.....	776	294	422	167	228	167	186	738	2,850	1,090	550	0	41,660
Busk-Ivanhoe tunnel.....	242	0	0	0	0	0	0	102	165	0	0	0	5,470
Larkspur ditch.....	0	0	0	0	0	0	0	0	0	0	0	0	267
Total.....	1,330	294	422	167	228	167	186	13,330	26,060	12,800	5,430	465	60,870
TO RIO GRANDE BASIN													
Tarbell ditch.....	0	0	0	0	0	0	0	0	136	133	157	93	519
Tabor ditch.....	0	0	0	0	0	0	0	166	218	75	0	0	459
Treasure Pass ditch.....	0	0	0	0	0	0	0	37	92	0	0	0	129
Piedra Pass ditch.....	0	0	0	0	0	0	0	0	362	147	46	0	555
Squaw Pass ditch.....	0	0	0	0	0	0	0	0	87	109	25	0	201
Fuchs ditch.....	31	0	0	0	0	0	0	55	191	0	0	0	277
Raber-Lohr ditch.....	0	0	0	0	0	0	0	168	607	0	0	0	775
Total.....	31	0	0	0	0	0	0	426	1,670	464	228	93	2,920
Grand total.....	29,330	30,510	32,740	32,250	29,940	32,350	24,310	52,400	77,900	55,320	53,800	39,600	490,500

Revisions.--Revised figures of diversion in acre-feet, for the water year 1963, superseding those previously published, are given herewith:

Diversion	May	June	July	Aug.	Sept.	Water year
TO PLATTE RIVER BASIN						
Berthoud Pass ditch.....	93	242	111	73	39	558
Total.....	40,740	39,720	33,530	23,830	19,590	346,800
Grand total.....	58,540	56,430	37,720	29,970	23,050	397,500

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 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 analyses, 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 generally presented in two tables. However, no records at crest-stage partial-record stations are available for the 1964 water year. A table of discharge measurements at low-flow partial-record stations is given first, followed by a table of discharge measurements made at miscellaneous sites for both low flow and high flow.

Low-flow partial-record stations

Measurements of streamflow in the area covered by this report made 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 for a nearby stream where continuous records are available, will give a 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)
Eagle River basin						
9-661.5	Pitkin Creek near Minturn, Colo.	Lat 39°38'35", long 106°18'10", near crossing of U. S. Highway 6, 900 ft above mouth, and 8 miles northeast of Minturn.	5.39	1964	11- 4-63 12- 5-63 1- 7-64 2- 4-64 3- 3-64 4- 8-64 4-23-64 5-13-64 6-11-64 6-26-64 7- 9-64 7-30-64 8-26-64	1.77 .84 .82 .72 .30 .71 1.09 4.04 35.8 36.3 20.9 6.24 3.68

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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 (†).

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						
Clay Creek.....	Arkansas River...	W½ sec.1, T.23 S., R.46 W., 1 mile upstream from mouth and 4 miles east of Lamar, Colo.	a230	1903, 1951, 1956	5-21-64 7-17-64	†3,530 †14,400
Eagle River basin						
Gypsum Creek.....	Eagle River.....	Sec.5, T.5 S., R.85 W., at mouth at Gypsum, Colo.	104	1906-10, 1922	3-24-64	28.4
Roaring Fork basin						
Rocky Fork Creek (formerly published as Rocky Fork)	Fryingpan River..	NW¼ sec.18, T.8 S., R.84 W., near private bridge at mouth, 1¼ miles west of Ruedi, Colo.	a13	1959-63	10- 8-63	*2.29
					11- 7-63	*2.18
					12- 4-63	*2.28
					1- 9-64	*2.52
					2- 6-64	*2.54
					3- 3-64	*1.86
					4- 9-64	*2.01
					5- 8-64	4.41
					6- 2-64	42.5
					6-25-64	21.5
7-15-64	7.36					
8-26-64	*4.60					
9-30-64	*3.71					
Gunnison River basin						
East Creek.....	Gunnison River...	NE¼ sec.5, T.13 S., R. 99 W., about 2 miles above mouth and about 3 miles southwest of Whitewater, Colo.	112		8- 2-64	†3,630

* Base flow.

† Peak flow.

a Approximately.

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