DEPARTMENT OF THE INTERIOR
Hubert Work, Secretary

U. S. GEOLOGICAL SURVEY
George Otis Smith, Director

Water-Supply Paper 570

SURFACE WATER SUPPLY OF THE UNITED STATES

1923

PART X. THE GREAT BASIN

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Prepared in cooperation with the States of
UTAH, NEVADA, CALIFORNIA, OREGON, IDAHO, and WYOMING

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SURFACE WATER SUPPLY OF THE GREAT BASIN, 1923

AUTHORIZATION AND SCOPE OF WORK

This volume is one of a series of 14 reports presenting records of measurements of flow made on streams in the United States during the year ending September 30, 1923.

The data presented in these reports were collected by the United States Geological Survey under the following authority contained in the organic law (20 Stat. L. p. 394):

Provided, That this officer [the Director] shall have the direction of the Geological Survey and the classification of public lands and examination of the geological structure, mineral resources, and products of the national domain.

The work was begun in 1888 in connection with special studies relating to irrigation in the arid West. Since the fiscal year ending June 30, 1895, successive appropriation bills passed by Congress have carried the following item:

For gaging the streams and determining the water supply of the United States, and for the investigation of underground currents and artesian wells, and for the preparation of reports upon the best methods of utilizing the water resources.

Annual appropriations for the fiscal years ending June 30, 1895–1924

1895	$12, 500. 00
1896	20, 000. 00
1897 to 1900, inclusive	50, 000. 00
1901 to 1902, inclusive	100, 000. 00
1903 to 1906, inclusive	200, 000. 00
1907	150, 000. 00
1908 to 1910, inclusive	100, 000. 00
1911 to 1917, inclusive	150, 000. 00
1918	175, 000. 00
1919	148, 244. 10
1920	175, 000. 00
1921 to 1923, inclusive	180, 000. 00
1924	170, 000. 00

In the execution of the work many private and State organizations have cooperated, either by furnishing data or by assisting in collecting data. Acknowledgments for cooperation of the first kind are made in connection with the description of each station affected; cooperation of the second kind is acknowledged on page 5.

Measurements of stream flow have been made at about 4,800 points in the United States and also at many points in Alaska and the Hawaiian Islands. In July, 1923, 1,590 gaging stations were be-

ing maintained by the Survey and the cooperating organizations. Many miscellaneous discharge measurements were made at other points. In connection with this work data were also collected in regard to precipitation, evaporation, storage reservoirs, river profiles, and water power in many sections of the country and will be made available in water-supply papers from time to time. Information in regard to publications relating to water resources is presented in the appendix.

DEFINITION OF TERMS

The volume of water flowing in a stream—the "run-off" or "discharge"—is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups—(1) those that represent a rate of flow, as second-feet, gallons per minute, miner's inches, and discharge in second-feet per square mile, and (2) those that represent the actual quantity of water, as run-off in inches, acre-feet, and millions of cubic feet. The principal terms used in this series of reports are second-feet, second-feet per square mile, run-off in inches, and acre-feet. They may be defined as follows:

"Second-feet" is an abbreviation for "cubic feet per second." A second-foot is the rate of discharge of water flowing in a channel of rectangular cross section 1 foot wide and 1 foot deep at an average velocity of 1 foot per second. It is generally used as a fundamental unit from which others are computed.

"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the run-off is distributed uniformly both as regards time and area.

"Run-off in inches" is the depth to which an area would be covered if all the water flowing from it in a given period were uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in depth in inches.

An "acre-foot," equivalent to 43,560 cubic feet, is the quantity required to cover an acre to the depth of 1 foot. The term is commonly used in connection with storage for irrigation.

The following terms not in common use are here defined:

"Stage-discharge relation," an abbreviation for the term "relation of gage height to discharge."

"Control," a term used to designate the section or sections of the stream channel below the gage which determine the stage-discharge relation at the gage. It should be noted that the control may not be the same section or sections at all stages.

The "point of zero flow" for a gaging station is that point on the gage—the gage height—at which water ceases to flow over the control.

EXPLANATION OF DATA

The data presented in this report cover the year ending September 30, 1923. At the beginning of January in most parts of the United States much of the precipitation in the preceding three months is stored as ground water, in the form of snow or ice, or in ponds, lakes, and swamps, and this stored water passes off in the streams during the spring break-up. At the end of September, on the other hand, the only stored water available for run-off is possibly a small quantity in the ground; therefore the run-off for the year beginning October 1 is practically all derived from precipitation within that year.

The base data collected at gaging stations consist of records of stage, measurements of discharge, and general information used to supplement the gage heights and discharge measurements in determining the daily flow. The records of stage are obtained either from

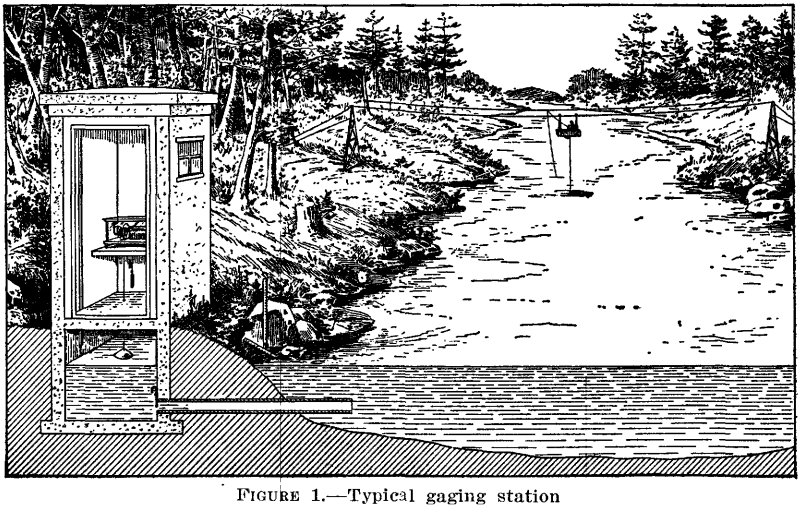

FIGURE 1.—Typical gaging station

direct readings on a staff or chain gage or from a water-stage recorder that gives a continuous record of the fluctuations. Measurements of discharge are made with a current meter. The general methods are outlined in standard textbooks on the measurement of river discharge. A typical gaging station, equipped with water-stage recorder and measuring cable and car is shown in Figure 1.

From the discharge measurements rating tables are prepared that give the discharge for any stage. The application of the daily gage heights to these rating tables gives the daily discharge from which the monthly and yearly mean discharge is computed.

The data presented for each gaging station in the area covered by this report comprise a description of the station, a table giving records of discharge measurements, a table showing the daily discharge of the stream, and a table of monthly and yearly discharge

and run-off. If the base data are insufficient to determine the daily discharge, tables giving daily gage height and results of discharge measurements are published.

The description of the station gives, in addition to statements regarding location and equipment, information in regard to any conditions that may affect the permanence of the stage-discharge relation, covering such subjects as the occurrence of ice, the use of the stream for log driving, shifting of control, and the cause and effect of backwater; it gives also information as to diversions that decrease the flow at the gage, artificial regulation, maximum and minimum recorded stages, and the accuracy of the records.

The table of daily discharge gives, in general, the discharge in second-feet corresponding to the mean of the gage heights read each day. At stations on streams subject to sudden or rapid diurnal fluctuations the discharge obtained from the rating table and the mean daily gage height may not be the true mean discharge for the day. If such stations are equipped with water-stage recorders the mean daily discharge may be obtained by averaging discharge at regular intervals during the day or by using the discharge integrator, an instrument operating on the principle of the planimeter and containing as an essential element the rating curve of the station.

In the table of monthly discharge the column headed "Maximum" gives the mean flow for the day when the mean gage height was highest. As the gage height is the mean for the day it does not indicate correctly the stage when the water surface was at crest height, and the corresponding discharge was consequently larger than given in the maximum column. Likewise, in the column headed "Minimum" the quantity given is the mean flow for the day when the mean gage height was lowest. The column headed "Mean" is the average flow in cubic feet per second during the month. On this average flow computations recorded in the remaining columns, which are defined on page 2, are based.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of stream-flow data depends primarily on the permanency of the stage-discharge relation and on the accuracy of observation of stage, measurements of flow, and interpretation of records.

A paragraph in the description of the station gives information regarding the (1) permanence of the stage-discharge relation, (2) precision with which the discharge rating curve is defined, (3) refinement of gage readings, (4) frequency of gage readings, and (5) methods of applying daily gage height to the rating table to obtain the daily discharge.

For the rating tables "well defined" indicates, in general, that the rating is probably accurate within 5 per cent; "fairly well defined,"

within 10 per cent; "poorly defined," within 15 to 25 per cent. These notes are very general and are based on the plotting of the individual measurements with reference to the mean rating curve.

The monthly means for any station may represent with high accuracy the quantity of water flowing past the gage, but the figures showing discharge per square mile and run-off in inches may be subject to gross errors caused by the inclusion of large noncontributing districts in the measured drainage area, by lack of information concerning water diverted for irrigation or other use, or by inability to interpret the effect of artificial regulation of the flow of the river above the station. "Second-feet per square mile" and "run-off in inches" are therefore not computed if such errors appear probable. The computations are also omitted for stations on streams draining areas in which the annual rainfall is less than 20 inches. All figures representing "second-feet per square mile" and "run-off in inches" published in the earlier Survey reports should be used with caution because of possible inherent sources of error not known to the Survey.

Many gaging stations on streams in the irrigated areas of the United States are situated above most of the diversions from those streams, and the discharge recorded does not show the water supply available for further development, as prior appropriations below the stations must first be satisfied. To give an idea of the amount of prior appropriations, a paragraph on diversions is presented in each station description. The figures given can not be considered exact but represent the best information available.

The tables of monthly discharge give only a general idea of the flow at the station and should not be used for other than preliminary estimates; the tables of daily discharge allow more detailed studies of the variation in flow. It should be borne in mind, however, that the observations in each succeeding year may be expected to throw new light on data previously published.

COOPERATION

The work in Utah, Nevada, California, Oregon, Wyoming, and Idaho was carried on under cooperative agreements between the United States Geological Survey and the States, and special acknowledgments are due to the cooperating State officials, R. E. Caldwell, State engineer of Utah; J. G. Scrugham and Robert A. Allen, State engineers of Nevada; W. F. McClure, State engineer of California; the division of water rights, Department of Public Works of the State of California; Percy A. Cupper and Rhea Luper, State engineers of Oregon; C. D. Shawver, State engineer of Wyoming; and W. G. Swendsen, commissioner of reclamation of Idaho; for the efficient manner in which they have represented their States in the cooperative investigations.

Acknowledgments are also due for financial assistance rendered by United States Office of Indian Affairs, Utah Power & Light Co., Empire irrigation district, Walker irrigation district, Sevier River water users, Silver Lake irrigation district, Silver Creek Valley irrigation district, Harney Valley irrigation district, Trout Creek irrigation district, and William Hanley Co.

DIVISION OF WORK

Data for stations in Utah and Nevada were collected and prepared for publication under the direction of A. B. Purton, district engineer, assisted by W. E. Dickinson, R. R. Rowe, B. A. Howell, H. W. Staats, J. W. Mangan, M. T. Wilson, D. M. Corbett, and Miss Lysle Christensen.

Data for stations in California were collected and prepared for publication under the direction of H. D. McGlashan, district engineer, assisted by William Kessler, R. C. Briggs, Charles Leidl, K. M. Kelley, Jesse Arnold, and J. E. Jones.

Data for stations in Oregon were collected and prepared for publication under the direction of F. F. Henshaw, district engineer, assisted by G. H. Canfield, K. N. Phillips, and Wendell Dawson.

Data for stations on Soda Creek in Idaho were collected and prepared for publication under the direction of C. G. Paulsen, district engineer, assisted by Berkeley Johnson, L. L. Bryan, A. G. Fiedler, F. M. Veatch, and Miss E. H. Haugse.

Data for the station in Wyoming were collected and prepared for publication under the direction of Robert Follansbee, assisted by P. V. Hodges and M. B. Arthur.

The records were reviewed and manuscript assembled by B. J. Peterson and J. H. Morgan.

GAGING-STATION RECORDS

GREAT SALT LAKE BASIN

GAGES ON GREAT SALT LAKE

LOCATION.—At Saltair, on southeast shore of lake, 15 miles west of Salt Lake City, and at Midlake, on Lucin cut-off of Southern Pacific Railroad, 30 miles west of Ogden, Weber County, Utah.

RECORDS AVAILABLE.—September 14, 1875, to December 15, 1899; March to July, 1904; October 1, 1912, to September 30, 1923.

GAGES.—Midlake gage read August 15, 1902, to September 30, 1923, by Southern Pacific Co. Saltair gage read July 1, 1903, to September 30, 1923, by United States Weather Bureau. Other gages used at various times are described in earlier water-supply papers. Datum of Midlake gage in 4,198.0 feet above mean sea level as determined by comparative readings with other gages in 1916. Datum of Saltair gage is 4,196.8 feet above mean sea level as determined by levels by topographic branch in 1922.

EXTREMES OF STAGE.—Maximum stage recorded during year, 4,204.8 feet above mean sea level June 1 and 15 at Saltair gage; minimum stage, 4,202.8 feet November 15 at Saltair gage.

1850–1923: Maximum stage recorded, 4,211.3 feet above mean sea level July 12, 1877. Estimated maximum stage, 4,212.5 feet occurred in 1868 (data furnished by Marcus E. Jones, Salt Lake City). Minimum stage, 4,195.7 feet in 1902.

ACCURACY.—Saltair gage is read to tenths of feet. Midlake gage is read in inches, and readings reduced to feet and decimals. Apparent inconsistencies in readings are probably largely due to effect of wind, as the two gages are about 40 miles apart.

COOPERATION.—Readings on Midlake gage are furnished by Southern Pacific Co.; readings on Saltair gage by United States Weather Bureau.

Gage height, in feet, of Great Salt Lake, Utah, for the year ending September 30, 1923

Day	Gage height		Day	Gage height		Day	Gage height	
	Saltair gage	Midlake gage		Saltair gage	Midlake gage		Saltair gage	Midlake gage
Oct. 1	6.2	5.17	Feb. 1	6.8	5.67	June 1	8.0	6.75
15	6.2	5.08	15	6.9	5.67	15	8.0	6.83
Nov. 1	6.0	5.00	Mar. 1	6.9	5.83	July 1	7.9	6.83
15	6.2	5.08	15	7.0	5.92	15	7.6	6.67
Dec. 1	6.2	5.08	Apr. 1	7.2	6.00	Aug. 1	7.5	6.42
15	6.3	5.17	15	7.4	6.17	15	7.4	6.17
Jan. 1	6.4	5.33	May 1	7.5	6.42	Sept. 1	7.2	6.00
15	6.5	5.50	15	7.7	6.58	15	7.0	5.83

BEAR RIVER BASIN

BEAR RIVER NEAR EVANSTON, WYO.

LOCATION.—In sec. 1, T. 15 N., R. 121 W., 300 feet above highway bridge and 3½ miles northwest of Evanston, Uinta County. Nearest tributary, a small stream entering from southwest half a mile above.

DRAINAGE AREA.—645 square miles (measured on map of Wyoming, scale 1:500,000).

RECORDS AVAILABLE.—October 26, 1913, to September 30, 1923.

GAGE.—Chain gage on left bank, 300 feet above bridge; read by Mrs. Alex. Morrow.

DISCHARGE MEASUREMENTS.—Made from cable just below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of coarse gravel. Control at riffle a short distance below gage; slightly shifting at long intervals. Banks subject to overflow at stage of about 5 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.1 feet at 5.30 p. m. May 27 (discharge, 3,460 second-feet); minimum stage, 1.20 feet October 8 and 9 (discharge, 35 second-feet).

1914–1923: Maximum stage recorded, 6.35 feet at 6.30 p. m. June 14, 1921 (discharge, 3,690 second-feet); minimum stage, 0.49 foot at 8.15 a. m. August 26, 1919 (discharge, 0.1 second-foot).

ICE.—Stage-discharge relation seriously affected by ice.

DIVERSIONS.—There are adjudicated diversions for irrigation of 30,300 acres from Bear River above station.

REGULATION.—Diurnal fluctuation during spring caused by alternate melting and freezing of mountain snow. No artificial regulation.

ACCURACY.—Stage-discharge relation shifted slightly. Rating curve well defined. Gage read to quarter-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table except from

October 1 to November 17, when shifting-control method was used. Records excellent, except during period of shifting control, for which they are fair.

Discharge measurements of Bear River near Evanston, Wyo., during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
Oct. 4	M. B. Arthur	1.24	40.0
May 21	P. V. Hodges	5.40	2,110

Daily discharge, in second-feet, of Bear River near Evanston, Wyo., for the year ending September 30, 1923

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	40	65	170	670	1,550	930	230	75
2	40	70	173	720	1,340	875	216	69
3	40	72	176	770	1,280	820	190	65
4	39	74	177	930	1,280	720	177	69
5	38	77	177	1,040	1,220	720	165	69
6	38	79	190	1,100	1,220	670	148	65
7	38	81	190	1,160	1,280	670	132	62
8	35	83	202	1,160	1,340	670	121	58
9	35		216	1,340	1,410	620	110	53
10	40		230	1,410	1,550	535	108	48
11	39	80	244	1,410	1,800	535	104	45
12	36		304	1,410	2,020	535	104	42
13	35		338	1,280	2,300	495	106	45
14	36		442	1,040	1,900	425	142	42
15	39	84	620	1,040	1,710	390	158	39
16	40	81	770	985	1,630	320	128	42
17	40	83	930	1,100	1,550	288	110	51
18	40	----------	1,340	1,280	1,280	273	104	55
19	48	----------	1,220	1,800	1,040	288	104	55
20	48	----------	770	2,020	930	320	100	55
21	44	----------	670	2,300	875	338	88	56
22	45	----------	575	2,860	930	390	84	58
23	45	----------	460	3,260	930	442	80	60
24	45	----------	495	2,660	985	535	77	67
25	47	----------	575	2,860	1,040	720	77	77
26	48	----------	670	3,060	1,100	620	73	88
27	48	----------	720	3,460	1,100	515	73	104
28	50	----------	875	2,660	1,040	390	69	119
29	53	----------	1,040	2,300	985	304	69	137
30	56	----------	1,100	2,020	985	258	75	144
31	59	----------	----------	1,710	----------	244	84	----------

NOTE.—Stage-discharge relations affected by ice Nov. 9–14; braced figure represents mean flow for period. Gage not read Apr. 1–3; discharge estimated.

Monthly discharge of Bear River near Evanston, Wyo., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	59	35	42.7	2,630
November 1–17	84	65	78.2	2,640
April	1,340	170	535	31,800
May	3,460	670	1,700	105,000
June	2,300	875	1,320	78,600
July	930	244	511	31,400
August	230	69	116	7,130
September	144	39	67.1	3,990

BEAR RIVER AT HARER, IDAHO

LOCATION.—In NE. ¼ sec. 22, T. 14 S., R. 45 E., three-fourths of a mile north of Harer siding on Oregon Short Line Railroad, 7 miles above Dingle and 14 miles southeast of Montpelier, Bear Lake County.

DRAINAGE AREA.—2,780 square miles (determined by Utah Power & Light Co.).

RECORDS AVAILABLE.—June 21, 1913, to September 30, 1916; January 1, 1919, to September 30, 1923.

GAGE.—Stevens continuous water-stage recorder on right bank; installed August 24, 1914; inspected by Karl Gilgen.

DISCHARGE MEASUREMENTS.—Made by wading or from cable.

CHANNEL AND CONTROL.—Bed clean and firm, hard material; left bank overflowed at extremely high stages. Control fairly permanent.

EXTREME OF DISCHARGE.—Maximum mean daily stage during year, 10.34 feet May 30 (discharge, 3,700 second-feet); minimum mean daily discharge, 255 second-feet February 7 (stage-discharge relation affected by ice).

1913–1916; 1919–1923: Maximum stage recorded, 10.51 feet June 2, 1920 (discharge, 3,860 second-feet); minimum stage, 2.61 feet at 6.25 a. m. September 1, 1919 (discharge, 81 second-feet).

ICE.—Stage-discharge relation seriously affected by ice.

DIVERSIONS.—Numerous diversions for irrigation above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation affected by ice November 10 to April 8. Rating curves well defined. Water-stage recorder operated satisfactorily. Daily discharge determined by applying to rating table mean daily gage height ascertained from recorder graph, except during November and December when mean discharge was estimated on account of ice for periods shown in daily-discharge table. January 1 to April 8 mean daily gage heights were corrected for ice effect by means of a backwater table before applying to rating table. Records good.

COOPERATION.—Data are collected and records compiled by Utah Power & Light Co. (under supervision of Geological Survey) in connection with records furnished for project 20, Idaho, of Federal Power Commission.

Discharge measurements of Bear River at Harer, Idaho, during the year ending September 30, 1923

[Made by Karl Gilgen]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Second-feet*		*Feet*	*Second-feet*
Oct. 3	3.52	331	Mar. 29	[a] 4.02	343
12	3.46	307	Apr. 14	7.79	2,320
19	3.45	299	23	[b] 8.82	2,850
25	3.48	305	30	7.51	2,170
Nov. 2	3.67	386	May 7	7.85	2,290
9	3.55	341	14	[b] 9.28	3,070
29	[a] 3.88	370	21	[b] 9.44	3,160
29	[a] 3.88	353	28	[b] 10.26	3,570
Dec. 15	[a] 3.98	317	June 6	[b] 10.18	3,680
21	[a] 3.90	308	13	8.02	2,390
28	[a] 3.80	334	26	6.39	1,650
Jan. 10	[a] 3.84	338	July 2	5.41	1,260
18	[a] 3.72	300	10	4.98	1,020
24	[a] 3.71	294	26	5.02	1,020
Feb. 9	[a] 3.85	279	Aug. 2	4.54	776
19	[a] 3.87	281	6	4.16	612
26	[a] 3.91	286	23	3.61	353
Mar. 5	[a] 3.96	279	Sept 3	3.66	381
12	[a] 3.92	295	11	3.68	386
22	[a] 3.97	297	24	3.81	428

[a] Stage-discharge relation affected by ice. [b] River overflowing banks.

Daily discharge, in second-feet, of Bear River at Harer, Idaho, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	334	366		345	315		360	2,210	3,700	1,220	815	374
2	331	380		345	305	280	400	2,210	3,690	1,200	770	385
3	328	388		340	295		450	2,180	3,660	1,180	710	374
4	328	392		340	270		550	2,180	3,620	1,160	649	385
5	328	384		345	270	279	700	2,190	3,600	1,150	604	374
6	324	370		355	260	280	800	2,250	3,600	1,120	582	368
7	328	356		360	255	285	900	2,320	3,490	1,080	572	364
8	328	348	325	360	260	290	1,100	2,420	3,260	1,040	559	360
9	328	352		360	279	285	1,340	2,520	2,950	1,020	518	357
10	328			320	285	295	1,470	2,620	2,670	1,000	497	371
11	320			325	275	285	1,480	2,770	2,550	1,040	473	378
12	310			335	275	295	1,640	2,880	2,460	1,080	453	374
13	306			330	285	300	1,980	3,000	2,400	1,040	445	368
14	306			310	275	315	2,290	3,080	2,370	1,020	429	371
15	306		317	310	280	315	2,640	3,100	2,370	1,040	405	371
16	306			300	275	295	2,720	3,110	2,340	1,030	389	371
17	303			285	275	305	2,720	3,120	2,280	1,040	389	374
18	303		315	300	275	290	2,840	3,140	2,280	1,040	393	385
19	303	360		300	281	275	2,980	3,140	2,280	1,040	397	385
20	306			280	285	285	3,020	3,160	2,210	1,000	389	382
21	306		308	270	285	300	3,020	3,170	2,180	934	382	382
22	310			260	285	297	2,980	3,220	2,120	879	371	378
23	310			260	285	310	2,840	3,260	2,000	846	364	374
24	314			294	280	315	2,640	3,320	1,790	815	357	429
25	314		330	300	280	320	2,350	3,400	1,700	846	357	493
26	328			300	286	325	2,080	3,480	1,660	962	350	532
27	331			310	280	320	1,970	3,570	1,610	1,080	346	595
28	334		334	310	280	330	1,980	3,640	1,570	1,070	343	590
29	348	370		315	-------	330	2,060	3,690	1,520	1,040	343	582
30	366	360	335	320	-------	343	2,160	3,700	1,300	994	340	608
31	366	-------		320	-------	345	-------	3,700	-------	901	354	-------

NOTE.—Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Bear River at Harer, Idaho, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	366	303	322	19,800
November	----------	----------	364	21,700
December	----------	----------	325	20,000
January	360	260	315	19,400
February	315	255	280	15,600
March	345	----------	301	18,500
April	3,020	360	1,880	112,000
May	3,700	2,180	2,960	182,000
June	3,700	1,300	2,510	149,000
July	1,220	815	1,030	63,300
August	815	340	463	28,500
September	608	357	414	24,600
The year	3,700	----------	932	674,000

BEAR RIVER AT ALEXANDER, IDAHO

LOCATION.—In NE. ¼ sec. 18, T. 9 S., R. 41 E., half a mile southeast of Alexander, Caribou County, 3 miles above intake of Last Chance Canal and 6 miles above dam of Utah Power & Light Co. near Grace.

DRAINAGE AREA.—3,844 square miles (measured on Utah Power & Light Co.'s map).

RECORDS AVAILABLE.—March 27, 1911, to September 30, 1916, and April 17, 1919, to September 30, 1923.

GAGE.—Stevens water-stage recorder on right bank installed September 15, 1914; inspected by Karl Gilgen.

DISCHARGE MEASUREMENTS.—Made from cable about 400 feet above gage and from a cable at Steamboat Springs about 3 miles above Alexander during period when river is frozen over.

CHANNEL AND CONTROL.—Bed composed of gravel and sand. Control fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year occurred during winter ice gorges. Maximum mean daily stage during open water 9.60 feet June 10 and 11 (discharge, 3,910 second-feet); minimum mean daily stage, 5.89 feet October 8 (discharge, 671 second-feet).

1911–1916; 1919–1923: Maximum stage recorded, 15.95 feet December 11, 1919, during ice-affected period. Maximum discharge 4,590 second-feet occurred May 9, 1922 (gage height, 10.14 feet); minimum stage, 4.96 feet November 15, 1915 (discharge, 310 second-feet).

ICE.—Stage-discharge relation seriously affected by ice.

DIVERSIONS.—Water is diverted above station for irrigation and for storage in Bear Lake.

REGULATION.—Affected by water released at Bear Lake and returned to Bear River about 30 miles above station.

ACCURACY.—Stage-discharge relation unsettled July to September; affected by ice as shown in daily-discharge table. Standard rating curve, and temporary curve used July to December, well defined by measurements. Water-stage recorder operated successfully during year except during ice-affected period. Daily discharge determined by applying to rating table mean daily gage height ascertained by inspection of recorder graph except during ice-affected periods when discharge was estimated from current-meter measurements and comparison with flow at Bern Bridge and Pescadero above station and Grace below. Records good.

COOPERATION.—Data are collected and records compiled by the Utah Power & Light Co. (under supervision of the Geological Survey) in connection with project 20, Idaho, of the Federal Power Commission.

Discharge measurements of Bear River at Alexander, Idaho, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 6	Karl Gilgen	5.99	757	May 5	Karl Gilgen	6.92	1,320
14	do	7.24	1,620	12	do	7.12	1,470
21	do	6.06	758	19	do	7.90	2,130
27	do	6.06	767	26	do	6.98	3,190
Nov. 3	do	6.01	772	June 4	do	9.44	3,760
10	do	6.40	998	9	do	9.48	3,720
17	do	6.30	926	16	do	9.03	3,350
24	do	6.42	982	27	do	8.41	2,650
Dec. 1	do	6.59	1,120	July 3	do	7.14	1,520
9	do	[a] 6.22	853	7	do	6.98	1,410
22	do	[a] 7.17	1,150	14	do	7.89	2,190
26	do	[a] 6.95	1,240	23	do	7.08	1,510
Jan. 2	do	6.64	998	Aug. 1	do	7.02	1,500
9	do	6.62	1,130	8	do	7.09	1,490
16	do	6.57	1,070	11	E. J. Baird	7.16	1,530
Mar. 6	do	6.88	1,240	15	do	6.98	1,410
13	do	6.71	1,170	22	do	7.15	1,480
20	do	6.61	1,080	24	do	7.12	1,470
26	do	6.50	1,040	29	Gilgen and Baird	7.00	1,430
Apr. 3	do	6.93	1,300	Sept. 5	do	7.30	1,650
13	do	7.43	1,700	15	Karl Gilgen	6.96	1,400
21	do	6.84	1,250	25	E. J. Baird	6.97	1,400
28	do	6.75	1,170	28	Karl Gilgen	7.04	1,410

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Bear River at Alexander, Idaho, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	820	788	1,080	{1,200		1,480	1,260	1,500	3,690	1,970	1,450	1,590
2	807	757	1,100			1,460	1,320	1,360	3,740	1,750	1,460	1,460
3	801	788	1,130			1,320	1,320	1,290	3,770	1,530	1,460	1,380
4	788	916	1,120	1,220		1,300	1,230	1,280	3,760	1,360	1,450	1,530
5	757	942	1,120	1,250		1,340	1,200	1,300	3,720	1,430	1,440	1,650
6	732	949	1,070	1,280		1,270	1,240	1,350	3,710	1,440	1,500	1,650
7	683	962	1,120	1,280		1,200	1,140	1,360	3,700	1,420	1,590	1,510
8	671	956	1,020	1,240		1,160	1,170	1,350	3,740	1,400	1,510	1,350
9	677	949	1,010	1,210		1,160	1,240	1,380	3,790	1,480	1,490	1,320
10	677	969	1,050	1,230		1,160	1,340	1,450	3,910	1,840	1,500	1,430
11	708	982		1,240		1,150	1,400	1,460	3,910	2,000	1,530	1,490
12	732	989		1,210		1,120	1,580	1,460	3,790	2,070	1,490	1,530
13	995	982		1,180		1,110	1,710	1,500	3,560	2,130	1,460	1,550
14	1,600	949		1,200		1,070	1,770	1,560	3,490	2,200	1,550	1,500
15	1,700	851		1,160	{1,200	1,070	1,970	1,580	3,350	2,170	1,430	1,390
16	1,720	858	{1,250	1,180		1,120	1,860	1,730	3,290	2,110	1,320	1,310
17	1,620	929		1,240		1,050	1,820	1,820	3,270	2,030	1,310	1,280
18	1,370	1,000		1,260		1,040	1,780	2,020	3,230	1,890	1,360	1,320
19	1,290	1,020		1,200		1,090	1,630	2,120	3,170	1,720	1,460	1,380
20	1,100	995		1,210		1,070	1,340	2,260	3,120	1,650	1,500	1,340
21	782	1,010				1,040	1,250	2,440	3,150	1,610	1,540	1,320
22	708	995	1,150	{1,150		1,050	1,180	2,700	3,110	1,550	1,540	1,310
23	677	982				1,070	1,300	2,910	3,060	1,490	1,540	1,310
24	677	1,000	{1,200	1,100		1,070	1,200	3,070	2,950	1,510	1,510	1,420
25	702	995		1,040		1,040	992	3,170	2,880	1,600	1,460	1,420
26	726	1,010	1,240	992		1,040	939	3,230	2,790	1,590	1,460	1,370
27	776	1,020		1,020		1,060	1,020	3,180	2,630	1,580	1,460	1,410
28	838	1,030				1,070	1,180	3,260	2,440	1,570	1,390	1,420
29	896	1,080	{1,220	{1,050		1,070	1,280	3,280	2,280	1,500	1,440	1,280
30	826	1,100				1,100	1,520	3,340	2,100	1,380	1,540	1,110
31	813					1,170		3,550		1,360	1,630	

NOTE.—Braced figures show estimated mean discharge for periods indicated when stage discharge relation was affected by ice.

Monthly discharge of Bear River at Alexander, Idaho, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	1,720	671	925	56,900
November	1,100	757	958	57,000
December			1,180	72,600
January			1,170	71,900
February			[a] 1,200	66,600
March	1,480	1,040	1,150	70,700
April	1,970	939	1,370	81,500
May	3,550	1,280	2,110	130,000
June	3,910	2,100	3,300	196,000
July	2,200	1,360	1,690	104,000
August	1,630	1,310	1,480	91,000
September	1,650	1,100	1,410	83,000
The year	3,910	671	1,490	1,080,000

[a] Estimated from flow at Pescadero station.

BEAR RIVER NEAR WESTON, IDAHO

LOCATION.—In SE. ¼ sec. 17, T. 16 S., R. 39 E., at Weston-Fairview highway bridge, 3 miles east of Weston, Franklin County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 21, 1919, to September 30, 1923. Records at this station are comparable with those obtained at gaging station near Preston, Idaho, maintained October 11, 1889, to January 15, 1917.

GAGE.—Stevens continuous water-stage recorder; inspected by Mrs. Mart Rasmussen.

DISCHARGE MEASUREMENTS.—Made from highway bridge immediately below gage.

CHANNEL AND CONTROL.—Bed composed of gravel and earth. Banks fairly high and covered with brush. One channel at all stages. Low-water control is fairly well-defined gravel riffle 200 feet below gage; not permanent.

EXTREMES OF DISCHARGE.—Maximum mean daily stage, 9.19 feet June 4 (discharge, 4,260 second-feet); minimum mean daily stage, 2.93 feet October 30 (discharge, 562 second-feet).

1920–1923: Maximum stage, 12.1 feet May 8 or 9, 1922 (discharge, 6,100 second-feet); minimum stage, 1.28 feet at 5 p. m. November 15, 1919 (discharge about 174 second-feet).

ICE.—Stage-discharge relation usually affected by ice.

DIVERSIONS.—Numerous ditches divert water for irrigation above station.

REGULATION.—Considerable diurnal fluctuation is caused by operation of Oneida power plant about 25 miles above, and seasonal flow is affected by storage at Bear Lake about 160 miles above.

ACCURACY.—Stage-discharge relation shifted occasionally; not seriously affected by ice this year. Shifting-control method used throughout the year. On account of large diurnal fluctuations records computed from hourly discharge determined by applying hourly gage heights to rating tables and checked by hydrographic comparison with flow below Oneida power plant. Records fair.

COOPERATION.—Data are collected and records compiled by the Utah Power & Light Co. (under supervision of the Geological Survey) in connection with records furnished for project 20, Idaho, of the Federal Power Commission.

Discharge measurements of Bear River near Weston, Idaho, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 12	R. P. Flagel	3.91	1,000	June 19	E. G. Thorum	8.08	3,400
Jan. 11	do	4.04	910	July 18	R. W. Groo	3.87	1,350
Mar. 22	do	3.74	688	Aug. 29	do	3.73	1,220
May 12	Groo and Thorum	5.72	1,730				

Daily discharge, in second-feet, of Bear River near Weston, Idaho, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,050	957	1,420	1,500	1,370	1,410	1,960	1,850	3,920	1,850	1,560	1,190
2	600	1,160	1,330	1,510	1,270	1,450	1,670	2,730	3,680	1,760	1,610	882
3	900	947	1,610	1,410	1,580	1,560	2,630	2,380	3,940	1,620	1,600	2,070
4	900	894	1,220	1,480	925	1,230	2,050	2,140	4,260	990	1,910	1,540
5	1,000	962	1,310	1,490	1,370	1,570	1,800	2,020	3,810	1,620	1,260	1,120
6	1,030	1,140	1,360	1,440	1,120	1,390	2,330	2,070	3,750	2,120	1,690	1,260
7	1,160	1,160	1,500	1,650	940	1,410	2,860	2,210	3,560	1,780	1,120	1,440
8	1,010	1,210	1,440	1,990	885	1,440	2,160	2,410	3,870	1,530	1,220	2,710
9	817	1,250	1,360	1,540	1,520	1,440	2,400	2,340	3,870	1,630	1,800	1,660
10	1,060	1,230	957	1,640	1,500	1,360	2,460	2,290	3,760	1,700	1,460	1,850
11	1,200	1,280	1,160	1,460	1,190	1,330	2,090	2,470	4,230	2,100	1,360	1,520
12	1,020	1,180	1,460	1,500	1,780	1,370	2,070	2,540	4,180	1,960	1,180	1,250
13	903	1,250	1,200	1,830	1,480	1,440	2,650	2,290	4,030	2,050	1,570	1,450
14	705	1,220	1,460	1,640	1,660	1,360	2,540	2,360	3,280	1,730	1,460	1,550
15	928	1,160	1,540	1,260	1,600	1,380	3,000	2,230	3,130	2,000	1,790	1,910

Daily discharge, in second-feet, of Bear River near Weston, Idaho, for the year ending September 30, 1923—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	1,050	1,200	1,210	1,230	1,630	1,330	3,480	2,670	3,250	1,810	1,990	910
17	1,840	1,080	1,540	1,420	1,620	1,390	3,050	2,320	2,810	1,740	1,710	1,820
18	1,820	1,180	1,430	1,410	1,130	1,110	3,370	2,260	3,190	1,590	1,310	1,650
19	1,670	1,260	1,590	1,600	1,300	1,560	2,950	2,790	3,020	1,620	750	1,380
20	1,220	1,360	1,570	1,470	1,220	1,280	2,690	3,060	3,340	1,900	1,320	1,660
21	1,540	1,450	1,660	1,300	1,540	1,510	2,480	2,990	3,090	2,020	1,390	1,850
22	1,020	1,100	1,470	1,470	1,450	1,340	2,480	2,760	3,390	1,140	1,320	1,970
23	1,040	1,200	1,420	1,320	1,500	1,410	2,580	3,420	3,350	1,830	1,660	1,260
24	1,380	1,300	1,260	1,500	1,430	1,380	1,460	3,820	3,300	1,390	1,550	733
25	1,200	1,100	1,550	1,680	1,640	1,170	1,520	3,700	3,040	1,660	1,820	1,590
26	1,080	1,120	1,530	1,510	1,510	1,760	1,620	3,860	2,730	1,770	1,040	1,530
27	933	1,310	1,530	1,380	1,290	1,310	1,420	3,480	3,140	1,530	1,830	1,060
28	918	1,310	1,480	1,170	1,420	1,720	1,940	3,920	2,410	1,650	2,230	1,500
29	709	1,300	1,610	1,490	-------	1,590	1,090	3,800	2,240	1,240	1,770	2,210
30	562	1,190	1,370	1,480	-------	1,870	2,590	3,530	1,550	1,410	1,860	1,930
31	1,080	-------	1,400	1,480	-------	2,540	-------	3,480	-------	1,880	1,490	-------

Monthly discharge of Bear River near Weston, Idaho, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	1,950	562	1,080	66,400
November	1,450	894	1,180	70,200
December	1,610	957	1,420	87,300
January	1,990	1,170	1,490	91,600
February	1,780	885	1,390	77,200
March	2,540	1,110	1,460	89,800
April	3,480	1,090	2,310	137,000
May	3,920	1,850	2,780	171,000
June	4,260	1,550	3,370	201,000
July	2,120	990	1,700	105,000
August	2,230	750	1,540	94,700
September	2,710	733	1,550	92,200
The year	4,260	562	1,770	1,280,000

BEAR RIVER NEAR COLLINSTON, UTAH

LOCATION.—In W. ½ sec. 34, T. 13 N., R. 2 W., a quarter of a mile below power plant of Utah Power & Light Co., at railroad siding called Wheelon, 4 miles north of Collinston, Box Elder County. Little Malad River enters 20 miles below station.

DRAINAGE AREA.—6,000 square miles (measured on topographic and United States Forest Service maps).

RECORDS AVAILABLE.—July 1, 1889, to September 30, 1923.

GAGE.—Friez eight-day water-stage recorder on left bank, installed November 17, 1919; replaced by Stevens continuous recorder from June 23 to November 10, 1922; inspected by H. O. Durfey.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and sand. Left bank high and covered with willows; not subject to overflow. Right bank fairly high and covered with willows; may be overflowed by exceptionally high floods. Control not well defined.

EXTREMES OF DISCHARGE.—Maximum stage during year, 5.45 feet during early morning June 2 (discharge, 6,060 second-feet); minimum stage, 1.31 feet at 7 p. m. August 13 (discharge, 276 second-feet).

1889–1923: Maximum stage recorded, 7.7 feet June 7–10, 1909 (discharge, 11,600 second-feet); minimum stage, 0.42 foot at midnight August 5, 1920 (discharge practically zero).

ICE.—Stage-discharge relation seldom affected by ice.

DIVERSIONS.—West Side and Hammond Canals divert water on both sides of Bear River about 2 miles above station. Water can be used from either or both of these canals to supply the Wheelon power plant. Water passing the Wheelon penstocks is used for irrigation or can be returned to the river. Numerous ditches farther upstream divert water for irrigation.

REGULATION.—Flow at station is affected by operation of power plants and storage and release of water from Bear Lake Reservoir.

ACCURACY.—Stage-discharge relation changed slightly a number of times during year; not affected by ice. Rating curves fairly well defined. Operation of water-stage recorders satisfactory, except for a few days. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph or staff gage readings; shifting-control method used January 16 to July 5. Records good.

COOPERATION.—Gage-height record and six discharge measurements furnished by Utah Power & Light Co.

Discharge measurements of Bear River near Collinston, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 10	R. P. Flagel [a]	2.97	1,930	May 13	Thorum [a] and Groo [a]	5.26	5,860
Jan. 9	do	3.60	3,110	June 22	E. G. Thorum	4.54	4,350
Mar. 20	do	3.12	2,330	July 27	R. W. Groo	2.26	1,100

[a] Engineer, Utah Power & Light Co.

Daily discharge, in second-feet, of Bear River near Collinston, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,000	1,760	1,990	2,200	1,570	2,290	4,160	4,420	5,840	1,980	1,160	900
2	646	1,680	2,160	2,270	1,780	2,290	4,020	4,420	6,020	2,200	1,160	890
3	710	1,800	2,250	2,200	1,780	2,380	4,150	4,510	5,840	1,880	790	1,210
4	818	1,680	2,300	2,200	1,710	2,440	4,650	4,580	5,570	1,670	990	1,280
5	953	1,540	1,990	2,230	1,940	2,270	4,340	4,550	5,450	1,090	1,060	1,140
6	1,100	1,610	2,210	2,340	1,890	2,380	4,240	4,700	5,450	1,010	860	745
7	1,100	1,830	2,200	2,570	2,020	2,490	5,200	4,960	5,320	1,490	800	673
8	1,240	1,860	2,290	2,250	1,860	2,510	5,560	5,320	5,070	1,640	562	840
9	1,000	1,860	2,210	2,570	1,780	2,550	5,040	5,590	4,930	1,160	516	1,490
10	1,030	1,930	2,210	2,720	1,770	2,400	4,590	5,540	4,950	990	570	1,310
11	1,240	1,850	1,800	2,680	2,130	2,270	4,310	5,670	4,850	880	890	1,040
12	1,310	1,860	1,860	2,530	2,250	2,210	4,000	5,870	4,800	1,030	562	1,000
13	1,200	1,770	2,020	2,470	2,110	2,270	4,090	5,870	4,800	1,260	538	637
14	1,200	1,770	2,200	2,640	2,270	2,270	4,350	5,500	5,020	1,190	700	673
15	1,080	1,770	2,290	2,400	2,420	2,140	4,360	5,180	5,200	900	830	940
16	1,410	1,830	2,250	2,040	2,610	2,210	4,490	4,880	4,590	1,170	1,040	1,210
17	2,250	1,830	1,990	2,090	2,510	2,210	4,790	4,760	4,340	890	1,310	709
18	2,200	1,830	2,210	2,230	2,530	2,270	4,970	4,850	4,270	930	1,430	1,290
19	2,160	1,860	2,250	2,210	2,360	2,060	5,030	4,750	3,980	763	1,380	1,210
20	2,020	1,910	2,340	2,270	2,060	2,420	5,350	5,160	3,930	754	700	1,120
21	1,610	2,020	2,340	2,210	2,090	2,420	5,220	5,570	3,980	920	655	1,250
22	1,910	2,080	2,420	2,040	2,140	2,590	5,000	5,660	4,290	1,120	880	1,330
23	1,370	1,800	2,270	2,140	2,470	2,570	4,880	5,610	4,530	562	890	1,480
24	1,540	1,890	2,290	2,110	2,380	2,860	5,040	5,570	4,540	781	1,000	1,190
25	1,720	1,990	2,200	2,320	2,340	2,860	4,290	5,720	4,410	1,040	1,080	1,490
26	1,570	1,800	2,320	2,440	2,400	3,110	3,760	5,700	4,190	1,170	1,140	1,590
27	1,440	1,770	2,380	2,290	2,510	3,780	3,810	5,720	3,760	1,230	980	1,660
28	1,290	1,960	2,380	2,020	2,360	3,620	3,670	5,680	3,740	940	840	1,710
29	1,350	2,040	2,380	2,020	-------	3,670	3,880	5,610	3,380	990	1,270	2,060
30	1,060	1,990	2,440	2,020	-------	3,780	3,580	5,720	2,820	610	1,230	2,480
31	1,020	-------	2,250	2,110	-------	3,900	-------	5,700	-------	840	1,040	-------

Monthly discharge of Bear River near Collinston, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	2,250	646	1,340	82,400
November	2,080	1,540	1,840	109,000
December	2,440	1,800	2,220	136,000
January	2,720	2,020	2,280	140,000
February	2,610	1,570	2,140	119,000
March	3,900	2,060	2,630	162,000
April	5,560	3,580	4,490	267,000
May	5,870	4,420	5,270	324,000
June	6,020	2,820	4,660	277,000
July	2,200	562	1,130	69,500
August	1,430	516	931	57,200
September	2,480	637	1,220	72,600
The year	6,020	516	2,510	1,820,000

SODA CREEK AT LAU RANCH, NEAR SODA SPRINGS, IDAHO

LOCATION.—In sec. 12, T. 8 S., R. 41 E., 100 feet east of the Lau ranch house and 6 miles north of Soda Springs, Caribou County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 1 to September 30, 1923.

GAGE.—Vertical staff on left bank; read by George Schmidt. Prior to April 21 used a temporary staff on right bank directly opposite and at same datum as present gage.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of lava rock and fine gravel; subject to slight aquatic growth. Control formed by well-defined riffle 20 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period of record, 2.78 feet April 18 (discharge, about 160 second-feet); minimum stage, 0.80 foot June 8 and 9 (discharge, 5.5 second-feet).

ICE.—Stage-discharge relation seriously affected by ice during winter.

DIVERSIONS.—Schmidt ditch diverts a small amount of water for irrigation, 150 feet above gage on right bank.

REGULATION.—Flow affected by placement and removal of flashboards in low earth dam at outlet of Fivemile Meadows 400 feet above gage, and by diversions above.

ACCURACY.—Stage-discharge relation permanent throughout period of record except for slight effect of aquatic growth. Rating curve well defined below 40 second-feet, above which it is extended on basis of comparative high-water rating for station 1½ miles below at Schmidt ranch. Gage read to nearest two-hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table except as indicated in footnote to table of daily discharge. Records fair.

Discharge measurements of Soda Creek at Lau ranch, near Soda Springs, Idaho, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Apr. 21	A. G. Fiedler	1.44	30.4	July 17	C. G. Paulsen	0.93	7.4
May 12	C. G. Paulsen	1.16	16.6	Aug. 12	E. J. Baird [a]	.98	9.6
June 4	do	1.19	15.7	30	Berkeley Johnson	1.00	10.8
25	A. G. Fielder	1.09	14.6				

[a] Water master for Soda Creek.

Daily discharge, in second-feet, of Soda Creek at Lau ranch, near Soda Springs, Idaho, for the year ending September 30, 1923

Day	April	May	June	July	August	September
1	10	17	20	13	11	11
2	10	16	18	10	11	10
3	10	16	18	10	12	9.7
4	10	16	17	9.7	14	9.7
5	11	16	16	9.2	9.7	9.7
6	12	16	16	8.6	10	9.7
7	12	16	10	8.6	9.7	9.7
8	13	16	5.5	8.6	9.7	9.2
9	14	16	5.5	8.1	9.7	8.1
10	14	16	6.3	8.1	10	8.1
11	15	16	6.8	8.1	10	8.1
12	16	16	7.2	7.6	9.7	8.6
13	17	16	7.2	7.6	9.7	8.6
14	18	16	7.2	7.6	9.7	8.6
15		18	7.2	7.6	9.7	8.1
16		19	7.6	7.6	10	8.1
17	125	20	9.2	8.1	10	8.1
18		19	20	7.6	10	8.1
19		19	15	7.6	10	8.1
20		19	13	9.2	10	8.1
21	29	19	13	9.7	11	8.1
22	26	19	13	10	11	8.1
23	24	18	13	10	11	8.1
24	22	18	13	10	11	11
25	21	17	13	10	11	9.7
26	20	17	13	10	11	9.2
27	20	17	13	17	10	17
28	20	17	13	22	10	16
29	19	16	13	11	10	13
30	19	17	13	11	10	11
31		19		12	11	

NOTE.—Discharge estimated or interpolated on account of missing gage heights, Apr. 1-2, 4, 6, 9, 11, and June 3; mean discharge, Apr. 15-20, determined by use of gage heights Apr. 15-19 and extension of rating curve based on comparative high-water rating for station at Schmidt ranch.

Monthly discharge of Soda Creek at Lau ranch, near Soda Springs, Idaho, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April			38.4	2,280
May	20	16	17.2	1,060
June	20	5.5	12.1	720
July	22	7.6	9.85	606
August	14	9.7	10.4	640
September	17	8.1	9.62	572
The period				5,880

NOTE.—Schmidt ditch diverted from right bank 150 feet above gage the following amounts of water as determined by occasional discharge measurements and from observer's notes: May, 6.5 acre-feet; June, 68 acre-feet; and July, 22 acre-feet. Ditch reported dry during April, August, and September.

SODA CREEK NEAR SODA SPRINGS, IDAHO

LOCATION.—In sec. 24, T. 8 S., R. 41 E., at George Schmidt ranch, one-eighth mile below confluence of two branches of creek, 5 miles north of Soda Springs, Caribou County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 5, 1913, to September 30, 1923.

GAGE.—Vertical staff set in concrete on left bank, quarter of a mile south of ranch house, installed June 28, 1921, at a datum 3.30 feet higher than former vertical staff at same location which was used August 1, 1913, to July 27, 1921. George Schmidt, observer.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of lava rock. Control is a reef about 15 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.60 feet, April 18 (discharge, 217 second-feet); minimum discharge, 55 second-feet, June 12–16 and September 8–9.

1913–1923: Maximum stage recorded, 5.3 feet April 6, 1913 (discharge, 324 second-feet); minimum stage, 3.95 feet January 8 and 12–15, 1919 (discharge, 38 second-feet).

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—Practically no water diverted above station; a small ditch diverts water just below gage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent on account of effect of aquatic growth, but flow is uniform. Gage read to nearest even two-hundredth once daily. Daily discharge ascertained by using shifting-control method throughout the year based on standard rating curve and several curves parallel thereto. Records October to March, fair; April to September, good.

Discharge measurements of Soda Creek near Soda Springs, Idaho, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Apr. 21	A. G. Fiedler	1.02	95.6	July 17	C. G. Paulsen	0.92	56.3
May 12	C. G. Paulsen	.94	72.3	Aug. 12	E. J. Baird [a]	.96	58.1
June 4	do	.96	69.0	29	Berkeley Johnson	.95	56.4
25	A. G. Fiedler	.94	66.5				

[a] Water master for Soda Creek.

Daily discharge, in second-feet, of Soda Creek near Soda Springs, Idaho, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	62	63	63	66	73	67	70	84	75	66	60	60
2	62	63	63	66	73	67	76	81	72	63	58	60
3	62	63	63	66	73	67	79	81	69	63	58	58
4	62	63	63	66	73	67	83	79	69	60	58	58
5	62	63	63	66	73	67	83	79	69	60	58	58
6	62	65	65	67	73	67	79	79	69	57	58	58
7	62	65	65	67	73	70	79	78	63	57	58	58
8	62	65	65	67	73	70	79	78	58	57	58	55
9	62	65	65	67	73	73	79	75	58	57	58	55
10	62	65	65	70	73	73	79	73	58	59	58	58
11	63	65	63	72	72	73	83	73	58	58	58	58
12	63	63	63	72	72	73	83	73	55	60	58	60
13	63	63	63	72	72	73	83	73	55	60	58	60
14	63	63	63	72	69	73	83	73	55	60	58	60
15	63	63	63	70	69	73	115	76	55	59	58	60
16	63	63	65	70	69	73	170	75	55	57	58	60
17	63	62	65	70	69	73	205	75	58	57	58	60
18	63	62	65	70	66	73	217	75	69	57	58	63
19	63	62	65	70	66	73	170	75	66	57	58	63
20	63	62	65	70	66	73	157	75	66	59	58	60

Daily discharge, in second-feet, of Soda Creek near Soda Springs, Idaho, for the year ending September 30, 1923—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
21	63	62	66	73	66	73	93	73	69	60	58	60
22	63	62	66	73	65	73	89	73	69	60	58	58
23	63	63	66	75	65	73	89	73	69	60	58	58
24	62	63	66	75	65	73	89	73	69	60	58	66
25	62	63	66	75	65	73	86	70	67	60	58	63
26	62	63	67	75	65	70	86	69	67	59	58	63
27	62	63	67	75	65	70	86	69	67	65	58	75
28	62	62	67	75	67	67	86	69	67	65	58	69
29	62	62	67	72	-------	67	86	67	67	65	57	66
30	62	62	67	72	-------	67	86	70	67	62	58	63
31	62	-------	67	72	-------	67	-------	73	-------	62	60	-------

Monthly discharge of Soda Creek near Soda Springs, Idaho, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	63	62	62.4	3,840
November	65	62	63.1	3,750
December	67	63	64.9	3,990
January	75	66	70.6	4,340
February	73	65	69.4	3,850
March	73	67	70.7	4,350
April	217	70	101	6,010
May	84	67	74.5	4,580
June	75	55	64.3	3,830
July	66	57	60.0	3,690
August	60	57	58.1	3,570
September	75	55	60.8	3,620
The year	217	55	68.3	49,400

LOGAN RIVER ABOVE STATE DAM, NEAR LOGAN, UTAH

LOCATION.—In sec. 36, T. 12 N., R. 1 E., at Logan plant of Utah Power & Light Co., 125 feet above confluence of tailrace with river, and 2½ miles above Logan, Cache County.

DRAINAGE AREA.—218 square miles (measured on topographic map).

RECORDS AVAILABLE.—May 7, 1913, to September 30, 1923. June 1, 1896, to July 17, 1903, and April 14, 1904, to December 31, 1912, at old station a quarter of a mile downstream; flow at present station plus that of tailrace comparable to that at old station.

GAGE.—Stevens continuous water-stage recorder on right bank about 100 feet west of power house; installed May 7, 1913; inspected by operator of power plant.

DISCHARGE MEASUREMENTS.—Made by wading at gage; high-water measurements made from cable 400 feet downstream and flow in tailrace deducted.

CHANNEL AND CONTROL.—Banks high, clean, and not subject to overflow; right bank is dry rubble retaining wall. Control is concrete cut-off wall about 6 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage during year, 4.18 feet at 3 a. m. May 27 (discharge, 1,210 second-feet); minimum stage, 0.75 foot at 7 p. m. March 7 (discharge, 10 second-feet).

1913–1923: Maximum stage recorded, 5.6 feet at 9.30 a. m. March 21, 1916 (discharge estimated, 2,000 second-feet); minimum discharge, 8 second-feet December 11, 1915.

ICE.—Stage-discharge relation seldom affected by ice.

BACKWATER.—Stage-discharge relation affected at times by backwater from State dam, half a mile downstream.

DIVERSIONS.—Utah Power & Light Co. diverts water above station for power, and Logan, Hyde Park & Smithfield Canal diverts for irrigation. Logan has a municipal power plant about 2 miles above station, but water is returned to river above two diversions noted. Logan is entitled to divert for municipal supply, from 4 to 10 second-feet of water, from springs in sec. 22, T. 12 N., R. 2 E., the quantity depending on flow in river.

REGULATION.—Some diurnal fluctuation is caused at times by operation of two power plants.

ACCURACY.—Stage-discharge relation changed about May 26 owing to backwater and again August 31 when backwater effect disappeared. Rating curves fairly well defined. Water-stage recorder operated satisfactorily except as indicated in footnote to daily discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph or mean daily hook gage readings. Records fair.

COOPERATION.—Gage-height record and discharge measurements furnished by Utah Power & Light Co.

Discharge measurements of Logan River above State dam, near Logan, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 13	R. P. Flagel	1.65	131	June 21	E. G. Thorum	3.00	566
Jan. 8	do	1.14	53.7	July 26	R. W. Groo	1.57	99.5
Mar. 19	do	.95	23.5	Aug. 31	do	1.22	41.3
May 8	Thorum and Groo	3.17	694	Sept. 30	E. G. Thorum	.91	20.7

Daily discharge, in second-feet, of Logan River above State dam, near Logan, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	142	138	118	111	18	13	45	243	805	380	78	41
2	142	142	118	65	22	13	44	308	688	369	76	41
3	153	140	124	66	17	13	38	404	641	361	79	38
4	157	140	122	52	15	12	19	490	682	361	71	37
5	153	140	118	48	18	16	17	570	677	354	69	36
6	153	136	120	46	19	12	45	640	720	306	66	48
7	151	134	120	55	18	11	31	695	693	309	62	18
8	153	142	129	53	17	11	25	726	698	286	60	19
9	148	142	118	51	17	11	26	800	780	260	58	19
10	146	144	115	49	17	12	32	885	810	248	56	19
11	146	140	115	60	17	17	52	875	850	233	48	19
12	144	140	114	50	17	16	100	695	850	210	41	18
13	142	129	120	40	16	13	98	644	820	196	58	17
14	140	131	118	40	17	16	109	636	755	186	54	19
15	146	134	114	32	16	13	138	615	698	180	40	30
16	138	131	117	29	16	19	184	648	641	168	34	26
17	138	129	122	25	16	17	228	640	606	157	48	38
18	140	133	125	24	16	15	277	840	561	146	66	52
19	138	131	134	22	16	24	240	945	532	135	95	48
20	136	133	131	17	17	20	200	960	542	133	63	48
21	140	129	127	17	16	21	170	960	552	102	53	38
22	140	129	134	17	16	20	145	950	556	97	41	24
23	142	134	138	17	18	19	122	890	523	93	30	24
24	134	127	138	17	17	19	111	980	482	93	39	30
25	142	125	142	22	17	19	113	1,040	486	112	38	38
26	142	122	148	20	18	26	128	1,120	473	97	41	32
27	140	122	138	25	13	20	167	1,090	460	84	41	37
28	140	122	129	26	13	14	234	1,000	439	79	32	46
29	144	122	120	25	-------	15	298	920	427	76	47	26
30	144	120	120	21	-------	19	287	895	411	76	48	21
31	144	-------	118	19	-------	33	-------	905	-------	72	41	-------

NOTE.—Daily discharge estimated Jan. 12–14, July 17, 18, Aug. 8 and 9. Hook gage readings used Oct. 8 to Nov. 12, Nov. 23, and Dec. 19–31.

Monthly discharge of Logan River above State dam, near Logan, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	157	134	144	8,850
November	144	120	133	7,910
December	148	114	125	7,690
January	111	17	37.5	2,310
February	22	13	16.8	933
March	33	11	16.7	1,030
April	298	17	124	7,380
May	1,120	243	774	47,600
June	850	411	629	37,400
July	380	72	192	11,800
August	95	30	54.0	3,320
September	52	17	31.6	1,880
The year	1,120	11	191	138,000

UTAH POWER & LIGHT CO.'S TAILRACE NEAR LOGAN, UTAH

LOCATION.—In NE. ¼ sec. 36, T. 12 N., R. 1 E., 100 feet below power house at plant of Utah Power & Light Co. and 2½ miles above Logan, Cache County.

RECORDS AVAILABLE.—May 7, 1913, to September 30, 1923.

GAGE.—Stevens continuous water-stage recorder on right bank just above weir; inspected by plant operators.

DISCHARGE MEASUREMENTS.—Made from footbridge just above gage.

CHANNEL AND CONTROL.—A rectangular wooden weir, having metal crest strip just below gage acts as control. Length of crest, 17.7 feet. Capacity of channel above weir not sufficient to eliminate all velocity of approach. Stage of zero flow, zero on gage.

ICE.—Stage-discharge relation not affected by ice.

REGULATION.—Flow at station affected by operation of power plant.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

COOPERATION.—Gage-height record and eight discharge measurements furnished by Utah Power & Light Co.

Canal diverts water from right bank of Logan River in SE. ¼ SW. ¼ sec. 29, T. 12 N., R. 2 E. Water is returned to river 125 feet below gaging station on Logan River above State dam in NE. ¼ sec. 36, T. 12 N., R. 1 E. Water is used for development of power.

Discharge measurements of Utah Power & Light Co.'s tailrace near Logan' Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Jan. 8	R. P. Flagel [a]	1.30	94.9	June 21	R. W. Groo	1.62	158
Mar. 19	do	1.22	87.1	July 26	do	1.77	157
May 8	Thorum [a] and Groo [a]	1.86	180	Aug. 31	do	1.76	165
10	H. L. Stoner [a]	2.08	197	Sept. 30	A. B. Purton	1.77	156
18	Stoner and Kleinschmidt [b]	2.01	201				

[a] Engineer, Utah Power & Light Co. [b] Consulting engineer, Salt Lake City, Utah

Daily discharge, in second-feet, of Utah Power & Light Co.'s tailrace near Logan, Utah, for the year ending September 30, 1923

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	42	101	96	140	125	156	159	159	156
2	85	97	96	145	124	158	162	147	156
3	75	102	96	141	124	159	154	156	156
4	98	90	96	145	126	161	134	154	154
5	94	95	96	148	121	151	148	155	152
6	108	90	102	148	122	162	159	152	133
7	108	93	102	137	107	164	142	159	155
8	106	98	101	144	141	165	147	161	155
9	94	97	92	151	117	164	155	159	155
10	87	92	86	151	135	164	152	142	154
11	72	96	87	151	129	162	155	162	156
12	87	94	88	151	135	159	155	161	156
13	94	96	89	155	130	159	155	162	156
14	96	95	90	154	117	158	149	148	156
15	89	95	90	151	126	158	154	156	156
16	94	96	89	140	125	158	155	159	156
17	100	101	87	134	117	159	131	158	156
18	102	101	87	128	124	158	134	155	159
19	103	100	87	138	158	158	144	100	161
20	103	102	88	134	159	159	144	155	159
21	104	102	90	138	155	158	154	149	156
22	106	102	90	131	159	162	152	148	156
23	108	101	90	131	158	162	154	148	156
24	106	100	89	128	152	162	155	145	159
25	103	100	87	125	162	156	155	148	161
26	106	97	88	125	162	158	159	156	156
27	107	96	87	121	164	159	159	156	159
28	107	96	100	126	162	162	159	156	161
29	107	-------	108	118	162	162	159	156	161
30	109	-------	114	128	162	162	159	156	159
31	109	-------	128	-------	161	-------	158	156	-------

NOTE.—Dry from Oct. 1 to Dec. 31.

Monthly discharge of Utah Power & Light Co.'s tailrace near Logan, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	0	0	0	0
November	0	0	0	0
December	0	0	0	0
January	109	42	97.1	5,970
February	102	90	97.3	5,400
March	128	86	94.1	5,790
April	155	118	139	8,270
May	164	107	139	8,550
June	165	151	160	9,520
July	162	131	152	9,350
August	162	100	153	9,410
September	161	133	156	9,280
The year	165	0	98.8	71,500

LOGAN, HYDE PARK & SMITHFIELD CANAL NEAR LOGAN, UTAH

LOCATION.—In NW. ¼ sec. 31, T. 12 N., R. 2 E., at concrete rating flume half a mile below head of canal and 3½ miles east of Logan, Cache County.

RECORDS AVAILABLE.—Fragmentary records 1904–1923.

GAGE.—Stevens continuous water-stage recorder on right bank near lower end of rating flume; installed June 6, 1913; inspected by Logan, Hyde Park & Smithfield Canal Co.

DISCHARGE MEASUREMENTS.—Made from footplank at flume or by wading.

CHANNEL AND CONTROL.—Rectangular concrete rating flume. Stage of zero flow at gage height, 0.40 foot; determined January 28, 1919.

ICE.—Recording gage usually removed during winter. A small flow of water is maintained for domestic use.

DIVERSIONS.—None above gage.

REGULATION.—Flow regulated by head gates at diversion works.

ACCURACY.—Stage-discharge relation changed between November 10 and May 9, when no records were obtained. Normal rating curve well defined. Operation of water-stage recorder satisfactory October 22–29 and May 9 to August 16. Staff gage readings used October 1, 2, 4–20, October 30 to November 9. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Discharge interpolated October 3 and 21; estimated May 1–8. Records good.

Canal diverts water from Logan River in NE. ¼ NE. ¼ sec. 31, T. 12 N., R. 2 E., for irrigation and domestic use in territory north of Logan.

The following discharge measurement was made by A. B. Purton:

September 30, 1923: Gage height, 1.17 feet; discharge, 35.8 second-feet.

Daily discharge, in second-feet, of Logan, Hyde Park & Smithfield Canal near Logan, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	May	June	July	Aug.	Day	Oct.	Nov.	May	June	July	Aug.
1	78	36		22	103	97	16	50	------	72	105	112	85
2	78	36		19	109	95	17	50	------	73	105	112	------
3	64	34		18	109	92	18	50	------	78	103	112	------
4	50	34		18	109	91	19	50	------	78	88	112	------
5	50	34	12	18	110	91	20	50	------	77	52	112	------
6	50	32		17	110	90	21	42	------	82	52	113	------
7	50	32		32	110	89	22	35	------	95	52	113	------
8	50	32		44	110	87	23	35	------	93	52	112	------
9	50	32	22	44	110	86	24	35	------	96	50	112	------
10	50	------	49	62	108	85	25	35	------	102	50	112	------
11	50	------	63	74	108	85	26	35	------	111	49	109	------
12	50	------	71	95	110	86	27	35	------	110	68	104	------
13	50	------	70	108	111	87	28	35	------	107	81	101	------
14	50	------	69	108	110	87	29	35	------	106	83	100	------
15	50	------	69	108	111	85	30	34	------	93	92	98	------
							31	34	------	24	------	96	------

NOTE.—Canal dry at gage May 1–8, but water was diverted from Utah Power & Light Co.'s flume into canal below gage; mean discharge for period estimated from one discharge measurement made by engineer of Utah Power & Light Co.

Monthly discharge of Logan, Hyde Park & Smithfield Canal near Logan, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	78	34	47.1	2,900
November 1–9	36	32	33.6	599
May	111	------	61.5	3,780
June	108	17	62.3	3,710
July	113	96	109	6,700
August 1–16	97	85	88.6	2,810

BLACKSMITH FORK ABOVE UTAH POWER & LIGHT CO.'S DAM NEAR HYRUM, UTAH

LOCATION.—In NE. ¼ sec. 8, T. 10 N., R. 2 E., 1 mile above diversion dam, 3½ miles above power plant of Utah Power & Light Co., and 6 miles east of Hyrum, Cache County.

DRAINAGE AREA.—260 square miles (measured on topographic maps and map of Cache National Forest).

RECORDS AVAILABLE.—July 19, 1900, to December 31, 1902, and November 28, 1913, to September 30, 1923.

GAGE.—Stevens continuous water-stage recorder on left bank 500 feet above wagon bridge and nearly a mile above dam; installed November 28, 1913; inspected by watchman at dam.

DISCHARGE MEASUREMENTS.—Made by wading or from cable 1 mile above gage.

CHANNEL AND CONTROL.—Bed rough, but fairly permanent; one channel at all stages.

EXTREMES OF DISCHARGE.—Maximum mean daily stage during year, 4.67 feet May 10 (discharge, 998 second-feet); minimum mean daily stage, 1.46 feet March 18 (discharge, 79 second-feet).

1913–1923: Maximum stage determined by levels from high-water mark in well, 6.5 feet May 15, 1917 (discharge estimated by extending rating curve, 1,620 second-feet); minimum stage recorded, 0.85 foot at 6 a. m. February 6, 1916 (discharge estimated from extension of rating curve, 22 second-feet).

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—Above all important diversions.

REGULATION.—None.

ACCURACY.—Stage-discharge relation shifted slightly during winter. Rating curves well defined. Operation of water-stage recorder satisfactory except September 26–28. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Discharge estimated September 26–28. Records good.

COOPERATION.—Gage-height record and six discharge measurements furnished by Utah Power & Light Co.

Discharge measurements of Blacksmith Fork above Utah Power & Light Co.'s dam near Hyrum, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 14	R. P. Flagel [a]	1.66	111	June 21	Groo [a] and Thorum [a]	2.24	235
Jan. 10	do	1.62	116	July 26	R. W. Groo	2.03	186
Mar. 21	do	1.54	91	Sept. 29	Purton and Thorum	1.85	146
May 7	Groo [a] and Thorum [a]	4.03	778				

[a] Engineer, Utah Power & Light Co.

Daily discharge, in second-feet, of Blacksmith Fork above Utah Power & Light Co.'s dam, near Hyrum, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	140	123	114	114	100	93	170	364	346	193	170	155
2	134	123	114	110	96	93	184	417	326	195	170	153
3	132	121	114	110	95	95	181	519	315	190	166	151
4	132	121	115	110	93	90	164	630	315	190	166	149
5	132	119	115	110	90	92	166	809	312	188	164	149
6	130	119	114	117	88	93	221	943	307	188	161	145
7	130	117	114	128	90	95	200	920	304	188	164	141
8	130	117	112	117	96	93	181	912	299	188	161	139
9	128	119	112	114	93	92	186	916	285	190	159	137
10	128	121	114	114	93	90	193	998	288	190	159	135
11	128	119	114	110	95	93	216	940	274	188	159	135
12	128	117	114	110	96	92	236	715	261	190	159	133
13	132	115	119	110	95	92	241	648	234	190	161	135
14	132	112	117	100	96	92	244	639	219	193	168	137
15	130	117	115	105	93	87	254	564	212	190	164	137
16	130	117	114	103	92	88	274	570	209	186	159	133
17	128	117	112	105	88	91	307	534	224	184	159	133
18	126	115	110	105	88	79	349	709	216	184	159	131
19	126	115	112	105	90	83	378	715	204	184	161	131
20	126	115	112	103	92	90	304	648	195	179	172	131
21	126	115	108	102	92	91	288	618	209	179	164	133
22	126	115	108	102	95	88	259	597	234	179	164	137
23	124	114	108	107	93	91	238	534	234	179	161	137
24	124	114	112	105	93	91	236	531	224	177	159	147
25	124	114	110	107	96	91	254	528	216	186	157	137
26	123	114	110	103	95	91	254	525	214	184	155	140
27	123	114	110	103	93	96	264	492	209	181	153	145
28	123	114	112	105	93	103	310	444	204	177	153	150
29	128	114	112	105	-------	113	352	399	202	175	151	145
30	126	112	112	105	-------	131	432	387	195	175	153	143
31	124	-------	112	105	-------	151	-------	381	-------	172	155	-------

Monthly discharge of Blacksmith Fork above Utah Power & Light Co.'s dam, near Hyrum, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	140	123	128	7,870
November	123	112	117	6,960
December	119	108	113	6,950
January	128	100	108	6,640
February	100	88	93.2	5,180
March	151	79	95.2	5,850
April	432	164	251	14,900
May	998	364	631	38,800
June	346	195	250	14,900
July	195	172	185	11,400
August	172	151	161	9,900
September	155	131	140	8,330
The year	998	79	190	138,000

WEST SIDE CANAL NEAR COLLINSTON, UTAH

LOCATION.—NW. ¼ sec. 34, T. 13 N., R. 2 W., at Wheelon siding on Oregon Short Line Railroad, about 600 feet below penstock of Utah Power & Light Co.'s Wheelon plant, 1,000 feet northwest of gaging station on Bear River, and 4 miles north of Collinston, Box Elder County.

RECORDS AVAILABLE.—June 1, 1912, to September 30, 1923.

GAGE.—Friez water-stage recorder on left bank; installed May 22, 1914.

DISCHARGE MEASUREMENTS.—Made from footbridge at gage or by wading.

CHANNEL AND CONTROL.—Bed composed of earth and gravel. Banks steep and clean. Control not well defined; stage-discharge relation is probably affected by vegetal growth and slight silt deposit.

ICE.—Stage-discharge relation seriously affected at times by ice.

DIVERSIONS.—Water is taken out of canal, about 600 feet above gage, for power plant, and, if necesary, water can also be siphoned across river to Hammond Canal.

REGULATION.—Flow can be regulated at head gates and also at forebay of power plant.

COOPERATION.—Records of daily discharge and six discharge measurements furnished by Utah Power & Light Co.

Canal diverts water from west side of Bear River in SW. ¼ sec. 23, T. 13 N., R. 2 W., by means of low diversion dam. Part of water is used through Wheelon plant of Utah Power & Light Co. about 1½ miles below; the rest which passes gaging station is used for irrigation on west side of river. When cleaning or repairing Hammond Canal in canyon, water can be siphoned across river at power plant from West Side Canal.

Discharge measurements of West Side Canal near Collinston, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 10	R. P. Flagel	2.19	67.7	May 13	Thorum and Groo	4.48	261
Jan. 9	do	1.70	42.3	June 22	E. G. Thorum	4.99	336
Mar. 20	do	.66	6.6	July 27	R. W. Groo	6.97	606

Daily discharge, in second-feet, of West Side Canal near Collinston, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	446	114	69	38	34	24	6	42	182	554	578	585
2	476	103	62	38	34	23	5	66	230	576	556	586
3	476	105	52	38	34	21	5	66	257	576	554	0
4	465	102	42	39	18	21	6	71	356	574	558	292
5	453	97	29	42	15	24	5	68	353	586	572	591
6	403	92	27	46	15	21	5	76	360	597	586	591
7	403	94	39	39	28	0	5	75	384	598	588	582
8	389	68	66	38	25	30	5	93	476	598	586	584
9	379	76	61	39	36	30	6	140	471	600	590	582
10	371	70	59	35	36	30	5	175	472	604	588	578
11	355	73	68	25	35	21	0	176	476	606	585	574
12	340	72	55	28	35	30	0	204	538	608	584	566
13	315	71	52	28	30	16	0	240	548	609	579	561
14	275	70	61	28	32	20	0	269	160	612	552	564
15	273	66	55	27	29	15	0	282	0	609	548	562
16	273	76	58	27	15	15	0	298	0	606	552	568
17	272	73	57	27	27	5	0	338	290	608	556	549
18	273	72	65	27	27	5	0	356	423	608	554	498
19	251	75	41	27	48	5	0	375	412	604	567	478
20	240	77	43	27	50	5	0	367	409	604	572	464
21	243	78	44	28	46	5	0	370	405	608	578	465
22	247	78	45	27	44	5	0	388	320	615	574	465
23	245	78	39	27	44	5	0	368	324	616	579	416
24	245	78	42	27	42	5	0	458	338	616	574	372
25	246	79	44	28	38	5	0	495	329	616	585	374
26	243	77	43	28	38	5	0	510	330	616	582	329
27	242	78	44	27	15	5	0	538	399	612	582	242
28	245	70	48	27	24	5	0	561	472	612	584	217
29	242	73	44	27	-------	5	42	576	519	.615	584	220
30	234	73	45	28	-------	5	38	542	522	615	582	214
31	190	-------	44	29	-------	4	-------	179	-------	612	586	-------

Monthly discharge of West Side Canal near Collinston, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	476	190	315	19,400
November	114	66	80.3	4,780
December	69	27	49.8	3,060
January	46	25	31.2	1,920
February	50	15	31.9	1,770
March	30	0	13.4	824
April	42	0	4.4	262
May	576	42	283	17,400
June	548	0	358	21,300
July	616	554	603	37,100
August	590	548	574	35,300
September	591	0	456	27,100
The year	616	0	235	170,000

HAMMOND (EAST SIDE) CANAL NEAR COLLINSTON, UTAH

LOCATION.—In NW. ¼ sec. 34, T. 13 N., R. 2 W., at Wheelon Siding on Oregon Short Line Railroad, 400 feet below penstock of Utah Power & Light Co. and 4 miles north of Collinston, Box Elder County.

RECORDS AVAILABLE.—June 1, 1912, to September 30, 1923.

GAGE.—Friez water-stage recorder on right bank; installed May 22, 1914.

DISCHARGE MEASUREMENTS.—Made from footbridge at gage or by wading.

CHANNEL AND CONTROL.—Bed composed of earth and gravel. Control not well defined.

DIVERSION.—Water is taken from this canal 400 feet above gage for power plant.

REGULATION.—Flow can be regulated at head gates and at power plant forebay; water can also be siphoned across river to West Side Canal.

COOPERATION.—Records of daily discharge and four discharge measurements furnished by Utah Power & Light Co.

Canal diverts water on east side of Bear River in SW. ¼ sec. 23, T. 13 N., R. 2 W., at same diversion dam as West Side Canal. Part of water is used by Wheelon plant of the Utah Power & Light Co. and remainder is either wasted into river or passes gaging station for irrigation use.

Discharge measurements of Hammond (east side) Canal near Collinston, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 10	R. P. Flagel	2.10	16.2	June 22	E. G. Thorum	3.24	51.9
May 13	Groo and Thorum	3.88	82.8	July 26	R. W. Groo	5.00	136

Daily discharge, in second-feet, of Hammond (east side) Canal near Collinston, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	109	24		27	47	112	140	134
2	106	22		24	26	115	138	135
3	114	17		24	51	121	137	134
4	124	20		24	53	128	139	134
5	117	24		26	77	132	140	134
6	116	18		26	77	133	140	134
7	118	16		45	74	134	138	134
8	110	16		37	77	131	139	134
9	105	16		41	74	131	136	134
10	97	16		41	74	132	138	132
11	83	16		57	78	136	139	130
12	67	16		67	74	106	134	127
13	49	16		81	75	62	140	129
14	57	16		83	81	77	117	129
15	70	16		81	93	124	122	134
16	71	16		82	93	132	139	93
17	71	16		82	96	138	139	94
18	72	16		87	97	142	139	107
19	55	16		82	96	138	136	117
20	46	10		94	95	140	134	116
21	45	6		95	95	140	44	117
22	46	6		96	64	139	0	119
23	45	6		97	51	137	0	107
24	45	7		96	47	138	0	94
25	44	3		107	47	138	0	82
26	45			107	46	138	0	82
27	46			107	59	139	0	58
28	42			117	75	139	0	49
29	45		24	117	85	138	0	24
30	44		24	117	98	124	138	25
31	32			94		131	133	

NOTE.—No water in canal from Nov. 26 to Apr. 28.

Monthly discharge of Hammond (east side) Canal near Collinston, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	124	32	72.1	4,430
November	24	0	12.4	738
December	0	0	0	0
January	0	0	0	0
February	0	0	0	0
March	0	0	0	0
April	24	0	1.6	95
May	117	24	72.9	4,480
June	98	26	72.5	4,310
July	142	62	128	7,870
August	140	0	98	6,030
September	135	24	109	6,490
The year	142	0	47.6	34,400

WEBER RIVER BASIN

WEBER RIVER NEAR OAKLEY, UTAH

LOCATION.—In NE. ¼ sec. 15, T. 1 S., R. 6 E., near mouth of canyon, 3 miles above Oakley, Summit County. South Fork of Weber River enters 2 miles above station and Beaver or Kamas Creek 6 miles below.

DRAINAGE AREA.—163 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 22, 1904, to September 30, 1923.

GAGE.—Inclined staff on left bank a quarter of a mile above diversion dam of New Field & North Bench Irrigation Co.'s canal; read by John Franson.

DISCHARGE MEASUREMENTS.—Made from cable near gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; steep and rough, but fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 7.8 feet June 12 and 13 (discharge, 2,060 second-feet); minimum discharge probably occurred during estimated periods in winter.

1904–1923: Maximum discharge, 4,000 second-feet July 6, 1907, and June 5–7, 1909; minimum stage, 4.0 feet for periods during February and March, 1908 (discharge, 46 second-feet).

ICE.—Stage-discharge relation seriously affected by ice every winter.

DIVERSIONS.—Above all important diversions.

REGULATIONS.—None.

ACCURACY.—Stage-discharge relation permanent; affected by ice November 13–16, and parts of December, January, and February. Rating curve well defined below 1,200 second-feet, extended above. Gage read to half-tenths once a day, except as stated in footnote to daily-discharge table. Daily discharge determined by applying daily gage height to rating table, except for periods when stage-discharge relation was affected by ice or gage was not read. For these periods, discharge was estimated from one meter measurement, temperature records, and observer's notes. Records good July to September; fair for rest of year.

Discharge measurements of Weber River near Oakley, Utah, during the year ending September 30, 1923

[Made by A. B. Purton]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Jan. 16	[a] 4.80	71.6	June 27	6.48	973
Apr. 27	4.82	186	Aug. 10	4.60	132

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Weber River near Oakley, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	79	72	72			79	95	223	990	990	194	95
2	79	72	72			79	95	238	850	920	181	95
3	79	72	72			79	95	270	920	920	208	95
4	79	72	72			79	95	340	1,060	850	181	95
5	79	72	72			79	95	419	990	790	156	87
6	79	72	72			79	95	463	990	730	156	87
7	79	79	72			79	95	560	1,060	670	144	87
8	79	79	72	72			95	670	1,130	610	144	87
9	79	79	72				104	790	1,210	560	144	87
10	79	79	72		75	83	104	920	1,450	510	133	87
11	79	79	72				104	990	1,790	463	133	87
12	72	79	72				113	850	2,060	419	133	87
13	72	79	72				113	730	2,060	378	133	87
14	72	79	72			87	113	670	1,610	359	181	87
15	72	79	72			87	118	670	1,290	419	156	87
16	72	79	72	72		87	123	610	1,130	340	133	87
17	72	79	72			87	156	670	1,130	322	123	104
18	72	79	72			87	208	920	1,060	304	123	95
19	72	79	72			87	208	990	990	270	113	87
20	72	79	72			87	208	1,130	850	270	113	87
21	72	79	72		79	87	208	1,290	850	270	113	87
22	72	79	72		79		181	1,290	790	304	113	87
23	72	79	72		79		156	1,060	850	340	104	87
24	72	79	72	72	79		156	1,130	990	304	104	113
25	72	79	72		79	83	168	1,370	1,130	270	104	104
26	72	75	72		79		181	1,700	1,210	270	104	95
27	72	72	72		79		181	1,790	1,130	254	104	113
28	72	72	72		79	79	168	1,610	1,210	238	104	113
29	72	72	72		-------	79	194	1,370	1,060	208	95	113
30	72	72	72		-------	95	208	1,290	1,060	208	95	113
31	72	-------	72		-------	95	-------	1,130	-------	194	95	-------

NOTE.—Discharge estimated or interpolated for following periods when gage was not read: Oct. 20, 26, Nov. 11, 24, 26, 30, Dec. 3–5, 7–12, 14–19, 21–26, 28–31, Jan. 1–3, 5–9, 11–15, 17, 19–23, 25–30, Feb. 1–6, 8–13, 15–20, 22–27, Mar. 1–6, 8–13, 15–20, 22–27, Apr. 1, 15, Sept. 12 and 30. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Weber River near Oakley, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	79	72	74.5	4,580
November	79	72	76.5	4,550
December	72	72	72.0	4,430
January	----------	----------	[a] 72.0	4,430
February	79	----------	[a] 76.2	4,230
March	95	79	83.6	5,140
April	208	95	141	8,390
May	1,790	223	908	55,800
June	2,060	790	1,160	69,000
July	990	194	450	27,700
August	208	95	133	8,180
September	113	87	94.1	5,600
The year	2,060	----------	279	202,000

[a] Estimated.

WEBER RIVER AT DEVILS SLIDE, UTAH

LOCATION.—In SW. ¼ sec. 19, T. 4 N., R. 4 E., 300 feet north of hotel and 500 feet downstream from highway bridge at Devils Slide, Morgan County. Lost Creek enters from right a quarter of a mile above station.

DRAINAGE AREA.—1,090 square miles (measured on topographic and United States Forest Service maps).

RECORDS AVAILABLE.—February 1, 1905, to September 30, 1923.

GAGE.—Vertical staff on left bank, installed September 21, 1915; read by A. E. Lucas.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and sand; shifts occasionally. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.45 feet at noon May 11 (discharge, 3,580 second-feet); minimum stage, 1.95 feet at noon March 15 (discharge, 115 second-feet).

1905–1923: Maximum stage recorded, 8.0 feet at 6 p. m. May 22, 1920 (discharge, 6,000 second-feet); minimum stage, 1.88 feet September 3, 1919 (discharge, 31 second-feet).

ICE.—Stage-discharge relation seldom affected by ice.

DIVERSIONS.—A number of canals divert water above this station for irrigation and domestic use.

REGULATION.—Diversions for irrigation only.

ACCURACY.—Stage-discharge relation not permanent. Standard rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage reading to rating table, shifting to discharge measurements. Records good.

Discharge measurements of Weber River at Devils Slide, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Jan. 17	A. B. Purton	2.31	229	June 28	A. B. Purton	4.28	1,400
Apr. 28	do	4.15	1,420	Sept. 8	Howell and Purton	2.34	214

Daily discharge, in second-feet, of Weber River at Devils Slide, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	152	222	253	245	245	207	582	1,330	2,000	1,200	286	207
2	148	249	230	230	245	241	680	1,430	1,780	1,110	299	218
3	152	266	222	215	187	233	652	1,680	1,720	988	286	215
4	145	266	237	226	152	164	534	1,890	1,810	892	262	218
5	145	262	237	211	174	167	528	2,160	1,730	780	241	218
6	148	245	249	303	174	207	795	2,410	1,740	722	237	218
7	148	245	249	325	177	218	988	2,590	1,720	694	218	215
8	148	266	164	307	207	258	825	2,750	1,750	624	207	211
9	145	270	174	241	222	245	908	2,980	1,810	673	207	200
10	145	278	200	245	204	207	980	3,290	1,910	582	218	200
11	142	286	190	299	211	241	932	3,580	2,040	715	200	193
12	142	291	218	295	200	174	1,100	3,070	2,230	568	193	193
13	142	218	295	266	184	211	1,230	2,730	2,300	516	200	190
14	148	197	320	197	190	207	1,140	2,590	2,220	534	291	193
15	148	197	282	164	190	115	1,110	2,410	1,990	659	249	200
16	152	218	260	218	180	184	1,200	2,480	1,770	610	230	207
17	152	258	233	233	184	222	1,370	2,400	1,660	516	230	211
18	155	282	226	249	207	133	1,600	3,190	1,500	458	230	215
19	158	258	303	245	211	204	1,690	3,450	1,370	425	241	222
20	155	270	270	215	245	230	1,340	3,280	1,250	392	230	222
21	155	253	207	170	215	207	1,360	3,480	1,230	355	230	218
22	164	230	177	158	211	174	1,210	3,250	1,280	464	237	209
23	167	215	211	245	207	187	1,110	2,900	1,210	743	230	200
24	174	211	262	253	211	218	1,030	2,830	1,210	589	207	262
25	177	190	291	258	226	226	996	2,930	1,300	547	207	274
26	180	204	258	226	218	226	1,090	3,140	1,450	534	204	258
27	180	222	258	211	128	245	1,240	2,870	1,500	425	197	286
28	193	237	274	187	152	266	1,410	2,520	1,380	386	193	355
29	218	262	262	190	-------	278	1,620	2,420	1,290	350	193	360
30	200	274	211	233	-------	330	1,730	2,340	1,250	330	193	340
31	207	-------	241	230	-------	414	-------	2,260	-------	299	207	-------

NOTE.—No gage-height record; discharge estimated or interpolated Dec. 16 and Sept. 22.

Monthly discharge of Weber River at Devils Slide, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	218	142	161	9,900
November	291	190	245	14,600
December	320	164	241	14,800
January	325	158	235	14,400
February	245	128	198	11,000
March	414	115	221	13,600
April	1,730	528	1,100	65,500
May	3,580	1,330	2,670	164,000
June	2,300	1,210	1,650	98,200
July	1,200	299	603	37,100
August	299	193	228	14,000
September	360	190	231	13,700
The year	3,580	115	650	471,000

WEBER RIVER AT GATEWAY, UTAH

LOCATION.—In the NW. ¼ SW. ¼ sec. 27, T. 5 N., R. 1 E., 300 feet below mouth of Strawberry Creek, 1,400 feet above Union Pacific Railroad bridge across Weber River and 4,400 feet above section house at Gateway, Morgan County. East Canyon Creek enters from left 9 miles above station, and Ogden River from right 16 miles below.

DRAINAGE AREA.—1,610 square miles (measured on map of Utah Water Storage Association, edition of 1919).

RECORDS AVAILABLE.—June 22 to September 17, 1919, and July 26, 1920, to September 30, 1923. Records were obtained from October, 1889, to July, 1903, at a station 1 mile downstream known as Weber River near Uinta, Utah. Records at these stations are comparable, as there were no diversions and no important tributaries between the two points.

GAGE.—Stevens continuous water-stage recorder on right bank; inspected by R. O. Bybee and George Strong.

DISCHARGE MEASUREMENTS.—From cable about 1,000 feet above gage or by wading. Flow of Strawberry Creek is added when cable is used.

CHANNEL AND CONTROL.—Bed composed of gravel and cobblestones. Right bank high. At high stages river overflows a bar opposite gage.

EXTREMES OF DISCHARGE.—Maximum stage during year, 6.58 feet, at 1 a. m. May 19 (discharge, 5,380 second-feet); minimum stage, 0.67 foot parts of October 23 (discharge, 274 second-feet).

1889–1903; 1919–1923: Maximum discharge, 7,980 second-feet May 31, 1896; minimum discharge, 65 second-feet August 7–13, 1898.

ICE.—Affected by ice usually only for short periods.

DIVERSIONS.—Numerous diversions from Weber River and tributaries for irrigation above Gateway. Three miles below station, Davis and Weber Canal diverts water for irrigation on bench lands south of Ogden. Entire low-water flow is diverted by various canals during irrigation season so that river is practically dry at Plain City station.

REGULATION.—Water stored by Davis and Weber Canal Co., on East Canyon Creek is released during July to September and passes gaging station.

ACCURACY.—Stage-discharge relation changed about May 11; affected by ice December 17 to January 5 and February 3–13. Rating curves well defined. Operation of water-stage recorder satisfactory, except for periods stated in footnote to daily discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Records good except estimated figures which are fair.

Discharge measurements of Weber River at Gateway, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 2	R. P. Flagel [a]	0.80	311	Apr. 25	A. B. Purton	3.37	1,840
Nov. 15	do	.85	340	May 14	R. W. Groo [a]	5.20	3,490
Jan. 13	A. B. Purton	.95	387	June 25	A. B. Purton	3.16	1,610
Mar. 30	R. P. Flagel	2.07	894	Aug. 20	do	1.32	476
Apr. 19	do	4.51	2,950	Sept. 7	Howell and Purton	1.13	417

[a] Engineer, Utah Power & Light Co.

Daily discharge, in second-feet, of Weber River at Gateway, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	320	335	350		365	335	1,350	2,360	3,100	1,320		400
2	316	376	353		338	376	1,550	2,380	2,700	1,250	500	400
3	305	391	357	360		403	1,430	2,800	2,480	1,140		396
4	300	391	368			331	1,200	3,000	2,530	1,080	461	384
5	300	395	361			350	1,200	3,500	2,480	1,030		384
6	300	384	368	411		368	1,990	3,830	2,490	950		380
7	299	372	376	442		384	1,990	3,870	2,500	850	480	392
8	299	391	331	474	300	387	1,660	4,100	2,460	758		392
9	302	403	288	435		384	1,690	4,400	2,470			388
10	299	430	313	395		361	1,750	4,800	2,510			388
11	300	438	316	400		384	1,850	5,050	2,680	700	482	380
12	290	422	310	390		353	2,050	4,600	2,790		495	377
13	290	376	411	380		380	2,240	4,170	2,900		534	380
14	280	338	478	350	296	372	2,160	3,790	2,700	640	579	384
15	278	342	442	300	302	316	2,190	3,460	2,500	748	520	377
16	282	361	434	320	306	357	2,280	3,510	2,300	758	490	369
17	285	384		331	313	414	2,500	3,990	2,180	678	470	373
18	288	399		376	320	342	2,820	4,500	1,960	611	461	380
19	296	403		380	340	365	2,980	5,220	1,790	552	470	384
20	292	395	350	368	360	414	2,500	4,830	1,660	534	478	388
21	292	384		324	342	411	2,400	4,830	1,580	512	473	380
22	282	368		306	342	391	2,250	4,740	1,640	508	469	377
23	278	353	300	357	327	387	2,100	4,420	1,640	602	461	365
24	282	346		380	335	411	1,950	4,330	1,490	723	448	388
25	285	327		387	357	420	1,800	4,410	1,580	728	448	424
26	285	335		368	338	450	1,810	4,510	1,560	680	428	420
27	285	342	350	342	310	500	2,060	4,530	1,600	600	424	408
28	296	350		338	310	676	2,340	4,230	1,540	565	416	428
29	313	368		331	-------	804	2,710	3,750	1,480		416	469
30	327	372		361	-------	950	2,850	3,560	1,380	550	428	444
31	324	-------		361	-------	1,110	-------	3,470	-------		461	-------

NOTE.—No gage-height record for following periods and discharge estimated by comparison with records for Utah Power & Light Co.'s station below Gateway and station at Devils Slide; Oct. 3–6, 11–14, Jan. 7, 9, 11, 12, 14–16, Feb. 18–20, Mar. 4, 25–27, Apr. 10–12, 20, 22–24, May 3–5, 8, 9, 12, 18, June 1, 2, 14–16, July 6, 7, 9–13, 26, 27, 29–31, Aug. 1–3, 5–10, 15–17, and 19.

Monthly discharge of Weber River at Gateway, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	327	278	296	18,200
November	438	327	376	22,400
December	478	-------	357	22,000
January	474	[a] 300	368	22,600
February	365	-------	318	17,700
March	1,110	316	448	27,500
April	2,980	1,200	2,060	123,000
May	5,220	2,360	4,030	248,000
June	[a] 3,100	1,380	2,160	129,000
July	1,320	508	741	45,600
August	579	416	474	29,100
September	469	365	393	23,400
The year	5,220	278	1,000	728,000

[a] Estimated.

WEBER RIVER NEAR PLAIN CITY, UTAH

LOCATION.—In SE. ¼ sec. 5, T. 6 N., R. 2 W., at county highway bridge 1 mile south of Plain City, Weber County, on road to Ogden, 1 mile below mouth of Fourmile Creek, and 6 miles above point where Weber River empties into Great Salt Lake.

DRAINAGE AREA.—2,060 square miles (measured on topographic and United States Forest Service maps).

RECORDS AVAILABLE.—May 14, 1905, to September 30, 1923. Records obtained at this point in 1904 by State engineer.

GAGE.—Chain gage on upstream side of highway bridge; installed November 12, 1914, at same datum as old gage; read by W. E. Davies.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading; conditions fair.

CHANNEL AND CONTROL.—Bed composed of sand and mud; shifting. One channel at all stages. Banks are high.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 18.5 feet at 6 a. m. May 12 (discharge, 6,820 second-feet); minimum stage, 1.40 feet at 1.30 p. m. September 13 (discharge, 3 second-feet).

1904–1923: Maximum stage recorded, 19.1 feet, June 6, 1909 (discharge, 7,580 second-feet); river practically dry during latter part of several summers since 1915.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—In summer practically entire flow of Weber River above station is diverted for irrigation.

REGULATION.—Flow affected by diversions.

ACCURACY.—Stage-discharge relation permanent during year; affected by ice February 3–10. Rating curve fairly well defined up to 6,000 second-feet; extended above. Gage read to hundredths once a day. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

The following discharge measurement was made by A. B. Purton:
September 13, 1923: Gage height, 1.60 feet; discharge, 10.6 second-feet.

Daily discharge, in second-feet, of Weber River near Plain City, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	85	393	480	539	539	527	1,730	3,900	3,630	966	99	61
2	82	443	556	527	551	539	1,860	3,280	3,040	823	86	86
3	82	473	575	520		539	2,160	4,020	2,770	823	67	80
4	76	496	575	527		551	1,990	4,200	2,610	797	80	44
5	69	496	563	551		527	2,190	4,660	2,610	797	67	21
6	63	485	587	599	550	568	2,330	5,610	2,540	647	61	21
7	63	490	611	747		575	3,190	5,920	2,490	623	92	21
8	69	496	551	772		599	2,770	6,080	2,420	539	67	25
9	69	501	551	722		611	2,680	6,160	2,370	480	49	21
10	69	520	556	690		599	2,520	6,400	2,380	367	34	21
11	69	568	457	660	551	575	2,770	6,740	2,400	345	21	25
12	69	568	492	623	527	575	2,890	6,820	2,420	367	21	18
13	69	556	575	587	503	587	3,080	6,400	2,440	283	21	10
14	69	496	797	539	457	592	3,160	5,610	2,540	334	29	11
15	89	473	772	367	503	575	3,120	5,270	2,300	367	244	21
16	109	462	747	389	480	503	3,160	5,400	2,200	389	150	34
17	157	450	599	434	457	563	3,370	4,870	2,060	345	130	61
18	202	532	575	503	527	539	3,820	4,900	2,010	314	106	55
19	248	520	587	539	480	575	4,390	6,320	1,780	142	138	55
20	202	520	575	539	480	587	3,880	6,610	1,660	127	157	55
21	168	508	575	527	503	599	3,140	6,440	1,730	49	142	38
22	248	496	503	367	515	623	3,120	6,200	1,890	49	127	34
23	248	478	503	480	539	623	3,100	6,120	1,820	134	116	61
24	242	462	480	527	575	623	2,890	5,460	1,770	150	83	86
25	248	462	492	575	599	647	2,720	5,340	1,730	378	61	142
26	248	455	503	599	575	680	2,600	5,310	1,610	303	44	207
27	248	462	527	539	527	722	2,750	5,120	1,570	303	34	389
28	287	455	551	480	503	823	3,140	5,010	1,480	263	25	515
29	339	422	587	515	-------	980	3,520	4,200	1,330	229	14	563
30	360	422	575	546	-------	1,150	4,080	3,850	1,270	165	18	587
31	367	-------	551	551	-------	1,670	-------	3,820	-------	113	49	-------

NOTE.—No gage-height record Nov. 7, Apr. 22, and Sept. 12; discharge interpolated. Braced figure shows estimated mean discharge for period indicated when stage-discharge relation was affected by ice.

Monthly discharge of Weber River near Plain City, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	367	63	162	9,960
November	568	393	485	28,900
December	797	457	569	35,000
January	772	367	551	33,900
February	599	457	528	29,300
March	1,670	503	660	40,600
April	4,390	1,730	2,940	175,000
May	6,820	3,280	5,360	330,000
June	3,630	1,270	2,160	129,000
July	966	49	387	23,800
August	244	14	78.5	4,830
September	587	10	112	6,660
The year	6,820	10	1,170	847,000

LOST CREEK NEAR CROYDON, UTAH

LOCATION.—In SE. ¼ sec. 8, T. 5 N., R. 5 E., 500 feet below dam site of a proposed reservoir, three-quarters of a mile below mouth of Francis Canyon, and 10 miles northeast of Croydon, Morgan County.

DRAINAGE AREA.—133 square miles (measured on United States Bureau of Reclamation maps).

RECORDS AVAILABLE.—February 1, 1921, to December 5, 1923, when station was discontinued.

GAGE.—Stevens continuous water-stage recorder on right bank; installed March 12, 1921; inspected by D. R. Eddington.

DISCHARGE MEASUREMENTS.—Made by wading near gage or by adding discharge of Francis Canyon measured by wading to that obtained from highway bridge above junction with Francis Canyon, three-quarters of a mile above gage.

CHANNEL AND CONTROL.—Banks high, wooded, and subject to overflow only at extreme stages. Control well defined; shifts occasionally. Point of zero flow, 0.2 foot±0.1 foot, determined August 1, 1922.

EXTREMES OF DISCHARGE.—Maximum stage during year, 4.20 feet from 11.30 p. m. May 10 to 12.30 a. m. May 11 and 11 to 12 p. m. May 18 (discharge, by extending curve, 770 second-feet); minimum stage not recorded.

1921–1923: Maximum stage, same as given above.

ICE.—Stage-discharge relation affected by ice during winter.

DIVERSIONS.—Above practically all diversions.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed during period December 10 to April 8. Rating curves well defined below 200 second-feet and extended above. Water-stage recorder operated successfully, except as stated in footnote to daily discharge table. Daily discharge ascertained by applying to rating table mean daily gage height as determined from recorder graph. Records for estimated periods fair; others good.

Discharge measurements of Lost Creek near Croydon, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
Apr. 26	A. B. Purton	1.97	96
June 28	do	1.51	49.5
Sept. 7	Howell and Purton	1.01	15.4

Daily discharge, in second-feet, of Lost Creek near Croydon, Utah, for the period October 1, 1922, to December 5, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1922-23															
1	14	18	16					158	160	44	21	46	22	20	17
2	14	19	16					181	144	43	21	22	22	20	17
3	14	18	16					248	135	40	21	18	21	21	16
4	14	18	16					320	132	39	20	17	26	21	16
5	14	17	16				45	374	125	38	19	16	28	21	16
6	14	16	16					442	120	35	18	16	25	21	------
7	14	17	16					490	114	34	17	16	26	22	------
8	14	17	16					514	110	34	16	16	27	22	------
9	15	18	16				55	560	107	36	15	15	30	22	------
10	14	18					58	630	106	34	13	15	27	22	------
11	14	18					64	650	101	34	13	14	27	24	------
12	15	16					82	514	97	31	12	15	25	25	------
13	16	14				14	91	462	94	30	14	15	23	24	------
14	16	13			12		92	401	90	37	15	15	22	23	------
15	16	13					103	380	85	36	14	16	21	23	------
16	16	12		14			122	392	84	32	14	16	20	22	------
17	16	13					144	389	85	30	14	18	20	20	------
18	16	18					176	682	76	28	14	18	20	20	------
19	16	16					200	682	71	27	17	18	20	21	------
20	16	16	15				160	602	67	27	15	18	19	20	------
21	16	16					135	550	64	27	14	18	19	19	------
22	16	16					114	506	72	26	14	17	20	19	------
23	16	16					99	434	63	26	13	18	21	18	------
24	16	16					91	404	58	26	13	22	21	18	------
25	16	16					92	368	55	25	12	21	20	18	------
26	16	16					96	341	52	25	11	20	20	16	------
27	16	16					107	308	51	24	11	21	20	17	------
28	17	16				25	127	257	49	22	11	23	21	17	------
29	19	16			------		166	220	48	22	11	22	20	17	------
30	18	16			------		181	203	46	22	13	21	19	18	------
31	17	------			------		------	187	------	21	13	------	20	------	------

NOTE.—No gage-height records Dec. 10 to Apr. 8, Apr. 19–20, May 9–10, and Aug. 12–15; discharge interpolated or estimated from temperature records and by comparison with records of discharge for "Lost Creek at Devils Slide." Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Lost Creek near Croydon, Utah, for the period October 1, 1922, to November 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
1922-23				
October	19	14	15.5	953
November	19	12	16.2	964
December	----------	----------	[a] 15.3	941
January	----------	----------	[a] 14	861
February	----------	----------	[a] 12	666
March	----------	----------	[a] 16.1	990
April	200	----------	97.2	5,780
May	682	158	414	25,500
June	160	46	88.7	5,280
July	44	21	30.8	1,890
August	21	11	14.8	910
September	46	14	18.8	1,120
The year	682	----------	63.3	45,900
1923				
October	30	19	22.3	1,370
November	25	16	20.4	1,210

[a] Estimated.

LOST CREEK AT DEVILS SLIDE, UTAH

LOCATION.—In SE ¼ sec. 19, T. 4 N., R. 4 E., a quarter of a mile above confluence with Weber River, half a mile east of Devils Slide, Morgan County.

DRAINAGE AREA.—228 square miles (measured on United States Bureau of Reclamation map).

RECORDS AVAILABLE.—April 1, 1921, to September 30, 1923, at present site; February 2 to December 31, 1905, at a site 150 feet above mouth of creek published as "Lost Creek near Croydon, Utah."

GAGE.—Stevens continuous water-stage recorder on right bank; inspected by A. E. Lucas.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Bed consists of gravel; rocky at gage. Straight for about 100 feet above and below gage. Most of water at this point, except during high water in spring, is seepage or from springs. One channel at all stages. Some moss on rocks at control. Control shifts occasionally. Point of zero flow at gage height, 0.3 foot, determined June 29, 1923.

EXTREMES OF DISCHARGE.—Maximum stage during year, 4.39 feet from 4 to 6 a. m. May 11 (discharge from extension of rating, 1,390 second-feet); minimum stage, 0.90 foot parts of September 22 (discharge, 13 second-feet).

1905; 1921-1923: Maximum stage, 4.39 feet from 4 to 6 a. m. May 11, 1923 (discharge from extension of rating, 1,390 second-feet); minimum discharge, 10 second-feet during measurement August 19, 1905.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Below all diversions.

REGULATION.—By irrigation above.

ACCURACY.—Stage-discharge relation changed about April 16–19. Rating curves fairly well defined below 600 second-feet, extended above. Water-stage recorder successfully operated throughout year, except during period of ice effect and May 29 when float rested on mud. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Records good except those for discharge above 600 second-feet which are fair.

Discharge measurements of Lost Creek at Devils Slide, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Jan. 17	A. B. Purton	1.02	18.8	June 29	A. B. Purton	1.22	42.1
Apr. 26	do	2.05	207	Sept. 8	Howell and Purton	1.07	25.9
28	do	2.18	253				

Daily discharge, in second-feet, of Lost Creek at Devils Slide, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	33	33	30	32	26	76	328	270	41	19	18
2	19	37	33	27	26	28	89	352	243	43	24	29
3	18	36	33	23	26	29	84	432	220	43	26	27
4	19	35	32	25		21	84	525	206	41	24	28
5	20	34	30	24		24	82	645	186	39	20	29
6	19	33	30	32		28	93	782	176	37	19	27
7	19	33	29	39		28	98	902	176	32	18	24
8	20	33	27	37	20	27	98	962	166	30	17	25
9	20	33	22	35		26	100	1,060	158	33	16	24
10	19	33	23	33		24	106	1,240	146	36	16	22
11	19	33	26	35		28	115	1,280	136	39	16	20
12	18	33	20	34		25	142	1,020	119	36	14	19
13	17	33	27	33		28	171	908	108	29	14	19
14	17	32	29	20	24	27	180	770	102	33	14	16
15	17	33	28	19	24	23	195	722	98	44	15	14

Daily discharge, in second-feet, of Lost Creek at Devils Slide, Utah, for the year ending September 30, 1923—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	17	32	28	18	24	28	220	655	93	40	17	16
17	16	32	18	22	23	28	266	920	96	40	15	16
18	15	30	20	29	25	21	336	1,190	98	36	16	16
19	15	30	25	28	23	28	376	1,070	89	36	17	16
20	16	30	28	26	25	29	332	1,030	80	30	19	16
21	14	30	26	22	24	27	306	944	89	28	20	14
22	14	29	16	22	26	27	270	836	104	27	21	14
23	15	28	16	27	25	27	234	752	108	26	19	14
24	16	27	23	28	26	28	214	655	98	27	18	18
25	16	27	28	32	28	30	209	615	93	27	15	22
26	19	27	28	32	26	32	217	545	87	26	15	23
27	18	28	28	27	23	34	231	476	80	24	14	28
28	18	28	29	32	22	36	249	408	60	22	14	33
29	22	32	29	30	-------	42	328	366	44	23	14	36
30	25	32	29	32	-------	56	376	324	38	23	16	37
31	29	-------	29	33	-------	59	-------	302	-------	23	16	-------

NOTE.—Braced figure shows estimated mean discharge for period indicated when stage-discharge relation was affected by ice. No gage height record May 29; discharge interpolated.

Monthly discharge of Lost Creek at Devils Slide, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	29	14	18.2	1,120
November	37	27	31.5	1,870
December	33	16	26.5	1,630
January	39	18	28.6	1,760
February	32	----------	23.3	1,290
March	59	21	29.8	1,830
April	376	76	196	11,700
May	1,280	302	742	45,600
June	270	38	126	7,500
July	44	22	32.7	2,010
August	26	14	17.4	1,070
September	37	14	22.0	1,310
The year	1,280	14	109	78,700

SOUTH FORK OF OGDEN RIVER NEAR HUNTSVILLE, UTAH

LOCATION.—In SE. ¼ sec. 12, T. 6 N., R. 2 E., half a mile below mouth of Magpie Creek, 1 mile above heading of Huntsville Mountain Canal, and 5½ miles east of Huntsville, Weber County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 21, 1921, to September 30, 1923.

GAGE.—Stevens continuous water-stage recorder on right bank; inspected by Mrs. Lucetta Anderson. Datum lowered 0.50 foot September 6, 1922.

DISCHARGE MEASUREMENTS.—Made by wading below gage.

CHANNEL AND CONTROL.—Bed of stream rocky and clean. One channel for all stages. Control well defined, but subject to slight shifting.

EXTREMES OF DISCHARGE.—Maximum stage during year, 5.4 feet at 10 p. m. May 10 (discharge, 1,450 second-feet); minimum stage, probably 0.48 foot December 22 and 23 (discharge, 40 second-feet).

1921–1923: Maximum and minimum stages same as given above.

ICE.—Stage-discharge relation only occasionally affected.

DIVERSIONS.—Above all, except few small ranch diversions.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed slightly October 1 to May 10; probably affected by ice February 3–18. Standard rating curve well defined below 1,200 second-feet; extended above. Water-stage recorder operated satisfactorily except periods indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph; shifting-control method used October 1 to May 10. Records good.

Discharge measurements of South Fork of Ogden River near Huntsville, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Jan. 18	A. B. Purton	0.56	47.0	July 17	A. B. Purton	0.79	80.5
Apr. 14	do	2.30	343	Aug. 29	W. E. Dickinson	.55	50.7

Daily discharge, in second-feet, of South Fork of Ogden River near Huntsville, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	49	53	49	47	51	62	268	405	358	122	69	55
2	48	55	50	46	50	67	242	430	322	119	67	54
3	48	54	50	46		66	196	562	310	114	67	53
4	48	54	49	48		61	171	676	308	112	65	52
5	49	53	49	49		65	173	860	294	107	65	52
6	50	52	49	55		62	254	970	282	104	64	50
7	50	52	51	58		64	228	1,010	272	101	64	49
8	50	51	49	53		62	206	1,060	260	100	63	48
9	50	51	46	52		62	218	1,140	254	99	62	48
10	50	52	50	51		62	236	1,270	244	96	61	49
11	49	51	48	51	45	62	282	1,190	238	93	60	48
12	51	51	48	50		60	340	930	228	90	59	48
13	52	49	54	49		61	352	770	220	88		49
14	52	48	52	43		57	348	690	210	85		50
15	51	49	50	42		58	355	610	202	83		50
16	51	49	49	45		60	380		198	80	63	49
17	51	50	45	51		56	442	800	206	81		50
18	50	50	47	47		57	514		186	78		50
19	50	49	47	47	41	58	499		173	78	61	50
20	50	50	48	48	42	59	392	990	168	78	60	50
21	50	50	45	44	51	58	355	958	166	81	60	50
22	50	50	40	43	58	58	296	880	168	83	59	49
23	51	50	40	48	62	60	246	766	156	79	59	49
24	51	50	41	48	66	64	226	778	143	79	58	53
25	50	50	49	49	66	67	226	750	136	79	58	52
26	51	49	48	51	62	74	246	726	127	79	57	52
27	50	49	48	50	60	81	276	622	132	76	55	53
28	52	49	48	52	60	104	355	526	132	74	53	54
29	53	51	49	53	------	143	442	466	130	73	52	54
30	52	51	48	52	------	182	455	435	127	72	55	54
31	52	------	49	52	------	218	------	402	------	70	56	------

NOTE.—No gage-height record; discharge estimated or interpolated Jan. 15, 16, May 14,16 -19, July 25, Aug. 7–11, 13–18, 20–25, 27, and 28. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of South Fork of Ogden River near Huntsville, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	53	48	50.4	3,100
November	55	48	50.7	3,020
December	54	40	47.6	2,930
January	58	42	49.0	3,010
February	66		49.6	2,750
March	218	56	75.2	4,620
April	514	171	307	18,300
May	1,270	402	777	47,800
June	358	127	212	12,600
July	122	70	888	5,460
August	69	52	60.9	3,740
September	55	48	50.8	3,020
The year	1,270		152	110,000

JORDAN RIVER BASIN

JORDAN RIVER NEAR LEHI, UTAH

LOCATION.—In sec. 25, T. 5 S., R. 1 W., about 800 feet below pump house at outlet of Utah Lake and 4 miles southwest of Lehi, Utah County.

DRAINAGE AREA.—2,570 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 30 to December 31. 1904, and July 22, 1913, to September 30, 1923.

GAGE.—Stevens eight-day water-stage recorder on right bank about 25 feet above bridge since May 16, 1920; operated by W. A. Knight.

DISCHARGE MEASUREMENTS.—Made from cable about 400 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of clay and hardpan. Banks clean and low; not subject to overflow. One channel at gage. Area slightly constricted below by highway bridge.

EXTREMES OF DISCHARGE.—Maximum mean daily stage during year, 7.00 feet May 31 (discharge, 1,110 second-feet); minimum mean daily stage, 4.28 feet October 29 (discharge, 454 second-feet).

1913–1923: Maximum mean daily stage reported, 7.78 feet June 8, 1922 (discharge, 1,370 second-feet). Minimum stage occurred at 6 p. m. December 15, 1915, when river was dry, owing to strong north wind which blew water in lake away from outlet gates. River was dry also August 14–15 and September 2, 1919, because of dam placed in lake outlet to permit repairing cut-off wall under pump house, and October 16, 1919, to May 15, 1920, because of dam placed in Lake outlet incident to construction of new pumping plant.

ICE.—Stage-discharge relation seldom affected by ice.

DIVERSIONS.—None from Jordan River above station. In Narrows about 6 miles north (downstream several miles by river) a number of large canals divert for irrigation in Salt Lake Valley and for use by smelters, etc., near Garfield.

REGULATION.—During irrigation season when natural flow from Utah Lake is inadequate for demands below, water is pumped from lake into Jordan River. A pumping plant, capacity about 1,500 second-feet, is at outlet of lake, 800 feet above gage; owned and operated by various canal companies interested in stream. This 1,500 second-feet capacity includes four 200-second-feet units installed during the winter of 1919–1920.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve fairly well defined. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

COOPERATION.—Records of mean daily gage height furnished by W. A. Knight, water commissioner.

Discharge measurements of Jordan River near Lehi, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge
1922		*Feet*	*Sec.-ft.*
Oct. 27	Purton and Jacob	4.81	588
May 11	Staats and Purton	6.58	973

Daily discharge, in second-feet, of Jordan River near Lehi, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	589	537	627	710	723	799	858	970	1,060	943	754	589
2	596	528	620	712	773	802	864	952	1,050	938	751	587
3	600	524	618	714	780	809	864	961	1,040	930	746	585
4	559	561	614	712	775	809	867	967	1,060	930	743	581
5	565	559	631	712	775	809	872	961	1,060	924	723	570
6	567	559	647	716	770	811	882	976	1,050	938	723	563
7	565	574	625	719	768	814	882	988	1,040	926	721	559
8	567	572	640	721	768	814	872	1,000	1,040	914	714	559
9	565	576	647	723	773	816	872	1,000	1,040	886	710	552
10	561	583	668	723	780	821	880	973	1,040	876	710	550
11	563	559	636	723	780	826	882	994	1,050	867	696	545
12	561	554	647	716	780	828	882	1,010	1,050	861	693	543
13	539	561	675	716	780	828	858	976	964	826	691	541
14	545	574	643	730	780	799	878	1,000	1,020	840	682	535
15	550	574	664	730	782	814	886	1,000	1,030	840	668	528
16	545	574	664	730	780	833	893	1,030	1,030	843	666	518
17	545	576	673	737	780	763	926	1,030	1,020	835	666	514
18	543	574	677	721	782	794	914	1,030	1,010	821	670	503
19	545	581	673	730	782	833	849	1,050	1,020	816	670	514
20	530	570	670	726	785	797	896	1,060	1,010	804	657	514
21	505	574	680	732	787	785	880	1,060	1,020	802	650	522
22	528	585	680	737	787	840	926	1,060	997	792	645	518
23	537	585	682	744	787	843	936	1,070	1,010	794	638	520
24	537	587	673	749	790	840	924	1,070	976	794	636	520
25	537	589	677	739	792	809	922	1,080	982	773	629	516
26	539	594	691	735	794	833	928	1,000	973	761	616	401
27	548	596	693	751	797	833	940	1,020	955	761	614	497
28	491	605	705	751	797	835	952	1,030	961	758	614	501
29	454	603	693	739	-------	838	936	1,060	958	754	616	503
30	528	627	684	742	-------	846	917	1,080	949	754	603	501
31	539	-------	707	742	-------	846	-------	1,110	-------	768	589	-------

Monthly discharge of Jordan River near Lehi, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	600	454	547	33,600
November	627	524	574	34,200
December	707	614	662	40,700
January	751	710	728	44,800
February	797	723	753	41,800
March	846	763	818	50,300
April	952	849	895	53,300
May	1,110	952	1,020	62,700
June	1,060	949	1,020	60,700
July	943	754	841	51,700
August	754	589	674	41,400
September	589	497	535	31,800
The year	1,060	454	757	547,000

SPANISH FORK AT THISTLE, UTAH

LOCATION.—In SW. ¼ sec. 28, T. 9 S., R. 4 E., at Thistle, Utah County, 800 feet below point where Soldier Fork and Thistle Creek unite to form Spanish Fork, 3 miles above confluence with Diamond Fork.

DRAINAGE AREA.—490 square miles (measured on topographic map).

RECORDS AVAILABLE.—December 3, 1907, to September 30, 1923.

GAGE.—Inclined staff on right bank 10 feet below cable, installed May 4, 1915; read by W. W. McClure.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and sand. One channel at all stages. Left bank low and subject to overflow; right bank high and partly wooded. Channel straight for 100 feet above and 600 feet below gage. Control is gravel bar about 30 feet below gage; shifting.

ICE.—Stage-discharge relation affected by ice for short periods.

DIVERSIONS.—No important diversions above station.

REGULATION.—None.

COOPERATION.—Records furnished by United States Bureau of Reclamation.

Discharge measurements of Spanish Fork at Thistle, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
Apr. 14	K. Borg [a] and G. Borg [a]	6.07	237.2
May 12	....do	6.97	627.2
June 14	Borg and Jones [a]	5.82	208.6

[a] Hydrographer, U. S. Bureau of Reclamation.

Daily discharge, in second-feet, of Spanish Fork at Thistle, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	52	60	56	34	37	61	300	274	377	135	108	80
2	52	60	56	34	38	61	177	274	360	131	106	79
3	52	63	58	34	38	61	180	314	340	126	113	79
4	54	63	61	35	40	62	167	364	325	124	98	78
5	54	63	63	35	45	60	167	479	314	124	93	78
6	54	71	61	34	47	60	184	454	290	121	93	78
7	54	75	61	34	48	60	212	479	280	118	89	76
8	60	75	61	34	48	60	193	505	259	121	85	76
9	60	73	61	35	49	60	182	572	248	123	85	76
10	71	71	60	35	49	60	186	651	242	123	85	76
11	63	71	60	35	49	60	186	651	237	123	85	75
12	63	69	60	35	49	61	186	651	232	123	85	75
13	60	67	61	35	49	61	257	626	219	123	85	75
14	61	67	63	35	48	61	232	566	209	123	94	75
15	65	65	65	35	48	61	240	543	207	123	86	79
16	65	63	67	35	48	61	259	543	205	123	82	78
17	65	61	67	35	47	61	284	532	202	119	81	78
18	65	60	67	35	47	63	300	725	197	114	81	78
19	63	58	67	35	48	63	325	812	191	113	81	78
20	56	56	67	35	50	65	306	869	180	113	93	76
21	52	56	67	35	56	66	306	876	177	111	82	76
22	50	56	67	35	58	66	268	783	177	123	84	76
23	50	54	67	35	59	66	219	698	173	123	82	76
24	50	54	67	35	59	66	207	698	162	118	81	82
25	50	52	67	36	59	116	207	684	158	123	81	80
26	50	54	67	36	59	108	219	691	156	123	81	79
27	50	54	69	36	61	114	219	626	152	113	80	82
28	56	54	71	36	61	131	224	560	146	110	80	79
29	56	54	71	37	-------	154	274	505	144	105	80	78
30	60	56	75	37	-------	169	306	469	139	102	79	78
31	60	-------	75	37	-------	184	-------	430	-------	98	81	-------

Monthly discharge of Spanish Fork at Thistle, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	71	50	57.2	3,520
November	75	52	61.8	3,680
December	75	56	64.7	3,980
January	37	34	35.1	2,160
February	61	37	49.8	2,770
March	184	60	79.4	4,880
April	325	167	232	13,800
May	876	274	578	35,500
June	377	139	223	13,300
July	135	98	119	7,320
August	113	79	87.1	5,360
September	82	75	77.6	4,620
The year	876	34	139	101,000

SPANISH FORK AT LAKE SHORE, UTAH

LOCATION.—In NW. ¼ sec. 15, T. 8 S., R. 2 E., 1 mile east of Lake Shore, Utah County, 3 miles above mouth, 3 miles northwest of Spanish Fork, and below all tributaries and diversions.

DRAINAGE AREA.—700 square miles (measured on topographic map).

RECORDS AVAILABLE.—December 10, 1903, to July 10, 1907; March 10, 1909, to September 30, 1923.

GAGE.—Inclined staff with vertical low-water extension, on right bank about half a mile below highway bridge, was used until December 31, 1922. A new staff on left bank at same datum was installed in 1922, but was not used until January 1, 1923. Gage read by Andrew Poulsen.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

CHANNEL AND CONTROL.—Bed soft; fairly permanent. One channel at all stages; banks of earth high and covered with willows.

ICE.—Stage-discharge relation slightly affected for short periods.

DIVERSIONS.—Entire flow is diverted above station during latter part of irrigation season; only waste and return waters pass gage at that time.

REGULATION.—Natural flow affected by irrigation diversions.

COOPERATION.—Records furnished by the United States Bureau of Reclamation.

Discharge measurements of Spanish Fork at Lake Shore, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Apr. 14	K. Borg[a] and G. Borg[a]	8.93	397.1	May 18	Borg and Jones[a]	10.50	552.2
28	do	9.33	460.5	Aug. 30	Kenneth Borg	3.10	5.3

[a] Hydrographer, U. S. Bureau of Reclamation.

Daily discharge, in second-feet, of Spanish Fork at Lake Shore, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	54	95	87	98	130	504	526	110	0	2	25
2	16	84	97	88	98	135	417	525	103	0	263	21
3	13	96	91	89	96	135	397	698	103	0	160	21
4	9	90	84	89	100	137	388	696	97	0	119	18
5	9	101	90	89	101	139	398	816	103	58	65	17
6	6	104	93	90	98	129	442	902	136	0	18	17
7	6	106	84	103	98	129	453	1,001	150	0	82	17
8	7	106	80	107	102	120	443	1,013	91	0	40	17
9	6	102	83	107	99	133	439	1,038	355	81	71	23
10	5	105	94	105	100	137	423	1,049	219	264	34	22
11	4	105	100	99	103	135	430	1,048	145	60	18	22
12	3	98	106	96	104	164	426	1,047	81	0	3	27
13	3	102	111	94	101	130	428	1,058	0	0	0	41
14	3	98	122	94	105	136	439	742	0	0	0	96
15	7	97	128	94	105	137	505	790	0	0	0	22
16	13	97	103	91	103	138	517	691	0	0	0	19
17	17	96	114	91	103	168	609	666	0	15	0	19
18	7	96	102	92	110	139	634	677	40	0	0	18
19	3	96	103	89	111	140	695	811	0	0	17	29
20	1	96	96	90	117	143	660	812	34	1	5	18
21	1	89	96	91	117	144	637	862	45	0	42	18
22	2	89	96	94	118	145	525	751	15	122	5	18
23	3	89	92	98	152	148	471	574	0	35	5	21
24	2	88	89	98	153	149	440	420	0	47	24	21
25	2	88	91	99	126	203	430	321	0	57	5	39
26	2	87	91	99	127	211	431	267	0	16	18	48
27	4	91	94	103	130	250	454	259	0	1	6	173
28	3	86	124	100	130	298	433	254	0	1	70	63
29	8	86	94	100	------	346	463	250	0	0	6	90
30	11	95	94	104	------	395	471	250	0	1	6	101
31	29	------	111	101	------	450	------	171	------	0	44	------

Monthly discharge of Spanish Fork at Lake Shore, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	29	1	7.5	461
November	106	54	93.9	5,590
December	128	80	98.3	6,040
January	107	87	95.8	5,890
February	153	96	111	6,160
March	450	120	177	10,900
April	695	388	480	28,600
May	1,058	171	677	41,600
June	355	0	60.9	3,620
July	264	0	24.5	1,510
August	263	0	36.4	2,240
September	173	17	36.7	2,180
The year	1,058	0	159	115,000

PROVO RIVER AT FORKS, UTAH

LOCATION.—In sec. 26, T. 5 S., R. 3 E., at Vivian Park summer resort, just above Forks, Utah County, and 400 feet above South Fork.

DRAINAGE AREA.—600 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 17, 1911, to September 30, 1923. Records have been obtained at various points below the mouth of South Fork since 1890.

GAGE.—Vertical staff on right bank, 16 feet above steel bridge; installed July 21, 1920; read by J. F. Carter. From October 5, 1915, to July 20 1920, staff gage on right bank half a mile upstream was used.

DISCHARGE MEASUREMENTS.—Made by wading or from bridge.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; fairly permanent. Banks fairly high and not subject to overflow; one channel at all stages. Control is gravel riffle.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.30 feet May 27 (discharge, 2,440 second-feet); minimum discharge, 242 second-feet January 16, February 4, and March 5.

1911–1923: Maximum stage recorded, 6.13 feet at 7 p. m. June 11, 1921 (discharge, 3,180 second-feet); minimum stage, 0.06 foot August 1 and 8, 1919 (discharge, 126 second-feet).

ICE.—Stage-discharge relation seldom affected by ice.

DIVERSIONS.—Station is below diversions for irrigation in Heber Valley and above those near Provo.

REGULATION.—A number of small lakes at headwaters have been utilized as storage reservoirs and flow is regulated to slight extent.

ACCURACY.—Stage-discharge relation changed continually throughout year. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table, using shifting-control method. Records fair.

COOPERATION.—Ten discharge measurements furnished by Utah Power & Light Co.

Discharge measurements of Provo River at Forks, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 5	R. P. Flagel [a]	2.12	250	May 17	Thorum [a] and Groo [a]	4.11	1,440
Nov. 21	do	2.42	352	June 15	E. G. Thorum [a]	4.36	1,580
Jan. 15	do	2.18	241	July 30	do	2.44	334
Feb. 21	do	2.20	280	Aug. 11	A. B. Purton	2.39	322
Apr. 3	do	3.11	681	Sept. 5	E. G. Thorum	2.36	315
May 2	do	3.32	807				

[a] Engineer, Utah Power & Light Co.

Daily discharge, in second-feet, of Provo River at Forks, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	253	293	347	342	317	306	666	762	1,300	619	364	312
2	253	302	347	335	310	314	701	849	1,070	597	397	334
3	253	330	350	317	279	314	725	940	980	530	436	312
4	248	327	358	324	289	278	579	1,050	1,000	477	356	319
5	248	337	358	296	282	242	528	1,250	1,110	468	356	312
6	248	340	361	354	300	310	919	1,410	1,260	468	349	312
7	248	344	390	346	303	310	940	1,490	1,080	414	341	312
8	248	347	358	346	303	303	655	1,610	1,080	372	326	312
9	243	344	340	335	310	303	666	1,730	1,160	356	326	304
10	243	412	334	324	303	300	677	1,990	1,240	356	326	290
11	243	397	347	324	300	303	671	2,060	1,480	372	319	290
12	246	375	347	317	296	303	713	1,900	1,800	364	319	290
13	246	347	460	310	317	303	856	1,730	1,710	372	356	294
14	248	337	492	282	275	306	737	1,570	1,600	405	356	290
15	259	344	420	255	268	289	828	1,330	1,440	397	334	283
16	253	347	397	242	262	289	800	1,390	1,320	397	330	283
17	251	361	361	265	262	332	926	1,470	1,200	380	319	290
18	251	368	327	310	258	289	1,050	1,620	1,060	356	334	294
19	259	365	358	292	296	317	1,210	1,940	807	349	380	290
20	259	361	354	289	300	310	1,010	1,940	854	341	334	312

Daily discharge, in second-feet, of Provo River at Forks, Utah, for the year ending September 30, 1923—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
21	256	354	340	278	292	303	940	2,170	840	341	334	270
22	259	347	317	275	289	303	856	2,120	787	349	326	270
23	264	350	308	332	296	303	750	1,860	736	364	326	270
24	267	347	334	324	296	310	666	1,570	664	405	312	297
25	264	340	344	324	289	339	632	1,900	699	414	312	290
26	264	340	340	317	292	342	666	2,190	742	397	312	288
27	267	340	340	310	249	354	775	2,330	736	364	312	297
28	273	340	337	317	279	376	842	2,230	699	356	312	312
29	302	344	344	317	-------	426	856	1,980	664	356	304	312
30	287	354	330	317	-------	490	926	1,940	630	356	312	297
31	278	-------	337	317	-------	528	-------	1,620	-------	364	304	-------

Monthly discharge of Provo River at Forks, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	302	243	257	15,800
November	412	293	348	20,700
December	492	308	357	22,000
January	346	242	311	19,100
February	317	249	290	16,100
March	528	242	326	20,000
April	1,210	528	792	47,100
May	2,330	762	1,680	103,000
June	1,800	630	1,060	63,100
July	619	341	402	24,700
August	436	304	336	20,700
September	334	270	298	17,700
The year	2,330	242	539	390,000

SOUTH FORK OF PROVO RIVER AT FORKS, UTAH

LOCATION.—In sec. 26, T. 5 S., R. 3 E., at Vivian Park summer resort, just above Forks, Utah County, a quarter of a mile above confluence with Provo River, and 12 miles up Provo Canyon on highway and railroad from Provo to Heber.

DRAINAGE AREA.—30 square miles (measured on topographic maps).

RECORDS AVAILABLE.—November 17, 1911, to September 30, 1923.

GAGE.—Vertical staff nailed to cottonwood tree on right bank; established June 15, 1913; moved 20 feet upstream May 2, 1922; read by J. F. Carter. No reference to original datum.

DISCHARGE MEASUREMENTS.—Made from footbridge near gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel; not permanent. One channel at all stages; banks low but rarely overflowed.

EXTREMES OF DISCHARGE.—Maximum discharge recorded during year, 106 second-feet May 27; minimum discharge, 32 second-feet July 21–23.

1911–1923: Maximum discharge, 123 second-feet May 27, 1922; minimum discharge, 20 second-feet July 23, 1917, and January 2, 1920.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Below all diversions.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed frequently; affected by ice January 28 to February 2. Standard rating curve not well defined. Gage read to hundredths once a day. Daily discharge ascertained by applying gage height to rating table, using shifting-control method. Records fair.

COOPERATION.—Ten discharge measurements furnished by Utah Power & Light Co.

Discharge measurements of South Fork of Provo River, at Forks, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
Oct. 5	R. P. Flagel [a]	1.26	45.7	May 17	Thorum [a] and Groo [a]	1.40	51.0
Nov. 21	do	1.24	42.8	June 15	E. G. Thorum [a]	1.59	46.7
Jan. 15	do	1.16	41.2	July 30	do	1.51	34.9
Feb. 21	do	1.16	39.0	Aug. 11	A. B. Purton	1.53	43.6
Apr. 3	do	1.20	38.0	Sept. 5	E. G. Thorum	1.54	40.7
May 2	do	1.23	48.0				

[a] Engineer, Utah Power & Light Co.

Daily discharge, in second-feet, of South Fork of Provo River at Forks, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46	46	42	45	40	38	37	48	62	35	34	40
2	46	46	42	45	40	38	36	48	56	35	41	40
3	46	48	42	44	40	38	38	49	53	35	39	40
4	46	48	42	44	40	37	37	48	55	34	38	40
5	47	48	42	44	40	36	36	47	54	34	41	40
6	47	48	42	45	40	38	38	57	54	34	41	41
7	46	48	40	44	40	38	38	57	53	37	42	41
8	46	48	40	44	40	38	38	56	62	37	43	41
9	46	48	40	44	41	38	38	61	61	37	44	40
10	46	48	40	44	42	38	38	65	59	35	45	40
11	46	48	40	44	41	37	39	69	65	34	42	40
12	46	48	42	41	41	37	39	62	68	34	45	40
13	46	46	53	41	41	37	40	56	64	34	45	40
14	46	46	46	41	40	37	40	55	61	36	45	40
15	46	46	44	41	39	35	41	49	48	36	45	40
16	46	46	42	41	39	35	42	55	46	34	46	38
17	46	46	41	41	39	37	42	54	41	34	46	37
18	46	46	41	41	39	37	44	59	41	33	48	42
19	46	41	41	41	39	37	44	61	41	33	48	38
20	46	42	41	40	39	37	41	60	39	33	46	38
21	46	42	41	40	39	35	42	69	38	32	45	37
22	46	42	41	40	39	34	45	68	37	32	45	37
23	46	42	41	40	39	34	45	64	36	32	42	37
24	46	42	41	40	39	35	44	68	36	34	40	46
25	46	42	42	40	39	35	44	78	36	34	40	42
26	46	42	42	40	39	35	45	92	36	34	39	39
27	46	41	42	40	38	35	47	106	40	34	39	44
28	46	41	41	40	39	35	47	104	38	34	39	44
29	48	41	41	40	-------	35	48	100	36	34	41	41
30	48	42	42	40	-------	35	48	88	36	34	41	41
31	46	-------	45	40	-------	36	-------	78	-------	34	41	-------

Monthly discharge of South Fork of Provo River at Forks, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	48	46	46.2	2,840
November	48	41	44.9	2,670
December	53	40	42.0	2,580
January	45	40	41.8	2,570
February	42	38	39.7	2,200
March	38	34	36.3	2,230
April	48	36	41.4	2,460
May	106	47	65.5	4,030
June	68	36	48.4	2,880
July	37	32	34.3	2,110
August	48	34	42.5	2,610
September	46	37	40.1	2,390
The year	106	32	43.6	31,600

SEVIER LAKE BASIN

SEVIER RIVER AT HATCH, UTAH

LOCATION.—In SE. ¼ sec. 28, T. 36 S., R. 5 W., at county bridge a quarter of a mile east of J. C. Barnhurst's house at Hatch, Garfield County, and 1½ miles below dam site of former Hatchtown Reservoir.

DRAINAGE AREA.—260 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 3, 1911, to July 31, 1921, fragmentary; and April 1, 1922, to September 30, 1923.

GAGE.—Stevens continuous water-stage recorder on left bank, installed August 23, 1914; inspected by H. S. Barnhurst.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—One channel at all stages. Bed composed of sand and gravel.

EXTREMES OF DISCHARGE.—Maximum stage during year, 3.42 feet at 3 a. m. May 20 (discharge, 826 second-feet); minimum stage not recorded.

1911–1923: Maximum stage occurred about 9 p. m. May 25, 1914, when Hatchtown Reservoir dam failed (discharge not determined). Maximum stage recorded, 5.25 feet at 4 a. m. May 26 (discharge, 1,490 second-feet); minimum flow, 10 second-feet on days in January, March, and April, 1912, while water was being stored at Hatchtown Reservoir.

ICE.—Stage-discharge relation slightly affected by ice.

DIVERSIONS.—Above all diversions, except Hatch Bench Canal, and Panguitch Lake Canal, which divert a small quantity of water from Mammoth Creek. Hillsdale Canal diverts about 4 miles downstream, and several other canals about 7 miles below for irrigation in Panguitch Valley.

REGULATION.—Entire flow controlled by gates in Hatchtown Reservoir dam before May 25, 1914. No regulation since that date.

ACCURACY.—Stage-discharge relation changed July 14 and August 2. Rating curve fairly well defined. Operation of water-stage recorder satisfactory, except as indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph or staff gage readings; shifting-control method used July 14 to August 2. Records fair.

Discharge measurements of Sevier River at Hatch, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge
1922		*Feet*	*Sec.-ft.*
Mar. 30	Purton and McBride [a]	0.99	114
June 12	Brice McBride	2.30	484
July 25	do	1.37	169

[a] Water commissioner, Sevier River.

Daily discharge, in second-feet, of Sevier River at Hatch, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	156	139			121	121	137	244	644	215	192	141
2	156	141			120	120	128	267	619	208	227	137
3	156	141		135		120	128	310	619	196	187	137
4	156	135					120	350	619	190	172	135
5	154	135					130	397	580	187	165	133
			120									
6	154	133		126	122	120	161	439	553	185	163	130
7	154	130					156	472	547	185	156	126
8	150	128					150	520	547	187	156	124
9	141	128					154	568	544	187	152	124
10	139	128			124	120	163	652	535	183	165	124
11	137	130					174	746	507	174	163	124
12	133	128					170	738	472	170	161	126
13	133	128	130	125		120	178	726	442	170	206	126
14	130	128					185	668	415	203	178	124
15	128	128	128				196	610	391	185	159	130
16	126	126	128			120	213	644	355	203	148	126
17	126	126	130		124		240	714	338	199	163	126
18	126	128	130				257	759	330	196	190	133
19	126	126	133				244	768	316	196	161	130
20	128	126	135	128		122	240	780		196	159	126
21	128	124	135				262	768		187	159	124
22	128	126	137				260	722		176	156	124
23	130	124	137	129			234	689		176	154	124
24	130		141		124	124	230	707		176	156	126
25	130		141				222	742	265	213	154	124
26	135	125	141	130	123	127	220	765		183	156	120
27	135		141				232	765		176	152	120
28	137		141				240	738		172	154	120
29	143		143	126			244	734		163	172	118
30	145		148		-------	130	247	707		154	159	118
31	143	-------	145		-------	137	-------	704	-------	156	148	-------

NOTE.—Discharge estimated or interpolated for following periods when gage was not read: Nov. 24 to Dec. 14, Dec. 31, Jan. 1–5, 7–19, 21–25, 27–31, Feb. 1, 3–9, 11–23, 25–28, Mar. 1, 2, 4–9, 11–15, 17–23, 25–29, and June 20 to July 1. Braced figures show mean discharge for periods indicated.

Monthly discharge of Sevier River at Hatch, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	156	126	138	8,480
November	141	----------	129	7,680
December	148	----------	131	8,060
January	----------	----------	128	7,870
February	----------	----------	123	6,830
March	137	----------	123	7,560
April	262	120	197	11,700
May	780	244	626	38,500
June	644	----------	410	24,400
July	215	154	185	11,400
August	227	148	166	10,200
September	141	118	127	7,560
The year	780	----------	207	150,000

SEVIER RIVER NEAR CIRCLEVILLE, UTAH

LOCATION.—In sec. 29, T. 31 S., R. 4 W., 2½ miles above mouth of Pine Creek and 8 miles southwest of Circleville, Piute County.

DRAINAGE AREA.—950 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 10 to September 19, 1912; April 23, 1914, to September 30, 1923. Fragmentary for 1923.

GAGE.—Stevens continuous water-stage recorder; installed April 23, 1914. Not in operation October 5, 1922, to September 23, 1923; outside staff gage read by J. A. Betenson.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—One channel at all stages; stream bed composed of sand; shifting.

EXTREMES OF DISCHARGE.—Not determined for 1923.

1912–1923: Maximum stage occurred in 1914 during flood resulting from failure of Hatchtown Dam; discharge not determined. Maximum discharge recorded, 1,600 second-feet August 6, 1916, and May 30, 1922; minimum stage recorded, 2.12 feet from July 8–11, 1919 (discharge, 52 second-feet).

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Above all diversions for Circle Valley; below several diversions for Hatchtown project and Panguitch Valley.

REGULATION.—Flow affected by diversions only.

ACCURACY.—Stage-discharge relation changed during early part of August, affected by ice January 4 to February 8. Rating curve well defined. Stevens continuous recorder operated satisfactorily October 1–4 and September 24–30. Weekly gage reading to hundredths were made for rest of year. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

Discharge measurements of Sevier River near Circleville, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
Mar. 30	Purton and McBride [a]	3.26	226
July 27	Brice McBride	3.16	201
Aug 20	Bowen [b] and McBride	2.88	150

[a] Water commissioner, Sevier River. [b] Deputy water commissioner, Sevier River.

Daily discharge, in second-feet, of Sevier River near Circleville, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	134		200			224			598			
2	131	200										
3	126							379		101		
4	126											139
5							260					
6												
7											234	
8			204			200			428			
9		186						668				
10										157		
11											169	136
12							287					
13											169	
14										129		
15			209		200	186			341			
16												
17		209								138		
18												202
19							390	692				
20											150	
21												
22			209		250	178					99	
23												
24		186										198
25								644				202
26	150						373		139	265		178
27										200		161
28											89	157
29			209			224						154
30						224						150
31										165		

SEVIER RIVER NEAR KINGSTON, UTAH

LOCATION.—In NW. ¼ sec. 16, T. 30 S., R. 3 W., 1 mile above site used until September 18, 1918, 1 mile west of Kingston, Piute County, and 2 miles above mouth of East Fork.

DRAINAGE AREA.—1,110 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 12, 1914, to September 30, 1923; also several miscellaneous measurements in 1911, published in Water-Supply Paper 310 as "South Fork near Junction, Utah."

GAGE.—Stevens continuous water-stage recorder on left bank installed September 20, 1918; inspected by W. S. Price.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—One channel at all stages. Concrete control 10 feet feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage during year, 3.45 feet at 9.15 p. m. May 18 (discharge, 908 second-feet); minimum stage, 0.94 foot from 9.30 to 10 a. m. July 21 (discharge, 42 second-feet).

1914–1923: Maximum stage recorded, 4.92 feet at 4 p. m. May 21, 1922 (discharge, 1,460 second-feet); minimum stage, 0.70 foot July 6, 1919, and 0.72 foot July 9, 1921 (discharge, 13 second-feet).

ICE.—Stage-discharge relation slightly affected by ice.

DIVERSIONS.—Below all diversions above mouth of East Fork.

REGULATION.—Flow affected by diversions for irrigation.

ACCURACY.—Stage-discharge relation changed during high water in May; affected by ice February 2–14. Rating curves well defined. Operation of water-stage recorder satisfactory, except for periods as shown in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Records fair, except for May and June, for which they are poor.

Discharge measurements of Sevier River near Kingston, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
Apr. 1	Purton and McBride [a]	2.28	240
Aug. 11	Brice McBride	1.16	96.7
20	Bowen [b] and McBride	1.26	114

[a] Water commissioner, Sevier River. [b] Deputy water commissioner, Sevier River.

Daily discharge, in second-feet, of Sevier River near Kingston, Utah, for the year ending September 20, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	108	186	176	173	222	225	258	388	656	102	121	130
2	110	190	204	176		233	254		595	95	452	119
3	123	190	218	176		254	243		570	85	525	119
4	116	180	218	186		211	236	500	570	83	264	121
5	105	166	204	186		213	225		555	73	161	116
6	102	183	194	183		215	243		540	60	164	113
7	100	218	194	190		236	280	620	515	62	157	110
8	98	218	197	197	200	247	277		510	73	142	110
9	95	225	169	190		258	269		500	73	116	116
10	95	218	162	180		262	288		490	97	108	108
11	92	211	222	194		229	330	770	461	228	97	100
12	85	194	233	186		222	326		418	220	87	100
13	92	180	254	186		233	284		404	145	87	110
14	92	166	273	180		233	295		386	102	200	133
15	92	162	254	173	254	218	303	746	359	337	306	136

Daily discharge, in second-feet, of Sevier River near Kingston, Utah, for the year ending September 20, 1923—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	90	183	243	169	243	208	333	730	324	555	272	139
17	90	194	215	173	243	247	372	780	293	213	236	161
18	90	215	197	186	254	211	392	843	281	85	187	157
19	90	208	183	190	269	204	440	854	272	52	154	161
20	92	204	190	197	277	222	400	831	272	50	113	151
21	92	204	190	190	318	200	412	825	256	47	121	145
22	95	200	186	183	376	186	472	666	236	50	124	142
23	98	200	180	197	372	186	440		198	102	121	142
24	98	200	173	211	341	208	376		187	127	113	148
25	95	190	200	222	314	236	368		180	437	110	154
26	98	180	186	204	218	215	364	730	142	555	105	142
27	102	183	169	197	176	208	366		136	277	92	136
28	145	190	197	197	197	240	368		127	213	85	130
29	194	208	194	200	-------	251	370		119	148	105	130
30	176	194	169	204	-------	247	372		113	108	127	130
31	173	-------	176	204	-------	262	-------	692	-------	105	136	-------

NOTE.—No gage-height record Oct. 6–8, Mar. 5, Apr. 14, 27–29, May 2–6, 8–14, 23–30, July 18, and Aug. 14; discharge estimated by comparison with record at Hatch. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Sevier River near Kingston, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	194	85	107	6,580
November	225	162	195	11,600
December	273	162	201	12,400
January	222	169	190	11,700
February	376	176	238	13,200
March	262	186	226	13,900
April	472	225	332	19,800
May	854	388	700	43,000
June	656	113	356	21,200
July	555	47	160	9,840
August	525	85	167	10,300
September	161	100	130	7,740
The year	854	47	250	181,000

PIUTE RESERVOIR NEAR MARYSVALE, UTAH

LOCATION.—In NW. ¼ sec. 3, T. 29 S., R. 3 W., at Piute Dam, 11 miles south of Marysvale, Piute County.

RECORDS AVAILABLE.—March 22, 1914, to September 30, 1923.

GAGE.—Iron pins driven every foot into rock face at outlet gates; readings between footmarks are measured with a graduated scale.

COOPERATION.—Gage-height record furnished by Piute Reservoir & Irrigation Co.

Daily contents, in acre-feet, of Piute Reservoir near Marysvale, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30,200	28,900	38,400	45,500	50,300	59,400	63,500	64,800	65,700	47,900	30,900	19,400
2	29,400	29,100	38,600	45,500	50,600	59,800	63,500	64,200	25,400	47,200	30,500	19,000
3	28,600	29,600	39,000	45,600	50,900	60,200	64,200	63,600	64,900	46,100	30,000	18,800
4	28,200	29,800	39,200	45,600	51,000	60,500	64,700	63,000	64,400	45,400	30,300	18,600
5	27,800	30,200	39,500	45,700	51,100	60,800	65,200	62,400	63,900	44,600	30,000	18,400
6	27,300	30,600	39,800	45,800	51,200	61,100	65,700	62,000	63,600	43,900	29,800	18,200
7	26,700	31,300	40,100	45,900	51,400	61,100	66,200	61,600	63,200	43,200	29,500	18,000
8	26,200	31,600	40,400	46,000	51,600	61,100	66,600	61,300	62,700	42,500	29,200	17,700
9	25,800	32,000	40,600	46,100	52,000	61,200	67,100	61,000	62,200	41,800	28,800	17,400
10	27,000	32,400	40,900	46,200	52,300	61,200	67,800	61,200	61,800	41,[illegible]00	28,400	17,100

Daily contents, in acre-feet, of Piute Reservoir near Marysvale, Utah, for the year ending September 30, 1923—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
11	29,400	32,800	41,200	46,300	52,500	61,600	68,200	61,600	61,200	40,800	27,800	16,800
12	28,800	33,200	41,500	46,400	52,800	61,300	68,800	62,000	60,600	40,100	27,200	16,500
13	28,500	33,500	41,800	46,500	53,000	61,300	69,400	62,400	59,900	39,600	26,700	16,200
14	28,200	33,800	42,200	46,600	53,400	61,400	69,700	62,800	59,200	39,100	26,400	15,800
15	28,200	34,000	42,500	46,700	53,900	61,400	69,700	63,000	58,600	38,600	26,100	15,300
16	28,100	34,200	42,900	46,700	54,500	61,300	69,500	63,200	58,200	38,100	25,800	14,900
17	28,200	34,500	43,200	46,800	55,000	61,300	69,400	63,600	57,700	37,700	25,500	14,600
18	28,200	34,800	43,500	46,900	55,500	61,300	69,400	64,000	57,200	37,200	25,000	14,300
19	28,200	35,100	43,600	47,000	55,900	61,500	69,700	64,400	56,600	36,700	24,700	14,100
20	28,300	35,400	43,800	47,100	56,400	61,800	69,700	64,900	56,000	36,100	24,300	13,800
21	28,400	35,700	44,100	47,200	56,900	62,100	69,200	65,500	55,400	35,400	24,000	13,500
22	28,400	35,900	44,300	47,300	57,400	62,400	68,900	65,800	54,700	34,600	23,800	13,300
23	28,500	36,200	44,500	47,400	57,800	62,700	68,700	65,800	54,000	34,200	23,500	12,900
24	28,600	36,400	44,600	47,500	58,100	63,000	68,500	65,800	53,300	33,700	23,000	12,600
25	28,800	36,700	44,800	47,600	58,300	63,200	68,200	65,900	52,500	33,200	22,600	12,300
26	28,800	37,100	45,000	47,900	58,500	63,400	67,700	65,900	51,700	33,700	22,200	11,800
27	28,800	37,300	45,200	48,400	58,700	63,700	67,300	65,900	51,400	33,200	21,700	11,400
28	28,700	37,600	45,300	49,100	58,900	63,700	66,600	65,900	50,600	33,200	21,200	11,000
29	28,800	37,800	45,400	49,600	-------	63,700	66,200	65,900	49,600	32,700	20,800	10,400
30	28,900	38,100	45,400	49,800	-------	63,700	65,400	65,900	48,900	32,200	20,600	10,000
31	28,800	-------	45,500	50,000	-------	63,600	-------	65,900	-------	31,600	19,900	-------

SEVIER RIVER BELOW PIUTE DAM, NEAR MARYSVALE, UTAH

LOCATION.—In sec. 34, T. 28 S., R 3 W., 700 yards below dam of Piute Reservoir,

LOCATION.—In sec. 34, T. 28 S., R 3, W., 700 yards below dam of Piute Reservoir, 11 miles south of Marysvale, Piute County.

DRAINAGE AREA.—2,440 square miles (measured on topographic maps).

RECORDS AVAILABLE.—May 17 to August 31, 1911; May 1, 1912, to September 30, 1923.

GAGE.—Stevens continuous water-stage recorder on left bank, installed June 17, 1922; inspected by M. C. Jensen.

DISCHARGE MEASUREMENT.—Made from cable or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel. One channel at all stages. Control is riffle of heavy gravel, and rocks immediately below gage; shifts occasionally.

EXTREMES OF DISCHARGE.—Maximum stage during year, 2.29 feet at 10 a. m. July 20 (discharge, 783 second-feet); minimum stage, —0.35 foot April 8 (discharge, 3 second-feet).

1911–1923: Maximum stage, 4.45 feet between 6 p. m. May 23 and 8 a. m. May 24, 1922 (discharge, 2,600 second-feet); river practically dry when reservoir gates were closed April 5–10, 1919.

ICE.—Stage-discharge relation slightly affected by ice.

DIVERSIONS.—No water diverted between station and Piute Reservoir.

REGULATION.—Flow past station controlled by operation of gates in dam above.

ACCURACY.—Stage-discharge relation changed during winter. Rating curves well defined. Operation of water-stage recorder satisfactory, except October 9 and 10. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Discharge estimated October 9 and 10. Records good.

Discharge measurements of Sevier River below Piute Dam, near Marysvale, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 5	Brice McBride[a]	2.27	659	Mar. 29	Purton and McBride	1.19	217
24	do	1.70	358	29	do	−.24	6
Nov. 19	do	.89	133	June 16	Brice McBride	1.82	480

[a] Water commissioner, Sevier River.

Daily discharge, in second-feet, of Sevier River below Piute Dam, near Marysvale, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	638	191	128	184	70	26	282	746	554	565	641	609
2	652	133	124	184	70	50	121	746	554	559	654	609
3	659	133	126	184	71	102	12	746	565	628	621	486
4	666	133	128	184	71	102	6	738	571	668	571	475
5	659	133	130	187	71	100	4	738	602	675	577	470
6	652	131	130	187	73	157	3	746	602	668	583	470
7	659	131	133	187	73	218	3	746	609	668	583	470
8	652	131	135	189	74	212	3	668	609	634	609	497
9	225	131	133	189	74	215	3	641	615	641	647	502
10	10	131	130	189	74	212	13	615	615	647	675	524
11	238	135	128	189	74	212	53	589	577	654	689	536
12	358	135	114	189	74	212	83	589	542	654	689	530
13	396	135	143	189	41	212	111	583	513	647	689	530
14	414	137	137	191	27	212	198	583	460	661	695	530
15	405	130	131	191	26	212	309	583	475	654	695	536
16	383	124	130	194	25	212	320	577	481	661	695	536
17	362	128	130	194	27	215	332	577	475	668	695	530
18	362	112	130	194	28	155	336	583	481	661	695	524
19	362	145	130	194	27	98	340	589	508	641	695	536
20	362	133	130	196	26	98	450	589	589	681	689	536
21	362	137	131	194	25	100	502	583	628	702	654	524
22	366	139	131	196	47	100	508	583	647	709	647	513
23	358	143	131	199	128	100	536	571	634	702	654	508
24	354	139	155	199	145	100	554	571	647	695	647	508
25	331	131	173	126	145	100	565	565	634	709	634	519
26	313	133	177	70	147	102	559	565	641	668	596	524
27	313	137	177	70	147	147	571	554	641	481	602	445
28	313	139	182	70	113	207	628	548	596	536	602	430
29	313	137	184	70	------	155	738	536	554	647	609	435
30	306	135	184	70	------	282	746	554	559	647	602	435
31	303	------	184	70	------	282	------	559	------	647	602	------

Monthly discharge of Sevier River below Piute Dam, near Marysvale, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	666	10	411	25,300
November	191	112	135	8,030
December	184	114	142	8,730
January	199	70	165	10,100
February	147	25	71.2	3,950
March	282	26	158	9,720
April	746	3	296	17,600
May	746	536	618	38,000
June	647	460	573	34,100
July	709	481	648	39,800
August	695	571	643	39,500
September	609	430	509	30,300
The year	746	3	366	265,000

SEVIER RIVER AT SEVIER, UTAH

LOCATION.—In E. ½ sec. 32, T. 25 S., R. 4 W., at Sevier, Sevier County; 100 yards above railroad bridge on Y spur of Denver & Rio Grande Western Railroad. Clear Creek enters Sevier River immediately above this station. Prior to November 15, 1916, Clear Creek entered Sevier River 45 yards below this station.

DRAINAGE AREA.—2,850 square miles including Clear Creek, which was diverted into Sevier River above this station on November 15, 1916; 2,700 square miles exclusive of Clear Creek. Areas measured on topographic maps.

RECORDS AVAILABLE.—May 20, 1911, to September 30, 1923.

GAGE.—Stevens continuous water-stage recorder on right bank; inspected by R. W. Levie.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Channel straight; composed of gravel. Banks seldom overflowed. Control composed of coarse gravel about 75 feet below gage; somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage during year, 5.43 feet at 3 p. m. May 5 (discharge, 1,300 second-feet); minimum stage, 3.16 feet at 6.20 p. m. April 4 (discharge, 62 second-feet).

1911–1923: Maximum discharge estimated, 2,800 second-feet during last week in May, 1922; minimum stage, 1.15 feet at 2 p. m. November 27, 1919 (discharge, 10 second-feet).

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—A few small ditches divert between station and Piute Dam.

REGULATION.—Flow past the station practically controlled by operation of gates in Piute Dam, about 27 miles above.

ACCURACY.—Stage-discharge relation changed about April 16 to May 5; affected by ice January 1 to March 3. Rating curves fairly well defined. Water-stage recorder operated satisfactorily. Daily discharge ascertained by applying to rating table mean daily gage height determined from water-stage recorder. Records good except for April and May, for which they are fair.

Discharge measurements of Sevier River at Sevier, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 6	Brice McBride [a]	5.08	720	June 16	Brice McBride	4.78	789
11	do	3.35	84.0	Aug. 9	Bowen [b] and McBride	4.61	681
Mar. 28	Purton and McBride	4.09	233				

[a] Water commissioner, Sevier River. [b] Deputy water commissioner, Sevier River.

Daily discharge, in second-feet, of Sevier River at Sevier, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	676	369	167			160	369	1,110	898	849	716	670
2	700	194	163			70	360	1,140	814	849	728	670
3	706	158	160			85	138	1,170	800	828	746	595
4	718	158	158	244		138	78	1,200	807	884	686	548
5	718	158	163			133	87	1,260	821	870	670	532
6	718	158	163			136	99	1,230	891	870	670	524
7	737	158	170	244	110	225	115	1,230	884	863	665	524
8	744	158	170			261	109	1,240	877	870	655	528
9	652	158	167			261	112	1,200	905	828	680	540
10	91	158	167	244		268	115	1,150	940	814	710	544
11	84	158	172			257	127	1,140	988	794	728	556
12	94	160	170			261	133	1,070	956	800	734	560
13	402	165	184			261	174	1,040	980	788	740	556
14	482	165	202	244	95	257	186	980	905	794	740	568
15	472	165	191			247	282	919	863	849	740	576
16	472	163	189			257	360	926	782	800	734	572
17	441	165	172			264	417	988	722	800	728	572
18	436	163	167	244		254	456	1,030	710	842	704	572
19	441	140	167		84	172	472	1,080	670	758	728	572
20	441	184	170			148	488	1,100	716	770	728	572
21	446	172	170	244		142	658	1,070	746	807	728	572
22	446	170	170			140	730	988	788	821	710	572
23	441	170	172	244	110	136	765	919	776	828	716	548
24	422	170	172		170	140	800	919	849	814	710	560
25	426	163	191	244	189	142	832	972	842	849	710	564
26	374	163	228	175		138	832	1,040	870	835	670	576
27	374	167	237	110	189	142	840	1,060	912	670	665	552
28	369	172	240			222	880	1,040	912	605	665	488
29	374	176	261	110	-------	271	952	980	849	734	680	488
30	369	172	252		-------	309	1,080	919	835	722	680	492
31	374	-------	244		-------	365	-------	919	-------	698	670	-------

NOTE.—Braced figures show estimated mean discharge for periods indicated when there was ice effect. No gage-height record; discharge estimated or interpolated Dec. 30, Mar.1–3, and Sept. 18–21.

Monthly discharge of Sevier River at Sevier, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	744	84	472	29,000
November	369	158	172	10,200
December	261	158	186	11,400
January			220	13,500
February			115	6,390
March	365	*70	202	12,400
April	1,080	78	435	25,900
May	1,260	919	1,070	65,800
June	998	670	844	50,200
July	884	605	803	49,400
August	746	655	704	43,300
September	670	488	559	33,300
The year	1,260	*70	484	351,000

* Estimated minimum during ice effect.

SEVIER RIVER NEAR VERMILION, UTAH

LOCATION.—In NE. ¼ sec. 19, T. 22 S., R. 1 W., at highway bridge half a mile below Rockyford Dam, 2 miles below Vermilion, Sevier County, and 4 miles above mouth of Lost Creek.

DRAINAGE AREA.—3,340 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 15 to September 23, 1912; July 31, 1914, to September 30, 1923.

GAGE.—Stevens continuous water-stage recorder on right bank; inspected by Orson Wilkinson.

DISCHARGE MEASUREMENTS.—Made by wading or from highway bridge.

CHANNEL AND CONTROL.—Fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, 5.08 feet at 3 p. m. April 2 (discharge, 436 second-feet); minimum discharge, about 1 second-foot July 16–18 (seepage only).

1914–1923: Maximum stage, about 8.1 feet May 30, 1922 (discharge, 2,400 second-feet); minimum discharge, that of July 16–18, 1923.

ICE.—Stage-discharge relation seldom affected by ice.

DIVERSIONS.—Entire flow usually diverted above station during low-water season. Flow past station at such times represents seepage and return flow from canals.

REGULATION.—Flow regulated to large extent by dams and reservoirs above.

ACCURACY.—Stage-discharge relation changed slightly during latter part of September. Rating curve well defined. Water-stage recorder operated satisfactorily, except as indicated in footnote to daily-discharge table. Shifting-control method used September 13–30. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Records good.

Discharge measurements of Sevier River near Vermilion, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
Mar. 27	Purton and McBride •	4.51	199.
July 8	Brice McBride	3.12	5.3
Aug. 28	do	4.00	87.0

• Water commissioner, Sevier River.

Daily discharge, in second-feet, of Sevier River near Vermilion, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	110	269	281	357	230	244	420	174	190	116	234	98
2	110	322	285	353	230	240	426	187	187	10	221	100
3	116	309	285	335	210	192	265	169	179	9	224	98
4	116	269	277	339	184	192	195	143	172	8	265	87
5	116	251	277	353	175	209	206	150	157	7	244	78
6	125	309	285	362	165	215	206	197	84	6	157	80
7	150	305	281	372	155	224	218	209	56	6	129	82
8	162	297	285	386	165	262	244	200	55	6	106	84
9	167	289	285	386	175	301	209	240	52	6	95	87
10	167	281	273	386	175	309	206	237	114	5	91	89
11	162	277	277	390	179	322	203	209	155	6	85	89
12	132	273	285	395	179	314	195	174	174	5	78	91
13	116	265	305	395	192	314	218	123	197	6	72	89
14	112	262	339	395	192	331	230	138	215	6	15	89
15	127	258	376	386	190	353	187	143	230	6	10	93
16	155	269	367	376	187	353	215	136	265	5	29	98
17	174	269	357	376	190	362	248	129	240	1	62	110
18	182	265	331	386	192	367	227	138	150	2	110	116
19	182	273	320	405	197	357	190	150	84	8	98	121
20	179	281	320	405	197	305	162	187	98	8	102	116
21	169	285	300	395	203	273	132	224	89	8	136	119
22	167	285	280	395	203	262	174	251	95	33	125	127
23	162	285	275	395	197	251	184	244	104	91	110	134
24	234	285	285	405	192	248	169	209	110	89	95	134
25	237	285	301	410	224	227	164	169	110	98	91	134
26	244	285	314	415	237	212	160	160	114	234	89	134
27	248	372	322	357	230	209	143	177	112	293	89	160
28	248	281	335	281	230	212	123	212	121	277	87	179
29	262	277	344	255	-------	281	125	254	152	240	84	177
30	277	281	348	250	-------	331	127	221	192	224	87	172
31	273	-------	348	250	-------	390	-------	200	-------	251	89	-------

NOTE.—Daily discharge estimated by comparison with Gunnison record: Dec. 19–23, Jan. 29–31, Feb. 1–3, 5–10, and July 2–6.

Monthly discharge of Sevier River near Vermilion, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	277	110	174	10,700
November	372	251	284	16,900
December	376	273	308	18,900
January	415	250	366	22,500
February	237	155	196	10,900
March	390	192	279	17,200
April	426	123	206	12,300
May	254	123	186	11,400
June	265	52	142	8,450
July	293	1	66.8	4,110
August	265	10	113	6,950
September	179	78	112	6,660
The year	426	1	203	147,000

SEVIER RIVER BELOW SAN PITCH RIVER, NEAR GUNNISON, UTAH

LOCATION.—In NE. ¼ sec. 14, T. 19 S., R. 1 W., 1,000 feet below mouth of San Pitch River, 3 miles west of Gunnison, Sanpete County.

DRAINAGE AREA.—4,880 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1917, to September 30, 1923. Records of Sevier River near Gunnison were obtained above confluence with San Pitch River June 29, 1900, to September 30, 1917. Combined flow of Sevier River near Gunnison with flow of San Pitch River near Gunnison is comparable with flow at present station.

GAGE.—Stevens continuous water-stage recorder on left bank; installed October 4, 1917; inspected by L. D. Christensen and Reuben Christensen.

DISCHARGE MEASUREMENTS.—Made from cable about 250 feet above gage or by wading.

CHANNEL AND CONTROL.—One channel at all stages. Bed is composed of fine sand and gravel; shifts occasionally.

EXTREMES OF DISCHARGE.—Maximum stage during year, 3.56 feet from midnight to noon April 2 (discharge, about 1,100 second-feet); minimum stage, 1.72 feet part of July 11 (discharge, 106 second-feet).

1918–1923: Maximum stage, 5.32 feet at 2 a. m. June 1, 1922 (discharge, 2,620 second-feet); minimum stage recorded, 0.19 foot July 30, 1919 (discharge, 57 second-feet).

ICE.—Stage-discharge relation seldom affected by ice.

DIVERSIONS.—During irrigation season, greater part of flow is diverted above station.

REGULATION.—Flow at gage is affected by operation of reservoirs and numerous irrigation diversions above.

ACCURACY.—Stage-discharge relation changed April 2 and about July 24. Rating curves well defined. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Records good except for February for which they are fair.

Discharge measurements of Sevier River below San Pitch River, near Gunnison, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Mar. 7	Brice McBride [a]	2.87	572	June 7	Brice McBride	2.23	282
27	Purton and McBride	3.14	713	21	do	2.10	251
Apr. 28	Brice McBride	2.62	466	July 9	do	1.76	111
May 2	do	2.47	410	Aug. 7	do	2.18	310
20	do	2.70	546	Sept. 26	do	2.22	329

[a] Water commissioner, Sevier River.

Daily discharge, in second-feet, of Sevier River below San Pitch River, near Gunnison, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	263	545	477	521	445	441	1,040	394	450	272	399	234
2	255	521	471	521	424	451	1,100	399	404	230	399	242
3	251	516	477	499	424	461	1,070	404	390	172	380	238
4	251	516	471	482	406	468	1,000	399	375	148	390	230
5	255	488	455	488	388	475	818	409	365	141	399	222
6	259	461	461	493	370	482	613	440	352	135	375	226
7	272	510	471	516	360	563	545	482	293	128	311	234
8	293	516	471	521	350	632	581	510	238	121	267	234
9	298	499	466	527	360	755	569	493	218	114	246	234
10	306	477	461	527	370	839	551	516	206	117	234	234
11	315	471	521	527	370	867	569	545	251	111	251	226
12	302	466	527	527	375	846	575	461	276	125	234	222
13	298	466	557	545	370	853	593	404	267	111	226	230
14	306	455	587	533	385	832	593	390	302	111	259	230
15	315	455	593	516	390	776	587	361	315	117	214	230
16	329	455	619	499	375	755	569	356	324	120	172	234
17	356	477	593	510	370	790	600	455	329	180	180	246
18	370	488	563	539	370	755	593	569	347	138	191	276
19	380	482	521	545	375	741	575	533	293	131	242	306
20	390	471	499	557	375	762	516	551	238	120	246	306
21	380	471	499	557	385	727	471	638	242	120	238	306
22	375	461	477	551	404	692	471	563	222	117	251	306
23	385	477	461	563	414	692	545	516	226	151	246	306
24	394	477	455	593	409	699	551	545	226	302	226	315
25	429	477	471	613	412	720	521	551	263	533	210	324
26	435	477	493	606	415	713	499	551	251	347	210	329
27	435	488	499	581	419	715	499	545	238	380	210	338
28	455	563	510	499	430	727	471	521	234	424	206	333
29	482	499	527	455	-------	762	414	521	246	404	206	338
30	516	488	516	450	-------	874	409	493	272	370	210	390
31	527	-------	516	445	-------	972	-------	488	-------	370	218	-------

NOTE.—No gage-height record Feb. 4, 5, 7–9, 25, 26, 28, Mar. 1, 2, 4, 5, July 6, and 8; discharge estimated or interpolated.

Monthly discharge of Sevier River below San Pitch River, near Gunnison, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	527	251	351	21,600
November	563	455	487	29,000
December	619	455	506	31,100
January	613	445	526	32,300
February	445	350	391	21,700
March	972	441	704	43,300
April	1,100	409	617	36,700
May	638	356	484	29,800
June	450	206	288	17,100
July	533	111	205	12,600
August	399	172	260	16,000
September	390	222	271	16,100
The year	1,100	111	425	307,000

SEVIER BRIDGE RESERVOIR NEAR JUAB, UTAH

LOCATION.—In NW. ¼ sec. 1, T. 17 S., R. 2 W., at dam of Consolidated Sevier Bridge Reservoir Co., 13 miles southwest of Juab, Juab County.

RECORDS AVAILABLE.—January 1, 1914, to September 30, 1923.

GAGE.—Inclined staff gage about 100 feet upstream from south end of dam, since April 26, 1914.

COOPERATION.—Gage-height record furnished by Consolidated Sevier Bridge Reservoir Co.

Daily contents, in acre-feet, of Sevier Bridge reservoir near Juab, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	154,000	140,000	172,000	202,000	203,000	216,000	223,000	211,000	176,000	144,000	99,700	66,700
2	154,000	140,000	173,000	203,000	204,000	216,000	225,000	210,000	175,000	142,000	99,400	65,900
3	153,000	141,000	174,000	203,000	204,000	216,000	226,000	210,000	174,000	140,000	98,300	65,600
4	152,000	142,000	175,000	203,000	206,000	216,000	227,000	209,000	173,000	139,000	97,200	64,800
5	151,000	143,000	176,000	203,000	207,000	215,000	229,000	208,000	172,000	137,000	96,500	64,000
6	149,000	144,000	176,000	203,000	208,000	215,000	229,000	208,000	172,000	135,000	95,500	63,000
7	149,000	146,000	177,000	203,000	208,000	215,000	231,000	208,000	171,000	132,000	94,500	62,000
8	149,000	147,000	178,000	203,000	208,000	216,000	231,000	208,000	169,000	129,000	93,400	60,700
9	148,000	148,000	180,000	203,000	208,000	216,000	231,000	207,000	168,000	126,000	92,100	59,400
10	148,000	149,000	181,000	203,000	208,000	215,000	231,000	205,000	168,000	124,000	90,700	58,400
11	147,000	151,000	181,000	203,000	209,000	215,000	231,000	202,000	167,000	122,000	89,100	57,200
12	146,000	152,000	182,000	203,000	210,000	215,000	232,000	200,000	167,000	119,000	88,400	55,900
13	145,000	153,000	184,000	203,000	211,000	215,000	230,000	199,000	165,000	118,000	87,100	55,000
14	144,000	154,000	185,000	203,000	212,000	215,000	230,000	197,000	165,000	116,000	86,200	53,800
15	144,000	154,000	187,000	203,000	213,000	215,000	228,000	194,000	164,000	115,000	84,900	52,800
16	143,000	156,000	188,000	203,000	213,000	216,000	227,000	193,000	164,000	113,000	83,000	51,600
17	142,000	157,000	190,000	203,000	214,000	216,000	226,000	192,000	164,000	111,000	81,200	50,700
18	142,000	158,000	191,000	203,000	214,000	216,000	225,000	189,000	163,000	110,000	80,000	49,500
19	141,000	159,000	192,000	203,000	214,000	216,000	223,000	189,000	162,000	109,000	78,800	48,800
20	141,000	160,000	193,000	203,000	215,000	216,000	221,000	187,000	161,000	108,000	77,600	48,200
21	140,000	161,000	194,000	203,000	216,000	217,000	220,000	186,000	160,000	108,000	76,400	47,500
22	140,000	162,000	195,000	203,000	216,000	217,000	219,000	186,000	159,000	107,000	75,200	46,800
23	140,000	164,000	196,000	203,000	217,000	217,000	218,000	186,000	157,000	106,000	74,100	46,100
24	140,000	164,000	197,000	203,000	217,000	217,000	216,000	186,000	155,000	106,000	72,900	45,700
25	139,000	163,000	198,000	203,000	217,000	218,000	214,000	185,000	154,000	105,000	71,800	45,500
26	139,000	167,000	200,000	203,000	217,000	219,000	213,000	183,000	153,000	104,000	71,000	45,000
27	139,000	168,000	200,000	203,000	216,000	219,000	213,000	181,000	151,000	104,000	69,900	44,600
28	137,000	169,000	201,000	203,000	216,000	220,000	213,000	180,000	149,000	103,000	69,100	44,400
29	138,000	169,000	201,000	203,000	-------	220,000	212,000	180,000	148,000	102,000	68,600	44,200
30	138,000	171,000	201,000	203,000	-------	221,000	212,000	177,000	147,000	102,000	67,800	44,400
31	139,000	-------	201,000	203,000	-------	222,000	-------	176,000	-------	101,000	67,200	-------

SEVIER RIVER NEAR JUAB, UTAH

LOCATION.—In NE. ¼ sec. 2, T. 17 S., R. 2 W., 1,600 feet downstream from Sevier Bridge Dam and 14 miles southwest of Juab, Juab County.

DRAINAGE AREA.—5,120 square miles (measured on topographic maps).

RECORDS AVAILABLE.—September 23, 1911, to September 30, 1923.

GAGE.—Stevens continuous water-stage recorder on left bank, installed April 16, 1914; inspected by O. E. Howard.

DISCHARGE MEASUREMENTS.—Made from cable 600 feet above gage or by wading.

CHANNEL AND CONTROL.—One channel at all stages. Bed composed of sand, clay, and fine gravel. Artificial control of rocks about 40 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage during year, 5.95 feet from 9 to 10 p. m. May 12 (discharge, 1,480 second-feet); minimum stage, 1.24 feet November 15 (discharge, 4 second-feet).

1911–1923: Maximum stage recorded, 8.50 feet at 7 p. m. June 2, 1922 (discharge, 2,140 second-feet); no flow March 7, 1918.

ICE.—Stage-discharge relation seldom affected by ice.

DIVERSIONS.—None between this station and that near Gunnison.

REGULATION.—Flow controlled by gates in dam just above station.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve well defined. Water-stage recorder operated satisfactorily. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Records good.

Discharge measurements of Sevier River near Juab, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 2	Brice McBride [a]	2.30	205	May 27	Brice McBride	5.08	1,140
23	do	1.26	3.3	June 22	do	3.96	742
Mar. 26	Purton and McBride	2.80	354	Aug. 12	Leslie Bowen [b]	4.34	864
Apr. 25	Brice McBride	5.58	1,340	Sept. 2	Brice McBride	3.90	714
May 6	do	4.39	887	27	do	3.44	564

[a] Water commissioner, Sevier River. [b] Deputy water commissioner, Sevier River.

Daily discharge, in second-feet, of Sevier River near Juab, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	668	177	5	440	148	559	303	769	926	1,090	828	651
2	684	129	5	440	138	598	306	735	848	1,060	828	718
3	691	14	5	440	135	628	310	677	813	1,030	840	718
4	691	14	5	446	135	625	310	677	828	1,000	856	718
5	691	14	5	464	135	625	267	783	832	1,030	852	765
6	701	14	6	473	135	625	288	884	832	1,340	848	817
7	694	13	6	483	135	661	306	964	832	1,250	860	863
8	691	13	5	479	96	766	306	1,140	725	1,220	910	894
9	684	11	5	486	96	817	319	1,220	568	1,200	906	890
10	684	11	4	530	79	817	382	1,240	552	1,160	887	887
11	681	11	4	563	83	820	440	1,290	549	1,130	875	881
12	681	11	5	559	79	817	684	1,390	546	1,050	872	852
13	681	11	5	559	77	817	968	1,470	546	992	875	856
14	681	6	5	555	77	820	1,110	1,466	549	942	898	887
15	681	4	5	559	77	817	1,120	1,320	552	976	898	884
16	651	5	5	559	77	813	1,120	1,290	552	980	898	884
17	681	5	4	559	77	745	1,260	1,260	648	922	890	872
18	674	5	5	552	77	698	1,410	1,170	728	681	898	779
19	671	5	5	532	77	698	1,400	1,150	735	414	884	721
20	668	5	5	486	152	698	1,380	1,020	732	469	884	718
21	671	5	5	499	334	701	1,370	898	735	522	884	715
22	661	5	5	509	369	698	1,360	887	735	519	884	694
23	598	5	5	506	427	698	1,350	898	840	516	860	674
24	671	5	5	509	473	479	1,340	960	922	516	836	661
25	661	5	5	512	499	350	1,320	1,030	926	674	820	638
26	664	5	6	506	536	356	1,190	1,120	926	813	800	608
27	681	5	6	506	563	319	1,060	1,140	976	810	715	565
28	588	5	263	506	563	294	930	1,140	1,010	806	598	559
29	482	6	440	506	-------	294	786	1,140	1,010	817	588	410
30	364	5	440	304	-------	294	779	1,070	1,060	828	585	337
31	177	-------	436	160	-------	294	-------	996	-------	828	585	-------

NOTE.—No gage-height record Oct. 30, 31, Nov. 1, and Apr. 26–28; discharge estimated or interpolated.

Monthly discharge of Sevier River near Juab, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	701	a 177	640	39,400
November	a 177	4	17.6	1,050
December	440	4	55.3	3,440
January	563	160	490	30,100
February	563	77	209	11,600
March	820	294	621	38,200
April	1,410	267	849	50,500
May	1,470	677	1,070	65,800
June	1,060	546	768	45,700
July	1,340	414	890	54,700
August	910	585	827	50,800
September	894	337	737	43,900
The year	1,470	4	601	435,000

a Estimated.

SEVIER RIVER AT OASIS, UTAH

LOCATION.—In E. ½ sec. 33, T. 17 S., R. 7 W., three-quarters of a mile northwest of Oasis, Millard County, and 1½ miles below county bridge, locally known as Hinckley Bridge.

DRAINAGE AREA.—8,080 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 13, 1912, to September 30, 1923.

GAGE.—Stevens continuous water-stage recorder on left bank, installed April 24, 1914; inspected by Alfred Stanworth.

DISCHARGE MEASUREMENTS.—Made from county bridge or by wading.

CHANNEL AND CONTROL.—Two channels at extremely high water, one channel at low and medium stages. Bed composed of sand with slight aquatic vegetation. Control is fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, 8.29 feet from 6 to 8 p. m. April 21 (discharge, 1,130 second-feet); minimum stage, 1.88 feet from 7 to 11 p. m. August 17 (discharge, 31 second-feet).

1912–1923; Maximum discharge, 1,580 second-feet June 12, 1914; minimum discharge, 0.5 second-foot May 13–19, 1912.

ICE.—Stage-discharge relation at times affected by ice.

DIVERSIONS.—Numerous diversions above station take practically entire flow during irrigation season; water passing gage at such times is largely seepage or return water entering below Gunnison Bend Reservoir.

REGULATION.—Flow controlled by storage reservoirs and diversion dams above station.

ACCURACY.—Stage-discharge relation for low water changed during high water in April. Rating curves fairly well defined. Water-stage recorder operated successfully, except for periods indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph or weekly readings obtained when recorder was not in operation. Discharge for periods of missing gage heights interpolated or estimated from information furnished by Sevier River water commissioner. Records fair.

Discharge measurements of Sevier River at Oasis, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
Apr. 20	Brice McBride [a]	7.98	1,030
Aug. 10	Leslie Bowen [b]	1.98	35.0

[a] Water commissioner, Sevier River. [b] Deputy water commissioner, Sevier River.

Daily discharge, in second-feet, of Sevier River at Oasis, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	98	65	363	590	652	474	62	48	36	46	46
2	42	132	71	447	590	660	470	70	48	38	42	46
3	40	161	76	487	590	690	462	86	53	38	36	46
4	40	310	79	512	}	734	459	80	58	41	35	43
5	40	329	144	514	415	756	459	56	57	46	35	}
6	39	300	474	522	}	746	457	44	57	45	36	} 44
7	37	276	497	534	237	706	409	44	51	42	34	}
8	36	187	256	544	}	703	394	44	51	40	35	}
9	36	139	179	556	}	730	391	46	48	41	35	46
10	36	118	144	566	233	773	398	40	48	39	36	}
11	38	102	120	568	}	838	403	40	44	43	34	}
12	39	95	111	574	}	877	414	39	43	44	35	} 66
13	40	90	103	596	229	886	453	39	43	51	35	}
14	46	86	95	617	}	909	487	39	44	58	38	}
15	52	87	93	624	}	874	676	42	48	45	42	}
16	46	89	96	624	235	890	868	44	58	38	39	87
17	37	85	109	622	}	909	915	45	68	37	35	}
18	36	77	101	624	241	894	972	44	65	39	32	}
19	36	80	104	626	}	896	1,000	44	54	40	34	}
20	39	76	102	628	}	856	1,050	46	46	40	37	} 116
21	39	72	101	638	240	814	1,120	48	40	37	44	}
22	38	68	140	605	}	791	1,110	49	42	35	46	}
23	38	65	266	580	340	785	1,090	46	44	34	48	146
24	41	63	286	580	440	776	740	46	44	35	46	}
25	45	64	252	588	534	768	850	48	46	34	49	}
26	54	64	210	608	656	732	1,000	45	40	35	65	} 150
27	59	62	167	611	662	605	841	45	42	35	82	}
28	61	61	140	590	654	510	491	46	41	39	70	}
29	61	61	132	590	------	482	85	47	39	38	48	}
30	64	64	140	590	------	480	70	54	38	45	48	154
31	71	------	210	590	------	480	------	51	------	54	● 46	------

NOTE.—No gage-height record Jan. 31, Feb. 1–6, 8–12, 14–17, 19–24, Sept. 5–8, 10–15, 17–22, and 24–29, discharge estimated or interpolated. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Sevier River at Oasis, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	71	36	44.1	2,710
November	329	61	119	7,080
December	497	65	163	10,000
January	638	363	572	35,200
February	662	----------	360	20,000
March	909	480	748	46,000
April	1,120	70	634	37,700
May	86	39	49.0	3,010
June	68	38	48.3	2,870
July	58	34	40.7	2,500
August	82	32	42.7	2,630
September	154	----------	92.7	5,520
The year	1,120	32	242	175,000

EAST FORK OF SEVIER RIVER NEAR KINGSTON, UTAH

LOCATION.—In SW. ¼ sec. 13, T. 30 S., R. 3 W., 1 mile below highway bridge and 2 miles east of Kingston, Piute County.

DRAINAGE AREA.—1,260 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 29, 1914, to September 30, 1923. Records obtained about 1½ miles above Rockyford Bridge, in SW. ¼ sec. 16, T. 30 S., R. 2½ W., March 27, 1913, to April 28, 1914; also at gage three-fourths of a mile north of Kingston, in NE. ¼ sec. 10, T. 30 S., R. 3 W., May 11 to September 20, 1912.

GAGE.—Stevens continuous water-stage recorder on right bank, 1 mile below highway bridge; established April 29, 1914; inspected by W. S. Price.

DISCHARGE MEASUREMENTS.—Made from cable 2 miles above gage, highway bridge 1 mile above, or by wading.

CHANNEL AND CONTROL.—One channel at all stages. Right bank is overflowed during high water. Bed composed of gravel. Concrete control built December 4–11, 1917, 20 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage during year, 3.79 feet August 20 (discharge, 339 second-feet); minimum stage not recorded.

1913–1923: Maximum stage recorded, 6.10 feet May 8, 1922 (discharge, 1,740 second-feet); minimum stage, 1.00 foot September 19, 20, and 21, 1913 (discharge, 8 second-feet).

ICE.—Stage-discharge relation seriously affected by ice.

DIVERSIONS.—Above all diversions in vicinity of Kingston.

REGULATION.—Flow affected by operation of gates at Otter Creek Reservoir, 8 miles above.

ACCURACY.—Stage-discharge relation changed during period of ice effect, February 3–16. Rating curves well defined. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Records good.

Discharge measurements of East Fork of Sevier River near Kingston, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 1	Brice McBride [a]	3.66	261	Mar. 31	Purton and McBride [a]	2.66	32.6
26	do	3.34	155	July 28	Brice McBride [a]	3.60	271
Mar. 29	Purton and McBride [a]	2.66	31.7	Aug. 18	Leslie Bowen [b]	3.76	322

[a] Water commissioner, Sevier River. [b] Deputy water commissioner, Sevier River.

Daily discharge, in second-feet, of East Fork of Sevier River near Kingston, Utah for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	262	65	24	41	26	23	37	26	58	236	274	250
2	266	66	25	29	24	23	37	24	56	239	274	253
3	266	65	25	29		24	34	24	56	236	267	253
4	266	64	26	33		22	33	25	50	232	267	253
5	273	40	24	37		23	32	35	46	232	274	250
6	273	22	24	41	15	23	32	38	46	232	274	250
7	270	22	25	44		26	34	38	41	232	274	246
8	262	21	25	35		24	34	44	37	232	274	242
9	259	22	25	32		26	35	52	35	225	286	239
10	259	22	32	32		28	40	53	34	242	312	199

Daily discharge, in second-feet, of East Fork of Sevier River near Kingston, Utah, for the year ending September 30, 1923—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
11	259	21	26	30		26	48	97	34	282	304	206
12	266	21	26	29		28	42	80	34	282	312	202
13	273	22	33	29		26	38	56	24	286	312	209
14	273	23	34	29	10	25	38	50	24	289	327	209
15	273	23	30	33		23	38	42	26	297	335	206
16	273	20	29	40		26	38	162	29	286	335	206
17	273	22	25	40	14	26	41	216	48	274	327	206
18	280	23	25	32	17	24	30	232	47	274	327	206
19	277	22	25	32	23	25	35	242	47	278	335	209
20	273	23	24	32	24	28	34	264	82	274	339	209
21	280	25	24	29	28	28	32	242	177	278	335	209
22	277	24	24	30	26	28	35	131	193	286	335	202
23	273	24	24	32	26	28	37	113	206	286	320	206
24	273	25	24	33	26	28	32	111	190	278	256	202
25	242	32	23	29	26	30	29	118	180	278	253	92
26	160	24	23	28	23	26	26	148	199	271	256	60
27	157	23	23	26	22	26	26	142	190	267	250	55
28	157	24	24	25	23	28	25	126	190	267	250	52
29	146	28	24	25	-------	32	25	95	190	267	250	48
30	70	28	21	26	-------	33	24	60	239	267	260	44
31	65	-------	32	26	-------	34	-------	60	-------	274	256	-------

NOTE.—No gage-height record Nov. 5-7; discharge estimated. Braced figures show estimated mean discharge for periods indicated when there was ice effect.

Monthly discharge of East Fork of Sevier River near Kingston, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	280	65	241	14,800
November	66	20	29.5	1,760
December	34	21	25.7	1,580
January	44	25	31.9	1,960
February	28	-------	18.1	1,010
March	34	22	26.5	1,630
April	48	24	34.0	2,020
May	264	24	101	6,210
June	239	24	93.6	5,570
July	297	225	264	16,200
August	339	250	292	18,000
September	253	44	189	11,200
The year	339	-------	113	81,900

ROCKYFORD CANAL NEAR VERMILION, UTAH

LOCATION.—In sec. 19, T. 22 S., R. 1 W., 300 feet below head of canal and 2 miles northeast of Vermilion, Sevier County.

RECORDS AVAILABLE.—July 8, 1914, to September 30, 1923.

GAGE.—Stevens continuous water-stage recorder on left bank; installed October 18, 1917; inspected by O. A. Wilkinson.

DISCHARGE MEASUREMENTS.—Made from highway bridge 400 feet downstream or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and clay; shifting. Banks lined with willows.

ICE.—Stage-discharge relation affected at times by ice.

DIVERSIONS.—None above gage. Gage is a short distance below wasteway which returns surplus water to Sevier River.

REGULATION.—Flow controlled by head gates and wasteway.

ACCURACY.—Stage-discharge relation changed several times. Standard rating curve used with shifts to measurements. Record of water-stage recorder broken December 18 to March 24, April 9–21, April 30 to May 12, and June 1 to July 6. During these periods staff gage was read once a week. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Discharge estimated for periods of faulty gage-height record. Records fair.

Canal diverts water from Rockyford Reservoir, a small reservoir on Sevier River, at Vermilion, in sec. 19. T. 22 S., R. 1 W. Flow dependent on water stored in reservoir and seepage and return waters below Richfield. Water used for irrigation north of Vermilion.

Discharge measurements of Rockyford Canal near Vermilion, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
Mar. 27	A. B. Purton	1.86	20.4
July 8	Brice McBride [a]	2.68	98.0
Aug. 28	do	2.08	66.9

[a] Water commissioner, Sevier River.

Daily discharge, in second-feet, of Rockyford Canal near Vermilion, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	63	28	17				29	60	88	86	89	76
2	65	29	18		21	22	27	70	80		93	74
3	67	30	18				28	78	72		81	72
4	69	29	19		20	20	24	71		92	71	65
5	67	28	20				19	72			76	62
6	69	25	22				18	72	66		86	64
7	70	21	22			23	17	72		97	102	65
8	75	21	23				25	72		98	84	65
9	80	21	23					72		89	84	70
10	85	20	22					71	61	74	84	70
11	89	20	22		21	26	40	71		72	84	70
12	81	20	24					71		73	81	70
13	77	20	26					71		88	78	69
14	76	20	30					87	75	97	87	70
15	74	20	32	25		27	44	86		100	107	73
16	74	20	32				44	85		104	101	76
17	74	20	32				45	87	89	105	95	79
18	74	20			22	28	45	89		105	74	81
19	74	20						91		103	77	81
20	74	20					70	94		105	76	81
21	74	20	33		24	24		95	84	106	80	82
22	74	20					72	95		101	78	77
23	74	20					78	95		84	72	68
24	58	20	34				78	94	79	76	68	69
25	28	20			26	20	81	93		77	67	70
26	28	20				20	85	91		71	65	71
27	28	23	30		24	20	86	87	82	72	65	71
28	28	18		22		21	79	92		72	65	66
29	28	17			-------	22	57	96		74	65	58
30	29	17		21	-------	25	60	97		75	67	58
31	29	-------			-------	27	-------	96	-------	84	70	-------

NOTE.—Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Rockyford Canal near Vermilion, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	89	28	63.1	3,880
November	30	17	21.6	1,290
December	----------	17	27.2	1,670
January	----------	----------	24.5	1,510
February	----------	----------	22.1	1,230
March	----------	----------	23.8	1,460
April	86	17	49.7	2,960
May	97	60	83.0	5,100
June	----------	----------	77.0	4,580
July	106	71	88.6	5,450
August	107	65	79.7	4,900
September	82	58	70.8	4,210
The year	107	----------	52.8	38,200

BEAVER RIVER BASIN

BEAVER RIVER NEAR BEAVER, UTAH

LOCATION.—In SE. ¼ sec. 18, T. 29 S., R. 6 W., a quarter of a mile above city diversion dam at mouth of canyon, 4½ miles above Beaver, Beaver County.

DRAINAGE AREA.—82 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 15 to September 22, 1906; March 15, 1914, to September 30, 1923.

GAGE.—Stevens continuous water-stage recorder on right bank used since November 14, 1914; inspected by G. W. Valantine.

DISCHARGE MEASUREMENTS.—Made from footbridge 70 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of boulders and coarse gravel; somewhat shifting. One channel; left bank subject to overflow at extremely high stages. Control composed of boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, 5.96 feet at 8 p. m. May 26 (discharge, 644 second-feet); minimum stage not recorded, but was less than 20 second-feet latter part of December.

1914–1923: Maximum stage 6.31 feet at 6 p. m. May 25, 1922 (discharge, 785 second-feet); minimum stage recorded, 2.57 feet, January 28, 1916 (discharge, 8 second-feet).

ICE.—Stage-discharge relation seriously affected by ice.

DIVERSIONS.—Above all irrigation diversions. Above station is a small storage reservoir known as Kents Lake. Water is diverted by Beaver River Power Co., but returned to stream several miles above station.

REGULATION.—Flow probably not affected by operation of Beaver River Power Co.'s plant but is somewhat affected by Kents Lake storage reservoir.

ACCURACY.—Stage-discharge relation permanent during year; affected by ice January 3–6, 15, 16, February 4–13. Rating curve well defined. Water-stage recorder operated successfully, except during periods indicated by braced figures in daily discharge table. For these periods discharge interpolated or estimated from hydrographic study based on weekly staff gage readings, observer's notes, and temperature records. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph or staff-gage readings. Records good.

Discharge measurements of Beaver River near Beaver, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
Dec. 28	J. J. Sanford	3.39	24.9
June 10	A. B. Purton	4.65	203

Daily discharge, in second-feet, of Beaver River near Beaver, Utah, for the year ending September 30, 1923

Day	Oct.	Nov	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27		25	25	24	24	38	60	236	118	64	31
2	28		25	23	26	25	36	81	236	118	64	31
3	28	26	25		20	25		113	239	112	58	32
4	26					24		143	234	108	58	34
5	26	25		22		24	32	171	216	102	55	34
6	27	25	27			24		181	208	98	51	31
7	28	28		26		25	29	223	203	96	50	31
8	26	26		24		26	31	258	203	95	48	29
9	26	28		23	20	27	36	281	206	95	47	27
10	25	28	28	23		26	40	318	223	101	46	28
11	26	23	28	23		24	42	343	236	94	47	28
12	26	28	28	21		24	44	299	247	90	46	28
13	26	25	28	23		24	56	269	241	87	51	28
14	26	24		18	24	23	67	247	218	101	44	33
15	26	29	26	20	25	23	75	266	200	88	40	31
16	26	31		20	24	22	90	336	174	81	38	28
17	26	23	25	23	27	23	98	388	147	77	39	28
18	26	25		24	24	21	85	436	139	77	44	29
19	26	23		26	26	21	77	500	127	74	41	29
20	27	24	22	28	25	23	76	512	124	75	39	29
21	26	25		23	24	22	77	425	125	78	37	28
22	27	23		29	25	21	67	330	112	75	34	31
23	27	23		25	27	21	59	308	113	72	34	32
24	26	24	18	25	26	24	52	382	124	75	33	38
25	26	25		26	23	27	49	460	129	77	33	35
26	25	25	22	26	24	23	48	523	135	64	32	31
27	28			26	23	24	47	489	131	58	33	31
28	26	25	25	24	25	27	45	425	129	57	31	31
29			24	30		28	53	352	125	52	36	30
30	27		22	25		31	61	314	124	58	34	30
31			26	24		37		269		71	31	

NOTE.—Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Beaver River near Beaver, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	28	25	26.5	1,630
November	31	23	25.5	1,520
December	28	18	24.7	1,520
January	30	18	23.9	1,470
February	27		22.9	1,270
March	37	21	24.6	1,510
April	98	29	53.5	3,180
May	523	60	313	19,200
June	247	112	177	10,500
July	118	52	84.6	5,200
August	64	31	43.2	2,660
September	38	27	30.5	1,810
The year	523		71.2	51,500

BEAVER RIVER AT ADAMSVILLE, UTAH

LOCATION.—In S. ½ sec. 30, T. 29 S., R. 8 W., 100 yards below highway bridge on road from Milford to Beaver, a quarter of a mile above mouth of Indian Creek, and three-quarters of a mile south of Adamsville, Beaver County.

DRAINAGE AREA.—272 square miles (measured on topographic maps).

RECORDS AVAILABLE.—December 16, 1913, to September 30, 1923.

GAGE.—Stevens continuous water-stage recorder on right bank, installed March 13, 1914; inspected by W. A. Rees.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

CHANNEL AND CONTROL.—Bed composed of fine gravel. Banks low; covered with willows; subject to overflow at extremely high stages. Concrete control constructed July 11, 1916, and rebuilt September 26, 1919.

EXTREMES OF DISCHARGE.—Maximum stage during year, 3.61 feet at 8 p. m. July 25 (discharge, 373 second-feet); minimum stage, 1.48 feet from 6 p. m. July 20 to 2 p. m. July 21 (discharge, 7 second-feet).

1914–1923: Maximum stage, 4.85 feet at 6 a. m. May 23, 1920 (discharge, 796 second-feet); minimum stage, 1.04 feet at 3 p. m. July 9, 1919 (discharge, 0.3 second-foot).

ICE.—Stage-discharge relation affected by ice during short periods.

DIVERSIONS.—No diversions between station and storage reservoir of Beaver County Irrigation Co. There are a number of canals above station supplying Adamsville and Beaver districts.

REGULATION.—Low-water flow affected by irrigation diversions.

ACCURACY.—Stage-discharge relation permanent; affected by ice February 2–12. Rating curve fairly well defined. Water-stage recorder operated satisfactorily, except as noted in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. For periods when recorder was not in operation and period of ice effect, discharge was determined by study of temperature records and observer's notes. Records good.

Discharge measurements of Beaver River at Adamsville, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
Dec. 30	J. J. Sanford	2.12	65.5
June 10	A. B. Purton	1.97	48.7

Daily discharge, in second-feet, of Beaver River at Adamsville, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23	56	60	63	53	52	50	37	108	17	22	22
2	23	56	60	67		51	50	38	97	15	25	20
3	23	58	61	66		50	50	43	87	13	20	20
4	23	60	62	60		50	48	53	76	12	18	20
5	23	59	61	58		52	45	75	65	12	17	19
6	23	58	59	58		56	44	73	55	9	15	19
7	23	56	60	56	50	54	44	90	50	9	12	18
8	24	56	63	55		52	44	125	53	10	11	16
9	25	56	62	54		50	44	147	50	12	12	16
10	25	58		52		46	49	132	48	12	13	17
11	25	58	72	51		44	53	149	61	12	16	20
12	25	58		49		44	52	127	61	11	22	23
13	25	59	83	48	55	45	53	111	70	12	32	24
14	26	54	76	48	58	44	61	101	72	15	48	25
15	26	58	71	49	59	53	67	93	60	19	35	26

Daily discharge, in second-feet, of Beaver River at Adamsville, Utah, for the year ending September 30, 1923—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
16	26	58	71	48	61	46	79	120	50	17	33	25
17	26	58	63	46	61	48	87	170	46	12	38	23
18	26	58	59	48	61	46	87	197	43	11	56	24
19	26	59	58	49	62	45	82	258	39	10	62	24
20	26	58	55	50	60	48	68	362	35	9	62	25
21	26	58	56	49	56	48	63	277	39	9	59	23
22	26	56	55	50	53	52	66	197	35	22	53	21
23	26	58	51	51	53	52	66	164	33	51	43	25
24	26	56	55	51	52	51	63	184	28	71	41	27
25	26	54	56	55	51	48	55	221	26	109	38	27
26	27	55	56	56	52	46	50	253	26	84	30	30
27	27	56	60	54	54	45	51	260	24	53	28	37
28	30	55	61	55	53	46	44	239	24	38	28	38
29	37	55	60	54	-------	48	38	205	26	35	32	38
30	37	59	59	58	-------	48	40	152	24	32	26	36
31	41	-------	59	56	-------	49	-------	130	-------	23	24	-------

NOTE.—No gage-height record Dec. 10–12 and June 2–5. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Beaver River at Adamsville, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	41	23	26.5	1,630
November	60	54	57.1	3,400
December	83	51	62.2	3,820
January	67	46	53.7	3,300
February	62	----------	53.7	2,980
March	56	44	48.7	2,990
April	87	38	56.4	3,360
May	302	37	152	9,350
June	108	24	50.4	3,000
July	109	9	25.0	1,540
August	62	11	31.3	1,920
September	38	16	24.3	1,450
The year	302	9	53.5	387,000

BEAVER RIVER AT ROCKYFORD DAM, NEAR MINERSVILLE, UTAH

LOCATION.—In NW. ¼ sec. 11, T. 30 S., R. 9 W., half a mile below Rockyford Dam, and 4 miles above Minersville, Beaver County.

DRAINAGE AREA.—512 square miles (measured on topographic maps).

RECORDS AVAILABLE.—December 18, 1913, to September 30, 1923.

GAGE.—Friez water-stage recorder at present site since June 1, 1916; inspected by J. L. Jackson.

DISCHARGE MEASUREMENTS.—Made by wading or from cable 1,000 feet below gage.

CHANNEL AND CONTROL.—Bed composed of gravel; some vegetal growth. One channel at all stages. Banks not subject to overflow. Concrete control installed November 2–12, 1916. Slight growth of moss on control during summer. Stage of zero flow, at gage height 0.60 foot.

EXTREMES OF DISCHARGE.—Maximum stage during year, 2.25 feet 8 p. m. May 21 to noon May 23 (discharge, 236 second-feet); minimum stage, 0.96 foot October 2–16 (discharge, 12 second-feet).

1913–1923; Maximum stage, 3.53 feet at 7 p. m. June 10, 1921 (discharge, 727 second-feet); minimum stage, 1.68 feet March 19 and 20, 1914 (discharge estimated, 0.3 second-foot).

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—None between dam and station. There are a number above Adamsville.

REGULATIONS.—Flow controlled by operation of gates at Rockyford Dam.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Water-stage recorder operated successfully, except November 19–24, December 10–15, February 3–9, and September 23–28. For days when recorder was not in operation, discharge interpolated or estimated. Owing to regulation it was possible to obtain good estimates. Records good.

COOPERATION.—Gage-height record furnished by Beaver County Irrigation Co.

Discharge measurements of Beaver River at Rockyford Dam, near Minersville, Utah, during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
Dec. 30	J. J. Sanford	1.17	32.1
June 10	A. B. Purton	1.53	80.3

Daily discharge, in second-feet, of Beaver River at Rockyford Dam, near Minersville, Utah, for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	26	36	32	14	15	46	76	148	87	53	90
2	19	26	36	32	14	15	46	76	126	87	53	90
3	12	26	36	28	14	15	44	68	113	87	53	90
4	12	26	36	25	14	15	40	64	113	87	53	90
5	12	26	36	25	14	15	40	64	105	87	53	85
6	12	26	37	25	14	15	40	64	94	70	53	73
7	12	26	37	25	14	15	40	68	85	92	68	73
8	12	26	37	25	14	15	40	75	80	92	87	73
9	12	26	37	25	14	15	40	82	80	92	87	73
10	12	26	37	25	14	15	40	111	80	92	87	61
11	12	26	37	25	14	15	31	109	80	92	87	58
12	12	26	37	25	14	15	26	111	100	92	87	58
13	12	26	38	25	14	15	26	111	128	94	52	58
14	12	26	38	24	15	25	26	111	128	98	48	58
15	12	29	38	20	15	34	26	111	128	100	70	58
16	12	36	38	16	15	34	26	113	128	100	70	54
17	12	36	36	15	15	34	26	115	128	101	87	45
18	12	36	32	15	15	38	25	124	128	103	90	42
19	33	36	32	14	15	45	25	126	128	107	90	36
20	45	36	32	14	15	46	41	126	128	107	90	36
21	45	36	32	14	15	46	49	165	128	105	90	34
22	45	36	32	14	15	46	49	236	106	105	90	28
23	45	36	32	14	15	46	49	219	76	105	90	
24	45	36	32	14	15	46	49	202	76	107	90	
25	45	36	32	14	15	46	52	202	73	105	90	
26	45	36	32	14	15	46	75	202	57	101	90	21
27	45	36	32	14	15	46	76	202	75	100	90	
28	45	36	32	14	15	46	76	202	75	100	90	
29	45	36	32	14	------	46	76	202	75	70	90	14
30	33	36	32	14	------	46	76	202	78	58	90	14
31	26	------	32	14	------	46	------	174	------	53	90	------

Monthly discharge of Beaver River at Rockyford Dam, near Minersville, Utah, for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	45	12	25.4	1,560
November	36	26	31.1	1,850
December	38	32	34.7	2,130
January	32	14	19.8	1,220
February	15	14	14.5	805
March	46	15	30.9	1,900
April	76	25	44.0	2,620
May	236	64	133	8,180
June	148	57	102	6,070
July	107	53	92.8	5,710
August	90	48	77.7	4,780
September	90	14	50.6	3,010
The year	236	12	54.9	39,800

MINOR BASINS IN NEVADA

CURRANT CREEK NEAR CURRANT, NEV.

LOCATION.—In sec. 25, T. 11 N., R. 58 E., at highway bridge at Cazier ranch, on road from Ely to Tonopah, 2 miles above Currant, Nye County, and 2½ miles below inflow from Cazier Reservoir.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 5 to September 30, 1913; May 25, 1914, to September 30, 1917; January 21 to August 18, 1923, when station was discontinued.

GAGE.—Vertical staff on left bank, installed April 29, 1922, replaced by another vertical staff April 7, 1923. Enamel vertical section placed on latter gage May 12, 1923; read by Edmund Cazier. All gage heights have been corrected to datum of present gage.

DISCHARGE MEASUREMENTS.—Made by wading or from bridge at gage.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders. One channel at all stages. Banks high and clean. Artificial control of concrete constructed between abutments of bridge in fall of 1922.

EXTREMES OF DISCHARGE.—Maximum discharge recorded during year, 21 second-feet May 8 and 9; minimum discharge, 1.0 second-feet in January and February.

1913–1917, 1923: Maximum discharge recorded, 24 second-feet April 30 and May 1, 1915, and May 25, 1917; minimum discharge in 1923.

ICE.—Stage-discharge relation not seriously affected by ice. Stream fed by springs in canyon about half a mile above gage.

DIVERSIONS.—Three small irrigation ditches divert water above gage, total capacity 3 to 5 second-feet.

REGULATION.—Flow somewhat affected by inflow from Cazier Reservoir and by changes in irrigation ditches above gage.

ACCURACY.—Stage-discharge relation changed probably during high water in May. Rating curves fairly well defined. Gage read to quarter-tenths or hundredths once daily during period except March 4–17, 25–31, and July 8 to August 4. Daily discharge ascertained by applying daily gage height to rating table except March 18–24, April 1–5, and during periods when gage was not read, for which it was interpolated. Records fair.

Discharge measurements of Currant Creek near Currant, Nev., during the years 1922 and 1923

Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*
1922			
Apr. 29	Purton and McFarland	0.39	21.2
June 4	A. D. Ryan	.28	15.8
1923			
Apr. 7	R. R. Rowe	.06	4.1
7	....do	.06	4.1
May 12	....do	.31	16.4
Oct. 16	W. E. Dickinson	.09	3.7

Daily discharge, in second-feet, of Currant Creek near Currant, Nev., for the period January 21 to August 18, 1923

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
1		1	1	4	10	16	8	7
2		1	1	4	13	15	12	7
3		1	1	4	10	15	12	7
4		1		4	13	13	12	7
5		1		4	14	16	12	7
6		1		4	15	15	10	7
7		1		5	16	15	10	7
8		1		5	21	15	10	5
9		1		5	21	13	10	5
10		1		5	20	13	10	5
			3					
11		1		5	18	13	10	5
12		1		5	17	13	9	5
13		1		5	11	13	9	7
14		1		5	11	13	9	5
15		1		6	10	13	9	5
16		1		7	12	12	9	5
17		1		8	12	10	9	5
18		1	4	8	15	10	9	5
19		1	4	8	15	10	9	
20		1	4	8	15	9	9	
21	1	1	4	8	16	8	8	
22	1	1	4	10	15	8	8	
23	1	1	4	10	15	8	8	
24	1	1	4	10	15	8	8	
25	1	1	4	10	16	8	8	
26	1	1	4	10	16	9	8	
27	1	1	4	10	15	9	8	
28	1	1	4	10	15	9	8	
29	1		4	10	13	9	8	
30	1		4	10	15	8	8	
31	1		4		18		8	

NOTE.—No gage-height record; discharge estimated Mar. 4–17, 25–31, and July 8 to Aug. 4. Braced figures show estimated mean discharge for period indicated.

Monthly discharge of Currant Creek near Currant, Nev., for the period January 21 to August 18, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
January 21–31	1	1	1	21
February	1	1	1	56
March		1	3.3	203
April	10	4	6.9	411
May	21	10	14.8	910
June	16	8	11.5	684
July	12	8	9.2	566
August 1–18	7	5	5.9	211
The period				3,060

OWENS LAKE BASIN

OWENS RIVER NEAR ROUND VALLEY, CALIF.

LOCATION.—In SE. ¼ sec. 10, T. 6 S., R. 31 E., below sheep bridge, 700 feet above mouth of Rock Creek, and 2 miles north of Round Valley, Inyo County.

DRAINAGE AREA.—About 450 square miles.

RECORDS AVAILABLE.—August 4, 1903, to September 30, 1923, when the station was discontinued.

GAGE.—Water-stage recorder on left bank 85 feet below bridge, installed November 22, 1920; operated by W. G. Allen.

DISCHARGE MEASUREMENTS.—Made from cable at gage.

CHANNEL AND CONTROL.—Rock and boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 2.77 feet at midnight July 4 (discharge, 465 second-feet); minimum discharge, from water-stage recorder, 5.4 second-feet at noon February 13.

1903–1923: Maximum stage recorded, 4.0 feet June 30, 1907 (discharge 1,190 second-feet); minimum discharge, 5.4 second-feet at noon February 13, 1923.

ICE.—Shore ice exists at times but ordinarily does not affect the stage-discharge relation.

DIVERSIONS.—No water is diverted above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changes continually. Standard rating curve fairly well defined. Water-stage recorder gave a good record. Daily discharge ascertained by shifting-control method. Records good.

COOPERATION.—Gage-height record and discharge measurements furnished by the city of Los Angeles.

Discharge measurements of Owens River near Round Valley, Calif., during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 18	G. P. Weatherill	2.00	162	May 9	Smart and Allen	1.94	159
Nov. 4	Weatherill and Allen	1.92	164	19	M. C. Smart	2.32	261
Dec. 6	do	2.09	196	June 9	do	2.19	211
Jan. 25	Smart and Topham	2.09	206	27	do	2.21	210
31	G. P. Weatherill	2.10	187	28	G. P. Weatherill	2.24	229
Feb. 7	Smart and Allen	2.01	170	July 19	Weatherill and Topham	2.15	188
21	M. C. Smart	2.22	250	Aug. 3	Smart and Odekirk	2.00	177
Mar. 7	do	2.24	254	21	do	2.08	170
24	Smart and Jones	2.00	180	Sept. 6	Smart and Allen	2.04	177
Apr. 11	M. C. Smart	2.16	220	20	M. C. Smart	2.02	173
30	do	1.86	150				

Daily discharge, in second-feet, of Owens River near Round Valley, Calif., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	180	198	195	186	186	274	149	152	202	294	206	160
2	183	183	192	216	195	262	141	146	220	319	202	157
3	171	165	198	198	168	238	149	149	195	346	186	168
4	171	177	192	216	180	186	160	152	189	430	183	180
5	174	195	189	223	168	206	154	146	195	415	177	180
6	177	202	198	209	168	270	230	152	198	386	168	177
7	171	216	162	198	168	278	216	152	198	368	160	165
8	174	220	189	192	165	250	186	154	206	328	154	168
9	168	220	192	186	160	234	149	162	216	314	157	165
10	168	226	212	186	143	165	195	171	238	290	160	171

Daily discharge, in second-feet, of Owens River near Round Valley, Calif., for the year ending September 30, 1923—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
11	171	223	209	192	165	216	246	174	294	282	157	171
12	177	223	209	198	80	230	165	177	324	274	165	168
13	177	226	216	189	20	250	149	180	306	266	216	202
14	171	220	206	195	107	243	141	183	290	254	216	220
15	162	220	206	174	198	236	138	183	278	314	171	198
16	162	216	212	168	212	230	143	195	310	332	177	183
17	160	223	216	209	223	223	152	234	310	286	183	168
18	157	216	206	212	250	238	165	246	310	216	183	171
19	160	209	209	212	246	220	177	262	310	198	198	171
20	165	202	198	223	230	223	146	266	302	198	192	171
21	174	202	195	223	274	206	141	324	230	198	189	168
22	171	198	195	209	310	177	143	278	209	206	177	165
23	177	189	192	192	302	180	149	250	198	209	168	171
24	180	186	209	220	310	186	160	242	186	220	160	171
25	183	189	220	212	328	174	168	246	186	220	152	171
26	180	186	220	192	278	165	162	230	192	202	154	192
27	180	189	216	183	238	157	160	238	216	195	152	189
28	174	192	177	162	258	157	154	238	246	198	152	174
29	174	198	202	177	-------	154	152	234	266	198	168	171
30	183	189	216	180	-------	149	149	226	274	216	165	171
31	195	-------	216	183	-------	152	-------	209	-------	226	162	-------

Monthly discharge of Owens River near Round Valley, Calif., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	195	157	173	10,600
November	226	165	203	12,100
December	220	162	202	12,400
January	223	162	197	12,100
February	328	20	205	11,400
March	278	149	211	13,000
April	246	138	163	9,700
May	324	146	205	12,600
June	324	186	243	14,500
July	430	195	271	16,700
August	216	152	175	10,800
September	220	157	175	10,400
The year	430	20	202	146,000

OWENS RIVER NEAR BIG PINE, CALIF.

LOCATION.—In sec. 2, T. 11 S., R. 34 E., at Charlies Butte, 11 miles southeast of Big Pine, Inyo County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—September 20, 1906, to September 30, 1923.

GAGE.—Water-stage recorder on left bank installed October 4, 1922; staff gage was used before that date.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

CHANNEL AND CONTROL.—Sand and gravel; shift slightly. Right bank high; left bank subject to overflow during floods.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 4.10 feet at 11 p. m. December 14 (discharge, 651 second-feet); minimum stage from water-stage recorder, 0.60 foot May 11–13 (discharge, 59 second-feet).

1906–1923: Maximum stage recorded, 11.2 feet about 9 p. m. January 26, 1914 (discharge, from extension of rating curve, 3,220 second-feet); minimum stage recorded, —0.05 foot June 13–16, 1908 (discharge, 36 second-feet.

ICE.—Stage-discharge relation not affected by ice.

DIVERSIONS.—On account of diversions above the station, the record does not indicate the total run-off from the drainage area.

REGULATION.—Flow is partly regulated by diversions.

ACCURACY.—Stage-discharge relation changed slightly during September. Rating curves fairly well defined. Good record from water-stage recorder. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair.

COOPERATION.—Gage-height record and discharge measurements furnished by the city of Los Angeles.

Discharge measurements of Owens River near Big Pine, Calif., during the year ending September 30, 1923

[Made by E. M. Selepegno]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 15	2.69	344	June 7	0.63	59
23	2.88	362	14	1.65	177
Nov. 4	2.69	362	27	1.00	93
18	3.28	473	July 8	1.89	200
24	3.12	432	17	1.57	152
Dec. 8	3.41	514	22	1.00	94
18	3.70	573	26	1.06	99
Jan. 9	3.32	467	29	.92	89
19	3.30	471	Aug. 1	.85	81
Feb. 2	3.18	448	6	.68	65
Mar. 29	1.52	131	18	.80	78
Apr. 5	1.12	106	29	.70	63
13	1.16	100	Sept. 5	.73	71
23	.96	85	9	.69	65
May 7	.75	69	16	.85	84
21	.69	66	24	1.08	109
			28	1.40	147

Daily discharge, in second-feet, of Owens River near Big Pine, Calif., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	114	384	439	494	450	450	103	83	62	105	78	68
2	118	373	450	472	439	461	103	81	61	117	78	69
3	125	362	450	472	439	450	101	75	61	130	77	69
4	139	340	461	483	450	428	100	73	61	145	72	69
5	158	351	472	483	461	395	100	71	61	161	69	69
6	182	384	472	494	483	384	97	71	62	179	65	69
7	200	395	472	494	483	406	104	71	64	197	63	69
8	212	395	494	483	483	428	97	69	77	194	62	68
9	227	428	494	472	461	406	102	67	69	178	62	67
10	227	450	494	472	439	373	105	60	70	160	61	65
11	235	472	538	472	439	351	103	59	77	144	61	66
12	251	461	560	472	450	362	102	59	97	130	63	69
13	280	461	605	472	428	340	104	59	107	129	78	71
14	340	472	628	450	351	330	107	61	148	117	91	73
15	340	450	594	450	384	320	105	61	186	115	79	73
16	351	461	582	450	439	290	102	60	192	118	73	85
17	373	472	571	450	439	290	97	65	104	146	72	83
18	373	472	560	461	450	310	93	67	104	135	75	79
19	373	450	549	472	461	330	94	67	104	120	77	79
20	373	450	538	483	461	310	92	70	104	111	78	81
21	373	450	527	494	450	310	90	68	104	104	77	84
22	378	439	516	494	483	310	86	77	104	91	76	83
23	384	439	505	516	505	260	89	82	99	90	73	88
24	384	428	505	527	516	227	90	73	97	91	72	95
25	384	428	494	538	516	212	91	68	96	93	71	114
26	384	428	494	527	516	208	86	65	93	93	71	121
27	384	428	494	505	483	194	83	65	91	91	70	134
28	384	439	494	472	439	167	83	65	93	89	69	148
29	373	450	472	461	-------	140	83	64	94	85	68	159
30	373	450	450	461	-------	128	85	61	95	81	69	163
31	362	-------	472	450	-------	109	-------	61	-------	79	68	-------

Monthly discharge of Owens River near Big Pine, Calif., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	384	114	295	18,100
November	472	340	429	25,500
December	628	439	511	31,400
January	538	450	481	29,600
February	516	351	457	25,400
March	461	109	312	19,200
April	107	83	95.9	5,710
May	83	59	67.7	4,160
June	192	61	94.6	5,630
July	197	79	123	7,560
August	91	61	71.5	4,400
September	163	65	87.7	5,220
The year	628	59	251	182,000

OWENS LAKE NEAR LONE PINE, CALIF.

LOCATION.—On the west shore of Owens Lake, 1 mile north of Brier Siding on California and Nevada Railroad (Southern Pacific Co.) and 9 miles south of Lone Pine, Inyo County.

RECORDS AVAILABLE.—March, 1908, to September 30, 1923.

GAGE.—Vertical staff, at a boulder point east of railroad culvert No. 507B; read occasionally by an employee of the city of Los Angeles.

EXTREMES OF STAGE.—1911–1923: Maximum elevation recorded, 3,578.75 feet March 16 and April 7, 1912; minimum stage recorded, 3,555.9 feet August 30 and September 6, 1923.

COOPERATION.—Records furnished by city of Los Angeles.

Daily gage height, in feet, of Owens Lake near Lone Pine, Calif., for the year ending September 30, 1923

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					8.61				
2						7.90	7.62		
3		8.95	8.82						
4				8.72	8.53				
5	8.96					7.87	7.47		
6	8.98	8.92						6.53	5.90
7			8.80	8.70					
8						7.80			
9	9.11				8.45		7.22		
10		8.95	8.80						
11				8.70					
12					8.37				6.00
13	9.13		8.85			7.70	7.10		
14		8.87		8.70					
15								6.35	
16					8.29	7.65	7.00		
17		8.87	8.80						
18	9.12			8.70		7.60			
19					8.21		6.90		
20	9.14		8.75						6.05
21		8.89		8.69		7.55			
22							6.85		
23			8.75		8.05			6.12	
24	9.15	8.85		8.70					
25						7.50			
26					8.00		6.80		
27	9.14	8.84							
28			8.73	8.69					
29					7.95		6.78		
30	9.20					7.47		5.90	
31			8.72						

ROCK CREEK NEAR ROUND VALLEY, CALIF.

LOCATION.—In NE. ¼ SE. ¼ sec. 9, T. 6 N., R. 31 E., below highway bridge, a short distance above mouth of Pine Creek, and 2 miles northwest of Round Valley, Inyo County.

DRAINAGE AREA.—About 46 square miles.

RECORDS AVAILABLE.—August 3, 1903, to November 10, 1923, when the station was discontinued.

GAGE.—Vertical staff on left bank about 600 feet below bridge; read by W. G. Allen. Prior to July, 1906, gage was located at highway bridge.

DISCHARGE MEASUREMENTS.—Made from footbridge at gage or by wading.

CHANNEL AND CONTROL.—Sand and cobblestones; somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.12 feet July 5 (discharge, 95 second-feet); minimum discharge recorded, 21 second-feet April 23 and May 4.

1903–1923: Maximum stage recorded, 5.0 feet January 25, 1914 (discharge, 360 second-feet); minimum discharge, 14 second-feet April 20–23, 1905.

ICE.—Shore ice forms but probably does not affect stage-discharge relation.

DIVERSIONS.—Water for irrigation is diverted above station.

REGULATION.—Flow partly regulated by diversions.

ACCURACY.—Stage-discharge relation not permanent. Standard rating curve well defined. Staff gage read to hundredths two or three times a week. Daily discharge ascertained by applying gage height to rating table using the shifting-control method. Discharge for days when gage was not read was interpolated or estimated from flow of Owens River near Round Valley. Records fair.

COOPERATION.—Gage-height record and discharge measurements furnished by the city of Los Angeles.

Discharge measurements of Rock Creek near Round Valley, Calif., during the period October 1, 1922, to December 3, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
1922		*Feet*	*Sec.-ft.*	1923		*Feet*	*Sec.-ft.*
Nov. 8	G. P. Weatherill	1.08	33	June 9	M. C. Smart	1.37	37
Dec. 6	do	1.08	37	14	Smart and Allen	1.58	52
				27	M. C. Smart	1.30	33
1923				July 11	G. P. Weatherill	1.52	58
Jan. 8	Smart and Weatherill	1.08	34	Aug. 3	Smart and Odekirk	1.27	38
25	M. C. Smart	1.11	36	21	M. C. Smart	1.16	36
Feb. 7	do	1.09	34	Sept. 6	Smart and Allen	1.01	31
21	do	1.05	33	20	M. C. Smart	1.06	31
Mar. 7	do	.99	27	Oct. 10	do	1.02	30
24	Smart and Jones	1.02	31	27	do	1.06	28
Apr. 11	M. C. Smart	.99	24	Nov. 5	Smart and Weatherill	1.04	27
23	do	.91	21	Dec. 3	Smart and Odekirk	1.02	30
May 9	Smart and Allen	1.01	29				
19	M. C. Smart	1.41	66				

Daily discharge, in second-feet, of Rock Creek near Round Valley, Calif., for the period October 1, 1922, to November, 10 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
1	24	28	36	35	32	28	24	22	37	60	49	32	29	28
2	26	28	36	34	33	28	24	22	36	82	46	33	29	27
3	24	29	36	33	34	28	24	22	38	81	38	34	29	26
4	26	29	36	36	34	28	23	21	30	82	36	32	29	26
5	24	29	37	35	33	27	23	25	28	95	35	29	30	27
6	24	29	38	34	34	27	22	26	25	88	34	30	30	28
7	24	30	34	33	34	27	22	27	25	81	32	29	30	29
8	24	32	36	32	31	27	22	28	30	72	31	28	31	29
9	24	31	38	32	30	26	22	28	36	64	29	28	30	30
10	24	30	40	32	30	26	23	32	61	62	28	28	30	30
11	24	29	42	33	31	27	23	36	72	59	26	30	30	------
12	24	30	44	30	32	28	23	40	66	63	34	32	31	------
13	25	32	47	26	33	26	24	45	59	60	42	30	32	------
14	26	32	41	29	34	24	24	50	53	56	40	30	30	------
15	26	33	40	32	34	24	24	54	50	62	37	30	28	------
16	27	32	38	35	33	26	24	58	46	69	35	28	28	------
17	27	33	35	38	32	27	25	59	38	64	36	27	28	------
18	28	34	32	32	32	28	26	62	31	58	38	28	29	------
19	28	33	34	33	32	28	26	64	28	54	39	28	29	------
20	28	32	35	34	32	28	24	66	26	50	40	30	29	------
21	27	32	34	34	32	27	23	69	35	45	36	29	28	------
22	26	32	34	35	32	28	22	62	29	44	31	28	28	------
23	26	31	33	38	32	28	21	54	23	44	32	28	28	------
24	26	32	34	40	31	28	22	55	24	45	32	27	28	------
25	27	32	34	36	30	27	22	55	26	46	32	27	27	------
26	27	33	35	36	30	26	22	55	32	42	32	27	28	------
27	26	34	35	36	30	25	22	52	38	42	32	28	28	------
28	26	35	35	34	29	24	22	48	40	41	31	28	27	------
29	26	36	36	32	------	26	22	48	51	40	30	28	26	
30	27	36	36	33	------	25	22	47	62	40	30	28	26	------
31	28	------	36	34	------	24	------	38	------	44	31	------	26	------

Monthly discharge of Rock Creek near Round Valley, Calif., for the period October 1, 1922, to November 10, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
1922–23				
October	28	24	25.8	1,590
November	36	28	31.6	1,880
December	47	32	36.7	2,260
January	40	26	33.7	2,070
February	34	29	32.0	1,780
March	28	24	26.6	1,640
April	26	21	23.1	1,370
May	69	21	44.2	2,720
June	72	23	39.0	2,320
July	95	40	59.2	3,640
August	49	26	34.6	2,130
September	34	27	29.1	1,730
The year	95	21	34.7	25,100
1923				
October	32	26	28.7	1,760
November 1–10	30	26	28.0	555
The period				2,320

PINE CREEK NEAR ROUND VALLEY, CALIF.

LOCATION.—In SE. ¼ SE. ¼ sec. 9, T. 6 S., R. 31 E., 300 feet above highway bridge, 600 feet above junction with Rock Creek, and 2 miles northwest of Round Valley, Inyo County.

DRAINAGE AREA.—About 32 square miles above mouth of canyon.

RECORDS AVAILABLE.—August 3, 1903, to November 16, 1923, when the station was discontinued.

GAGE.—Vertical staff on left bank just above bridge. Gage was destroyed by high water of 1922 and a new one installed 20 feet downstream. Prior to May 13, 1908, gage was 150 feet below highway bridge.

DISCHARGE MEASUREMENTS.—Made from footbridge at gage, from bridge, or by wading.

CHANNEL AND CONTROL.—Lava rock and sand; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.80 feet July 2 (discharge, 85 second-feet); minimum discharge recorded, 0.2 second-foot September 10.

1903–1923: Maximum discharge, 370 second-feet June 22, 1911; minimum discharge, 0.1 second-foot August 13, 1920.

ICE.—Ice occasionally forms at station but does not affect stage-discharge relation.

DIVERSIONS.—Water is diverted above station for irrigation.

REGULATION.—Diversions probably affect the flow.

ACCURACY.—Stage-discharge relation changed during May and June. Rating curves fairly well defined. Staff gage read to hundredths two or three times a week. Daily discharge ascertained by applying daily gage height to rating table and interpolating or estimating discharge for days when gage was not read; shifting-control method used May 25 to June 13. Records fair.

COOPERATION.—Gage-height record and discharge measurements furnished by the city of Los Angeles.

Discharge measurements of Pine Creek near Round Valley, Calif., for the period October 1, 1922, to December 3, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
1922		*Feet*	*Sec.-ft.*	1923		*Feet*	*Sec.-ft.*
Nov. 8	Weatherill and Allen	3.60	5.3	June 9	M. C. Smart	4.02	31
Dec. 6	do	3.59	4.6	14	do	4.25	36
				27	do	4.16	32
1923				July 11	J. W. Topham	4.12	28
Jan. 8	Smart and Weatherill	3.60	4.6	Aug. 3	Smart and Odekirk	3.95	17
25	Smart and Topham	3.63	5.0	21	do	3.64	4.0
Feb. 7	M. C. Smart	3.60	4.1	Sept. 6	Smart and Allen	3.52	.59
21	do	3.58	2.8	20	M. C. Smart	3.52	1.1
Mar. 7	do	3.51	1.9	Oct. 10	do	3.64	2.6
24	Smart and Jones	3.48	1.5	27	do	3.62	2.3
Apr. 11	M. C. Smart	3.50	1.4	Nov. 5	Smart and Weatherill	3.64	3.6
23	Smart and Allen	3.40	.55	Dec. 3	Smart and Odekirk	3.63	3.8
May 9	M. C. Smart	3.35	.22				

Daily discharge, in second-feet, of Pine Creek near Round Valley, Calif., for the period October 1, 1922, to November 10, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
1	0.6	1.9	3.2	3.3	4.1	1.9	1.5	0.9	15	58	21	0.7	2.0	3.4
2	.9	2.3	3.1	2.8	3.9	1.8	1.5	.5	14	85	19	.7	2.1	3.2
3	.7	2.7	3.2	2.4	3.6	1.7	1.5	.5	14	60	18	.7	2.2	3.1
4	.9	3.1	3.4	3.9	3.2	2.0	1.6	.5	13	13	15	.6	2.2	3.2
5	1.5	3.0	3.6	4.0	2.9	2.4	.7	.4	14	72	12	.5	2.2	3.4
6	1.8	2.9	3.9	4.1	3.5	2.2	1.1	.4	16	61	10	1.1	2.2	3.2
7	2.2	3.5	4.1	4.1	4.1	1.9	1.6	.4	12	50	6	.7	2.5	3.1
8	1.9	4.1	3.8	4.1	3.4	1.9	1.6	.3	22	42	2.5	.3	2.8	4.0
9	1.9	3.9	3.4	4.1	3.5	1.9	1.5	.3	31	35	5	.2	2.6	4.1
10	1.9	3.7	3.9	4.1	3.6	1.9	1.9	.5	79	31	3.2	.2	2.5	4.2
11	2.0	3.6	4.4	4.1	3.6	1.9	2.2	.5	85	28	1.5	.4	1.8	------
12	2.2	3.6	6	3.9	3.6	1.9	1.7	.5	65	47	10	.6	2.3	------
13	1.9	3.6	7.5	3.6	3.6	1.8	1.8	.8	45	37	19	1.3	2.8	------
14	1.7	3.6	4.4	3.3	3.6	1.7	1.9	1.1	37	27	11	1.2	2.3	------
15	1.7	3.6	4.2	2.9	3.9	1.7	1.5	1.4	28	37	2.5	1.0	1.8	------
16	1.7	2.9	4.1	3.5	3.9	1.7	1.2	1.7	19	46	2.2	.9	1.9	------
17	1.7	2.9	3.5	4.1	3.9	1.7	1.5	1.6	15	40	3.8	.8	2.0	------
18	1.7	2.9	2.9	3.9	4.0	1.6	1.7	1.6	12	33	5.5	.8	2.2	------
19	1.7	2.9	3.3	4.0	4.1	1.5	1.7	1.7	11	28	6	.8	2.4	------
20	1.9	2.9	3.6	4.1	3.9	1.5	1.0	1.9	10	23	6.5	1.1	2.5	------
21	2.2	2.4	3.6	4.1	3.6	1.5	.4	2.2	19	18	4.0	.8	2.4	------
22	2.2	1.9	3.6	4.1	3.6	1.3	.4	3.1	14	18	.8	.5	2.2	------
23	2.2	3.1	3.6	5	3.6	1.4	.5	4.1	10	19	3.7	.4	2.1	------
24	2.2	3.1	3.6	6	3.6	1.5	.9	4.1	15	17	2.6	.4	2.0	------
25	2.2	3.1	3.7	4.8	3.5	1.5	1.3	7	20	15	1.6	.9	2.2	------
26	2.1	3.3	3.8	3.4	3.4	1.5	1.0	11	28	15	1.5	1.5	2.2	------
27	1.9	3.6	3.9	1.9	2.6	1.5	1.2	15	35	14	1.3	1.6	2.3	------
28	1.7	3.6	3.9	2.7	1.9	1.5	1.5	20	41	13	1.0	2.2	2.8	------
29	1.8	3.6	4.0	3.6	------	1.5	1.3	22	53	12	.7	2.8	3.4	------
30	1.9	3.4	4.1	3.6	------	1.5	1.1	25	65	10	.6	2.6	3.2	------
31	1.9	------	3.7	3.6	------	1.5	------	16	------	15	.6	------	3.1	------

Monthly discharge of Pine Creek near Round Valley, Calif., for the period October 1, 1922, to November 10, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
1922–23				
October	2.2	0.6	1.77	109
November	4.1	1.9	3.16	188
December	7.5	2.9	3.90	240
January	6	1.9	3.78	232
February	4.1	1.9	3.56	198
March	2.4	1.3	1.70	105
April	2.2	.4	1.34	79.7
May	25	.3	4.74	291
June	85	10	28.6	1,700
July	85	10	34.3	2,110
August	21	.6	6.39	393
September	2.8	.2	.94	55.9
The year	85	.2	7.88	5,700
1923				
October	3.4	1.8	2.36	145
November 1–10	4.2	3.1	3.49	69.2
The period				214

ANTELOPE VALLEY BASIN

ROCK CREEK NEAR VALYERMO, CALIF.

LOCATION.—In NE. ¼ sec. 20, T. 4 N., R. 9 W., about 1¾ miles southeast of Valyermo, Los Angeles County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—January 17 to September 30, 1923.

GAGE.—Water-stage recorder in wooden well and shelter in right bank, about a quarter of a mile south of the boundary line of the Angeles National Forest.

DISCHARGE MEASUREMENTS.—Made from a footbridge 20 feet below the gage or by wading.

CHANNEL AND CONTROL.—Boulders and gravel which may shift at high stages; fairly permanent at low and medium stages.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 1.4 feet at noon April 10 (discharge, 27 second-feet); minimum discharge, estimated at 4.8 second-feet August 28.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Rating curves well defined. Excellent gage-height record from water-stage recorder. Daily discharge ascertained by applying mean daily gage height to rating table. Discharge August 18 to September 14 interpolated between measurements, except September 11–13, which was estimated.

Discharge measurements of Rock Creek near Valyermo, Calif., during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Dec. 30	Troxell and Ebert	1.11	15	Aug. 21	H. J. Tompkins		5.6
Mar. 21	H. C. Troxell	1.15	16	28	do		4.8
Apr. 30	do	1.19	17	Sept. 1	do		6.0
May 31	do	1.10	14	7	do		5.4
July 12	do	.98	9.5	18	do	1.05	7.3
Aug. 6	Troxell and Ebert	.93	7.6	27	do	.98	5.9

Daily discharge, in second-feet, of Rock Creek near Valyermo, Calif., for the year ending September 30, 1923

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		14	18	17	17	14	13	10	6
2		14	18	17	18	14	13	9.5	6
3		14	18	17	18	14	12	9.5	6
4		14	19	16	18	14	12	9.5	6
5		14	18	16	19	14	12	9	5.5
6		14	18	20	18	14	12	9	5.5
7		14	18	22	18	14	11	9	5.5
8		15	18	20	18	14	11	9	5.5
9		15	18	20	18	14	11	8.5	5.5
10		14	19	25	18	14	11	8.5	5.5
11		14	19	24	18	14	10	8.5	6
12		14	18	24	17	14	10	8.5	9
13		14	18	24	17	14	10	8.5	7
14		14	18	24	17	14	10	8.5	6
15		14	18	24	16	14	9.5	8.5	6
16		14	18	22	16	14	10	8.5	6
17	14	15	17	22	16	14	10	8.5	6
18	13	15	17	23	16	14	10	8	6
19	13	16	16	22	16	14	10	7	6
20	13	16	16	21	16	14	10	6	6

Daily discharge, in second-feet, of Rock Creek near Valyermo, Calif., for the year ending September 30, 1923—Continued

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
21	12	16	16	20	16	14	10	5.5	6.5
22	13	16	16	20	16	14	10	5.5	7
23	13	17	16	20	16	14	11	5	7
24	13	17	16	20	15	14	11	5	7
25	13	18	16	19	15	14	11	5	7
26	13	18	16	18	15	14	11	5	7
27	13	18	16	18	14	14	11	5	6.5
28	13	18	16	18	14	13	11	4.8	6.5
29	13	------	16	18	14	13	10	5	6
30	14	------	16	17	14	13	10	5	6
31	14	------	16	------	14	------	10	5.5	------

Monthly discharge of Rock Creek near Valyermo, Calif., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
January 17–21	14	12	13.1	391
February	18	14	15.2	844
March	19	16	17.2	1,060
April	25	16	20.3	1,210
May	19	14	16.4	1,010
June	14	13	13.9	827
July	13	9.5	10.8	664
August	10	4.8	7.36	453
September	9	5.5	6.25	372
The period	------	------	------	6,830

MONO LAKE BASIN

MONO LAKE NEAR MONO LAKE, CALIF.

LOCATION.—In lot 6, SE. ¼ NE. ¼ sec. 31, T. 2 N., R. 26 E., 2 miles south of Mono Lake post office, Mono County.

RECORDS AVAILABLE.—June 15, 1912, to September 30, 1923 (fragmentary).

GAGE.—Vertical staff on support of boat house, installed September 1916; read once daily by W. E. Green. Original gage was vertical staff fastened to willow tree about 400 feet from Hammon's store. Published gage heights for July 13, 1916, to September 30, 1920, are 10.0 feet too low.

EXTREMES OF STAGE.—1912–1923: Maximum stage recorded, 13.55 feet July 18, 1919; minimum stage recorded, 7.93 feet December 11, 1913.

COOPERATION.—Gage-height record furnished by United States Forest Service.

The following readings were made during year ending September 30, 1923:

Date	Gage height	Date	Gage height	Date	Gage height
	Feet		*Feet*		*Feet*
Oct. 31	11.65	May 20	12.35	Aug. 15	12.30
Mar. 28	12.30	June 29	12.45	Sept. 18	12.00
Apr. 24	12.40	July 30	12.45		

WALKER LAKE BASIN

EAST WALKER RIVER NEAR BRIDGEPORT, CALIF.

LOCATION.—In sec. 27, T. 6 N., R. 25 E., 100 feet from highway, half a mile above highway bridge, and 6 miles below Bridgeport, Mono County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 1 to November 30, 1921, and May 3, 1922, to September 30, 1923, and miscellaneous measurements in 1920 and 1921. 1911–1914 at a site 1½ miles upstream.

GAGE.—Stevens continuous recorder on right bank. Inspected by Walker River irrigation district.

DISCHARGE MEASUREMENTS.—Made by wading or from highway bridge half a mile below gage.

CHANNEL AND CONTROL.—Channel fairly straight above and below gage. Bed of shifting sand and gravel. Control indefinite; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year, 4.95 feet at 12.30 a. m. May 22 (discharge, 714 second-feet); minimum stage 1.67 feet at 1 p. m. January 28 (discharge, 32 second-feet).

1921–1923: Maximum stage occurred June 29, 1922 (discharge not determined); minimum stage not recorded.

ICE.—Stage-discharge relation slightly affected by ice.

DIVERSIONS.—Below all diversions in Bridgeport Valley.

REGULATION.—Slight regulation by Twin Lakes Reservoir and irrigation above gage.

ACCURACY.—Stage-discharge relation changed slightly for low water during high water in May. Rating curves well defined. Water-stage recorder operated successfully except for a short period in February, July 21–22, and August 9. Daily discharge ascertained by applying mean daily gage height to rating table. Discharge estimated for ice-affected period, and interpolated July 21, 22, and August 9. Records good.

COOPERATION.—Walker River irrigation district furnished gage-height record, and results of two discharge measurements.

Discharge measurements of East Walker River near Bridgeport, Calif., during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 10	R. R. Rowe	2.16	72.7	Mar. 17	Rowe and Beemer[b]	3.16	237
Jan. 30	do	(a)	46	17	R. R. Rowe	3.21	246
Mar. 16	do	2.84	181	July 15	(b)	3.53	331
16	do	2.92	192	26	(b)	2.68	165

[a] Gage height uncertain; measurement made 7 miles below gage.
[b] Engineer, Walker River irrigation district.

Daily discharge, in second-feet, of East Walker River near Bridgeport, Calif., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	67	71	106	95	91	167	109	73	237	332	167	154
2	66	65	100	102	90	162	96	74	253	398	170	142
3	66	70	118	95	}	137	87	67	223	426	156	132
4	63	76	95	112	88	105	87	60	249	444	144	129
5	67	80	122	101	}	108	95	95	237	447	139	130
6	78	82	90	91	86	144	258	112	253	439	135	128
7	77	93	84	92		193	150	130	274	439	133	122
8	76	108	102	86		212	102	162	295	421	125	118
9	76	115	120	86		172	95	172	304	403	114	113
10	76	105	131	88		130	124	185	363	375	103	109
11	77	96	153	73		139	136	158	467	361	110	109
12	80	102	147	78		176	119	158	497	363	116	128
13	82	139	158	81		214	111	171	421	334	136	170
14	81	118	162	87	90	198	95	152	358	295	128	176
15	81	136	158	84		150	92	180	351	316	132	164
16	79	136	153	84		214	104	249	418	332	136	140
17	80	136	142	130		358	108	298	344	316	138	126
18	78	131	119	139		284	87	309	278	289	148	122
19	73	124	126	116		262	86	271	249	249	191	118
20	72	118	131	98		275	77	363	267	212	154	117
21	71	111	98	80	153	178	66	648	253	224	136	110
22	69	98	105	106	180	152	60	554	223	236	133	109
23	70	101	106	87	189	150	61	405	207	249	136	110
24	71	101	128	82	196	145	61	380	202	255	129	107
25	70	105	131	86	215	139	66	375	241	225	123	107
26	68	102	116	92	196	126	79	351	245	184	118	154
27	67	105	128	85	169	120	82	334	251	177	109	133
28	70	109	92	65	162	124	85	309	276	191	119	125
29	69	106	101	54	-------	119	91	282	284	208	186	122
30	64	95	131	60	-------	116	84	259	286	204	159	117
31	72	-------	105	81	-------	118	-------	233	-------	177	159	-------

NOTE.—Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of East Walker River near Bridgeport, Calif., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	82	63	72.8	4,480
November	139	65	104	6,190
December	162	84	121	7,440
January	139	54	90.2	5,550
February	215	----------	116	6,440
March	358	105	171	10,500
April	258	60	98.4	5,860
May	648	60	244	15,000
June	497	202	294	17,500
July	447	177	307	18,900
August	191	103	138	8,480
September	176	107	128	7,620
The year	648	54	157	114,000

EAST WALKER RIVER ABOVE MASON VALLEY, NEAR MASON, NEV.

LOCATION.—In SW. ¼ sec. 4, T. 11 N., R. 26 E., 30 feet below highway bridge and 11 miles southeast of Mason, Mineral County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 23, 1921, to September 30, 1923, at present site; August 27, 1916, to January 5, 1918, at a site half a mile upstream; fragmentary.

GAGE.—Stevens continuous water-stage recorder on left bank, installed May 23, 1921; attended by employees of Walker River irrigation district.

DISCHARGE MEASUREMENTS.—Made by wading or from highway bridge near gage. Excellent sections at all stages.

CHANNEL AND CONTROL.—Channel fairly straight. Bed of shifting sand and fine gravel. Banks covered with willows. Control indefinite.

EXTREMES OF DISCHARGE.—Maximum stage during year, 3.54 feet at 2 p. m., May 22 (discharge, 688 second-feet); minimum stage not determined.

1921–1923: Maximum stage, 4.40 feet at 3 p. m. June 29, 1922 (discharge, 1,160 second-feet); minimum stage, 0.68 foot at 11 a. m. February 13 (discharge, 28 second-feet).

ICE.—Stage-discharge relation affected by ice at times.

DIVERSIONS.—Strosnider's Canal heads about 1½ miles above gage.

REGULATION.—Slight regulation by Twin Lakes Reservoir and by irrigation.

ACCURACY.—Stage-discharge relation shifting continually; affected by ice January and February. Standard rating curves fairly well defined. Water-stage recorder successfully operated throughout year by Walker River irrigation district except as noted in footnote to daily discharge table. Daily discharge ascertained by applying mean daily gage height to rating table using shifting-control method. Records good; estimated periods fair.

COOPERATION.—Gage-height record and two discharge measurements furnished by Walker River irrigation district.

Discharge measurements of East Walker River above Mason Valley, near Mason, Nev., during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 19	Rowe and Warren [a]	1.15	82.0	Mar. 18	R. R. Rowe	2.58	324
Jan. 31	R. R. Rowe	[b] 1.44	90.6	Aug. 4	(a)	1.49	115
				10	(a)	1.38	85.3

[a] Engineer, Walker River irrigation district. [b] Affected by ice.

Daily discharge, in second-feet, of East Walker River above Mason Valley, near Mason, Nev., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			107				153	115	200	183	150	119
2			108				146	110	201	207	145	120
3			118				141	104	205	263	145	118
4		100	107			150	136	100	194	298	132	114
5			125				134	93	200	306	127	110
6			118				159	94	183	321	118	112
7			101			179	242	114	201	327	110	105
8		122	93	100		198	181	132	215	324	102	93
9		127	109			213	153	139	219	318	99	98
10	85	125	116		95	192	142	155	238	285	92	89
11		117	127			166	162	169	253	249	86	88
12		113	127			170	164	161	348	236	88	91
13		107	130			194	152	161	394	228	94	104
14			133			223	141	167	345	219	95	119
15			129			205	134	148	315	207	95	128
16			125			179	132	229	384	215	101	123
17			117			240	138	217	394	221	105	107
18		110	122			339	145	231	300	205	111	99
19	84		121			292	141	238	240	194	120	93
20	84		110			288	133	258	213	179	131	58
21	90		110			265	125	453	221	159	115	83
22	90		113			209	122	643	198	142	104	94
23	90		122	90		186	119	453	167	143	97	97
24	91	109	124			181	117	345	158	166	101	99
25	91	106	118		180	181	115	327	162	186	101	98
26	92	107	123			174	118	318	169	172	99	93
27		110	113			166	122	300	169	159	95	112
28		119	110			162	121	278	167	150	94	114
29	90	117	123		-------	159	123	256	166	158	101	118
30		107	122		-------	156	127	223	170	167	124	116
31		-------	120	91	-------	152	-------	215	-------	174	116	-------

NOTE.—No gage-height record and discharge estimated Oct. 1–18, Oct. 27 to Nov. 7, Nov. 14–23, Dec. 31 to Mar. 6, and July 13. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of East Walker River above Mason Valley, near Mason, Nev., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October			868	5,340
November			110	6,550
December	133	93	117	7,190
January			94.9	5,840
February			119	6,610
March	339		193	11,900
April	242	115	141	8,390
May	643	93	224	13,800
June	394	158	233	13,900
July	327	142	218	13,400
August	150	86	109	6,700
September	128	83	105	6,250
The year	643	83	146	106,000

NOTE.—See footnote to daily-discharge table.

WALKER RIVER AT MASON, NEV.

LOCATION.—In NE. ¼ sec. 33, T. 13 N., R. 25 E., 200 yards above highway bridge at Mason, Lyon County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—November 21, 1910, to September 15, 1912; July 3, 1913, to September 30, 1916; and May 15, 1921, to September 30, 1923, when station was discontinued.

GAGE.—Stevens continuous water-stage recorder on left bank; inspected by employees of Walker River irrigation district.

DISCHARGE MEASUREMENTS.—Made by wading near gage or from highway bridge 200 yards below gage. Good sections at all stages.

CHANNEL AND CONTROL.—Bed is of shifting sand, with no well-defined control. Two or more channels at low water. One channel for medium and high water.

EXTREMES OF DISCHARGE.—1910–1916, 1921–1923: Maximum stage recorded, 8.85 feet June 21–22, 1914 (discharge, 3,410 second-feet); minimum stage recorded, 1.74 feet September 17, 1921 (discharge, 17 second-feet).

ICE.—Stage-discharge relation usually affected by ice.

DIVERSIONS.—None between confluence of East and West Walker Rivers and gaging station. During irrigation season practically all of stream is diverted below gage for use in Mason Valley. Maximum capacity of canals diverting water from East Walker River in Mason Valley is 120 second-feet; of West Walker River is 100 second-feet.

REGULATION.—Flow affected by storage of waters in Topaz Lake, Poor Lakes, and Twin Lakes, as well as by extensive irrigation, especially in Mason, Smith, Antelope, and Bridgeport Valleys.

ACCURACY.—Stage-discharge relation changes with changes of stage. Water-stage recorder operated successfully for periods shown in daily gage height table. Daily discharge not determined owing to lack of sufficient measurements to define shifting-control conditions.

Discharge measurements of Walker River at Mason, Nev., during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 18	R. R. Rowe	2.29	99.5	July 13	[a]	2.98	343
Jan. 27	do	2.91	145	21	[a]	2.38	112
Mar. 18	do	3.33	281	Aug. 7	[a]	2.70	186

[a] Engineers, Walker River irrigation district.

Daily gage height, in feet, of Walker River at Mason, Nev., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.14	2.51	------	2.96	2.94	3.11	------	2.81	------	3.65	------	2.89
2	2.20	2.57	------	2.92	2.93	3.14	------	2.72	3.54	3.88	------	2.90
3	2.25	2.61	------	2.89	3.45	3.14	------	2.73	------	4.26	------	2.91
4	2.24	2.62	------	2.89	3.87	3.10	------	2.74	------	4.50	------	2.91
5	2.17	2.68	------	2.91	------	3.01	------	2.74	------	3.97	------	2.94
6	2.13	2.71	------	2.93	------	3.00	------	2.84	------	3.89	2.72	2.85
7	2.13	2.77	------	2.92	------	3.04	------	3.51	------	3.85	2.73	2.80
8	2.14	2.80	------	2.91	------	3.14	------	3.75	------	------	2.75	2.73
9	2.17	2.87	------	2.92	------	3.20	------	3.69	------	------	2.72	2.67
10	2.21	2.94	------	2.88	------	3.19	------	3.74	3.26	------	2.69	2.70
11	2.25	2.94	------	2.90	------	3.09	------	3.79	3.50	------	2.69	2.83
12	2.32	2.93	------	2.91	------	3.07	------	3.59	3.71	------	2.67	------
13	2.35	2.93	------	2.88	3.70	3.05	------	3.46	3.74	2.98	2.70	------
14	2.37	2.94	------	2.85	3.33	3.16	------	3.40	3.74	2.88	2.67	------
15	2.36	2.90	------	2.84	2.89	3.23	------	3.40	3.68	2.93	2.59	------
16	2.33	2.90	------	2.84	2.95	3.19	------	3.74	3.92	2.97	2.56	------
17	2.32	2.91	------	2.82	2.91	3.18	------	3.92	3.95	2.96	2.56	------
18	2.30	2.98	------	2.91	2.92	3.44	3.58	3.77	3.81	2.85	2.66	------
19	2.32	2.99	------	2.98	2.96	3.42	3.60	------	3.61	2.66	2.76	------
20	2.35	2.98	------	3.04	3.00	3.36	3.49	------	3.40	2.51	2.73	------
21	2.37	2.98	------	3.03	3.01	3.37	3.36	------	3.42	2.44	2.72	------
22	2.39	2.98	------	2.97	3.03	3.25	3.34	4.62	3.30	2.39	2.71	------
23	2.41	2.94	------	2.96	3.10	3.13	3.27	------	3.18	2.42	2.76	------
24	2.42	2.94	------	2.95	3.13	3.12	3.22	------	3.11	2.73	2.75	------
25	2.42	2.94	------	2.98	3.14	3.16	3.14	------	3.05	2.87	2.64	------
26	2.43	2.93	------	3.01	3.16	3.17	3.07	------	3.09	2.93	2.57	------
27	2.42	2.93	------	2.97	3.16	3.24	3.02	------	3.12	2.94	2.55	------
28	2.48	------	------	2.91	3.10	3.29	2.93	------	3.13	3.03	2.57	------
29	2.49	------	2.9	2.91	------	------	2.88	------	3.12	3.07	2.65	------
30	2.50	------	2.88	2.93	------	------	2.87	------	3.14	3.12	2.84	3.16
31	2.50	------	2.92	2.88	------	------	------	------	------	------	2.89	------

WALKER RIVER NEAR WABUSKA, NEV.

LOCATION.—In NE. ¼ sec. 20, T. 15 N., R. 26 E., half a mile above boundary line of Walker River Indian Reservation, and 5 miles east of Wabuska, Lyon County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—January 15, 1920, to September 30, 1923. Comparable records were obtained July 22, 1902, to July 31, 1908, at railroad bridge 3 miles upstream.

GAGE.—Stevens eight-day water-stage recorder on left bank, installed October 14, 1922; inspected by Mrs. A. E. Parker. Temporary staff gage used August 30 to October 13, 1922.

DISCHARGE MEASUREMENTS.—Made by wading or from cable 30 feet upstream.

CHANNEL AND CONTROL.—Banks fairly high and clean. One channel, except at very high stages when abandoned channel on right may carry small quantity of water around gage. Bed of stream composed of sand. Channel control.

EXTREMES OF DISCHARGE.—Maximum stage during year, 5.68 feet at 5 p. m. May 22 (discharge, 742 second-feet); minimum discharge, 12 second-feet October 1.

1920–1923: Maximum stage recorded, 7.08 feet at 10 a. m. June 8, 1922 (discharge, 2,220 second-feet); minimum stage recorded, 3.26 feet September 1, 1921 (discharge, 1 second-foot).

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Below all diversions above Walker River Indian Reservation.

REGULATION.—Flow regulated by Topaz Lake, Poor Lake, and Twin Lakes Reservoirs; also by diversions.

ACCURACY.—Stage-discharge relation probably changed slightly about July 6; affected by ice January 13 to February 17. Rating curves fairly well defined up to 400 second-feet and extended above. Operations of water-stage recorder satisfactory, except as stated in footnote to daily-discharge table, and from October 1–14, when daily staff readings were made. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph, or daily gage height readings. Discharge for periods when recorder was not operating, and for period of ice effect was estimated by hydrographic comparison with Schurz station, and climatological data. Records fair.

Discharge measurements of Walker River near Wabuska, Nev., during the year ending September 30, 1923

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 13	[a] 1.24	60.6	Mar. 13	4.08	190
15	[b] 3.36	84.7	May 28	4.68	368
Jan. 31	[c] 3.92	92.0			

[a] Temporary staff gage.
[b] Hook gage, after moving gage-house; temporary staff gage read, 1.33 feet.
[c] Staff-discharge relation affected by ice.

Daily discharge, in second-feet, of Walker River near Wabuska, Nev., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	110	170	164	90	216	274	136	410	194	80	98
2	19	120	180	150	85	214	277	132	390	247	90	112
3	32	114	187	144	80	214	250	125	372	324	88	128
4	56	116	190	141	75	200	260	120	330	536		155
5	46	120	196	148	70	180	250	115	310	562		157
6	42	121	187	148	70	170	250	110	300	518	79	146
7	32	128	206	144	65	170	250	110	290	484		114
8	32	139	204	144	60	170	247		270	465		117
9	32	153	194	140	60	170	219		240	450		106
10	32	155	194	140	70	175	194		220	434	70	95
11	37	151	214	130	80	180	277	140	219	392	71	95
12	43	151	256	120	90	185	216		253	338	74	99
13	61	151	280	60	100	190	179		358	283		113
14	64	151	283	50	120	194	194		406	206		127
15	84	155	289	100	140	209	210		490	170		150
16	85	151	262	100	140	216	225	162	614	145	79	179
17	84	162	247	110	140	212	241	174	590	125		206
18	84	168	230	120	141	244	239	187	570	110		220
19	82	170	209	130	143	292	241	192	550	97	84	230
20	81	170	190	140	148	286	233	199	452	87	92	230
21	80	170	174	130	170	234	227	283	324	79	93	250
22	78	170	172	120	190	181	202	662	302	73	91	260
23	79	161	166	120	220	174	233	600	265	68	91	240
24	79	153	161	115	236	172	219	500	256	66	85	250
25	80	162	150	110	239	181	214	420	241	66	83	260
26	83	162	157	105	247	183	184	389	219	67	74	270
27	84	162	157	100	247	192	161	365	212	70	70	280
28	90	168	153	90	230	172	144	389	192		70	300
29	95	172	164	90	-------	194	138	470	187	75	70	295
30	100	194	164	91	-------	233	138	473	185		74	300
31	105	-------	164	92	-------	253	-------	466	-------		97	-------

NOTE.—Discharge estimated from hydrographic comparison with Schurz station: Oct. 21, Oct. 28 to Nov. 2, Dec. 1, 2, Dec. 30 to Jan. 2, Jan. 9–12, 25–26, Feb. 10, 11, 21–23, Mar. 5–12, 21, Apr. 3–7, 15, 16, May 3–15, 23, 24, June 2, 4–10, 18, July 8, 9, 15–18, July 27 to Aug. 2, Aug. 4–9, 13–18, Sept. 9, 18–30. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Walker River near Wabuska, Nev., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	105	12	64.3	3,950
November	194	110	151	8,980
December	289	150	198	12,200
January	164	50	119	7,320
February	247	60	134	7,440
March	292	170	202	12,400
April	277	138	220	13,100
May	662	110	255	15,700
June	614	185	334	19,900
July	562	66	224	13,800
August	97		80.5	4,950
September	300	95	186	11,100
The year	662	12	181	131,000

WALKER RIVER AT SCHURZ, NEV.

LOCATION.—In sec. 36, T. 13 N., R. 28 E., 50 feet below Southern Pacific Railroad bridge at Schurz, Mineral County, 3 miles above Walker Lake, and 6 miles below diversion dam of Walker River Indian Reservation.

DRAINAGE AREA.—2,850 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 2, 1913, to September 30, 1923.

GAGE.—Inclined staff gage on right bank 50 feet below Southern Pacific Railroad bridge; vertical staff gage for low stages on bridge pier; read by J. G. Bradford and Irving Clark.

DISCHARGE MEASUREMENTS.—Made by wading or from flume half a mile below gage.

CHANNNEL AND CONTROL.—Bed composed of loose sand; shifts occasionally.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 4.20 feet at 7 a. m. May 24 (discharge, 825 second-feet); minimum stage recorded, 0.40 foot at 3 p. m. July 30 (discharge less than 1 second-foot).

1913–1923: Maximum stage recorded, 11.0 feet June 8 and 9, 1914 (discharge, 2,530 second-feet); no flow during periods in 1913, 1920, 1921, and 1922.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Below all diversions.

REGULATIONS.—Flow affected by Topaz Lake, Poor Lake, and Twin Lakes Reservoirs; also by irrigation diversion.

ACCURACY.—Stage-discharge relation changed during low water in July. Rating curve well defined between 40 and 1,600 second-feet. Gage read to hundredths twice daily except July 1–7 and 15–23. Daily discharge ascertained by applying daily gage height to rating table; using parallel shift July 24 to September 30. Discharge estimated for July 1–7 and 15–23 by hydrographic comparison with Wabuska station. Records good except those for first part of October and July 15 to September 17, which are poor.

Discharge measurements of Walker River at Schurz, Nev., during the year ending September 30, 1923

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 17	1.21	51.3	Mar. 13	2.08	168
Jan. 27	1.91	144	May 26	3.11	430

Daily discharge, in second-feet, of Walker River at Schurz, Nev., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1	72	174	140	137	233	182	40	401	100	1	5
2	1	74	165	138	156	215	186	23	476	90	1	4
3	1	78	156	140	153	207	224	22	380	100	5	4
4	14	84	165	124	132	182	219	23	360	150	8	24
5	16	82	174	125	117	163	198	20	324	250	7	68
6	23	90	194	137	122	160	213	19	280	350	7	85
7	20	97	184	128	117	156	207	14	251	450	7	83
8	17	104	194	131	111	150	217	9	239	489	4	41
9	17	104	215	142	100	156	204	7	228	554	4	36
10	22	128	176	142	89	150	170	12	204	496	3	32
11	25	132	184	138	88	154	194	40	178	444	4	24
12	27	140	204	138	97	167	237	56	153	380	2	16
13	31	140	260	131	111	165	170	38	143	298	2	16
14	31	125	285	124	122	176	125	46	174	237	2	36
15	40	128	285	66	128	176	140	48	333	180	4	64
16	45	137	280	52	143	182	165	56	395	110	2	76
17	56	128	280	117	160	196	190	78	648	70	2	112
18	50	143	265	111	158	207	204	90	740	40	3	142
19	50	153	226	122	160	233	202	87	517	20	4	150
20	48	160	190	143	160	246	178	100	410	15	4	172
21	45	204	165	160	165	258	178	174	324	10	4	192
22	45	190	153	174	170	248	167	395	265	5	3	186
23	40	156	137	160	184	228	160	712	233	5	4	207
24	40	156	126	143	190	213	153	810	226	4	4	228
25	40	148	137	148	202	213	170	600	194	4	6	213
26	45	150	128	143	211	207	153	459	160	2	6	228
27	50	137	140	143	215	219	111	407	137	2	5	239
28	52	132	128	146	224	215	82	324	128	2	4	258
29	59	137	134	143	-------	207	66	298	132	2	7	262
30	66	156	140	128	-------	172	56	333	125	1	4	282
31	66	-------	138	131	-------	178	-------	360	-------	-------	3	-------

Monthly discharge of Walker River at Schurz, Nev., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	66	1	34.7	2,130
November	204	72	128	7,620
December	285	126	187	11,500
January	174	52	133	8,180
February	224	88	147	8,160
March	258	150	195	12,000
April	237	56	171	10,200
May	810	7	184	11,300
June	740	125	292	17,400
July	554	1	157	9,650
August	7	1	4.1	252
September	282	4	116	6,900
The year	810	1	145	105,000

WEST WALKER RIVER NEAR COLEVILLE, CALIF.

LOCATION.—NE. ¼ NW. ¼ sec. 28, T. 8 N., R. 23 E., at mouth of Ross Canyon, at head of Antelope Valley, 400 feet east of State highway, 1,100 feet above heading of Terry Canal, 1.4 miles above Terry ranch house, 6 miles above Coleville, Mono County, and 40 miles southeast of Gardnerville, Nev.

DRAINAGE AREA.—245 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 18, 1915, to September 30, 1923, at present site; October 5, 1902, to July 31, 1908, at a site half a mile upstream.

GAGE.—Stevens continuous water-stage recorder on left bank installed May 5, 1922; inspected by T. F. Hardy.

DISCHARGE MEASUREMENTS.—Made from cable 1,000 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of large boulders, sand, and gravel; fairly permanent. Control composed of large boulders and some loose gravel; fairly permanent. Point of zero flow —0.2±0.3 foot October 14, 1921.

EXTREMES OF DISCHARGE.—Maximum stage, 5.10 feet at 1 a. m. June 11 (discharge, 1,770 second-feet); minimum stage, 1.46 feet at 6 p. m. January 13 (discharge, 25 second-feet).

1915–1923: Maximum stage recorded, 5.74 feet at 3 a. m. June 12, 1921 (discharge, 2,710 second-feet); minimum discharge, 14 second-feet at 10 p. m. March 2, 1916.

ICE.—Stage-discharge relation not seriously affected by ice.

DIVERSIONS.—Station is above all diversions, except one small canal 1½ miles upstream which diverts a maximum of 3 second-feet.

REGULATION.—A small reservoir at Poor Lake, 17 miles upstream, capacity of which is not known, stores water from the spring floods and releases it later in the summer. Regulation is very slight.

ACCURACY.—Stage-discharge relation changed during high water; affected by ice January 17 and January 30 to February 19. Rating curves fairly well defined. Water-stage recorder operated satisfactorily, except as indicated in footnote to daily-discharge table. Daily discharge ascertained by applying mean daily gage height to rating table. Discharge estimated when gage heights were ice affected, and for period of no gage heights by hydrographic comparison and climatological data. Records good.

Discharge measurements of West Walker River, near Coleville, Calif., during the year ending September 30, 1923

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 11	1.84	72.4	Mar. 15	1.67	41.9
Jan. 28	1.48	25.9	May 27	3.96	995

Daily discharge, in second-feet, of West Walker River, near Coleville, Calif., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	62	67	71	58		90	240	356	684	1,250	350	132
2	78	60	66	71		88	219	411	622	1,280	327	137
3	90	62	76	73		84	197	454	684	1,180	290	120
4	86	58	53	76		71	184	525	756	1,090	269	108
5	86	62	71	76		82	206	664	864	1,080	246	104
6	80	69	62	71		90	284	742	966	1,090	220	102
7	76	75	34	66		88	223	890	1,010	1,080	204	99
8	73	76	52	66		90	209	998	1,100	954	189	97
9	69	75	71	64		82	203	1,070	1,250	924	184	93
10	67	71	73	71	50	76	243	1,100	1,490	924	178	87
11	69	62	76	62		84	250	1,010	1,570	900	169	81
12	71	59	86	59		84	292	968	1,280	828	172	93
13	73	82	86	46		82	323	956	966	810	198	127
14	71	62	88	67		82	340	1,020	882	858	189	161
15	69	75	90	66		73	368	1,120	816	870	178	140
16	67	71	86	69		86	432	1,300	732	810	178	110
17	66	78	86	75		100	432	1,420	638	678	169	99
18	66	71	69	73		105	385	1,290	627	585	164	91
19	64	67	78	75		116	340	1,160	644	565	166	81
20	64	71	69	73	76	139	335	1,060	684	550	153	73

Daily discharge, in second-feet, of West Walker River, near Coleville, Calif., for the year ending September 30, 1923—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
21	62	66	69	56	80	131	315	960	708	520	134	66
22	62	60	69	66	88	121	288	1,010	654	555	122	66
23	62	64	67	62	88	126	269	1,110	702	580	117	72
24	62	66	78	66	92	139	262	1,340	798	520	113	68
25	62	66	80	73	92	152	262	1,360	888	474	108	68
26	60	64	75	44	84	164	254	1,130	930	460	102	81
27	62	66	75	67	82	175	250	996	990	460	99	79
28	67	71	71	40	84	190	292	960	1,120	438	108	93
29	60	75	69	38	-------	212	327	924	1,190	417	106	104
30	56	50	80	40	-------	229	323	864	1,160	395	113	110
31	73	-------	76	40	-------	254	-------	750	-------	370	108	-------

NOTE.—No gage height record July 30 to Aug. 1; discharge estimated. Braced figures show estimated mean discharge for period indicated.

Monthly discharge of West Walker River, near Coleville, Calif., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	90	56	68.9	4,240
November	82	50	67.4	4,010
December	90	34	72.6	4,460
January	76	38	62.9	3,870
February	92	----------	61.3	3,400
March	254	71	119	7,320
April	432	184	285	17,000
May	1,420	356	965	59,300
June	1,570	622	914	54,400
July	1,280	370	758	46,600
August	350	99	175	10,800
September	161	66	98.1	5,840
The year	1,570	34	305	221,000

WEST WALKER RIVER NEAR WELLINGTON, NEV.

LOCATION.—In sec. 10, T. 10 N., R. 23 E., in canyon between Antelope and Smith Valleys, in Douglas County three-quarters of a mile above Lyon County line; a quarter of a mile above Plymouth Canal on right and Colony or Simpson Canal on left; 1 mile below head of Saroni Canal and 1 mile above Wellington, Lyon County.

DRAINAGE AREA.—521 square miles (measured on topographic map).

RECORDS AVAILABLE.—December 20, 1917, to September 30, 1923.

GAGE.—Stevens eight-day water-stage recorder on right bank; inspected by J. W. Pierce.

DISCHARGE MEASUREMENTS.—Made by wading near gage or from Hoye bridge 2 miles upstream.

CHANNEL AND CONTROL.—One channel at all stages. Banks not subject to overflow. Stream bed composed of boulders and gravel.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 4.2 feet at 10 p. m. June 3 (discharge, 1,370 second-feet); minimum stage not recorded.

1918–1923: Maximum stage was 5.32 feet at 5 a. m. on June 6, 1922 (discharge, 2,110 second-feet); minimum stage not recorded, but was probably less than 10 second-feet late in January, 1922.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Station is below all diversions and return water in Antelope Valley and above all diversions in Smith Valley, except Saroni Canal, for which records of monthly flow are given on page 97.

REGULATION.—Flow partly controlled by Topaz Lake Reservoir and Poor Lake Reservoir.

ACCURACY.—Stage-discharge relation changed for low water during high water in May; affected by ice January 15 to February 18. Rating curves well defined. Operation of water-stage recorder satisfactory during intermittent periods covering about one-third of the year; supplemented by weekly readings. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph, or weekly staff gage readings. Discharge estimated for periods of no gage-height record, and when affected by ice, by hydrographic comparison of other Walker River stations and climatological data. Records good except for estimated periods, for which they are fair.

Discharge measurements of West Walker River near Wellington, Nev., during the year ending September 30, 1923

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 11	1.30	69.1	Mar. 14	0.75	16.9
Jan. 28	[a] 1.20	18.5	May 27	2.95	558
29	.74	21.9			

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of West Walker River near Wellington, Nev., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	198		95				160		650	870	450	292
2			95			27			700	960	410	292
3		55	95					160	720	1,270	392	262
4				25		27			665	930	392	262
5	120	68					150	250	615	780	375	262
6			105					410	640	780	375	247
7				24		20			590	810	392	247
8	68						185		590	750	392	234
9	68	95							565		410	234
10	68		118					650	615		410	276
11	68					14	225			640	276	290
12		118				15					307	307
13	55				30	16		590			307	
14			140			17		590	550		307	
15	44					17	212	665		540	292	
16		110				17		810		515	292	
17			55			17		720	515	470	276	
18				20		17		615	515	375	276	
19	40	100					250	590	450	307	276	
20								590	450	292	276	
			40									275
21						25		900		276	276	
22	40	95					212		400	247	276	
23										392	276	
24			27					700	340	410	262	
25					27	68				430	262	
							185					
26	40	92							380	490	262	
27			27		27			565		515	262	
28				18		110				515	276	
29	40	95		22			160	650		515	307	
30	40			20			150		500	515	324	220
31	45		27	20						470	307	

NOTE.—Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of West Walker River near Wellington, Nev., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October			65.9	4,050
November			92.6	5,510
December			76.9	4,730
January			21.1	1,300
February			29.6	1,640
March			39.9	2,450
April			198	11,800
May			582	35,800
June			517	30,800
July	1,270	247	589	36,200
August	450	262	322	19,800
September	292		270	16,100
The year	1,270		235	170,000

WEST WALKER RIVER NEAR HUDSON, NEV.

LOCATION.—In SE. ¼ sec. 13, T. 11 N., R. 24 E., half a mile above highway bridge in upper end of Wilson Canyon, 3 miles southeast of Hudson, Lyon County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 7, 1921, to September 30, 1923. Records for West Walker River at Hudson, August 3, 1914, to September 30, 1921.

GAGE.—Stevens continuous water-stage recorder on right bank; inspected by Walker River irrigation district.

DISCHARGE MEASUREMENTS.—Made by wading near gage or from bridge, half a mile below gage.

CHANNEL AND CONTROL.—Channel fairly straight. Bed of sand and fine gravel, with few rocks. Control is rock riffle 200 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage during year, 4.88 feet at 4 a. m. July 4 (discharge, 1,510 second-feet); minimum stage not recorded.

1921–1923: Maximum stage 6.35 feet at noon, June 7, 1922 (discharge, 3,530 second-feet); minimum stage, 1.09 feet December 19, 1922 (discharge, 18 second-feet).

ICE.—Stage-discharge relation usually affected by ice.

DIVERSIONS.—Below all diversions in Smith Valley. Six canals divert between gage and mouth of river with total capacity of 100 second-feet.

REGULATION.—By Poor Lake and Topaz Lake Reservoirs and irrigation.

ACCURACY.—Stage-discharge relation varied between narrow limits; affected by ice January 8–14, and February 3–8. Standard rating curve fairly well defined up to 400 second-feet; extended above. Water-stage recorder operated successfully, except as indicated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height, using shifting-control method. Discharge estimated from hydrographic comparison of all Walker River stations during periods of no gage heights. Records probably good.

COOPERATION.—One discharge measurement and gage-height record furnished by Walker River irrigation district.

Discharge measurements of West Walker River near Hudson, Nev., during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 10	R. R. Rowe	1.58	65.1	July 21	(a)	2.02	173
Jan. 30	do	1.28	34.0	Aug. 3	(a)	2.47	272
Mar. 14	do	1.24	26.3				

a Engineer, Walker River irrigation district.

Daily discharge, in second-feet, of West Walker River near Hudson, Nev., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	112	58	120	52	39	34	203	157	617	846	344	281
2	124	90	128	50	39	38	198	144	594	942	312	287
3	134	95	130	44		39	189	166	573	1,360	273	276
4	65	95	142	43		33	168	206	582	1,090	268	278
5	43	103	142	43		30	146	213	456	745	244	270
6	43	105	153	44	40	29	184	368	470	740	249	220
7	47	112	166	43		28	298	676	463	745	259	213
8	59	124	136			33	251	750	456	720	259	201
9	62	134	120		42	34	208	640	427	612	228	186
10	64	144	157		33	32	452	676	500	573	223	236
11	70	140	206	35	38	31	251	640	662	552	223	236
12	81	136	223		40	31	238	528	676	466	216	241
13	79	134	226		44	27	262	452	520	390	226	236
14	81	136	233		40	26	273	459	565	350	220	270
15	62	130	206	27	48	32	273	481	528	374	196	303
16	50	136	186	29	60	33	292	671	577	387	175	303
17	46	134	134	30	60	31	341	695	565	362	179	318
18	47	138	81	30	69	29	378	617	528	315	218	303
19	42	136	65	42	70	29	368	497	424	233	223	298
20	40	132	59	54	70	28	306	552	362	198	223	303
21	42	130	54	56	70	30	270	1,250	359	184	220	303
22	44	124	53	58	70	31	249	924	301	122	236	281
23	48	116	48	54	65	38	231	658	270	241	254	268
24	52	114	48	54	60	86	210	644	257	338	223	268
25	48	114	59	58	58	90	193	671	268	371	186	270
26	46	114	58	53	39	106	186	662	303	362	177	278
27	42	116	56	44	38	138	170	544	312	368	170	287
28	46	118	50	39	35	151	157	582	338	403	184	295
29	47	126	50	37	-------	164	142	666	374	387	244	306
30	47	128	52	34	-------	170	164	700	470	400	309	298
31	46	-------	52	34	-------	184	-------	658	-------	362	301	-------

NOTE.—Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of West Walker River near Hudson, Nev., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	134	40	60.0	3,690
November	144	58	120	7,140
December	233	48	116	7,130
January	58	----------	41.8	2,570
February	70	33	48.8	2,710
March	184	26	58.5	3,600
April	452	142	242	14,400
May	1,250	144	566	34,800
June	676	257	460	27,400
July	1,360	122	501	30,800
August	344	170	234	14,400
September	318	186	270	16,100
The year	1,360	26	228	165,000

SARONI CANAL NEAR WELLINGTON, NEV.

LOCATION.—In sec. 10, T. 10 N., R. 23 E., in canyon between Antelope and Smith Valleys, Douglas County, 1 mile below head of canal and 1 mile above Wellington, Lyon County.

RECORDS AVAILABLE.—May 26, 1920, to September 30, 1923, when the station was discontinued.

GAGE.—Vertical staff 100 feet upstream from highway bridge.

DISCHARGE MEASUREMENTS.—Made by wading or from bridge.

CHANNEL AND CONTROL.—Channel of trapezoidal cross section through earth and shale. Control is gravel section of canal.

ICE.—Stage-discharge relation affected by ice during winter.

DIVERSIONS.—None above station.

REGULATION.—By head gates.

COOPERATION.—Records furnished by Walker River irrigation district.

Canal diverts water in NW. ¼ sec. 15, T. 10 N., R. 23 E., from right bank of West Walker River for use in Smith Valley. Combined flow of Saroni Canal and West Walker River near Wellington shows quantity of water flowing from Antelope Valley.

The following discharge measurement was made by R. R. Rowe:

May 27, 1923: Discharge, 45 second-feet. Station also visited by R. R Rowe January 28 and March 14, 1923, when canal was found dry.

Monthly discharge of Saroni Canal near Wellington, Nev., for the year ending September 30, 1923

Month	Discharge in second-feet	Run-off in acre-feet, mean	Month	Discharge in second-feet	Run-off in acre-feet, mean
October	5	307	May	40	2,460
November	0	0	June	60	3,570
December	0	0	July	61.6	3,790
January	0	0	August	55.9	3,440
February	0	0	September	31.0	1,840
March	0	0	The year		15,400
April	0	0			

NOTE.—Daily discharge furnished by Walker River irrigation district from July 23 to Sept. 10. Estimates were made for rest of year by engineers for Walker River irrigation district and U. S. Geol. Survey.

HUMBOLDT-CARSON SINK BASIN

CARSON RIVER BASIN

EAST FORK OF CARSON RIVER NEAR MARKLEEVILLE, CALIF.

LOCATION.—In NE. ¼ sec. 27, T. 10 N., R. 20 E., at Hangman Bridge 2 miles east of Markleeville, Alpine County. Indian Creek enters 100 feet above gage and Markleeville Creek 1¼ miles below.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—November 13, 1910, to September 30, 1923 (not complete).

GAGE.—Vertical staff, 75 feet below bridge, bolted to rock ledge on right bank; read by W. J. Clark.

DISCHARGE MEASUREMENTS.—Made from cable 400 feet below gage or by wading.

CHANNEL AND CONTROL.—Gravel and small boulders; appear permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.30 feet June 29 (discharge, 846 second-feet); minimum stage, 2.66 feet October 17 (discharge, 67 second-feet).

1910–1923: Maximum stage recorded, 7.7 feet June 7, 1911 (discharge not determined); minimum stage, 1.45 feet September 20, 1913 (discharge, 6 second-feet).

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—No information.

REGULATION.—Low-water flow augmented by storage developed on Silver Creek above station.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Staff gage read to hundredths occasionally except during winter when no observer is at the station. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

COOPERATION.—Gage-height record furnished by United States Forest Service.

The following discharge measurement was made by Charles Leidl:
August 25, 1923: Gage height, 2.74 feet; discharge, 75 second-feet.

Daily discharge, in second-feet, of East Fork of Carson River near Markleeville, Calif., for the year ending September 30, 1923

Day	Oct.	May	June	July	Aug.	Sept.	Day	Oct.	May	June	July	Aug.	Sept.
1					146	78	16			608			
2				526	146		17	67				114	
3							18			452			72
4	85				138	85	19						
5						78	20			470			66
6						78	21			488			
7	72						22						
8	72				122		23				237		78
9	54			488			24				194		
10	71						25			608	204	77	
11							26			698			
12	72						27						
13	72						28				184		92
14	72				114		29			846			
15							30		165				
							31					92	

CARSON RIVER NEAR EMPIRE, NEV.

LOCATION.—In sec. 12, T. 15 N., R. 20 E., just below tailrace of Brunswick mill, quarter of a mile below highway bridge, and 2 miles below Empire, Ormsby County.

DRAINAGE AREA.—988 square miles (measured on topographic map).

RECORDS AVAILABLE.—June 25 to December 31, 1895; October 21, 1900, to February 3, 1923, when station was discontinued.

GAGE.—Inclined staff on left bank used since February 24, 1911.

DISCHARGE MEASUREMENTS.—Made from cable quarter of a mile above gage or by wading. When made from cable, power canal is measured and this quantity added.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders, fairly permanent. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum mean daily stage during period, 4.8 feet December 13 (discharge, 770 second-feet); minimum mean daily stage, 2.9 feet October 2 and 3 (discharge, 22 second-feet).

1900–1922: Maximum stage recorded, 8.0 feet January 23, 1914 (discharge, 5,160 second-feet); river dry August 31 and September 4, 5, and 14, 1905.

ICE.—No information.

DIVERSIONS.—A large amount of water is diverted above station for irrigation in Carson Valley. Water diverted by Brunswick mill power canal is returned to river above gage.

COOPERATION.—Records of daily discharge furnished by the United States Bureau of Reclamation.

No discharge measurements were made during the year.

Daily discharge, in second-feet, of Carson River near Empire, Nev., for the period October 1, 1922, to February 3, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Day	Oct.	Nov.	Dec.	Jan.	Feb.
1	30	81	160	285	125	16	52	160	285	200	-------
2	22	81	160	240	160	17	52	160	285	565	-------
3	22	100	125	240	160	18	52	160	240	385	-------
4	30	100	160	240	-------	19	65	160	240	335	-------
5	40	125	200	240	-------	20	65	160	240	335	-------
6	52	125	200	240	-------	21	65	160	240	285	-------
7	52	160	240	200	-------	22	65	160	240	285	-------
8	52	160	160	200	-------	23	65	160	240	240	-------
9	52	200	125	200	-------	24	81	160	240	240	-------
10	52	200	285	200	-------	25	65	160	240	240	-------
11	65	200	440	160	-------	26	65	160	240	200	-------
12	65	160	335	160	-------	27	65	160	240	200	-------
13	65	125	770	160	-------	28	65	160	285	200	-------
14	65	125	700	160	-------	29	65	160	240	160	-------
15	52	125	335	160	-------	30	65	125	240	125	-------
						31	81	-------	240	125	-------

Monthly discharge of Carson River near Empire, Nev., for the period October 1, 1922, to February 3, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	81	22	56.4	3,470
November	200	81	148	8,810
December	770	125	270	16,600
January	565	125	232	14,300
February 1–3	160	125	148	881
The period				44,100

CARSON RIVER NEAR FORT CHURCHILL, NEV.

LOCATION.—In sec. 5, T. 16 N., R. 23 E., 1 mile west of Clifton station on Mound House-Churchill branch of Southern Pacific Railroad, 9 miles west of Fort Churchill, Lyon County, and 10 miles below Dayton.

DRAINAGE AREA.—1,200 square miles (measured on topographic maps).

RECORDS AVAILABLE.—April 13, 1911, to September 30, 1923.

GAGE.—Inclined staff on right bank with vertical extension for high water.

DISCHARGE MEASUREMENTS.—Made from suspension bridge 500 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; shifts occasionally.

EXTREMES OF DISCHARGE.—Maximum mean daily stage during year, 8.5 feet May 26 (discharge, 2,170 second-feet); dry August 27 to September 30.

1911–1923: Maximum stage, 11.5 feet January 26, 1914 (discharge, 6,150 second-feet); dry August 27 to September 30, 1923.

ICE.—No information.

DIVERSIONS.—Carson and Dayton Valleys are irrigated above station.

REGULATION.—Flow affected by diversions.

COOPERATION.—Records of daily discharge furnished by United States Bureau of Reclamation.

No discharge measurements made during year.

Daily discharge, in second-feet, of Carson River, near Fort Churchill, Nev., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	37	150	304	480	360	550	450	655	1,110	620	88	
2	37	150	304	420	390	550	450	690	1,010	655	88	
3	37	173	304	420	420	550	450	725	920	655	70	
4	37	173	304	420	390	550	450	760	880	690	70	
5	37	173	332	420	360	550	450	800	840	690	70	
6	37	196	332	420	360	550	480	880	800	690	70	
7	53	196	360	390	360	515	515	1,010	840	690	53	
8	70	196	360	390	360	515	550	1,110	920	690	53	
9	70	196	360	360	332	515	585	1,280	960	655	53	
10	70	222	390	360	332	480	585	1,480	1,010	585	53	
11	70	222	450	360	304	480	620	1,480	1,110	550	53	
12	70	248	550	360	304	450	620	1,480	1,110	515	53	
13	70	248	550	332	276	420	655	1,410	1,110	480	53	
14	70	276	585	304	276	360	690	1,280	1,110	480	53	
15	70	304	585	304	248	360	725	1,280	1,060	480	37	
16	88	276	620	304	248	360	760	1,340	960	450	37	0
17	88	276	655	304	276	360	800	1,550	960	420	37	
18	88	276	690	304	304	360	840	1,770	1,010	360	22	
19	88	304	725	304	332	390	840	1,690	960	332	22	
20	88	304	725	304	332	390	840	1,550	920	304	22	
21	88	304	760	304	360	420	840	1,770	880	248	22	
22	88	304	760	332	390	450	800	2,090	800	196	22	
23	88	304	760	332	420	450	760	1,930	800	150	22	
24	107	304	760	332	450	450	690	1,850	800	150	9	
25	107	304	760	332	480	450	620	2,010	800	129	9	
26	107	304	760	332	515	450	550	2,170	760	107	9	
27	129	304	760	332	550	450	550	1,930	725	88	0	
28	129	304	760	332	550	450	550	1,620	690	88	0	
29	129	304	690	332	-------	450	585	1,340	655	88	0	
30	129	304	620	332	-------	450	620	1,280	620	88	0	
31	129	-------	550	332	-------	450	-------	1,220	-------	88	0	

Monthly discharge of Carson River near Fort Churchill, Nev., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	129	37	80.8	4,970
November	304	150	253	15,100
December	760	304	562	34,600
January	480	304	351	21,600
February	550	248	367	20,400
March	550	360	457	28,100
April	840	450	631	37,500
May	2,170	655	1,400	86,100
June	1,110	620	904	53,800
July	690	88	400	24,600
August	88	0	37.1	2,280
September	0	0	0	0
The year	2,170	0	455	329,000

MARKLEEVILLE CREEK[1] ABOVE MARKLEEVILLE, CALIF.

LOCATION.—At highway bridge above mouth of Pleasant Valley Creek, three-fourths of a mile above Markleeville, Alpine County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—November 7, 1911, to September 30, 1923 (fragmentary).

GAGE.—Vertical staff in two sections on left abutment of bridge; read by W. J. Clark. Datum of gage was raised 5.71 feet August 18, 1914.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

[1] Known locally as Hot Springs Creek.

CHANNEL AND CONTROL.—Gravel and small boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.50 feet May 14 (discharge, 185 second-feet); minimum stage recorded, 0.57 foot August 15 (discharge, 1.8 second-feet).

1911–1923: Maximum stage recorded, 3.65 feet at 4.30 p. m. June 15, 1917 (discharge, 602 second-feet); minimum stage recorded, 0.45 foot September 5, 1921 (discharge, 0.05 second-foot).

ICE.—No record obtained during winter.

DIVERSIONS.—Town ditch, which heads above the gage, furnished water for irrigation and domestic supply at Markleeville. A small ditch also diverts water for irrigation on Hot Springs ranch.

REGULATION.—No information.

ACCURACY.—Stage-discharge relation changed slightly during year. Rating curves well defined. Staff gage read to hundredths occasionally except during winter when no observer was available. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

COOPERATION.—Gage-height record furnished by United States Forest Service.

The following discharge measurement was made by Charles Leidl:
August 25, 1923: Gage height, 0.59 foot; discharge, 1.8 second-feet.

Daily discharge, in second-feet, of Markleeville Creek above Markleeville, Calif., for the year ending September 30, 1923

Day	Oct.	May	June	July	Aug.	Sept.	Day	Oct.	May	June	July	Aug.	Sept.
1						1.6	16						
2			60	36	3.8	1.6	17			36			2.0
3				32		2.5	18	2.9	160	36			2.0
4			60	25	3.0	4.5	19	2.8	135	36			
5	3.0		54	25		3.8	20	3.0		36	7.5		
6			75			2.5	21	3.0		39	8.5		
7					3.0		22			36	7.5	2.0	
8			92			2.0	23	3.0		41	7.5		
9			112	16			24		215	38			
10							25	3.0		38		1.9	
11		148	112	16			26	2.9		36			
12		135		14			27	3.1		36			
13			54	12			28	3.2			3.8		
14		185	54				29			44	4.5		
15					1.8		30	4.2		36	4.5	2.0	
							31		60		3.8		

MARKLEEVILLE CREEK AT MARKLEEVILLE, CALIF.

LOCATION.—In SE. ¼ sec. 21, T. 10 N., R. 20 E., at highway bridge at Markleeville, Alpine County, three-fourths of a mile below junction with Pleasant Valley Creek.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—November 11, 1910, to September 30, 1923 (fragmentary).

GAGE.—Vertical staff on left abutment of highway bridge near downstream end; read by W. J. Clark.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Gravel and boulders; somewhat shifting during high water. Banks are high and not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.9 feet May 15 (discharge, 552 second-feet); minimum stage recorded, 0.70 foot September 1 (discharge, 3.2 second-feet).

1910–1923: Maximum stage recorded, 5.3 feet June 15, 1912 (discharge, 915 second-feet); minimum stage recorded, 0.65 foot September 6, 1920 (discharge, 2.0 second-feet). Flood of March, 1907, reached a stage about 9 feet.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—See Markleeville Creek near Markleeville. Water is also diverted from Pleasant Valley Creek for irrigation.

REGULATION.—Diversions partly regulate flow. Some storage has been developed on Pleasant Valley Creek.

ACCURACY.—Stage-discharge relation changed slightly from that of previous year. Rating curve fairly well defined. Staff gage read to hundredths occasionally except during winter when no observer is available. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

COOPERATION.—Gage-height record furnished by United States Forest Service.

The following discharge measurement was made by Charles Leidl:
August 25, 1923: Gage height, 0.86 foot; discharge, 5.3 second-feet.

Daily discharge, in second-feet, of Markleeville Creek at Markleeville, Calif., for the year ending September 30, 1923

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1				12	3.2	16		141			
2		176	110	12		17	424			7	23
3			96			18		133			19
4		218		8.5	18	19	387				
5		218			17	20		133			12
6					17	21		150			
7						22					
8		292		7		23			29		8.5
9		292				24					
10			73			25	507	133	23	5.5	
11	387	292				26		125			
12	320					27					
13			63			28			13		12
14						29	320	125			
15	552					30				5	
						31	218				

HUMBOLDT RIVER BASIN

HUMBOLDT RIVER AT PALISADE, NEV.

LOCATION.—In sec. 36, T. 32 N., R. 51 E., at highway bridge at Palisade, Eureka County, 100 feet below Southern Pacific Railroad bridge and 1 mile above mouth of Pine Creek.

DRAINAGE AREA.—5,010 square miles (measured on Land Office maps).

RECORDS AVAILABLE.—November 27, 1920, to October 19, 1906; July 26, 1911, to September 30, 1923.

GAGE.—Chain gage at highway bridge since December 1, 1911; read daily by Mrs. Wendell Jones.

DISCHARGE MEASUREMENTS.—Made from cable about one-eighth mile above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel. Control at low stages is gravel bar 25 feet below gage; at high stages a pile bent railroad bridge about 300 feet below gage and rock riffle, a few hundred feet farther downstream become effective; both fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.24 feet June 8 (discharge, 1,450 second-feet); minimum stage, 1.26 feet October 1 (discharge, 27 second-feet).

1903–1906; 1911–1923: Maximum stage recorded, 8.6 feet at 10 a. m. March 3, 1921 (discharge, 4,300 second-feet); minimum stage, 0.86 foot, August 25 to September 18, 1919 (discharge, 9 second-feet).

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Some water diverted for irrigation in valley above canyon.

REGULATION.—Flow affected by irrigation diversions above.

ACCURACY.—Stage-discharge relation remained permanent except for ice effect January 30 to February 3. Rating curve well defined. Gage read to hundredths once daily except October 27 and February 2–12. Daily discharge ascertained by applying daily gage height to rating table except October 27 which was interpolated and for period of ice effect which was estimated from one meter measurement, weather records, and observer's notes. Records good except those for February, March, and April which are fair.

Discharge measurements of Humboldt River near Palisade, Nev., during the year ending September 30, 1923

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 23	1.84	67.5	Mar. 7	3.54	514
Jan. 21	2.40	135	8	3.91	654
22	2.11	94.6	May 14	2.94	281
22	2.26	115	June 2	4.47	925
Feb. 3	* 2.32	105			

* Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Humboldt River at Palisade, Nev., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	82	113	105	115	685	493	424	900	940	121	49
2	31	82	113	95	110	685	521	391	1,000	950	107	47
3	32	84	115	107	105	790	650	361	1,060	900	95	46
4	34	84	113	139	}	580	531	339	1,110	864	88	55
5	34	86	110	130	100	590	550	339	1,190	820	84	44
6	35	88	113	133	}	580	653	324	1,350	800	78	46
7	36	91	115	139	}	475	663	331	1,350	708	74	44
8	38	95	115	150	}	621	674	317	1,450	674	70	40
9	39	107	118	133	}	696	685	303	1,280	590	64	43
10	41	118	118	136	75	560	696	303	1,300	541	62	40
11	43	121	121	146	}	560	708	303	1,360	503	60	41
12	47	124	127	153	}	512	674	283	1,420	466	55	39
13	55	124	133	150	74	475	653	277	1,430	416	59	38
14	57	121	146	136	80	424	601	257	1,400	383	59	36
15	59	118	157	144	102	383	580	228	1,350	361	57	35
16	60	118	153	153	100	368	590	217	1,200	339	52	35
17	64	115	146	173	97	399	580	206	1,240	290	50	34
18	66	113	139	146	97	383	560	228	1,220	267	49	36
19	66	110	133	146	113	376	541	251	1,190	239	50	39
20	64	115	124	130	173	416	521	290	1,180	222	53	39
21	62	121	102	128	303	407	531	493	1,180	206	55	40
22	64	118	95	114	541	407	521	663	1,180	191	55	39
23	66	115	84	146	541	449	512	653	1,310	178	52	39
24	68	115	93	161	642	424	512	621	1,200	182	47	40
25	70	113	95	153	766	416	512	719	1,130	182	46	40
26	72	110	100	143	601	391	503	810	1,190	165	44	50
27	74	107	113	133	458	399	484	820	1,300	165	43	62
28	76	110	121	127	531	449	475	778	1,250	161	43	64
29	78	110	143	121	-------	424	458	708	1,060	146	41	70
30	80	110	133	120	-------	458	449	730	1,030	143	49	72
31	80	-------	115	120	-------	493	-------	820	-------	133	47	-------

NOTE.—Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Humboldt River at Palisade, Nev., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	80	27	55.4	3,410
November	124	82	108	6,430
December	157	84	120	7,380
January	173	95	136	8,360
February	766		225	12,500
March	790	376	493	30,300
April	708	449	566	33,700
May	820	206	445	27,400
June	1,450	900	1,230	73,200
July	950	133	423	26,000
August	121	41	61.6	3,790
September	72	34	44.7	2,660
The year	1,450	27	325	235,000

HUMBOLDT RIVER AT BATTLE MOUNTAIN, NEV.

LOCATION.—In SE. ¼ sec. 8, T. 32 N., R. 45 E., 700 feet below Licking Dam and 1 mile northeast of Battle Mountain, Lander County, Nev.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 1, 1896, to December 31, 1897; March 1, 1921, to July 15, 1923.

GAGE.—Low and high water enamel vertical staff gages on right bank; installed March 2, 1921; read by William Licking once or twice daily.

DISCHARGE MEASUREMENTS.—From highway bridge 1,600 feet above gage or by wading.

CHANNEL AND CONTROL.—Channel crooked with several sloughs carrying water around gage at high water. Bed of gravel. Control is gravel riffle 300 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 7.53 feet June 24 (discharge, 1,070 second-feet); minimum stage, not recorded.

1921–1923: Maximum discharge recorded, 1,560 second-feet June 19 and 20, 1921, and May 11–13, 1922; minimum stage, 0.37 foot at 11.40 a. m. on September 30, 1921 (discharge by current-meter measurement, 7 second-feet).

ICE.—Stage-discharge relation usually affected by ice.

DIVERSIONS.—Extensive diversions above and below gage.

REGULATION.—By irrigation, especially by Licking Dam.

ACCURACY.—Stage-discharge relation shifting; affected by ice January 30 to February 24. Standard rating curve well defined. Staff gage read to hundredths once or twice a day, except as indicated in footnote to daily-discharge table. Daily discharge ascertained by applying mean daily gage height to rating table using shifting-control method. Discharge estimated for periods of ice effect and days of no gage-height record by hydrographic comparison with Humboldt River at Comus. Records fair.

Discharge measurements of Humboldt River at Battle Mountain, Nev., during the year ending September 30, 1923

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 22	0.74	38.1	Mar. 23	4.28	416
Jan. 23	2.04	189	May 2	2.56	184
Feb. 3	[a] 1.59	94.0	31	3.44	318

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Humboldt River at Battle Mountain, Nev., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1	18	55	109	157	110	466	517	177	347	835
2	17	56	112	155	100	487	531	178	408	819
3	17	59	112	150	94	502	537	175	452	795
4	17	59	113	152	}	397	563	175	482	745
5	17	61	115	149		521	578	164	544	719
6	17	61	115	149		575	596	55	600	675
7	17	59	118	146		521	691	38	695	663
8	18	64	115	145		487	761	}	751	635
9	19	66	118	140		475	791		795	590
10	19	70	116	140		631	741		839	555
11	20	71	123	152		596	657		895	540
12	22	73	122	157		552	612		931	475
13	24	75	131	156		521	554	}	970	422
14	25	77	143	156	} 90	382	496	20	995	363
15	27	80	152	156		472	478		1,010	339
16	28	87	166	157		460	469		1,010	-------
17	29	88	164	157		442	466		988	-------
18	29	90	160	158		412	463		1,010	-------
19	29	92	156	158		397	470		1,030	-------
20	30	92	153	158		412	448	200	1,040	-------
21	30	94	152	156		406	438	273	1,060	-------
22	34	96	150	154		412	430	203	1,060	-------
23	29	96	153	171		415	424	172	1,070	-------
24	33	98	153	152	}	418	415	176	1,070	-------
25	35	100	147	152	211	421	415	180	1,060	-------
26	36	94	148	149	412	427	404	184	1,020	-------
27	38	94	148	147	537	427	257	275	935	-------
28	39	95	148	147	472	433	233	299	925	-------
29	41	100	152	147	-------	436	123	336	915	-------
30	42	102	154	140	-------	445	315	324	879	-------
31	43	-------	152	120	-------	521	-------	327	-------	-------

NOTE.—No gage-height record May 8–19 and 25. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Humboldt River at Battle Mountain, Nev., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre feet
	Maximum	Minimum	Mean	
October	43	17	27.1	1,670
November	102	55	80.1	4,770
December	166	109	138	8,480
January	171	120	151	9,280
February	537	-------	[a]137	7,610
March	631	382	467	28,700
April	791	123	496	29,500
May	336	-------	134	8,240
June	1,070	347	860	51,200
July 1–15	835	339	611	18,200
The period	-------	-------	-------	168,000

[a] Estimated.

HUMBOLDT RIVER AT COMUS, NEV.

LOCATION.—In NW. ¼ sec. 14, T. 36 N., R. 41 E., at Comus, Humboldt County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—September 25, 1917, to June 30, 1923, when station was discontinued.

GAGE.—Inclined staff on left bank 160 feet above Southern Pacific section house, established September 25, 1917; read by Charles Helton.

DISCHARGE MEASUREMENTS.—Made from cable or by wading near gage.

CHANNEL AND CONTROL.—Bed composed of fine gravel and sand. Low-water control is gravel bar 150 feet downstream.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 6.3 feet June 22 (discharge, 910 second-feet); minimum stage, 1.9 feet, October 2–13 (discharge, 8 second-feet).

1918–1923: Maximum stage recorded, 10.9 feet June 24 to 26, 1921 (discharge, 2,700 second-feet); no flow during periods in 1918, 1919, and 1920.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Water is diverted all along river both above and below this station. Practically all flow during irrigation season is seepage.

REGULATION.—None except by diversion.

ACCURACY.—Stage-discharge relation shifting; affected by ice January 21 to February 24. Rating curves fairly well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table; shifting-control method used November 1 to January 20. Discharge estimated for ice-affected period from four discharge measurements, temperature records, and hydrographic comparison with discharge at Battle Mountain. Records fair.

Discharge measurements of Humboldt River at Comus, Nev., during the year ending September 30, 1923

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 22	2.00	12.4	Feb. 2	[a] 2.80	125
Jan. 24	[a] 2.78	151	Mar. 10	4.47	511
Feb. 2	[a] 3.06	117	May 3	2.72	172
2	[a] 2.86	127	31	1.80	32.7

[a] State-discharge relation affected by ice.

Daily discharge, in second-feet, of Humboldt River at Comus, Nev., for the period October 1, 1922, to June 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	9	18	76	110	123	442	460	223	28
2	8	18	76	105	123	472	484	200	32
3	8	19	77	100		496	496	170	43
4	8	19	71	101		500	500	159	68
5	8	20	72	102		510	500	130	75
6	8	20	66	110		516	500	122	97
7	8	21	68	111		510	496	113	204
8	8	23	62	113		520	500	97	223
9	8	25	63	114		550	500	68	261
10	8	27	63	116		512	496	49	420
11	8	29	64	121		512	490	43	460
12	8	29	70	126		516	484	41	480
13	8	31	77	127		520	490	41	500
14	9	32	83	128	100	540	500	41	520
15	9	34	124	130		530	498	41	560
16	10	36	139	134		520	496	40	580
17	12	39	157	136		516	340	38	636
18	12	39	165	142		500	340	32	650
19	12	40	138	144		480	320	29	660
20	12	42	138	145		440	300	28	680
21	12	45	141	146		430	300	26	885
22	12	45	142	148		426	320	23	910
23	12	50	145	150		420	360	22	883
24	12	55	145	151		430	320	20	835
25	14	61	147		223	440	296	16	822
26	14	61	147		344	440	280	13	785
27	14	62	133	130	420	438	270	10	772
28	15	64	126		430	438	261	13	760
29	15	69	120		----------	440	261	16	750
30	15	69	114		----------	436	252	20	736
31	16	----------	116		----------	436	----------	28	----------

NOTE.—Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Humboldt River at Comus, Nev., for the period October 1, 1922, to June 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	16	8	10.7	658
November	69	18	38.1	2,270
December	165	62	107	6,580
January	----------	----------	126	7,750
February	430	----------	[a] 138	7,660
March	550	420	480	29,500
April	500	252	404	24,000
May	223	10	61.7	3,790
June	910	28	510	30,300
The period	----------	----------	----------	113,000

[a] Estimated.

HUMBOLDT RIVER NEAR LOVELOCK, NEV.

LOCATION.—In NW. ¼ sec. 11, T. 25 N., R. 31 E., 1,500 feet below dam and reservoir on Big 5 ranch, and 9 miles south of Lovelock, Pershing County.

DRAINAGE AREA.—14,200 square miles (measured on General Land Office maps).

RECORDS AVAILABLE.—February 7, 1912, to September 30, 1923, fragmentary.

GAGE.—Lietz water-stage recorder on right bank since October 10, 1921; inspected by H. F. Sommer.

DISCHARGE MEASUREMENTS.—Made from cable at gage or by wading.

CHANNEL AND CONTROL.—Bed is composed of firm clay. Control fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year not recorded. River dry during greater part of year.

1912–1923: Maximum stage recorded, 5.90 feet May 29 and 30, 1922 (discharge, 1,700 second-feet); stream dry for periods in nearly every year.

ICE.—Seldom affected by ice.

DIVERSIONS.—Below all irrigation diversions.

REGULATION.—Flow affected by irrigation diversions and storage.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve well defined. Water-stage recorder operated spasmodically. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph or staff gage readings. Records fair.

Discharge measurements of Humboldt River near Lovelock, Nev., during the year ending September 30, 1923

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Feb. 1	[a] 1.96	27.7	Mar. 19	2.51	398
Mar. 12	2.04	265	May 4	.41	[b] 3

[a] Stage-discharge relation affected by ice. [b] Estimated.

Daily discharge, in second-feet, of Humboldt River near Lovelock, Nev., for the year ending September 30, 1923

Day	Feb.	Mar.	Apr.	July	Day	Feb.	Mar.	Apr.	July
1	28		167	203	16				
2			160	203	17				
3			121	203	18		395		
4			10	167	19		398		
5				128	20		383		
6				88	21		386		
7				48	22		383		
8				8	23	228	380		
9				4	24		377		
10					25		377		
11		249			26		377		
12		265			27				
13					28				
14					29				
15					30				
					31				

NOTE.—No record Dec. 26 to Jan. 6, Jan. 8–31; Feb. 2–22, 24–28, Mar. 1–10, 13–17, 27–31, and June 27–30. Observer reports river was dry or was flowing less than 1 second-foot Oct. 1 to Dec. 25, Jan. 7, Apr. 5 to June 26, and July 10 to Sept. 30.

Monthly discharge of Humboldt River near Lovelock, Nev., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	0	0	0	0
November	0	0	0	0
December		0		
January		0		
April	167	0	15.3	910
May	0	0	0	0
June		0		
July	203	0	33.9	2,080
August	0	0	0	0
September	0	0	0	0

NOTE.—See footnote to daily-discharge table.

STARR CREEK NEAR DEETH, NEV.

LOCATION.—In NE. ¼ sec. 12, T. 36 N., R. 59 E., at highway bridge 2 miles above mouth and 3 miles southeast of Deeth, Elko County; below all large tributaries, except Boulder Creek.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—June 4, 1913, to September 30, 1923.

GAGE.—Vertical enamel staff nailed to upstream pile of bridge bent near right bank; read by G. E. Weathers.

DISCHARGE MEASUREMENTS.—Made by wading or from bridge.

CHANNEL AND CONTROL.—Bed composed of small gravel. Control is gravel bar; shifts occasionally. One channel, except at extremely high stages, when part of the flow passes under an auxiliary bridge.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.70 feet June 12 (discharge, 218 second-feet); minimum stage not recorded.

1913–1923: Maximum stage recorded, 4.65 feet June 9, 1921 (discharge, 391 second-feet); minimum stage, 0.80 foot July 8 to August 7, 1919 (discharge, 0.5 second-foot).

ICE.—Stage-discharge relation generally affected by ice.

DIVERSIONS.—Station is below practically all diversions from Starr Creek.

REGULATION.—Some variation in daily flow at times caused by diversions for irrigation.

ACCURACY.—Stage-discharge relation changed during high water about April 6 and also August 8 and 29, when gravel was removed from control; affected by ice December 8–11 and January 31 to February 17. Rating curve used to April 6 well defined; curves used April 7 to August 28 poorly defined; and that used August 29 to September 30, well defined. Staff gage read to half-tenths three or four times a week during low water, and daily during high water. Daily discharge ascertained by applying daily gage height to rating table. Discharge interpolated for days of no gage height, except during periods of ice affect when discharge was estimated from observer's notes and temperature records. Records fair except for August, which may be poor.

Discharge measurements of Starr Creek near Deeth, Nev., during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 1	R. R. Rowe	1.53	3.5	Apr. 11	R. R. Rowe	1.88	20.0
1	do	1.53	4.1	May 10	do	1.89	20.4
Jan. 12	do	1.71	7.4	Sept. 28	W. E. Dickinson	1.29	12.6

Daily discharge, in second-feet, of Starr Creek near Deeth, Nev., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4	5	7	7		9	11	18	135	144	10	9
2	4	5	7	7		7	11	18	91	130	8	8
3		6	7	7		9	11	18	114	120	7	6
4		6	7	7		7	11	15	91	110	7	9
5		6		7		7	14	18	102	110	7	6
	4											
6		6		7		7	62	15	126	91	7	6
7		7		7		7	27	18	132	96	7	9
8		7	7	7		8	18	21	126	96	7	6
9	4	7		7		7	18	24	150	80	6	6
10	4	7		7	6	6	18	21	176	60	6	6
11	4	6		9		7	21	18	190	46	6	8
12	4	6	7	7		7	24	15	218	42	6	6
13	5	6	6	7		6	18	21	190	40	6	6
14	4	6	6	7		7	18	18	163	38	6	6
15	4	6	7	7		6	18	18	150	34	6	6
16	5	6	7	7		7	18	24	144	30	7	6
17	5	7	7	7		7	20	42	126		7	6
18	5	7	7	7		7	21	50	120	25	7	6
19	5	7	7	7	6	7	18	60	126		7	6
20	5	7	7	7	5	7	18	55	114	24	7	6
21	5	7	7	7	6	7	21	144	126	24	7	7
22	5	7	7	7	6	7	18	80	144	21	7	8
23	5	7	7	7	6	7	18	38	126	20	6	9
24	5	7	7	6	7	7	20	60	132	30	6	11
25	5	7	7	6	6	9	21	80	126	60	6	12
26	5	7	7	6	7	7	21	114	126	27	6	12
27	5	6	7	7	6	7	24	91	126	23	6	13
28	5	7	7	6	7	7	24	91	138	19	8	13
29	5	7	7	6	-------	7	21	80	138	14	11	13
30	5	7	7	7	-------	9	21	80	132	12	11	13
31	5	-------	7	7	-------	9	-------	176	-------	10	10	-------

NOTE.—Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Starr Creek near Deeth, Nev., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October			4.5	277
November	7	5	6.5	387
December			6.9	424
January	9	6	6.9	424
February			6.1	339
March	9	6	7.2	443
April	62	11	20.1	1,200
May	176	15	49.7	3,060
June	218	91	137	8,150
July	144	10	52.5	3,230
August	10	6	7.1	437
September	13	6	8.1	482
The year	218		26.0	18,900

MARYS RIVER NEAR DEETH, NEV.

LOCATION.—In NW. ¼ sec. 31, T. 40 N., R. 60 E., at bridge 300 feet east of Mala Vista ranch house of Nevada Land & Livestock Co. and 19 miles north of Deeth, Elko County.

DRAINAGE AREA.—355 square miles (measured on map of Nevada issued by General Land Office, edition of 1908).

RECORDS AVAILABLE.—November 24, 1902, to July 14, 1903; January 17, 1912, to September 30, 1923.

GAGE.—Chain gage on upstream side of bridge, replaced by vertical staff on right bank to different datum April 12, 1923; read by Herbert Clayton.

DISCHARGE MEASUREMENTS.—Made from bridge at gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and loose sand; banks below gage subject to caving. Rock and gravel control 25 feet below gage, slightly shifting. Point of zero flow at gage height 1.5 feet, determined October 2, 1922.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year 4.90 feet May 18 and 19 (discharge, 223 second-feet); minimum discharge, 3 second-feet October 1, September 10–14, 19, and 20.

1912–1923: Maximum stage recorded, 7.70 feet at 2 p. m. May 8, 1922 (discharge, 616 second-feet). River frozen solid about January 21 to February 9, 1922; no discharge.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Station is below all diversions, except one small ditch on the Mala Vista ranch and the Cross ranch diversions about 12 miles below.

REGULATION.—During low-water periods flow is affected by diversions above.

ACCURACY.—Stage-discharge relation changed slightly during winter; affected by ice January 10 to February 28. Rating curves well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table, using shifting-control method March 1 to April 11. For period of ice effect discharge estimated from weather records, observer's notes, and two discharge measurements. Records fair.

Discharge measurements of Marys River near Deeth, Nev., during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 2	R. R. Rowe	2.13	3.8	Apr. 12	R. R. Rowe	[c] 3.48	78.
2	do	2.13	3.9	May 10	do	[d] 4.44	172
Jan. 11	do	[a] 2.30	12.2	Sept. 28	W. E. Dickinson	2.34	6.5
12	do	[b] 2.36	9.4				

[a] Slight ice effect, if any.
[b] Anchor ice on control.
[c] New staff gage reading. Chain gage reading, 3.40 feet.
[d] Chain gage reading, 4.44 feet.

Daily discharge, in second-feet, of Marys River near Deeth, Nev., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3	6	7	7		28	92	94	146	71	11	9
2	4	6	7	9		29	92	98	146	66	10	8
3	4	7	7	8		29	82	98	136	62	8	7
4	4	7	7	7		36	74	107	126	54	8	6
5	4	7	7	6		29	64	116	116	50	8	6
6	4	7	7	7		29	73	136	107	42	7	6
7	4	7	8	9		29	81	146	98	38	7	6
8	4	7	8	9	10	36	72	162	107	54	7	5
9	4	6	8	10		42	63	167	116	54	6	4
10	4	6	9			37	63	175	126	46	6	3
11	4	6	8			29	66	189	126	46	6	3
12	4	5	9			28	88	189	136	46	5	3
13	4	4	10			30	116	189	146	45	6	3
14	4	4	10			33	107	178	136	45	6	3
15	5	4	11			31	116	189	116	42	6	4
16	5	5	12			33	136	200	126	38	6	4
17	5	5	14			36	136	200	116	36	6	4
18	5	5	13			41	116	223	116	33	5	4
19	6	5	14			48	107	223	112	32	6	3
20	6	5	14	10		38	116	211	107	24	6	3
21	6	5	13			35	126	211	102	20	6	4
22	6	5	12		20	27	136	200	98	18	6	4
23	6	5	10			23	146	189	94	19	6	4
24	6	4	9			25	136	200	89	19	5	4
25	7	5	9			46	126	200	89	22	5	4
26	7	5	7			38	116	211	84	20	4	6
27	7	6	7			25	107	189	80	18	4	7
28	7	5	7			45	98	178	80	16	4	7
29	7	5	7			52	89	167	76	14	4	7
30	7	6	7			67	89	156	76	14	4	7
31	7		7			75		156		14	11	

NOTE.—Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Marys River near Deeth, Nev., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	7	3	5.2	320
November	7	4	5.5	327
December	14	7	9.2	566
January	----------	6	[a] 9.4	578
February	----------	----------	[a] 14.6	811
March	75	23	36.4	2,240
April	146	63	101	6,010
May	223	94	172	10,600
June	146	76	111	6,600
July	71	14	36.1	2,220
August	11	4	6.3	387
September	9	3	4.9	292
The year	223	3	42.8	31,000

[a] Estimated.

LAMOILLE CREEK NEAR LAMOILLE, NEV.

LOCATION.—In sec. 6, T. 32 N., R. 58 E., 50 feet below tailrace of Elko-Lamoille Power Co.'s plant, 2 miles above Lamoille, and 22 miles southeast of Elko, Elko County.

DRAINAGE AREA.—14 square miles (measured on maps issued by United States Forest Service).

RECORDS AVAILABLE.—May 8, 1915, to June 12, 1923, when station was discontinued.

GAGE.—Vertical staff on right bank installed July 4, 1917; read by an employee of Elko-Lamoille Power Co.

DISCHARGE MEASUREMENTS.—Made from bridge 500 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and large boulders. Control composed of boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period, 2.8 feet June 11 (discharge, 352 second-feet). Minimum stage not recorded.

1915–1923: Maximum stage probably occurred in June 1917, when gage was washed out (discharge probably exceeded 500 second-feet); minimum discharge, 1 second-foot at 7 p. m. January 24, 1918.

ICE.—Stage-discharge relation affected by ice about every winter.

DIVERSIONS.—Above all irrigation diversions. Water is diverted for Elko-Lamoille Power Co.'s plant, but returned to stream about 50 feet above gage.

REGULATION.—A daily fluctuation occurs on days when power plant is not in continuous operation.

ACCURACY.—Stage-discharge relation changed for low water on November 14, when rocks were placed on control; probably slightly affected by ice at times during winter. Rating curves well defined. Gage read to hundredths twice daily. Daily discharge determined by applying mean daily gage height to rating table. Records fair.

Discharge measurements of Lamoille Creek near Lamoille, Nev., during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 1	R. R. Rowe	0.43	4.5	Apr. 10	R. R. Rowe	0.61	7.2
1	do	.42	4.4	May 11	do	1.51	104
Jan. 13	do	.44	3.5	Sept. 29	W. E. Dickinson	----------	9.5

Daily discharge, in second-feet, of Lamoille Creek near Lamoille, Nev., for the period October 1, 1922, to June 12, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	5	5					6	17	109
2	5	4					5	19	100
3	4	5					6	21	101
4	4	4					5	25	103
5	4	4					6	38	117
6	4	4					7	50	119
7	4	4					7	64	134
8	4	5					7	80	154
9	4	4					7	96	171
10	4	5					7	109	229
11	4	4					8	109	289
12	4	4					8	109	285
13	5	4					9	100	-------
14	4						9	95	-------
15	4		4	4	3	4	9	109	-------
16	4						10	124	-------
17	4						11	138	-------
18	5						12	169	-------
19	4						12	169	-------
20	5						12	156	-------
21	4	4					13	145	-------
22	4						13	136	-------
23	5						13	154	-------
24	5						13	200	-------
25	4						14	229	-------
26	5						14	180	-------
27	4						15	163	-------
28	4						17	156	-------
29	4				-------	4	17	131	-------
30	4				-------	5	17	117	-------
31	4	-------			-------	6	-------	124	-------

NOTE.—Power plant shut down for part of every day from November 21 to March 28; discharge estimated. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Lamoille Creek near Lamoille, Nev., for the period October 1, 1922, to June 12, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	5	4	4.3	264
November	5	----------	4.1	244
December	----------	----------	4	246
January	----------	----------	4	246
February	----------	----------	3	167
March	6	----------	4.1	252
April	17	5	10.3	613
May	229	17	114	7,010
June 1–12	289	100	159	3,790
The period	----------	----------	----------	12,800

SECRET CREEK NEAR HALLECK, NEV.

LOCATION.—In NE. ¼ NW. ¼ sec. 1, T. 34 N., R. 59 E., at Ryan ranch, 500 feet from Secret Pass highway; half a mile below mouth of Doisey Creek; 12 miles above confluence with Lamoille Creek; and 15 miles southeast of Halleck, Elko County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 28, 1917, to September 30, 1923.

GAGE.—Vertical staff on right bank, 75 feet below lower fence on Ryan ranch; read by J. M. Ryan.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; one channel, except at extremely high stages when water runs through shallow overflow channel on right bank. Control is coarse gravel bar which is fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.70 feet, June 21 (discharge, 105 second-feet); minimum discharge, 2 second-feet during first part of October.

1917–1923: Maximum stage recorded, 3.65 feet at 5 a. m. April 23, 1921 (discharge, 375 second-feet); minimum discharge probably zero during August and September, 1919.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Station is below Secret Valley and Ryan ranch diversions; the "71" ranch diverts water 4 to 6 miles below.

REGULATION.—Flow affected by irrigation diversions above.

ACCURACY.—Stage-discharge relation changed about April 10. Rating curves fairly well defined. Staff gage read to hundredths once or twice a day during high water and four or five times a week during low water, except October 1 to November 8 and February 1–11. Daily discharge ascertained by applying mean daily gage height to rating table, and interpolating or estimating for days or periods of no gage heights. Records fair.

Discharge measurements of Secret Creek near Halleck, Nev., during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 1	R. R. Rowe	0.47	2.4	May 10	R. R. Rowe	1.09	37.3
1	do	.47	2.2	Sept. 28	W. E. Dickinson	.62	7.2
Jan. 12	do	.59	4.7	28	do	.64	7.8
Apr. 11	do	1.01	31.0				

Daily discharge, in second-feet, of Secret Creek near Halleck, Nev., for the year ending September 30, 1923

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

NOTE.—Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Secret Creek near Halleck, Nev., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	----------	----------	2.5	154
November	7	----------	4.6	274
December	5	3	4.1	252
January	5	4	4.5	277
February	5	----------	3.9	217
March	37	4	8.6	529
April	64	19	37.0	2,200
May	69	32	39.9	2,450
June	80	15	47.1	2,800
July	14	4	6.4	394
August	17	3	4.4	271
September	8	3	3.5	208
The year	80	----------	13.8	10,000

MAGGIE CREEK AT CARLIN, NEV.

LOCATION.—In sec. 26, T. 33 N., R. 52 E., 700 feet above highway bridge, half a mile above confluence with Humboldt River, and half a mile east of Carlin, Elko County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—June 6, 1913, to June 10, 1922; and April 1 to September 30, 1923.

GAGE.—Vertical staff on right bank 800 feet above Pacific Fruit Express Co.'s dam; installed September 22, 1917; read by Aurora Pruett. Installed to new datum May 19, 1922.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; shifts occasionally.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.08 feet May 22 (discharge, 73 second-feet); minimum discharge, 3 second-feet, occurred during parts of August and September.

1913–1923: Maximum stage recorded, 4.3 feet May 7, 1922 (discharge, 800 second-feet); no flow July 22 to October 24, 1919, and July 15 to October 19, 1920.

ICE.—Stage-discharge relation slightly affected by ice.

DIVERSIONS.—Some diversion for irrigation above.

REGULATION.—By irrigation diversions above.

ACCURACY.—Stage-discharge relation permanent during period. Rating curve fairly well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

Discharge measurements of Maggie Creek at Carlin, Nev., during the year ending September 30, 1923

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 23	1.21	2.3	Mar. 7	1.38	11.5
Jan. 21	1.17	3.8	May 2	1.59	27.9
Feb. 3	1.32	8.7	June 2	1.70	35.1

Daily discharge, in second-feet, of Maggie Creek at Carlin, Nev., for the year ending September 30, 1923

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	43	34	41	11	4	3	16	52	41	16	4	4	3
2	47	27	36	9	4	3	17	58	50	15	4	4	3
3	47	27	36	9	4	3	18	61	50	13	4	5	3
4	39	25	33	9	4	4	19	61	45	13	4	4	3
5	38	28	36	9	4	4	20	47	43	14	4	4	3
6	62	29	41	7	4	3	21	52	60	19	4	4	3
7	62	43	50	7	4	3	22	48	73	19	4	4	3
8	52	47	41	6	3	3	23	47	60	20	4	4	3
9	50	50	33	6	3	3	24	38	50	19	4	4	3
10	52	50	33	7	3	3	25	34	50	15	4	4	3
11	52	50	25	9	3	3	26	27	41	13	4	4	4
12	52	43	25	7	4	3	27	34	45	13	4	3	5
13	60	41	25	6	4	3	28	27	43	13	4	3	4
14	58	41	19	5	9	3	29	47	43	13	4	3	3
15	56	38	19	5	9	3	30	27	41	11	4	3	3
							31	------	41	------	4	3	------

Monthly discharge of Maggie Creek at Carlin, Nev., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April	62	27	47.7	2,840
May	73	25	43.5	2,670
June	50	11	24.0	1,430
July	11	4	5.7	350
August	9	3	4.1	252
September	5	3	3.2	190
The period				7,730

ROCK CREEK NEAR BATTLE MOUNTAIN, NEV.

LOCATION.—In NE. ¼ sec. 17, T. 34 N., R. 48 E., at mouth of canyon below all tributaries; half a mile above highway bridge on Overland Trail, in Eureka County, 25 miles northeast of Battle Mountain, Lander County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 26, 1918, to September 30, 1923.

GAGE.—Stevens continuous water-stage recorder on left bank, installed March 26, 1918; inspected by Frank Eads.

DISCHARGE MEASUREMENTS.—Made by wading near gage or from highway bridge half a mile downstream.

CHANNEL AND CONTROL.—Banks high and not subject to overflow. Stream bed composed of gravel and boulders. Principal control is rock riffle 50 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage during year, 2.82 feet at 7 a. m. April 7 (discharge, 292 second-feet); no flow during part of July and August.

1918–1923: Maximum stage, from water-stage recorder. 5.54 feet at 1 a. m. February 11, 1921 (discharge, 2,240 second-feet); creek dry during long periods from July to October practically every year.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—There are diversions in valley above canyon. Station is above all diversions in Boulder Flat and is below all tributaries.

REGULATION.—A small reservoir in Squaw Valley about 30 miles upstream may affect run-off to some extent.

ACCURACY.—Stage-discharge relation permanent; affected by ice during winter. Rating curve well defined. Operation of water-stage recorder satisfactory except as stated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. Records fair.

Discharge measurements of Rock Creek near Battle Mountain, Nev., during the year ending September 30, 1923

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 23	0.99	1.9	May 2	1.50	25.5
Jan. 23	a 1.11	3.8	May 31	1.65	36.1
Mar. 9	1.70	44.5			

a Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Rock Creek near Battle Mountain, Nev., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Sept.
1		1					115	37	40	16	
2		1					90	27	35	14	
3		2					65	25	30	16	
4		2					52	24	27	13	
5		2				15	49	19	32	10	
6		2					150	12	27	10	
7		1					240	11	29	8	
8		1			5		114	16	30	8	
9		1				42	87	17	27	9	
10		1				22	76	12	21	8	
11		1				19	77	13	17	8	
12	1	1		4		19	90	16	14	8	
13		2				17	101	21	14	8	
14		2				10	90	19	12	13	
15		2				12	76	19	10	13	
16		2	2			14	74	17	17	10	2
17		1				16	81	21	16	8	
18		1				16	90	32		6	
19		2				22	76	32		1	
20		1				33	70	36		-------	
21		2				22	68	42		-------	
22		2			10	17	73	57		-------	
23	2	2		4		16	67	55		-------	
24	2	2				20	64	43	15	-------	
25	2	2				36	64	34		-------	
26	2	2				41	65	30		-------	
27	2	2		4		70	63	32		-------	
28	2	1				85	53	32		-------	
29	2	1			-------	84	47	32		-------	
30	2	1			-------	84	45	30	15	-------	
31	2	-------			-------	89	-------	37	-------	-------	-------

NOTE.—No gage-height record and discharge estimated Oct. 1–22, Dec. 1 to Mar 7, Apr. 6, June 18–29, and Sept. 1–30. No flow July 20 to Aug. 31. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Rock Creek near Battle Mountain, Nev., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	2		1.3	80
November	2	1	1.5	89
December			2.0	123
January			4.0	246
February			7.3	405
March	89		29.9	1,840
April	240	45	82.4	4,900
May	57	11	27.4	1,680
June	40		19.8	1,180
July	16	0	6.0	369
August			0	0
September			2.0	119
The year	240	0	15.2	11,000

LITTLE HUMBOLDT RIVER NEAR PARADISE VALLEY, NEV.

LOCATION.—In NE. ¼ sec. 19, T. 41 N., R. 41 E., 300 feet south of Humboldt Hot Springs, 40 miles northeast of Winnemucca, and 11 miles southeast of Paradise Valley, Humboldt County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 1, 1921, to September 30, 1923.

GAGE.—Stevens continuous water-stage recorder on right bank, installed October 2, 1921; inspected by G. S. Reed.

DISCHARGE MEASUREMENTS.—Made by wading or from bridge 4 miles above gage.

CHANNEL AND CONTROL.—Bed composed of firm sand and clay. Control is shale ledge 40 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage during year, 4.35 feet at 7 p. m. February 20 (discharge, 52 second-feet); minimum discharge, 7 second-feet October 16–21; may have been less in July.

1922 and 1923: Maximum stage, 9.30 feet at 8 a. m. May 8, 1922 (discharge, 331 second-feet); minimum discharge, that of October 16–21, 1922.

ICE.—Stage-discharge relation seldom affected by ice.

DIVERSIONS.—Above all diversions in Paradise Valley. Bull Head ranch diverts in valley above.

REGULATION.—Affected by Bull Head irrigation diversion.

ACCURACY.—Stage-discharge relation changed several times during year. Standard rating curve fairly well defined. Operation of water-stage recorder satisfactory, except as stated in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph or staff gage readings. Discharge for days of missing gage height interpolated. Records fair.

Discharge measurements of Little Humboldt River near Paradise Valley, Nev., during the year ending September 30, 1923

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 5	2.97	10.2	May 5	3.10	15.9
Jan. 25	3.05	16.2	30	3.78	29.7
Mar. 22	3.18	20.2			

Daily discharge, in second-feet, of Little Humboldt River near Paradise Valley, Nev., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		9			16	33	25	15	34	24		
2		9			16	34	28	15	33	19	8	
3	10	9		15		38	30	15	32	21		
4		9				34	26	15	29	23	8	11
5	10	9				28	28	15	27	22		
6	10	9		15		30	28	15	26	20		
7	9	10		16		29	34	15	27	20		11
8	9	11		15		29	42	15	28	18		
9	9	11	13	14		32	37	16	29	18		
10	8	11		13		33	32	17	28			
11	8	12		13	20	30	24	17	24	13		
12	8	12		13		30	20	18	17			
13	8	12		12		29	21	20	16	8		
14	8	11		12		28	19	20	14			
15	8	11		12			21	19	13			
16	7	11		13			22	19	13			
17	7	11	14	13			22	18	13		8	12
18	7	12	14	14		25	20	19	19			
19	7		14	16			20	18	30			
20	7		14	15	26		22	20	30	7		
21	7		14	15	26		21	22	33			
22	8		14	16	34	20	19	23	44			
23	8		14	16	38	20	20	24	37			
24	8	12	14	17	36	19	17	24	37			
25	8		14	16	37	20	16	23	35			
26	8			17	41	20	15	21	35			
27	8			16	40	20	15	22	35	8		
28	8			16	37	20	15	21	33			14
29	8		14	16		20	15	21	32	8		
30	8			16		22	15	31	27			
31	9			16		24		38			11	

NOTE.—No gage-height record and discharge estimated Oct. 1–4, Nov. 19 to Dec. 16, Dec. 26 to Jan. 5, Feb. 3–19, Mar. 15–21, July 10–12, 14–26, 28–31, Aug. 1–3, 5–30, Sept. 1–6, 8–28, and 30. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Little Humboldt River near Paradise Valley, Nev., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October		7	8.3	510
November		9	11.1	660
December			13.5	830
January	17	12	14.8	910
February	41		24.5	1,360
March	38	19	26.4	1,620
April	42	15	23.0	1,370
May	38	15	19.7	1,210
June	44	13	27.7	1,650
July	24		11.7	719
August			8.1	498
September			12.0	714
The year	44		16.6	12,100

MARTIN CREEK NEAR PARADISE VALLEY, NEV.

LOCATION.—In SE. ¼ NE. ¼ sec. 11, T. 42 N., R. 40 E., 1½ miles above Silver State flour mill, and 8 miles northeast of Paradise Valley, Humboldt County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 1, 1921, to September 30, 1923.

GAGE.—Stevens continuous water-stage recorder on right bank; installed October 2, 1921; moved 400 feet upstream March 21, 1923, and set to different datum; inspected by Edmund Recanzone.

DISCHARGE MEASUREMENTS.—Made from bridge 2½ miles below gage or by wading.

CHANNEL AND CONTROL.—Channel of rock and earth. Control is rock and gravel riffle immediately below gage.

EXTREMES OF DISCHARGE.—Maximum stage during year, 4.92 feet at 7 a. m. May 21 (discharge, 101 second-feet); minimum stage, 3.54 feet parts of August 16–18 (discharge probably less than 5 second-feet).

1922–1923: Maximum stage, 6.67 feet at 10 a. m. May 19, 1922 (discharge 275 second-feet); minimum discharge, that of August 16–18, 1923.

ICE.—Stage-discharge relation slightly affected by ice.

REGULATION.—None.

DIVERSION.—None above gage.

ACCURACY.—Stage-discharge relation changed October 17–21, when diversion dam was built on control. Rating curves well defined. Water-stage recorder operated satisfactorily, except as stated in footnote to daily-discharge table. Daily discharge ascertained by applying mean daily gage height or weekly gage reading to rating table. Shifting-control method used February 28 and March 1. Records good; estimated periods fair.

Discharge measurements of Martin Creek near Paradise Valley, Nev., during the year ending September 30, 1923

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 5	4.57	7.0	Mar. 21	a 3.86	16.7
Jan. 25	4.88	7.2	May 5	4.42	51.5
Mar. 20	5.03	19.5	30	4.38	52.4
21	4.76	6.1			

a Gage moved 400 feet upstream and set to new datum.

Daily discharge, in second-feet, of Martin Creek near Paradise Valley, Nev., for the year ending September 30, 1923

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

NOTE.—No gage-height record and discharge estimated or interpolated Dec. 29, 30, Jan. 15–20, 26–31, Feb. 1–3, 5–10, 12–17, 19–25, Mar. 26 to Apr. 2, May 14–19, June 11–16, July 2–8, 10–14, 16–21, and Sept. 2–7. Discharge estimated or interpolated Oct. 17–21, 31, and July 22 to Aug. 4, because of faulty gage-height records. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Martin Creek near Paradise Valley, Nev., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	11	7	8.1	498
November	10	6	8.4	500
December	12	6	9.5	584
January	11		8.3	510
February	23		7.8	433
March	35	8	15.9	978
April	74	24	40.3	2,400
May	85	35	59.5	3,660
June	52	29	42.3	2,520
July	27	6	15.2	935
August	7	5	5.4	332
September	9	6	6.7	399
The year	85	5	19.0	13,700

HUMBOLDT-LOVELOCK IRRIGATION, LIGHT & POWER CO.'S FEEDER CANAL NEAR MILL CITY, NEV.

LOCATION.—In SW. ¼ sec. 29, T. 33 N., R. 35 E., a quarter of a mile below head of canal and 2 miles north of Mill City, Pershing County.

RECORDS AVAILABLE.—February 19, 1914, to September 30, 1923.

GAGE.—Stevens continuous water-stage recorder on left bank; inspected by G. L. Pitt.

DISCHARGE MEASUREMENTS.—Made from footbridge at gage or by wading.

CHANNEL AND CONTROL.—Earth section. Channel control. Stage-discharge relation is affected by growth of aquatic plants and by the wash from several small gullies below the station.

ICE.—Stage-discharge relation seriously affected by ice.

DIVERSIONS.—None.

REGULATION.—Flow regulated by head gates one-fourth mile above station.

ACCURACY.—Stage-discharge relation not permanent and not enough measurements made to determine what actually happened. Standard rating curves fairly well defined. Water-stage recorder operated successfully October 5–12, 21, 22, January 26–30, and June 22 to July 15. Daily discharge obtained by applying mean daily gage height to rating table. See footnote to daily-discharge table. Records probably fair.

Canal diverts from Humboldt River in sec. 29, T. 33 N., R. 35 E., for storage in the Taylor-Pitt Reservoirs near Humboldt. The water is returned to river during the irrigation season, about 3 miles west of Humboldt through Humboldt-Lovelock Irrigation Light & Power Co.'s outlet canal, and is carried in natural channel to head gates of canals serving Lovelock district.

Discharge measurements of Humboldt-Lovelock Irrigation, Light & Power Co.'s feeder canal near Mill City, Nev., during the year ending September 30, 1923

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 6	2.02	26.4	May 4		0
Jan. 26	a 2.54	29.8	29		0
Mar. 11	2.92	86.0			

a Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Humboldt-Lovelock Irrigation, Light & Power Co.'s feeder canal near Mills City, Nev., for the year ending September 30, 1923

Day	Oct.	June	July	Aug.	Sept.
1			207		
2			214		
3	0		215		
4			206		
5	10		209		
6	27		209		
7	28		207		
8	28		202		
9	29		205		
10	32		206		
11	32	0	194		
12	33		209		
13	34		205		
14	35		183		
15	36		143		0
16	38		16	5	
17	37				
18	36				
19	35				
20	35				
21	35				
22	35	12			
23		50			
24		62	10		
25		102			
26		141			
27	35	154			
28		159			
29		186			5
30		197			18
31					

NOTE.—Record uncertain Nov. 1 to Mar. 18, except Nov. 16, when daily gage height gave a discharge of 36 second-feet, and Jan. 26 and Mar. 11, when discharge measurements were made. Dry Oct. 1–4, Mar. 19 to June 21, and Sept. 1–28. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Humboldt-Lovelock Irrigation Light & Power Co.'s feeder canal near Mill City, Nev., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	30	0	28.7	1,760
April	0	0	0	0
May	0	0	0	0
June	197	0	35.4	2,110
July	215		103	6,330
August			[a] 5	307
September	18	0	0.8	46

[a] Estimated.

HUMBOLDT-LOVELOCK IRRIGATION, LIGHT & POWER CO.'S OUTLET CANAL NEAR HUMBOLDT, NEV.

LOCATION.—In SE. ¼ sec. 30, T. 32 N., R. 33 E., at outlet of lower Taylor-Pitt Reservoir, 2½ miles west of Humboldt, Pershing County.

RECORDS AVAILABLE.—February 15, 1914, to September 30, 1920; October 1, 1921, to September 30, 1923.

GAGE.—Stevens continuous water-stage recorder on right bank about 100 feet above the weirs; inspected by G. L. Pitt.

DISCHARGE MEASUREMENTS.—Made from footbridge one-fourth mile below gage or by wading.

CHANNEL AND CONTROL.—Two 8-foot Cippoletti weirs form a permanent control. Stage of zero flow at gage height, 0.04 foot; determined April 7, 1917.

ICE.—Gates usually closed during winter.

DIVERSIONS.—None.

REGULATION.—Flow regulated by reservoir outlet gates a few hundred feet above station.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined below 150 second-feet; extended above. Operation of water-stage recorder satisfactory during periods when reservoir gates were open. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph. See footnote to daily-discharge table. Records good.

Canal conducts stored water released from Taylor-Pitt Reservoirs to Humboldt River in SW. ¼ sec. 31, T. 33 N., R. 33 E., for irrigation in Lovelock Valley several miles downstream.

Discharge measurements of Humboldt-Lovelock Irrigation, Light & Power Co.'s outlet canal near Humboldt, Nev., during the year ending September 30, 1923

[Made by R. R. Rowe]

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Oct. 6	0.11	0.82	Jan. 26	0.12	0.82	May 4	1.63	121
21	.27	7.1	Mar. 11	.09	.49	29	1.37	85.2

Daily discharge, in second-feet, of Humboldt-Lovelock Irrigation, Light & Power Co.'s outlet canal near Humboldt, Nev., for the year ending September 30, 1923

Day	Oct.	Apr.	May	June	July	Aug.	Sept.
1		1	101	102		16	1
2		1	112	81		40	1
3	1	1	118	83		55	1
4		1	119	92		63	4
5		2	124	92	1	63	8
6	1	2	142	95		63	8
7		2	148	58		61	8
8		24	138	64		61	8
9		35	•141	72	21	58	8
10		35	157	72	46	46	8
	1						
11		33	163	66	52	25	8
12		38	152	72	45	25	8
13		49	131	54	22	25	8
14		58	135	47	57	27	8
15	5	61	162	51	83	24	8
16	13	66	195	42	28	20	10
17	13	59	183	21	3	10	11
18	13	49	162	6	3	6	11
19	10	36	167	6	3	3	8
20	8	37	162	13	3	1	5
21	7	30	157	9	3	3	5
22	7	27	135	1	8	6	5
23	7	26	131	1	21	.7	5
24	-------	26	129	1	19	10	3
25	-------	20	111	1	17	8	1
26	-------	11	78	1	12	7	1
27	-------	16	70	1	10	7	1
28	-------	29	77	1	4	9	1
29	-------	44	86	1	3	12	1
30	-------	74	92	1	6	10	1
31	-------	-------	105	-------	9	3	-------

NOTE.—Gates closed Oct. 1–14, Oct. 21 to Apr. 7, June 22 to July 8, Aug. 20, Sept. 1–3, and 25–30; seepage only, averaging less than 1 second-foot. Braced figures show estimated mean discharge for periods indicated.

Monthly discharge of Humboldt-Lovelock Irrigation Light & Power Co.'s outlet canal near Humboldt, Nev., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October 1-23	13	----------	4.2	192
April	66	1	29.8	1,770
May	195	70	132	8,125
June	102	1	40.2	2,394
July	83	----------	15.7	960
August	63	1	25.0	1,570
September	11	1	5.5	327

PYRAMID AND WINNEMUCCA LAKES BASIN

LAKE TAHOE AT TAHOE, CALIF.

LOCATION.—In SE. ¼ sec. 6, T. 15 N., R. 17 E., near outlet of lake at Tahoe, Placer County.

DRAINAGE AREA.—519 square miles (including water surface of lake, 193 square miles).

RECORDS AVAILABLE.—1900 to September 30, 1923.

GAGE.—Vertical staff fastened to piling of boat landing near outlet; read once a day by an employee of the United States Bureau of Reclamation. Datum is 6,220 feet above sea level. Mean low-water elevation of lake is 6,226.0 feet.

EXTREMES OF STAGE.—Maximum stage recorded during year, 7.30 feet July 9 and 11–14; minimum stage, 5.19 feet December 5.

1900–1923: Maximum stage recorded, 11.26 feet July 14, 15, 17, and 18, 1907; minimum stage, 4.37 feet November 7, 1920.

ACCURACY.—Gage read to hundredths once daily.

COOPERATION.—Records furnished by United States Bureau of Reclamation.

Daily gage height, in feet, of Lake Tahoe at Tahoe, Calif., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.96	5.43	5.22	5.82	5.98	5.82	5.74	6.22	6.87	7.26	7.21	6.81
2	5.93	5.41	5.21	5.82	5.96	5.82	5.75	6.22	6.88	7.27	7.20	6.80
3	5.96	5.40	5.20	*5.81	5.94	5.83	5.78	6.23	6.90	7.27	7.18	6.79
4	5.95	5.38	5.19	5.80	5.92	5.83	5.79	6.24	6.92	7.28	7.15	6.78
5	5.94	5.37	5.19	5.79	5.91	5.83	5.84	6.25	6.94	7.29	7.12	6.76
6	5.93	5.36	5.35	5.79	5.90	5.83	5.95	6.26	6.96	7.28	7.09	6.74
7	5.91	5.40	5.38	5.78	5.90	5.83	5.99	6.27	6.98	7.28	7.07	6.72
8	5.91	5.46	5.40	5.77	5.89	5.82	6.02	6.28	7.00	7.29	7.05	6.71
9	5.84	5.47	5.39	5.76	5.90	5.80	6.04	6.31	7.02	7.30	7.03	6.70
10	5.81	5.49	5.49	5.74	5.90	5.80	6.08	6.34	7.04	7.29	7.01	6.68
11	5.79	5.48	5.50	5.74	5.89	5.79	6.09	6.40	7.05	7.30	7.00	6.67
12	5.76	5.47	5.52	5.73	5.95	5.79	6.09	6.44	7.05	7.30	6.98	6.65
13	5.74	5.45	5.61	5.72	5.93	5.77	6.09	6.47	7.04	7.30	6.97	6.65
14	5.72	5.42	5.63	5.69	5.92	5.75	6.10	6.50	7.04	7.30	6.95	6.65
15	5.70	5.40	5.72	5.68	5.91	5.73	6.10	6.52	7.05	7.29	6.93	6.64
16	5.68	5.39	5.72	5.68	5.90	5.72	6.11	6.54	7.12	7.28	6.92	6.64
17	5.66	5.37	5.71	5.74	5.89	5.71	6.13	6.56	7.15	7.27	6.93	6.63
18	5.66	5.36	5.71	5.75	5.88	5.72	6.14	6.59	7.17	7.26	6.93	6.61
19	5.65	5.34	5.70	5.75	5.87	5.72	6.15	6.62	7.19	7.27	6.92	6.56
20	5.64	5.32	5.69	5.74	5.87	5.72	6.16	6.66	7.18	7.26	6.91	6.52
21	5.63	5.32	5.68	5.74	5.86	5.72	6.17	6.69	7.18	7.25	6.89	6.49
22	5.62	5.31	5.67	5.73	5.85	5.72	6.18	6.71	7.18	7.25	6.87	6.49
23	5.60	5.30	5.66	5.85	5.85	5.72	6.19	6.74	7.18	7.25	6.86	6.50
24	5.59	5.29	5.66	5.90	5.85	5.73	6.20	6.77	7.19	7.24	6.84	6.49
25	5.57	5.28	5.65	5.92	5.85	5.73	6.20	6.79	7.20	7.24	6.83	6.47
26	5.55	5.27	5.65	5.92	5.85	5.74	6.20	6.81	7.20	7.23	6.81	6.48
27	5.55	5.26	5.65	5.92	5.84	5.74	6.21	6.83	7.20	7.23	6.79	6.42
28	5.52	5.25	5.76	5.94	5.83	5.73	6.21	6.84	7.21	7.22	6.78	6.40
29	5.49	5.23	5.76	5.98	-------	5.73	6.21	6.86	7.22	7.22	6.81	6.38
30	5.47	5.22	5.76	5.98	-------	5.74	6.22	6.86	7.23	7.21	6.83	6.36
31	5.45	-------	5.82	5.98	-------	5.74	-------	6.87	-------	7.21	6.82	-------

TRUCKEE RIVER AT TAHOE, CALIF.

LOCATION.—In NW. ¼ sec. 7, T. 15 N., R. 17 E., at Tahoe, Placer County, a short distance below dam at outlet of Lake Tahoe.

DRAINAGE AREA.—519 square miles.

RECORDS AVAILABLE.—July 3, 1895, to February 29, 1896; June 17, 1900, to September 30, 1923.

GAGE.—Vertical staff fastened to a large cottonwood tree on left bank, 300 feet below dam at outlet of Lake Tahoe.

DISCHARGE MEASUREMENTS.—Made from cable 140 feet below gage or by wading.

CHANNEL AND CONTROL.—Gravel; practically permanent.

EXTREMES OF DISCHARGE.—1895–1896; 1900–1923: Maximum mean daily discharge, 1,340 second-feet, July 13-20, 1907; river dry during parts of 1900, 1901, 1914, and 1918–1923.

ICE.—Stage-discharge relation not seriously affected by ice.

DIVERSIONS.—No information.

REGULATION.—Flow regulated by operation of gates in dam at Lake Tahoe.

ACCURACY.—Stage-discharge relation did not change during year. Rating curve well defined. Gage read to hundredths at least once each day. Stage controlled by outlet gates at Lake Tahoe. Daily discharge ascertained by United States Bureau of Reclamation by applying mean daily gage height to rating table.

COOPERATION.—Daily-discharge record and discharge measurement furnished by United States Bureau of Reclamation.

The following discharge measurement was made by S. R. Marean, of the United States Bureau of Reclamation:

August 27, 1923: Gage height, 3.30 feet; discharge, 458 second-feet.

Daily discharge, in second-feet, of Truckee River at Tahoe, Calif., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	July	Aug.	Sept
1	376	346	352	307	263	266	-------	413	487
2	395	352	349	307	263	266	-------	437	487
3	395	349	346	307	263	266	-------	437	487
4	395	343	349	307	295	266	-------	472	487
5	395	355	349	307	295	266	-------	472	487
6	392	355	367	307	295	266	-------	472	472
7	392	346	385	307	295	266	-------	472	472
8	392	316	355	316	295	266	-------	472	472
9	389	313	355	316	295	266	-------	472	472
10	389	340	349	316	295	266	75	472	472
11	389	340	349	316	295	266	83	472	472
12	385	340	373	313	295	266	30	490	472
13	382	340	379	325	295	266	39	490	472
14	382	340	310	325	295	258	90	490	472
15	379	340	310	325	295	258	161	490	472
16	376	340	310	325	295	258	161	490	472
17	376	340	310	252	295	249	183	490	472
18	376	337	289	252	295	146	212	490	465
19	373	334	289	238	295	50	260	490	472
20	373	328	289	238	295	-------	260	490	472
21	370	325	310	238	295	-------	295	490	472
22	367	337	310	252	295	-------	316	490	472
23	367	337	310	258	255	-------	316	487	472
24	367	337	310	260	212	-------	316	487	472
25	367	340	310	260	188	-------	316	487	455
26	364	355	310	244	188	-------	358	487	455
27	364	355	307	260	188	-------	413	487	434
28	361	355	325	263	188	-------	413	487	424
29	358	352	325	263	-------	-------	413	487	441
30	355	346	325	263	-------	-------	413	487	441
31	349	-------	310	263	-------	-------	413	487	-------

NOTE.—Outlet gates closed at dam Mar. 20 to July 9; no flow past gage.

Monthly discharge of Truckee River at Tahoe, Calif., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	395	349	377	23,200
November	355	313	341	20,300
December	385	289	330	20,300
January	325	238	285	17,500
February	295	188	272	15,100
March	266	0	151	9,280
April	0	0	0	0
May	0	0	0	0
June	0	0	0	0
July	413	0	179	11,000
August	490	413	479	29,500
September	487	424	468	27,800
The year	490	0	240	174,000

TRUCKEE RIVER AT ICELAND, CALIF.

LOCATION.—In sec. 36, T. 18 N., R. 17 E., above dam of National Ice Co., 400 feet northeast of Southern Pacific railroad station at Iceland, Nevada County, and 23 miles west of Reno, Nev.

DRAINAGE AREA.—937 square miles.

RECORDS AVAILABLE.—August 1, 1912, to September 30, 1923.

GAGE.—Water-stage recorder on right bank above dam; auxiliary vertical staff fastened to gage well.

DISCHARGE MEASUREMENTS.—Made from cable 130 feet above gage.

CHANNEL AND CONTROL.—Bed consists of small boulders; fairly smooth and permanent. Left bank high; right bank subject to overflow at high stages. Dam of National Ice Co. is the control.

EXTREMES OF DISCHARGE.—1907–1923: Maximum mean daily discharge, 15,300 second-feet March 18, 1907; minimum mean daily discharge, 175 second-feet November 6–7, 1920.

ICE.—Stage-discharge relation somewhat affected by ice.

DIVERSIONS.—No information.

REGULATION.—See "Truckee River at Tahoe."

ACCURACY.—Stage-discharge relation did not change during year. Rating curve well defined. Mean daily gage heights determined from water-stage recorder sheets. Daily discharge ascertained by United States Bureau of Reclamation by applying mean daily gage height to rating table.

COOPERATION.—Daily-discharge record and discharge measurements furnished by United Bureau of Reclamation.

Discharge measurements of Truckee River at Iceland, Calif., during the year ending September 30, 1923

[Made by S. A. Marean •]

Date	Gage height	Discharge
	Feet	*Sec.-ft.*
Nov. 1	0.91	397
June 15	2.02	1,000
Aug. 28	1.25	528

• Employee of U. S. Bureau of Reclamation.

Daily discharge, in second-feet, of Truckee River at Iceland, Calif., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	490	403	414	462	414	470	1,210	1,360	1,090	855	530	542
2	486	403	414	447	440	502	1,120	1,480	960	855	526	538
3	410	403	410	428	447	518	981	1,500	876	795	510	542
4	414	400	418	410	418	510	825	1,550	869	740	522	530
5	425	396	410	410	462	494	819	1,500	890	751	518	534
6	421	396	432	410	486	494	1,390	1,960	981	715	534	526
7	421	432	440	410	486	502	1,300	2,090	1,040	650	538	518
8	418	510	447	403	486	490	1,010	2,230	1,140	650	522	502
9	418	440	447	403	494	502	981	2,370	1,280	586	526	502
10	414	414	451	410	486	502	995	2,560	1,390	518	522	506
11	410	418	478	418	490	494	1,250	2,620	1,550	577	526	510
12	410	425	550	410	418	506	1,590	2,340	1,500	534	522	510
13	414	414	568	410	379	514	1,770	2,130	1,260	577	530	506
14	418	418	660	414	534	518	1,770	2,230	1,060	530	546	514
15	418	410	595	421	530	510	1,770	2,410	960	470	542	510
16	421	414	510	418	518	502	1,830	2,270	925	490	538	510
17	421	418	470	478	451	518	2,020	2,440	925	568	538	502
18	410	418	470	530	447	586	1,790	2,470	855	542	542	502
19	421	414	451	470	443	613	1,480	2,190	784	518	538	498
20	418	410	425	447	443	617	1,550	1,770	767	510	534	498
21	414	410	414	410	451	613	1,440	1,770	784	534	526	494
22	414	414	414	407	459	613	1,200	1,700	778	510	530	502
23	410	407	414	414	462	622	1,040	1,640	778	518	526	518
24	414	410	425	418	462	660	939	1,770	819	538	534	514
25	407	410	425	421	432	720	981	1,940	795	534	530	534
26	410	414	414	451	410	807	1,080	1,960	813	518	522	568
27	407	418	414	414	414	869	1,110	1,600	836	510	522	559
28	414	418	447	418	418	939	1,180	1,410	855	502	522	550
29	410	421	447	410	------	1,040	1,320	1,210	939	530	530	502
30	407	418	421	414	------	1,110	1,300	1,250	869	530	546	470
31	403	------	451	425	------	1,200	------	1,220	------	518	542	------

Monthly discharge of Truckee River at Iceland, Calif., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	490	403	419	25,860
November	510	396	417	24,800
December	660	410	456	28,000
January	530	403	426	26,200
February	534	379	456	25,300
March	1,200	470	631	38,800
April	2,020	819	1,300	77,400
May	2,620	1,210	1,900	117,000
June	1,550	767	979	58,300
July	855	470	586	36,000
August	546	510	530	32,600
September	568	470	517	30,800
The year	2,620	379	720	521,000

WARNER LAKES BASIN

DEEP CREEK ABOVE ADEL, OREG.

LOCATION.—In NW. ¼ sec. 15, T. 39 S., R. 23 E., half a mile below Drake Creek, 2 miles below Camas Creek, and 7 miles above Adel, Lake County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—September 8, 1922, to September 30, 1923, when station was discontinued. Records at station at Adel below some diversions May 11, 1909, to May 31, 1916, December 18, 1917, to September 30, 1919, and January 30, 1921, to September 30, 1922.

GAGE.—Gurley 8-day recorder, on left bank; staff gage about 20 feet downstream read September 8 to December 20, 1922. Inspected by W. L. Crump.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Bed composed of gravel and small boulders; somewhat shifting at flood stages.

EXTREMES OF DISCHARGE.—Maximum stage during period of record, from water-stage recorder, 2.70 feet at 11 p. m. April 17, 1923 (discharge, 405 second-feet); minimum discharge, 10 second-feet September 22, 1922.

ICE.—A little slush ice formed and at times surface ice in pools, apparently no ice on riffle and stage-discharge relation probably unaffected.

DIVERSIONS.—Considerable area irrigated from tributaries and 2,000 or 3,000 acres by natural flooding in Big Valley and Crane Lake. Five ditches with total capacity of about 30 second-feet divert between present gage and former station at Adel.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed the last week in March. Two fairly well defined rating curves used. Staff gage read once daily to quarter-tenths September 8 to December 20; water-stage recorder operated satisfactorily beginning December 21, except for periods indicated by breaks in record. Daily discharge ascertained by applying to rating table daily gage reading or mean daily gage height determined by inspecting gage-height graph. Records good except for periods of breaks in records for which they are fair.

Discharge measurements of Deep Creek above Adel, Oreg., during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 16	Henshaw and Mushen	0.82	25.5	July 22	S. A. Mushen	0.74	30
Mar. 11	S. A. Mushen [a]	1.06	42.3	28	do	.57	21
May 8	Wendell Dawson	2.38	324				

[a] Engineer holding Federal Power Commission permit.

Daily discharge, in second-feet, of Deep Creek above Adel, Oreg., for the period September 8, 1922, to September 30, 1923

Day	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
1	-------	12	17	22	24	30	80	253			156	20
2	-------	12	17	22	28	30	86	242			150	20
2	-------	15	20	22	24	32	71	191			140	19
4	-------	16	20	22	26	32	68	176	300		138	17
5	-------	18	22	22	22	33	66	200			138	-------
6	-------	18	24	24	21	35	63	225			138	-------
7	-------	17	30	24	23	41	60	255	327		138	-------
8	12	17	27	24	24	42	50		327		130	-------
9	12	17	27	22	26	42	53		327		108	-------
10	12	18	20	22	26	42	47	240	327		94	-------
11	12	17	20	22	26	39	36				81	-------
12	11	17	20	22	27	36	34				71	-------
13	12	16	20	20	30	34	27		310	270	64	-------
14	12	16	24	20			40	278			62	-------
15	12	16	30	20		32	45	290				-------
16	12	16	26	20	28		42	327	302			-------
17	12	17	24	18		30	71	392	310		50	-------
18	12	17	20	18		49	71	350	318			-------
19	11	17	20	17		51	94	350	327			-------
20	11	18	20	17	27	56	121					-------
21	11	18	20	20	27	56	99	314			33	-------
22	10	18	20	20	31	57	91	302	275		30	-------
23	11	18	22	20	32	58	94	246			27	-------
24	12	18	22	21	33	58	103	242			27	-------
25	11	18	22	23	34	60		220			25	-------
26	12	17	20	24	35	58		218	233	251	24	-------
27	12	17	20	24	26	52	200	246		225	23	-------
28	12	17	22	24		74		262		208	21	-------
29	12	18	22	24	28	-------		270	240	170	21	-------
30	13	18	22	24		-------		280		160	20	-------
31	-------	20	-------	24		-------	273	-------		-------	20	-------

Monthly discharge of Deep Creek above Adel, Oreg., for the period September 8, 1922, to September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
1922				
September 8–30	13	10	11.7	534
1922–23				
October	20	12	16.9	1,040
November	30	17	22	1,310
December	24	17	21.5	1,320
January	35	21	27.5	1,690
February	74	30	43.7	2,430
March	273	27	99.5	6,120
April	392	176	264	15,700
May	----------	----------	290	17,800
June	----------	160	259	15,400
July	156	20	70.3	4,320
August	20	----------	[a] 15	922
September	----------	----------	[a] 12	714
The year	392	----------	95.1	68,800

[a] Estimated.

DRAKE CREEK NEAR ADEL, OREG.

LOCATION.—At highway bridge, 1 mile above mouth, 8 miles west of Adel, Lake County, in sec. 9, T. 39 S., R. 23 E., unsurveyed.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 18 to May 10, 1915, and December 21, 1922, to May 9, 1923, when station was discontinued.

GAGE.—Vertical staff on left bank abutment of highway bridge.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Stream bed composed of gravel. Left bank low and some water may pass around bridge. Control rocky; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period December 21 to May 9, 1.70 feet March 3 (discharge, 19 second-feet); minimum discharge, recorded, 4.34 second-feet at time of measurement of May 9.

ICE.—Considerable obstruction from ice during parts of January and February, discharge estimated.

DIVERSIONS.—None

REGULATION.—None.

ACCURACY.—Stage-discharge relation unstable. Fairly well defined rating curve used December 21 to April 10. Gage read to hundredths once a day. Daily discharge ascertained by applying daily gage reading to rating table; shifting-control method used April 11 to May 9. Records fair.

Discharge measurements of Drake Creek near Adel, Oreg., during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Nov. 16	Henshaw and Mushen	0.65	5.93	May 9	Wendell Dawson	0.96	4.34
Mar. 9	S. A. Mushen[a]	1.08	10.8	July 28	S. A. Mushen	.94	4.90

[a] Engineer holding Federal Power Commission permit.

Daily discharge, in second-feet, of Drake Creek near Adel, Oreg., for the year ending September 30, 1923

Day	Dec.	Jan.	Feb.	Mar.	Apr.	May	Day	Dec.	Jan.	Feb.	Mar.	Apr.	May
1		9.8		17	13	4.5	16		9.8	11	10	11	
2		9.8		18	14	4.7	17		9.8	11	11	10	
3		10		19	14	4.9	18		9.8	11	12	9.5	
4		10	9	16	15	4.7	19			11	14	9	
5		9.8		12	15	4.9	20			12	12	8.5	
6		9.8		11	15	4.5	21	9.8	9	12	12	6	
7		10		11	15	4.5	22	9.7		13	11	6	
8		10	9.1	11	15	4.4	23	9.6		13	12	6	
9		10	9.1	11	15	4.3	24	9.6		15	14	5.4	
10		10	8.9	10	17		25	9.5		14	14	5.6	
11		11		10	13		26	9.6	9.8	12	13	5.1	
12		10		10	14		27	9.6	10	13	14	4.9	
13		11	8	9.6	14		28	9.6		18	15	4.7	
14		9.6		9.6	13		29	9.8	9		15	4.5	
15		9.6		9.5	12		30	9.8			12	4.7	
							31	9.8			12		

Monthly discharge of Drake Creek near Adel, Oreg., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
December 21–31	9.8	9.5	9.67	211
January	11		9.63	592
February	18		10.6	589
March	19	9.5	12.5	769
April	17	4.5	10.5	625
May 1–9	4.9	4.3	4.60	82
The period				2,870

SILVER LAKE BASIN

WEST FORK OF SILVER CREEK NEAR SILVER LAKE, OREG.

LOCATION.—In sec. 8, T. 29 S., R. 14 E., 1 mile above mouth of West Fork and 7 miles by road southwest of Silver Lake post office, Lake County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—Irrigation seasons 1919 to 1922 and March 1 to August 31, 1923.

GAGE.—Stevens continuous recorder installed on left bank half a mile above station used 1919 to 1921; inspected by J. H. Gowdy.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Stream bed gravel and small boulders, banks clean but of friable soil and may shift by undercutting.

EXTREMES OF DISCHARGE.—Maximum stage from water-stage recorder during period March 1 to August 6, 1923, 1.06 feet May 11 (discharge, 22 second-feet); discharge estimated as 1.0 second-foot at time of visit January 25, but may have been lower at times.

1919–1923: Maximum discharge, 138 second-feet April 11, 1921 (gage height on old gage, 2.24 feet); stream bed probably is nearly dry at times in extremely cold weather.

ICE.—Stage-discharge relation affected by ice during winter; practically no ice during period of record.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed during winter. Rating curve fairly well defined. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspection except as noted in footnote to daily discharge table. Records good except for periods of no gage-height records, for which they are fair.

Discharge measurements of West Fork of Silver Creek near Silver Lake, Oreg., during the year ending September 30, 1923

[Made by Wendell Dawson]

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Nov. 10	[a] 0.47	2.3	Mar. 20	0.80	11.8	May 14	0.94	17.6
Jan. 25		[b] 1.0	Apr. 15	.83	13.2	July 7	.62	7.6

[a] Stage-discharge relation affected by ice. [b] Estimated.

Daily discharge, in second-feet, of West Fork of Silver Creek near Silver Lake, Oreg., for the year ending September 30, 1923

Day	Mar.	Apr.	May	June	July	Aug.
1	15	12	11	9.6		1.9
2	14	12	11	8.8		2.0
3		11	11	8.8		4.0
4		10	11	8.6	7.8	3.6
5		12	12	8.4		2.5
6		16	14	8.2		2.3
7	8.0	12	15	8.8	7.0	
8		11	17	8.8	5.8	
9		9.6	19	8.6	5.1	
10		9.6	22	8.2	4.2	
11		9.6	22	8.2	4.0	
12	4.2	12	20	8.6	3.8	
13		12	18	8.6	3.6	
14		12	16		3.6	
15		13	16		4.6	
16	6.0	14	16		5.1	
17		16	15		4.2	
18		16	15		3.8	
19		15	14		3.3	2.0
20	12	15	14		3.1	
21	11	15	13	7.0	2.9	
22	10	15	12		2.7	
23	10	14	12		2.5	
24	11	14	11		2.3	
25	9.6	13	11		2.3	
26	9.6	11	11		2.3	
27	9.8	11	11		2.1	
28	11	11	10		2.1	
29	11	11	11		2.0	
30	12	11	11		1.9	
31	13		10		1.8	

NOTE.—No gage height record for following periods: Mar. 1, 3–11, and 13–19 (discharge, estimated from climatic records); Apr. 12–13 (discharge, interpolated); June 14–30 (discharge, estimated from maximum and minimum stages indicated by recorder); and July 1–6 and Aug. 7–31 (discharge, estimated). Braced figures show mean discharge for periods indicated.

Monthly discharge of West Fork of Silver Creek near Silver Lake, Oreg., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
March			8.94	550
April	16	9.6	12.5	744
May	22	10	13.9	855
June	9.6		7.71	459
July		1.8	4.29	264
August	4.0		2.14	132
The year				3,000

BRIDGE CREEK NEAR SILVER LAKE, OREG.

LOCATION.—In sec. 3, T. 39 S., R. 13 E., 8 miles southwest of Silver Lake, Lake County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 7 to August 27, 1922, and March 1 to August 31, 1923, when station was discontinued.

GAGE.—Stevens 8-day water-stage recorder; inspected by Cecil Owsley.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Control is a rocky riffle just below gage but the soft banks may be eroded by high water.

EXTREMES OF DISCHARGE.—Maximum stage during period of record in 1923, from water-stage recorder, 0.98 foot at 6 a. m. May 17 (discharge, 22 second-feet); minimum stage, 0.25 foot at 6 a. m. March 20 (discharge, 0.5 second-foot). Stream was practically dry in the late summer.

1922–1923: Maximum stage recorded, 1.39 feet June 5, 1922 (discharge, 43 second-feet).

ICE.—None during period of records.

DIVERSIONS.—One small ditch diverts about half a mile above gage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed slightly during high water May 16–23; affected by drift May 9–13. Rating curve used to May 14, fairly well defined. Shifting-control method used thereafter. Daily discharge ascertained by applying to rating table directly or by shifting-control method mean daily gage height determined by inspection except as noted in footnote to daily-discharge table. Records good except for periods of no gage-height record for which they are fair.

Discharge measurements of Bridge Creek near Silver Lake, Oreg., during the year ending September 30, 1923

[Made by Wendell Dawson]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Nov. 12	0.32	0.75	May 14	0.90	18.2
Mar. 20	.43	2.4	July 7	.62	7.3

Daily discharge, in second-feet, of Bridge Creek near Silver Lake, Oreg., for the year ending September 30, 1923

Day	Mar.	Apr.	May	June	July	Aug.
1		3.1	5.5	13	6.5	
2		2.8	5.0	12	6.5	2.4
3		2.6	5.0	12	6.5	
4		2.5	5.3	12	6.2	2.1
5		2.3	6.6	11	5.5	
6		2.3	8.0	13	6.9	
7		2.3	10	14	7.2	
8		2.1	12	13		
9		2.3	17	13		
10	1.0	2.3	17	13	6.5	
11		2.1	18	13		
12		2.6	18	12		
13		2.6	18			
14		3.1	18		5.8	
15		3.0	19	12	9.4	
16		3.8	18			
17		4.3	22			1.5
18		4.5	22	11	6.2	
19		4.3	22	10		
20	1.6	4.3	20	9.4		
21	2.1	4.5	19	8.6	3.0	
22	1.7	4.1	18	8.6		
23	1.2	4.3	19	8.0		
24	2.0	4.1	20	7.6		
25	1.7	3.8	20	8.0	3.0	
26	1.8	4.1	18	9.0		
27	2.1	4.1	18	8.6		
28	2.5	5.0	17	8.0	3.0	
29	2.8	5.8	15	7.6		
30	3.0	5.8	15	7.2	2.8	
31	3.3		13			

NOTE.—Mean discharge estimated or interpolated for following periods when gage was not read: Mar. 1–19, June 13–17, July 8–13, 16–20, 22–27, 29–31, Aug. 1–3 and 5–31.

Monthly discharge of Bridge Creek near Silver Lake, Oreg., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
March	3.3		1.45	89
April	5.8	2.1	3.49	208
May	22	5.0	15.3	941
June	14	7.2	10.8	643
July	9.4		5.25	323
August			1.61	99
The period				2,300

BUCK CREEK NEAR SILVER LAKE, OREG.

LOCATION.—In NE. ¼ sec. 28, T. 28 S., R. 13 E., at Howard ranch, near Klamath Falls road, and 8 miles west of town of Silver Lake, Lake County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—January 21, 1905, to July 19, 1906; January 20, 1909, to September 24, 1910; March 13, 1919, to August 31, 1923, when station was discontinued. Records 1905–6 and 1909–10 were obtained at a site 4 miles downstream, and March 13, 1919, to April 12, 1922, at a site 1½ miles downstream from present location.

GAGE.—Gurley 8-day recorder on right bank; inspected by Cecil Owsley.

DISCHARGE MEASUREMENTS.—Made near gage by wading at low water, from head gate at high water.

CHANNEL AND CONTROL.—One channel except at extreme high stages; banks of stream vertical and composed of loose earth. Control is sharp gravel riffle.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 1.72 feet at 5 p. m. May 16 (discharge, 75 second-feet); no record of extreme minimum.

1905–6, 1909–10, 1919–1923: Maximum stage recorded, 10.0 feet on old gage, February 24, 1910, at 8 p. m. (discharge, from extension of rating curve, 409 second-feet); minimum discharge, 2.5 second-feet December 11 and 12, 1906. The flood of February, 1907, reached a stage of 6.6 feet on gage at Deadmond Ranch, according to observer (discharge, from extension of rating curve, 450 second-feet).

ICE.—Stage-discharge relation affected.

DIVERSIONS.—About 100 acres irrigated through two small ditches above recorder, 120 acres above old gage; most of water diverted returns to creek.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed during winter. Rating curve fairly well defined. Daily discharge ascertained by applying to rating table mean daily gage height determined from recorder graph by inspection, except as indicated in footnote to table of daily discharge. Records good except for periods when discharge was estimated, for which they are fair.

Discharge measurements of Buck Creek near Silver Lake, Oreg., during the year ending September 30, 1923

[Made by Wendell Dawson]

Date	Gage height	Discharge	Date	Gage height	Discharge
	Feet	*Sec.-ft.*		*Feet*	*Sec.-ft.*
Nov. 12	[a] 0.62	2.8	May 14	1.38	41
Mar. 21	[a] .56	3.7	July 7	1.23	35
Apr. 15	.74	9.6			

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Buck Creek near Silver Lake, Oreg., for the year ending September 30, 1923

Day	Mar.	Apr.	May	June	July	Aug.
1		8.8	10	31	23	11
2		8.5	9.2	32	22	11
3		8.2	8.5	31	22	12
4		8.0	10	31	21	12
5		8.2	13	34	20	12
6		8.5	14	39	28	
7		8.0	18	52	30	
8		7.8	23	54	26	
9		7.5	33	52	23	
10		7.8	43	53	26	
11	3.0	7.8	40	49	25	
12		8.8	45	44	24	
13		8.8	46	39	24	
14		9.2	50	37	24	
15		9.5	57	35	22	
16		10	64	35	22	
17		12	65	34	19	
18		11	61	34	18	
19		10	58	35	17	10
20		10	49	32	17	
21	3.7	10	52	29	16	
22		10	53	28		
23		9.8	60	28		
24		9.5	63	29		
25		9.2	63	27	14	
26	6.0	9.8	56	24		
27		10	50	23		
28		12	43	23	13	
29		13	50	24	12	
30		10	43	24	12	
31			39		12	

NOTE.—Discharge interpolated or estimated for following periods when no gage-height records were obtained: March 1–20, Apr. 14, 21, June 16, 17, July 14, 15, 22–27, and Aug. 6–31. Discharge estimated Mar. 22–31 because of ice effect. Braced figures show mean discharge for periods indicated.

Monthly discharge of Buck Creek near Silver Lake, Oreg., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
March			3.99	245
April	13	7.5	9.39	559
May	64	8.5	41.6	2,560
June	54	23	34.7	2,060
July	30	12	19.4	1,190
August	12		10.3	633
The period				7,250

DUNCAN CREEK NEAR SILVER LAKE, OREG.

LOCATION.—In SE. ¼ sec. 9, T. 29 S., R. 15 E., just above backwater of Lutz Reservoir and 10 miles southeast of Silver Lake, Lake County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 12 to June 4, 1922, and March 31 to May 31, 1923, when station was discontinued.

GAGE.—Stevens continuous water-stage recorder, installed on downstream side of large boulder, 150 yards above backwater of reservoir at medium stage.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Large boulders, practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage from water-stage recorder 2.30 feet at 2 a. m. April 17 (discharge, 76 second-feet). Stream bed dry after May 21.

ICE.—None during period of run-off.

DIVERSIONS.—None above station. Reservoir dam is used to divert water for irrigation of land near Silver Lake.

REGULATION.—Water stored in Lutz Reservoir, capacity about 600 acre-feet, just below gage. Storage during the year had been accumulated prior to March 24, 1923, amounting to about 300 acre-feet, the total run-off of the creek up to that time.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined above 5 second-feet. Operation of water-stage recorder satisfactory March 24 to May 31, except April 11–15 and May 3–10. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph, or for days of considerable variation in stage by averaging discharge for shorter periods. Records good.

The following measurement was made by Wendell Dawson:

May 11, 1923: Gage height, 0.77 foot; discharge estimated, 0.8 second-foot.

Daily discharge, in second-feet, of Duncan Creek near Silver Lake, Oreg., for the year ending September 30, 1923

Day	Mar.	Apr.	May	Day	Mar.	Apr.	May	Day	Mar.	Apr.	May
1		0.6	11	11			0.4	21		15	
2		.4	11	12			.3	22		8.4	
3		.2		13			.2	23		6.0	
4		.1		14		2.5	.1	24		4.6	
5		.1		15			.1	25		5.3	
6		1.6	5	16		45	.1	26		14	
7		1.0		17		58	.1	27		21	
8		.9		18		30	.1	28		23	
9		.3		19		25	.1	29		17	
10		.2		20		21	.1	30		9.4	
								31	1.4		

NOTE.—Creek practically dry May 21–31.

Monthly discharge of Duncan Creek near Silver Lake Oreg., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
March 31			1.4	3
April	58	0.1	10.7	637
May	11	0	2.05	126
The period				766

NOTE.—Run-off amounting to about 300 acre-feet occurred prior to Mar. 31, probably early in March, and was stored in Lutz Reservoir, below station.

MALHEUR AND HARNEY LAKES BASIN

SILVIES RIVER NEAR SILVIES, OREG.

LOCATION.—In NE. ¼ sec. 14, T. 20 S., R. 31 E., at site of proposed storage dam, three-quarters of a mile below Trout Creek, a mile southwest of Craddock ranch, and 3 miles southwest of former post office of Silvies, Harney County.

DRAINAGE AREA.—510 square miles (measured on map prepared by United States Bureau of Reclamation).

RECORDS AVAILABLE.—May 9, 1903, to December 31, 1904; January 1, 1909, to June 30, 1911; April 11 to June 9, 1912; April 1 to June 13, 1916; March 1 to June 11, 1921; April 16 to June 20, 1922; and April 1 to June 9, 1923, when station was discontinued.

GAGE.—Inclined staff; read daily by G. W. Hankins.

DISCHARGE MEASUREMENTS.—Made from cable 50 feet above gage or by wading.

CHANNEL AND CONTROL.—Stream tortuous and gradient flat, no defined control; water overflows to the right at high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 7.1 feet April 21 (discharge, 518 second-feet); stream goes practically dry at times.

1903–4; 1909–1912; 1916; 1921–1923: Maximum stage recorded, known to have been maximum for period, although records are fragmentary, 12.15 feet April 16, 1904 (discharge, 2,320 second-feet); stream bed dry in August and September, 1910, and probably at other times.

ICE.—No record during winter.

DIVERSIONS.—Several hundred acres irrigated from flood waters above the station.

REGULATIONS.—None.

ACCURACY.—Stage-discharge relation probably permanent during year. Rating curve fairly well defined. Gage read to tenths once a day. Daily discharge ascertained by applying daily gage reading to rating table. Records good.

The following discharge measurement was made by Wendell Dawson:

May 23, 1923: Gage height, 4.0 feet; discharge, 120 second-feet.

Daily discharge, in second-feet, of Silvies River near Silvies, Oreg., for the year ending September 30, 1923

Day	Apr.	May	June	Day	Apr.	May	June	Day	Apr.	May	June
1	224	304	110	11	292	140	-------	21	518	160	-------
2	224	280	101	12	316	130	-------	22	464	160	-------
3	257	280	110	13	342	140	-------	23	464	120	-------
4	257	292	92	14	370	160	-------	24	414	150	-------
5	257	120	92	15	414	180	-------	25	414	130	-------
6	246	120	74	16	414	213	-------	26	342	130	-------
7	235	140	50	17	464	224	-------	27	342	130	-------
8	246	120	34	18	446	246	-------	28	370	120	-------
9	268	120	34	19	500	224	-------	29	316	120	-------
10	268	140	-------	20	500	170	-------	30	329	110	-------
								31	-------	110	-------

Monthly discharge of Silvies River near Silvies, Oreg., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
April	518	224	350	20,800
May	304	110	167	10,300
June 1–9	110	34	77.4	1,380
The period	-------	-------	-------	32,500

SILVIES RIVER NEAR BURNS, OREG.

LOCATION.—In or near SE. ¼ sec. 25, T. 21 S., R. 29 E., 1 mile below damsite for proposed lower Silvies Reservoir and 15 miles northwest of Burns, Harney County.

DRAINAGE AREA.—940 square miles (measured on map prepared by United States Bureau of Reclamation).

RECORDS AVAILABLE.—May 10, 1903, to July 24, 1906; December 14, 1908, to September 30, 1923.

GAGE.—Stevens continuous water-stage recorder on left bank, installed April 7, 1922. Staff gage in sec. 7, T. 22 S., R. 30 E., at Parker ranch used prior to April 6, 1922, and during winter of 1922–23.

DISCHARGE MEASUREMENTS.—Made from cable 1½ miles below recorder or by wading.

CHANNEL AND CONTROL.—Low-water control is a gravel riffle about 200 feet below gage; fairly permanent. In times of flood river overflows its banks near both gages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.98 feet at 2 p. m. April 18 (discharge, 960 second-feet); minimum stage from recorder, 1.10 feet at midnight November 16 (discharge, 9 second-feet).

1904–1906; 1909–1923: Maximum stage recorded, 17.12 feet on original datum April 15, 1904 (discharge, 4,730 second-feet); minimum discharge estimated 1 second-foot July 4 and 5, 1920.

ICE.—Stage-discharge relation probably unaffected by ice.

DIVERSIONS.—A large area of land in the headwaters of Silvies River is irrigated with flood water.

REGULATION.—None at recorder; flow at lower station occasionally affected by operation of Sylvester's Dam half a mile above.

ACCURACY.—Stage-discharge relation apparently permanent at both stations during period covered by records. Operation of water-stage recorder satisfactory October 1 to November 22 and March 15 to September 25. Staff gage at Parker ranch read three times a week, December 4 to March 31, and daily for comparisons April 1–21. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph, or the daily gage reading when recorder was not operating. Records good except for December to February for which the rating and amount of ice obstruction at staff gage are somewhat uncertain.

Discharge measurements of Silvies River near Burns, Oreg., during the year ending September 30, 1923

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Feet	*Sec.-ft.*			*Feet*	*Sec.-ft.*
Oct. 1	R. D. Cooper	1.30	13.9	Apr. 6	Wendell Dawson	6.70	516
Mar. 15	Wendell Dawson	a 2.25	66	May 22	do	4.05	226

a Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Silvies River near Burns, Oreg., for the year ending September 30, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	22	30	57	48	73	464	409	132	72	22	11
2	17	22	30	57	48	75	497	365	132	62	19	11
3	19	24	30	57	48	77	486	335	132	47	17	12
4	20	23	29	57	48	72	486	325	132	43	16	11
5	22	22	29	57	48	66	486	315	137	37	16	12
6	23	26	29	66	48	67	508	295	112	31	22	12
7	22	26	29	66	48	69	542	265	108	35	17	11
8	22	31	29	70	48	70	530	255	120	38	16	11
9	21	30	29	73	48	76	497	255	128	37	15	11
10	21	34	29	81	48	81	475	255	132	35	15	10
11	22	35	29	81	48	76	486	255	116	32	14	10
12	23	33	29	81	48	70	530	255	104	30	14	11
13	24	32	29	81	48	69	566	255	92	26	13	11
14	24	28	29	77	48	67	590	255	100	27	13	10
15	24	35	29	73	48	66	602	236	108	29	13	10
16	24	33	29	70	52	70	626	245	112	30	12	10
17	24	32	29	68	57	294	706	255	116	31	12	10
18	24	31	29	66	57	275	906	275	108	32	11	10
19	24	34	29	62	57	275	924	275	100	31	11	10
20	24	29	29	57	58	345	924	275	96	29	11	10
21	24	33	29	57	60	227	838	245	92	27	11	10
22	24	37	29	57	62	160	720	227	92	27	11	10
23	24		29	57	64	132	638	209	89	24	11	10
24	24		29	57	66	164	578	200	92	25	11	11
25	25		29	57	64	182	519	182	92	24	11	12
26	25	32	39	57	62	200	486	160	86	24	12	
27	22		39	57	66	227	464	146	96	22	13	
28	22		44	52	70	255	442	142	96	22	11	15
29	21		48	48	-------	295	442	142	92	20	11	
30	21		48	48	-------	335	431	150	82	31	12	
31	21	-------	52	48	-------	398	-------	116	-------	20	12	-------

NOTE.—Mean discharge Nov. 23–30 and Sept. 26–30 estimated because of no gage-height record.

Monthly discharge of Silvies River near Burns, Oreg., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
October	25	16	22.4	1,380
November	37	22	30.3	1,800
December	52	29	32.2	1,980
January	81	48	63.0	3,870
February	70	48	54.1	3,000
March	398	66	158	9,720
April	924	431	580	34,500
May	409	116	244	15,000
June	137	82	108	6,430
July	72	20	32.3	1,990
August	22	11	13.7	842
September		10	11.4	678
The year	924	10	112	81,200

PRATHER CREEK NEAR BURNS, OREG.

LOCATION.—In sec. 25, T. 22 S., R. 30 E., just above bridge on road from Burns to Canyon City, and 9 miles northeast of Burns, Harney County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 8 to June 19, 1921; March 29 to June 24, 1922; and March 1 to June 23, 1923, when station was discontinued.

GAGE.—Vertical staff on left bank read by Mrs. C. Swacker.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading.

CHANNEL AND CONTROL.—Gravel; slightly shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period 3.0 feet at 6 p. m. April 17 (discharge, 17 second-feet); stream dry at times.

1921–1923: Maximum stage recorded, 3.8 feet April 6, 1922 (discharge, 115 second-feet).

DIVERSIONS.—None above gage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation apparently permanent during year. Rating curve fairly well defined above 1 second-foot. Gage read to tenths twice a day. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair.

Discharge measurements of Prather Creek near Burns, Oreg., during the year ending September 30, 1923

[Made by Wendell Dawson]

Date	Gage height	Discharge
	Feet	*Sec.-ft.*
Mar. 16	2.30	0.75
Apr. 7	2.75	7.3

Daily discharge, in second-feet, of Prather Creek near Burns, Oreg., for the year ending September 30, 1923

Day	Mar.	Apr.	May	June	Day	Mar.	Apr.	May	June
1		2.9	2.9	0.2	16	1.0	7.0	1.4	0.2
2		2.9	1.7	.2	17	1.2	12	1.7	.2
3		3.6	1.7	.2	18	1.4	12	1.7	.1
4	5	5.3	1.7	.2	19	1.0	10	1.4	.1
5		5.3	1.7	.2	20	1.0	8.8	1.0	.1
6		10.0	1.7	.2	21	1.0	8.8	.7	.1
7		10.0	1.7	.2	22	1.0	7.0	.8	.1
8		7.0	1.7	.2	23	1.4	6.2	.8	.1
9		7.0	1.4	.2	24	1.4	6.2	.7	
10		8.8	1.0	.2	25	1.7	4.4	1.0	
11	1	7.0	1.0	.2	26	2.3	2.9	.8	
12		7.0	1.0	.3	27	1.4	2.9	.7	
13		6.2	1.0	.2	28	2.3	2.9	.7	
14		6.2	1.0	.2	29	2.3	2.9	.6	
15		6.2	1.0	.2	30	3.6	2.3	.4	
					31	4.4		.2	

NOTE.—Discharge estimated Mar. 1–15.

Monthly discharge of Prather Creek near Burns, Oreg., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
March			2.17	133
April	12	2.3	6.39	380
May	2.9	.2	1.19	73
June 1–23	.3	.1	.18	8
The period				594

SILVER CREEK ABOVE SUNTEX, OREG.

LOCATION.—In NW. ¼ sec. 30, T. 22 S., R. 26 E., at Cecil ranch, 3 miles below mouth of Nicoll Creek and 5 miles above Suntex, Harney County.

DRAINAGE AREA.—260 square miles (measured on maps of United States Bureau of Reclamation).

RECORDS AVAILABLE.—April 19, 1904, to July 14, 1906; February 16 to December 12, 1909; April 6 to October 19, 1910; flood periods of 1911, 1912, and 1914–1923.

GAGE.—Stevens eight-day recorder referred to vertical and inclined staff on right bank, one-fourth mile above Cecil ranch house and 100 yards above point where creek divides into three channels; installed March 6, 1921. Gage reader, J. C. Cecil. Staff gage used prior to 1921.

DISCHARGE MEASUREMENTS.—Made from a cable about 100 yards below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of clean gravel; slightly shifting; banks heavily covered with willows; changes in a diversion dam, about 500 yards below, may affect stage-discharge relation somewhat.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 4.50 feet at 6 p. m. April 16 (discharge, 253 second-feet). No record of minimum.

1904–1906, 1909–1923: Maximum stage recorded, 13.95 feet on original gage, observed from high-water mark April 14, 1904 (discharge, 1,760 second-feet); stream bed dry in August and September, 1910.

DIVERSIONS.—About 300 acres irrigated above the station, large areas irrigated below.

ACCURACY.—Stage-discharge relation affected by operation of movable dam below gage, and by ice February 27 to March 17. Operation of recorder fairly satisfactory, but not attended regularly after April 1. Daily discharge ascertained by shifting-control method, applying to rating table the mean daily gage height obtained by inspection of recorder graph. Records fair.

Discharge measurements of Silver Creek above Suntex, Oreg., during the year ending September 30, 1923

[Made by Wendell Dawson]

Date	Gage height	Discharge
	Feet	*Sec.-ft.*
Mar. 17	[a] 1.71	38.0
Apr. 5	3.46	136
May 21	1.34	30

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Silver Creek above Suntex, Oreg., for the year ending September 30, 1923

Day	Feb.	Mar.	Apr.	May
1			147	113
2			138	105
3			129	97
4			129	93
5		10	138	89
6				
7				
8				
9		11	160	
10		8		
11		7		
12		8	223	
13		8	213	50
14		6	223	
15		6	223	
16		24	234	
17		30		
18		36		
19		45		
20		64		
21		42		28
22		37		26
23		34	200	24
24		45		22
25		45		20
26		58		17
27		78		17
28	10	113		
29	10	129		15
30		129	121	
31		156		

NOTE.—Discharge Feb. 27 to Mar 17 estimated because of ice. Braced figures for other periods show estimated discharge when no gage-height records were obtained.

Monthly discharge of Silver Creek above Suntex, Oreg., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
February 27–28	----------	----------	[a] 10	40
March	156	6	38.7	2,380
April	234	121	183	10,900
May	113	----------	47.1	2,900
The period	----------	----------	----------	16,200

[a] Estimated on account of ice.

SILVER CREEK BELOW SUNTEX, OREG.

LOCATION.—In NE. ¼ sec. 14, T. 24 S., R. 27 E., three-fourths mile southwest of Cryder ranch, and 15 miles southeast of Suntex post office, Harney County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—Run-off periods of 1912 to 1914, 1919, and 1921 to 1923, when station was discontinued. Fragmentary records in 1915 and 1917.

GAGE.—Water-stage recorder referred to vertical staff on left bank, inspected by A. D. Cryder. Staff gage used prior to 1921.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Gravel and small boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 2.13 feet at 4 p. m. April 20 (discharge, 184 second-feet); stream dry October to about February 27 and July to September.

1912–1914; 1919; and 1921–1923; Maximum stage recorded, 4.20 feet, April 28, 1922 (discharge, 764 second-feet); creek dry practically every summer.

ICE.—No flow during winter.

DIVERSIONS.—About 3,800 acres irrigated from Silver Creek above station.

REGULATION.—None except by irrigation dams.

ACCURACY.—Stage-discharge relation practically permanent except as affected by growth of aquatic plants May 10–22. Rating curve well defined. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph; shifting-control method used May 10–22. Records good.

Discharge measurements of Silver Creek below Suntex, Oreg., during the year ending September 30, 1923

[Made by Wendell Dawson]

Date	Gage height	Discharge
	Feet	*Sec.-ft.*
Mar. 16	0.67	4.0
Apr. 5	1.35	71
May 22	.70	2.9

Daily discharge, in second-feet, of Silver Creek below Suntex, Oreg., for the year ending September 30, 1923

Day	Feb.	Mar.	Apr.	May	Day	Feb.	Mar.	Apr.	May
1		27	74	55	16		3.5	109	3.3
2		31	83	46	17		6.8	136	3.3
3		20	84	34	18		16	151	5.2
4		15	75	28	19		14	168	4.0
5		12	70	27	20		12	168	3.5
6		10	73	21	21		17	147	3.8
7		7.2	88	17	22		12	126	2.8
8		11	95	12	23		9.4	111	
9		12	101	6.0	24		8.0	99	
10		7.2	98	4.0	25		9.4	83	
11		2.8	98	3.3	26		14	75	2.0
12		6.0	102	2.4	27		22	65	
13		5.6	112	2.4	28	8	29	58	
14		2.6	105	2.4	29		25	58	
15		4.4	102	2.6	30		43	57	
					31		49		

NOTE.—Discharge, May 23-31, estimated.

Monthly discharge of Silver Creek below Suntex, Oreg., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
February 28			8.0	16
March	49	2.6	15.0	922
April	168	57	99.0	5,890
May	55		9.90	609
The period				7,440

SILVER CREEK NEAR NARROWS, OREG.

LOCATION.—In NW. ¼ sec. 21, T. 25 S., R. 28 E., a quarter of a mile north of house at Dunn Field, 20 miles southeast of Suntex, and 25 miles northwest of Narrows, Harney County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—Flood periods of 1917 and 1919 to 1923.

GAGE.—Vertical staff on right bank 200 feet below diversion dam; read by employees of William Hanley Co.

DISCHARGE MEASUREMENTS.—Made from road bridge 200 yards below gage or by wading near gage.

CHANNEL AND CONTROL.—Bed slightly shifting. Grass grows in channel before water ceases to flow. Control not well defined.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.3 feet April 20 and 21 (discharge, 150 second-feet); stream dry most of year.

1917–1923: Maximum stage recorded 5.3 feet April 29 and 30, 1922 (discharge, 538 second-feet).

ICE.—No flow during winter.

DIVERSIONS.—About 4,000 acres of land, mostly in wild hay, is irrigated above station. Dunn Field ditch diverted from 14 to 33 second-feet of water past gage April 11–15, 6 second-feet April 30, and 22–25 second-feet May 1–5. These diversions included in determinations of discharge of Silver Creek at gaging station.

REGULATION.—Small amount of water is stored in dams used to subirrigate lands within a few miles above station.

ACCURACY.—Stage-discharge relation probably permanent. Rating curve fairly well defined. Gage read to tenths twice a day. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair.

The following measurement was made by Wendell Dawson:
April 5, 1923: Gage height, 2.60 feet; discharge, 64 second-feet.

Daily discharge, in second-feet, of Silver Creek near Narrows, Oreg., for the year ending September 30, 1923

Day	Mar.	Apr.	May	Day	Mar.	Apr.	May	Day	Mar.	Apr.	May
1		49	46	11		78		21		150	
2		64	24	12		53		22		120	
3		69	22	13		33		23		107	
4		74	25	14		33		24		101	
5		64	22	15		56		25		90	
6		64		16		90		26		74	
7		69		17		95		27		74	
8		89	10	18		120		18		64	
9		95		19		135		29		64	
10		95		20		150		30		65	
								31	45		

Monthly discharge of Silver Creek near Narrows, Oreg., for the year ending September 30, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
March 31			45.0	89
April	150	33	82.8	4,930
May 1–10	46		18.9	375
The period				5,390

NOTE.—Discharge of Dunn Field ditch, Apr. 11–15 and Apr. 30 to May 5 included in the above table. See "Diversions" in station description.

CHICKAHOMINY CREEK NEAR SUNTEX, OREG.

LOCATION.—In sec. 29, T. 23 S., R. 26 E., at crossing of Bend-Burns road and 2 miles south of Suntex post office, Harney County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 24 to April 26, 1917; March 30 to May 5, 1922, and February 23 to March 6, 1923, when station was discontinued.

GAGE.—Vertical staff gage on bridge.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Gravel and boulders; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage during period from high-water marks noted March 17, 1.0 foot, probably on morning of February 24 (discharge, 56 second-feet); stream dry except during spring break-up or after unusual rains.

ICE.—None.

DIVERSIONS.—Some water diverted for irrigation from a northerly tributary.

REGULATION.—None.

ACCURACY.—Stage-discharge relation probably permanent. Rating curve well defined above 16 second-feet by measurements in 1922. Gage read to half-tenths usually once a day. Daily discharge ascertained by applying mean daily gage height to rating table. Record poor on account of extreme diurnal fluctuation.

No discharge measurements made during the year.

Daily discharge of Chickahominy Creek near Suntex, Oreg., for 1923

Day	Discharge in second-feet	Day	Discharge in second-feet	Day	Discharge in second-feet
Feb. 23	14	Feb. 27	4.4	Mar. 3	7.2
24	19	28	11	4	4.0
25	19	Mar. 1	14	5	2.0
26	19	2	4.4	6	.0

NOTE.—Run-off Feb. 23 to Mar. 5 was 234 acre-feet.

ALVORD LAKE BASIN

TROUT CREEK NEAR DENIO, OREG.

LOCATION.—In SW. ¼ sec. 26, T. 39 S., R. 36 E., 800 feet above bridge at mouth of canyon, 5 miles east of Trout Creek ranch, and 14 miles northeast of Denio, Harney County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 25, 1911, to March 31, 1912; April 15, 1922, to November 4, 1923, when station was discontinued.

GAGE.—Stevens 8-day water-stage recorder on right bank, inspected by E. P. Hill. Staff gage at bridge used in 1911–1912.

DISCHARGE MEASUREMENTS.—Made by wading at gage or at high stages from bridge.

CHANNEL AND CONTROL.—Control of fairly large gravel and boulders, shifting at high stages. Banks fairly high, covered with willows.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year 2.18 feet at 9 a. m., May 18 (discharge, 39 second-feet); minimum stage from recorder, 0.62 foot September 15 (discharge, 0.8 second-foot).

ICE.—Creek frozen December to March. Record obtained at weirs on two channels of creek.

DIVERSIONS.—A little water diverted for irrigating small ranch fields above the station. Large area irrigated below mouth of canyon.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed during winter. Two rating curves used, fairly well defined above 2 second-feet, based largely on comparisons of gage heights with discharge computed from readings on weirs on two channels of stream. Operation of water-stage recorder satisfactory October 1 to November 23 and April 12 to October 21, with a few breaks in record. Gages above weirs read once a week October 21 to August 12. Readings used only for comparison except November 25 to March 31. Daily discharge ascertained by applying to rating table the mean daily gage height obtained by inspecting the recorder graph. Records fair.

The following measurement was made by Wendell Dawson:
April 9, 1923: Gage height, 1.36 feet; discharge, 8.2 second-feet.

Daily discharge, in second-feet, of Trout Creek near Denio, Oreg., for the period October 1, 1922, to November 4, 1923

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
1	2.5	3.2							18	8.6	2.9	1.4	2.8	
2	2.3	4.3	4.1						18	8.0	3.0		2.8	6.3
3	2.4	4.7				5.1			20	7.6	3.1		3.4	
4	2.5	4.0			3.4			23	16	7.4	3.2		4.6	6.3
5	2.6	4.9					6.0		13	7.0	3.2	1.2	4.6	
6	2.7	4.9		3.6					22	7.2	3.1		4.8	
7	2.6	4.8						33	20	7.0	2.8		5.2	
8	2.8	4.8						35	21	7.2	2.8		5.6	
9	2.8	4.8	3.7				8.2	37	19	6.6	2.7	.9	5.7	
10	2.8	4.8			4.3	5.1	7.4	39	19	6.6	2.7	1.0	6.7	
11	3.1	4.7					6.6	32	18	5.6	2.6	.9	7.4	
12	3.7	4.5					5.7	25	19	4.9	2.4	.9	7.0	
13	3.0	3.9		5.2			7.2	22	19	5.2	2.4	.9	6.7	
14	2.9	3.9					9.4	21	16	4.8	1.9	.8	6.7	
15	2.8	4.2					10		14	14.0	1.6	.8	6.7	
16	2.7	4.5	3.1				16	24	12	9.6	1.5	.9	6.7	
17	2.5	4.5			4.3	2.4	22		12	8.0	1.5	.9	6.7	
18	2.6	4.6					19		13	6.7	1.3	.9	6.9	
19	2.6	4.3					17	28	12	5.4	1.5	.9	6.9	
20	2.6	4.3		2.3			14	27	11	5.4	1.9	1.0	6.9	
21	3.0	4.0					13	27	13	5.1	2.6	1.0	6.9	
22	4.0	3.2					12	26	12	5.1	1.9	1.2		
23	3.5	1.8	3.5				12	17	14	4.8	2.0	1.9		
24	2.4	3.0			3.9	3.2		16	15	4.8	1.9	1.7		
25	2.4	4.2						18	13	3.8	1.9	1.9	6.6	
26	2.4						12	17	12	3.7	1.7	3.4		
27	2.4			3.2				16	12	3.3	1.6	4.0		
28	2.4	4.0						16	11	3.4	1.6	3.0	6.3	
29	2.6							15	10	3.2	1.5	2.5	6.3	
30	2.7		3.7				13	18	10	3.2	1.5	2.7		
31	2.9					5.0		18		2.8	1.3			

Monthly discharge of Trout Creek near Denio, Oreg., for the period October 1, 1922, to October 31, 1923

Month	Discharge in second-feet			Run-off in acre-feet
	Maximum	Minimum	Mean	
1922-23				
October	4.0	2.3	2.75	169
November	4.9	1.8	4.16	248
December			3.62	223
January			3.58	220
February			3.98	221
March			4.16	256
April	22		10.4	619
May	39	15	23.8	1,460
June	22	10	15.1	898
July	14	2.8	6.00	369
August	3.2	1.3	2.18	134
September	4.0	0.8	1.46	87
The year	39	.8	6.78	4,900
1923				
October	7.4	2.8	6.02	370

MISCELLANEOUS DISCHARGE MEASUREMENTS

Discharge measurements of streams in the Great Basin at points other than regular gaging stations, made during the year ending September 30, 1923, are presented in the following table:

Miscellaneous discharge measurements in Great Basin during the year ending September 30, 1923

Bear River Basin

Date	Stream	Tributary to—	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
June 1	Tule Lakes outlet	Soda Creek	S. ½ sec. 27 and N. ½ sec. 34, T. 7 S., R. 24 E., 11 miles northeast of Soda Springs, Idaho.		23.5
25	do	do	do		17.9
July 18	do	do	do		29.0
June 3	Formation Springs	do	SE. ¼ sec. 23, T. 8 S., R. 42 E., 5½ miles northeast of Soda Springs, Idaho.		23.9
25	do	do	do		26.4
July 17	do	do	do		24.9
Aug. 30	do	do	do		25.4
Sept. 30	Logan River	Little Bear River	NE. ¼ sec. 24, T. 12 N., R. 2 E., at Cord Canyon ranger station, 11 miles northeast of Logan, Utah.	0.77	149

Minor basins in Nevada

Apr. 7	Currant Creek	Railroad Valley	At Cazier's weir three-fourths mile above gaging station at Cazier's ranch, near Currant, Nev.		4.4
7	do	do	At Calloway's weir 2½ miles below gaging station at Cazier's ranch near Currant, Nev.		5.1

Antelope Valley Basin

Mar. 21	Littlerock Creek	Antelope Valley	Above Santiago Creek near Littlerock, Calif.		17
21	Santiago Creek	Littlerock Creek	Mouth near Littlerock, Calif.		9

Walker River Basin

July 18	East Walker River	Walker River	NE. ¼ sec. 35, T. 7 N., R. 26 E., 20 miles northeast of Bridgeport, Calif.	1.00	267
25	do	do	do	.81	214
Aug. 16	do	do	do	.46	141
Oct. 11	West Walker River	do	SE. ¼ sec. 9, T. 6 N., R. 23 E., below confluence of East and West Forks of West Walker River, 3 miles north of Hardy Station, Calif.		52
11	do	do	NE. ¼ sec. 4, T. 7 N., R. 23 E., 2 miles upstream from gaging station near Coleville, Calif.		64

Humboldt-Carson Sink Basin

Oct. 6	Humboldt River	Humboldt Sink	Sec. 35, T. 29 N., R. 32 E., at former gaging station, 2 miles southwest of Oreana, Nev.	1.01	38.7
21	do	do	do	.76	19.7
Jan. 26	do	do	do		105
Feb. 1	do	do	do		167
Mar. 11	do	do	do	2.45	273
May 4	do	do	do	1.97	183
29	do	do	do	1.56	128

Miscellaneous discharge measurements in Great Basin during the year ending September 30, 1923—Continued

Humboldt-Carson Sink Basin—Continued

Date	Stream	Tributary to—	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
Jan. 13	Elko-Lamoille Power Co.'s tailrace.	Diverts from Lamoille Creek.	Sec. 6, T. 32 N., R. 58 E., at confluence with creek 50 feet above gaging station on Lamoille Creek near Lamoille, Nev.	-------	0.9
May 11	McDermitt Canal	do	Sec. 6, T. 32 N., R. 58 E., 300 feet below head of canal, near Lamoille, Nev.	-------	19
27	North Fork of Humboldt River.	Humboldt River	Sec. 13, T. 38 N., R. 57 E., at site of former gaging station at Devils Gate, 17 miles north of Halleck, Nev.	-------	17
Oct. 2	do	do	Sec. 24, T. 38 N., R. 57 E., 1½ miles below former gaging station at Devils Gate, Nev.	-------	12
Jan. 10	South Fork of Humboldt River.	do	Sec. 19, T. 33 N., R. 55 E., at former gaging station 4 miles above mouth, and 10 miles southwest of Elko, Nev.	-------	26.6
Mar. 6	do	do	do	1.49	85.0
May 1	do	do	do	1.62	91.1
June 4	do	do	do	2.47	276
Sept. 26	do	do	do	.67	13.4

Warner Lakes Basin

Mar. 9	Camas Creek	Deep Creek	Former gaging station below Blue Creek near Lakeview, Oreg.	0.63	13.8
May 9	do	do	do	2.30	100
July 28	do	do	do	.28	3.9

Abert Lake Basin

Nov. 21	Chewaucan River	Abert Lake	Former gaging station near Paisley, Oreg.	0.39	20.1
Mar. 17	do	do	do	.58	57
Apr. 12	do	do	do	.98	154
May 10	do	do	do	1.39	337
July 9	do	do	do	.64	58

Summer Lake Basin

Jan. 29	Ana River	Summer Lake	Sec. 6, T. 30 S., R. 17 E., near Summer Lake, Oreg.	-------	109
July 10	do	do	do	3.00	129

Silver Lake Basin

Mar. 22	Silver Creek	Silver Lake	Below Thompson Valley Reservoir, Oreg.	-------	1.0
Apr. 14	do	do	do	1.85	32
May 15	do	do	do	1.50	20
Jan. 25	do	do	Former gaging station near Silver Lake, Oreg.	.15	1.5
Mar. 21	do	do	do	.05	1.5

Malheur Lake Basin

Mar. 16	Poison Creek	Silvies River	Former gaging station near Burns, Oreg.	1.23	2.4
Apr. 7	do	do	do	1.87	40

STREAM-GAGING STATIONS AND PUBLICATIONS RELATING TO WATER RESOURCES

INTRODUCTION

Investigation of water resources by the United States Geological Survey has consisted in large part of measurements of the volume of flow of streams and studies of the conditions affecting that flow, but it has comprised also investigation of such closely allied subjects as irrigation, water storage, water powers, underground waters, and quality of water. Most of the results of these investigations have been published in the series of water-supply papers, but some have appeared in the bulletins, professional papers, monographs, and annual reports.

The results of stream-flow measurements are now published annually in 12 parts, each part covering an area whose boundaries coincide with natural drainage features as indicated below.

Part I. North Atlantic slope basins (St. John River to York River).
II. South Atlantic slope and eastern Gulf of Mexico basins (James River to the Mississippi).
III. Ohio River Basin.
IV. St. Lawrence River Basin.
V. Upper Mississippi River and Hudson Bay basins.
VI. Missouri River Basin.
VII. Lower Mississippi River Basin.
VIII. Western Gulf of Mexico basins.
IX. Colorado River Basin.
X. Great Basin.
XI. Pacific slope basins in California.
XII. North Pacific slope basins, in three volumes:
A. Pacific slope basins in Washington and upper Columbia River Basin.
B. Snake River Basin.
C. Lower Columbia River Basin and Pacific Slope basins in Oregon.

HOW GOVERNMENT REPORTS MAY BE OBTAINED OR CONSULTED

Water-supply papers and other publications of the United States Geological Survey containing data in regard to the water resources of the United States may be obtained or consulted as indicated below.

1. Copies may be purchased at nominal cost from the Superintendent of Documents, Government Printing Office, Washington, D. C., who will, on application, furnish lists giving prices.

2. Sets of the reports may be consulted in the libraries of the principal cities of the United States.

3. Complete sets are available for consultation in the local offices of the water-resources branch of the Geological Survey, as follows:

Boston, Mass., 2500 Customhouse.
Albany, N. Y., 704 Journal Building.
Trenton, N. J., Statehouse.
Charlottesville, Va., care of University of Virginia.
Asheville, N. C., 316 Jackson Building.
Chattanooga, Tenn., 37 Municipal Building.
Columbus, Ohio, Engineering Experiment Station, Ohio State University.
Chicago, Ill., 940 Transportation Building.
Madison, Wis., care of Railroad Commission of Wisconsin.
Ames, Iowa, State Highway Commission Building.
Rolla, Mo., Rolla Building, School of Mines and Metallurgy.
Topeka, Kans., 23 Federal Building.
Helena, Mont., 45–46 Federal Building.
Denver, Colo., 403 Post Office Building.
Salt Lake City, Utah, 313 Federal Building.
Idaho Falls, Idaho, 228 Federal Building.
Boise, Idaho, Federal Building.
Tacoma, Wash., 404 Federal Building.
Portland, Oreg., 606 Post Office Building.
San Francisco, Calif., 303 Customhouse.
Los Angeles, Calif., 600 Federal Building.
Tucson, Ariz., College of Law Building, University of Arizona.
Austin, Tex., State Capitol.
Honolulu, Hawaii, Territorial Building.

A list of the Geological Survey's publications may be obtained by applying to the Director, United States Geological Survey, Washington, D. C.

STREAM-FLOW REPORTS

Stream-flow records have been obtained at about 4,800 points in the United States, and the data obtained have been published in the reports tabulated on page 151.

Stream-flow data in reports of the United States Geological Survey

[A = Annual Report; B = Bulletin; W = Water-Supply Paper]

Report	Character of data	Year
10th A, pt. 2	Descriptive information only	
11th A, pt. 2	Monthly discharge and descriptive information	1884 to Sept., 1890.
12th A, pt. 2	do	1884 to June 30, 1891
13th A, pt. 3	Mean discharge in second-feet	1884 to Dec. 31, 1892.
14th A, pt. 2	Monthly discharge (long-time records, 1871 to 1893)	1888 to Dec. 31, 1893.
B 131	Descriptions, measurements, gage heights, and ratings	1893 and 1894.
16th A, pt. 2	Descriptive information only	
B 140	Descriptions, measurements, gage heights, ratings and monthly discharge (also many data covering earlier years).	1895.
W 11	Gage heights (also gage heights for earlier years)	1896.
18th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also similar data for some earlier years).	1895 and 1896
W 15	Descriptions, measurements, and gage heights, eastern United States, eastern Mississippi River, and Missouri River above junction with Kansas.	1897.
W 16	Descriptions, measurements, and gage heights, western Mississippi River below junction of Missouri and Platte, and western United States.	1897.
19th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also some long-time records).	1897.
W 27	Measurements, ratings, and gage heights, eastern United States, eastern Mississippi River, and Missouri River	1898.
W 28	Measurements, ratings, and gage heights, Arkansas River, and western United States.	1898.
20th A, pt. 4	Monthly discharge (also for many earlier years)	1898.
W 35 to 39	Descriptions, measurements, gage heights, and ratings	1899.
21st A, pt. 4	Monthly discharge	1899.
W 47 to 52	Descriptions, measurements, gage heights, and ratings	1900.
22d A, pt. 4	Monthly discharge	1900.
W 65, 66	Descriptions, measurements, gage heights, and ratings	1901.
W 75	Monthly discharge	1901.
W 82 to 85	Complete data	1902.
W 97 to 100	do	1903.
W 124 to 135	do	1904.
W 165 to 178	do	1905.
W 201 to 214	do	1906.
W 241 to 252	do	1907–8.
W 261 to 272	do	1909.
W 281 to 292	do	1910.
W 301 to 312	do	1911.
W 321 to 332	do	1912.
W 351 to 362	do	1913.
W 381 to 394	do	1914.
W 401 to 414	do	1915.
W 431 to 444	do	1916.
W 451 to 464	do	1917.
W 471 to 484	do	1918.
W 501 to 514	do	1919–20.
W 521 to 534	do	1921.
W 541 to 554	do	1922.
W 561 to 574	do	1923.

The records at most of the stations discussed in these reports extend over a series of years, and miscellaneous measurements at many points other than regular gaging stations have been made each year. An index of the reports containing records obtained prior to 1904 has been published in Water-Supply Paper 119.

The following table gives, by years and drainage basins, the numbers of the papers on surface-water supply published from 1899 to 1923. The data for any particular station will be found in the reports covering the years during which the station was maintained. For example, data for Machias River at Whitneyville, Maine, 1903 to 1921, are published in Water-Supply Papers 97, 124, 165, 201, 241, 261, 281, 301, 321, 351, 381, 401, 431, 451, 471, 501, and 521, which contain records for the New England streams from 1903 to 1921. Results of miscellaneous measurements are published by drainage basins.

Numbers of water-supply papers containing results of stream measurements, 1899–1923

[For basins included see p. 149]

Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII		
												A	B	C
1899 [a]	35	[b] 35, 36	36	36	36	[c] 36, 37	37	37	[d] 37, 38	38, [e] 39	38, [f] 39	38	38	38
1900 [g]	47, [h] 48	48	48, [i] 49	49	49	49, [j] 50	50	50	50	51	51	51	51	51
1901	65, 75	65, 75	65, 75	65, 75	[k] 65, 66, 75	66, 75	[k] 65, 66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75
1902	82	[b] 82, 83	83	[l] 82, 83	[k] 83, 84	84	[k] 83, 84	84	85	85	85	85	85	85
1903	97	[b] 97, 98	98	97	[k] 98, 99, [m] 100	99	[k] 98, 99	99	100	100	100	100	100	100
1904	[n] 124, 125 [p] 126	[p] 126, 127	128	129	[k] 128, 130	130, [q] 131	[k] 128, 131	132	133	133, [r] 134	134	135	135	135
1905	[n] 165, [o] 166 [p] 167	[p] 167, 168	169	170	171	172	[k] 169, 173	174	175, [s] 177	176, [r] 177	177	178	178	[t] 177, 178
1906	[n] 201, [o] 202 [p] 203	[p] 203, 204	205	206	207	208	[k] 205, 209	210	211	212, [r] 213	213	214	214	214
1907–8	241	242	243	244	245	246	247	248	249	250, [r] 251	251	252	252	252
1909	261	262	263	264	265	266	267	268	269	270, [r] 271	271	272	272	272
1910	281	282	283	284	285	286	287	288	289	290	291	292	292	292
1911	301	302	303	304	305	306	307	308	309	310	311	312	312	312
1912	321	322	323	324	325	326	327	328	329	330	331	332–A	332–B	332–C
1913	351	352	353	354	355	356	357	358	359	360	361	362–A	362–B	362–C
1914	381	382	383	384	385	386	387	388	389	390	391	392	393	394
1915	401	402	403	404	405	406	407	408	409	410	411	412	413	414
1916	431	432	433	434	435	436	437	438	439	440	441	442	443	444
1917	451	452	453	454	455	456	457	458	459	460	461	462	463	464
1918	471	472	473	474	475	476	477	478	479	480	481	482	483	484
1919–20	501	502	503	504	505	506	507	508	509	510	511	512	513	514
1921	521	522	523	524	525	526	527	528	529	530	531	532	533	534
1922	541	542	543	544	545	546	547	548	549	550	551	552	553	554
1923	561	562	563	564	565	566	567	568	569	570	571	572	573	574

[a] Rating tables and index to Water-Supply Papers 35–39 contained in Water-Supply Paper 39. Tables of monthly discharge for 1899 in Twenty-first Annual Report, Part IV.
[b] James River only.
[c] Gallatin River.
[d] Green and Gunnison Rivers and Grand River above junction with Gunnison.
[e] Mohave River only.
[f] Kings and Kern Rivers and south Pacific slope basins.
[g] Rating tables and index to Water-Supply Papers 47–52 and data on precipitation, wells, and irrigation in California and Utah contained in Water-Supply Paper 52. Tables of monthly discharge for 1900 in Twenty-second Annual Report, Part IV.
[h] Wissahickon and Schuylkill Rivers to James River.
[i] Scioto River.
[j] Loup and Platte Rivers near Columbus, Nebr., and all tributaries below junction with Platte.
[k] Tributaries of Mississippi from east.
[l] Lake Ontario and tributaries to St. Lawrence River proper.
[m] Hudson Bay only.
[n] New England rivers only.
[o] Hudson River to Delaware River, inclusive.
[p] Susquehanna River to Yadkin River, inclusive.
[q] Platte and Kansas Rivers.
[r] Great Basin in California except Truckee and Carson River Basins.
[s] Below junction with Gila.
[t] Rogue, Umpqua, and Siletz Rivers only.

In these papers and in the following lists the stations are arranged in downstream order. The main stem of any river is determined by measuring or estimating its drainage area—that is, the headwater stream having the largest drainage area is considered the continuation of the main stream, and local changes in name and lake surface are disregarded. All stations from the source to the mouth of the main stem of the river are presented first, and the tributaries in regular order from source to mouth follow, the streams in each tributary basin being listed before those of the next basin below.

In exception to this rule the records for Mississippi River are given in four parts, as indicated on page 149, and the records for large lakes are presented in order of streams around the rim of the lake.

PRINCIPAL DIVISIONS

The Great Basin is made up of a number of minor basins whose streams do not discharge into the ocean. The largest of these minor basins are the depressions that hold Great Salt Lake, Sevier Lake, Humboldt Sink, Truckee, Walker, Carson, and Owens Rivers, and Honey, Mono, Malheur, Harney, Warner, Abert, Summer, and Silver Lakes. The streams in this section drain wholly or in part the States of California, Idaho, Nevada, Oregon, Utah, and Wyoming.

In addition to the list of gaging stations and the annotated list of publications relating specifically to the section, these pages contain also brief references to reports published by State and other organizations (see p. 164).

GAGING STATIONS

NOTE.—Dash after a date indicates that station was being maintained September 30, 1923. Period after a date indicates discontinuance.

GREAT SALT LAKE BASIN

Great Salt Lake at Saltair, Utah, 1904; 1912–
Great Salt Lake at Midlake, Utah, 1912–
Great Salt Lake at Garfield Beach gage, Utah, 1875–1899.
- Bear River near Evanston, Wyo., 1913–
- Bear River at Harer, Idaho, 1913–1916; 1919–
- Bear River at Dingle, Idaho, 1903–1914.
- Bear River at Soda Springs, Idaho, 1896.
- Bear River at Alexander, Idaho, 1911–1916; 1919–
- Bear River near Preston, Idaho, 1889–1917.
- Bear River near Weston, Idaho, 1919–
- Bear River near Collinston, Utah, 1889–
  - Bear (Mud) Lake inlet canal near Dingle, Idaho, 1911–1913.
  - Bear Lake at Fish Haven, Idaho, 1903–1906.
  - Georgetown Creek near Georgetown, Idaho, 1911–1914.
  - Soda Creek at Lau ranch, near Soda Springs, Idaho, 1923–
  - Soda Creek near Soda Springs, Idaho, 1913–
  - Cub Creek near Franklin, Idaho, 1900–1901.

Great Salt Lake tributaries—Continued.
Bear River tributaries—Continued.
Little Bear River—
Logan River above State dam, near Logan, Utah, 1913–
Logan River near Logan, Utah, 1896–1912.
Logan River below State dam, near Logan, Utah, 1913–14.
Logan River below Logan Northern Canal, near Logan, Utah, 1915–1917.
Utah Power & Light Co.'s tailrace near Logan, Utah, 1913–
Logan, Hyde Park, and Smithfield Canal near Logan, Utah, 1904–1907; 1909–
Logan Northern Canal near Logan, Utah, 1913–1916.
Blacksmith Fork above Utah Power & Light Co.'s dam, near Hyrum, Utah, 1900–1902; 1913–
Blacksmith Fork at Utah Power & Light Co.'s plant, near Hyrum, Utah, 1914–1916.
Blacksmith Fork below Utah Power & Light Co.'s plant, near Hyrum, Utah, 1904–1910; 1914–1916.
Hyrum city power canal (Blacksmith Fork power-plant race) near Hyrum, Utah, 1904–1910; 1914–1917.
West Side Canal near Collinston, Utah, 1912–
Hammond (East Side) Canal near Collinston, Utah, 1912–
Little Malad River near Malad, Idaho, 1911–1913.
Box Elder Creek near Brigham, Utah, 1918–1921.
Box Elder Creek at Brigham, Utah, 1909–1912.
Weber River near Oakley, Utah, 1904–
Weber River at Devils Slide (Croydon), Utah, 1905–
Weber River at Gateway, Utah, 1919–
Weber River near Uinta, Utah, 1889–1903.
Weber River near Plain City, Utah, 1903–
Chalk Creek at Coalville, Utah, 1904–5.
Lost Creek near Croydon, Utah, 1921–1923.
Lost Creek at Devils Slide,[1] Utah, 1905; 1921–
South Fork of Ogden River (head of Ogden River) near Huntsville, Utah, 1921–
Ogden River at upper end of canyon, near Ogden, Utah, 1895-96.
Ogden River at Utah Light & Railway Co.'s dam, near Ogden, Utah, 1904–1912.
Ogden River at powder mill, near Ogden, Utah, 1889–90; 1897–1899.
Mill Creek near Bountiful, Utah, 1913–14.
Jordan River near Lehi, Utah, 1904; 1913–
Utah Lake near Spanish Fork, Utah, 1889–1896.
Utah Lake at Geneva, near outlet, Utah, 1896–1900.
Summit Creek near Santaquin, Utah, 1905; 1910–1916.
Peteetneet Creek near Payson, Utah, 1910–1916.
Spanish Fork at Thistle, Utah, 1907–
Spanish Fork near Spanish Fork (Mapleton), Utah, 1900–1901; 1903–1917.
Spanish Fork at Lake Shore, Utah, 1903–1907; 1909–
Diamond Fork near Thistle, Utah, 1907–1917.
United States Bureau of Reclamation power canal near Spanish Fork, Utah, 1909–1917.

[1] Records for 1905 published as "Lost Creek near Croydon, Utah."

Great Salt Lake tributaries—Continued.
Jordan River tributaries—Continued.
Utah Lake tributaries—Continued.
Hobble Creek near Springville, Utah, 1904–1916.
Maple Creek near Springville, Utah, 1910–1913.
Provo River at Forks, Utah, 1911–
Provo River above Telluride Power Co.'s dam, near Provo, Utah, 1905–1911.
Provo River at mouth of canyon, near Provo, Utah, 1889–1906.
Provo River at Denver & Rio Grande Railroad bridge, near Provo, Utah, 1905.
Provo River at San Pedro, Los Angeles & Salt Lake Railroad bridge, near Provo, Utah, 1903–4.
South Fork of Provo River at Forks, Utah, 1911–
American Fork above South Fork, near American Fork, Utah, 1912–1915.
American Fork near American Fork, Utah, 1900–1901; 1903–1905.
South Fork of American Fork near American Fork, Utah, 1912–1915.
Little Cottonwood Creek near Salt Lake City, Utah, 1898–1913.
Big Cottonwood Creek near Salt Lake City, Utah, 1898–1913.
Mill Creek near Salt Lake City, Utah, 1898–1913.
Parleys Creek near Salt Lake City, Utah, 1898–1913.
Emigration Creek near Salt Lake City, Utah, 1898–1913.
City Creek near Salt Lake City, Utah, 1898–1913.

SEVIER LAKE BASIN

Mammoth Creek (head of Sevier River) near Hatch, Utah, 1912; 1913–14; 1915–1919.
Sevier River at Hatch, Utah, 1911–
Sevier River near Panguitch, Utah, 1914.
Sevier River below Old Houston Canal near Panguitch, Utah, 1916.
Sevier River near Circleville, Utah, 1912; 1914–
Sevier River near Kingston, Utah, 1914–
Sevier River near Junction, Utah, 1911; 1912–1916.
Piute Reservoir near Marysvale, Utah, 1914–
Sevier River below Piute Dam, near Marysvale, Utah, 1911; 1912–
Sevier River at Pitts ranch, near Marysvale, Utah, 1906–1911.
Sevier River at Marysvale, Utah, 1912–1914.
Sevier River at Sevier, Utah, 1911–
Sevier River near Richfield, Utah, 1916–1918.
Sevier River at Joseph, Utah, 1889.
Sevier River near Vermilion, Utah, 1912; 1914–
Sevier River near Gunnison, Utah, 1900–1917.
Sevier River below San Pitch River, near Gunnison, Utah, 1917–
Sevier River at Clarks Bridge, near Fayette, Utah, 1914–1916.
Sevier River at McArtie's Ford, near Fayette, Utah, 1914; 1915.
Sevier Bridge Reservoir near Juab, Utah, 1914–
Sevier River near Juab, Utah, 1911–
Sevier River near Mills, Utah, 1914–1918.
Sevier River at Leamington, Utah, 1889–1898; 1912–1914.
Sevier River near Lynndyl, Utah, 1914–1919.

Delta and Melville Reservoir near Delta, Utah, 1914–1917.
Sevier River near Delta, Utah, 1912; 1913–1919.
Gunnison Bend Reservoir near Delta, Utah, 1914–1919.
Sevier River at Oasis, Utah, 1912–
    Hatch Bench Canal near Hatch, Utah, 1914; 1916–1919.
    Asay Creek near Hatch, Utah, 1912; 1913–14.
    State Canal near Panguitch, Utah, 1913; 1914–1919.
    Long Canal near Panguitch, Utah, 1914–1919.
    East Panguitch Canal near Panguitch, Utah, 1914–1919.
    Panguitch Creek above canals near Panguitch, Utah, 1915–1920.
    Panguitch Creek below canals at Panguitch, Utah, 1915; 1917–1918.
    Barton and LeFevre Canal near Panguitch, Utah, 1915–1919.
    McEwen Canal near Panguitch, Utah, 1914–1919.
    Old Houston Canal near Panguitch, Utah, 1915–1919.
    Fox Canal near Circleville, Utah, 1914–1919.
    Circleville Canal near Circleville, Utah, 1914–1919.
    Old Kingston Canal near Circleville, Utah, 1914–1919.
    Dalton Canal at Circleville, Utah, 1914–1919.
    Mitchell Slough:
        Mitchell Slough Canal near Junction, Utah, 1914–1919.
    Junction Middle Canal near Junction, Utah, 1915–1919.
    East Fork of Sevier River at Coyoto, Utah, 1914–1919.
    East Fork of Sevier River above Otter Creek, near Coyoto, Utah, 1915–16.
    East Fork of Sevier River near Kingston, Utah, 1912–
        Coyoto Canal near Coyoto, Utah, 1916–1919.
        Otter Creek above reservoir, near Coyoto, Utah, 1915–1920.
        Otter Creek Reservoir near Coyoto, Utah, 1914.
        Otter Creek near Coyoto, Utah, 1913–1919.
        Otter Creek Reservoir feeder canal at head near Coyoto, Utah, 1914–1919.
        Otter Creek Reservoir feeder canal at mouth near Coyoto, Utah, 1915–1920.
        Kingston Canal at Kingston, Utah, 1914–1919.
    Pine (Bullion) Creek (Upper Station) near Marysvale, Utah, 1918–19.
    Pine Creek at Marysvale, Utah, 1914; 1918–19.
    Clear Creek at Sevier, Utah, 1912–1919.
        Cove Canal at Sevier, Utah, 1914–1919.
    Monroe South Bend Canal near Joseph, Utah, 1914–1919.
    Sevier Valley Canal near Joseph, Utah, 1912–1919.
    Sevier Valley Canal at Elsinore, Utah, 1913.
    Sevier Valley Canal near Richfield, Utah, 1912–1919.
    State Canal near Vermilion, Utah, 1913.
    State Canal near Aurora, Utah, 1913.
    State Canal near Salina, Utah, 1913.
    State Canal near Redmond, Utah, 1913–1919.
        Joseph Canal near Joseph, Utah, 1914–1919.
    Wells Canal near Joseph, Utah, 1914–1919.
    Monroe Canal near Elsinore, Utah, 1914–1919.
    Elsinore Canal near Elsinore, Utah, 1914–1919.
    Brooklyn Canal near Elsinore, Utah, 1914–1919.
    Richfield Canal near Elsinore, Utah, 1914–1919.
    Annabella Canal at Elsinore, Utah, 1914–1919.
    Vermilion Canal near Richfield, Utah, 1914–1919.
    Rockyford Canal near Vermilion, Utah, 1914–

Sevier River tributaries—Continued.
Salina Creek at Salina, Utah, 1914–1919.
West View Canal at Redmond, Utah, 1914–1919.
Fayette Canal near Centerville, Utah, 1914–1919.
Dover Canal near Gunnison, Utah, 1914–1919.
San Pitch River near Gunnison, Utah, 1900–1905; 1912–1917.
Manti Creek near Manti, Utah, 1900.
Wellington Canal near Mills, Utah, 1914–1918.
Sevier River Land & Water Co.'s Canal near Leamington, Utah, 1914–1919.
Sevier River Land & Water Co.'s Canal above Fool Creek Reservoir, near Lynndyl, Utah, 1914.
Sevier River Land & Water Co.'s by-pass near Lynndyl, Utah, 1914.
Sevier River Land & Water Co.'s Reservoir No. 1 (Fool Creek Reservoir) near Lynndyl, Utah, 1914.
McIntyre Canal near Leamington, Utah, 1914–1918.
Leamington Canal near Leamington, Utah, 1914–1919.
Delta and Mellville Canal (Canal A) near Delta, Utah, 1912–1919.
Canal B at intake, near Delta, Utah, 1912.
Lyman's ditch near Delta, Utah, 1912.
Melville West Side Canal near Delta, Utah, 1912.
Canal C at head gate near Delta, Utah, 1912.
Melville Main Canal near Delta, 1912.
Midland Canal near Delta, Utah, 1914.
Abraham Canal near Delta, Utah, 1913; 1914.
Deseret High-Line Canal near Delta, Utah, 1913; 1914.
Deseret Canal near Delta, Utah, 1913; 1914.
Smith Canal near Delta, Utah, 1914.

STREAMS IN PAVANT VALLEY

Chalk Creek near Fillmore, Utah, 1914.
Pine Creek near Fillmore, Utah, 1914.
Meadow Creek near Meadow, Utah, 1914.
Corn Creek near Kanosh, Utah, 1914.

BEAVER RIVER BASIN

Beaver River near Beaver, Utah, 1906; 1914–
Beaver River at Adamsville, Utah, 1913–
Beaver River at Rockyford dam, near Minersville, Utah, 1913–
Beaver River at Minersville, Utah, 1909–1913.
Beaver River at Milford, Utah, 1914.
South Creek near Beaver, Utah, 1906.
North Fork of North Creek (head of North Creek) near Beaver, Utah, 1906.
South Fork of North Creek near Beaver, Utah, 1906.
Indian Creek at Adamsville, Utah, 1906; 1914–1920.
Minersville Canal at Minersville, Utah, 1906; 1914.
Coal Creek near Cedar City, Utah, 1915–1919.

MINOR BASINS IN NEVADA

Thousand Springs Creek near Tecoma, Nev., 1910–1913.
Overland Creek near Ruby Valley, Nev., 1917–1918.
Snake Creek near Baker, Nev., 1913–1915; 1916–17.
Baker Creek near Baker, Nev., 1913–1915.
Cleveland Creek near Osceola, Nev., 1914–1916.
White River near Preston, Nev., 1914.
Currant Creek at Ranger Station, near Currant, Nev., 1913.
Currant Creek near Currant, Nev., 1913; 1914–1917; 1923.
Big Warm Spring near Duckwater, Nev., 1915–16.
Duckwater Creek near Duckwater, Nev., 1915–1917.
Lees Creek near Pahrump, Nev., 1916.
Intermittent Springs near Pahrump, Nev., 1916.
Birch Creek near Austin, Nev., 1913; 1914.

SALTON SINK BASIN

Salton Sea near Salton, Calif., 1904–1918.
Alamo River near Brawley, Calif., 1909–1912.
New River near Brawley, Calif., 1909–1911.

OWENS LAKE BASIN

Owens River near Round Valley, Calif., 1903–1923.
Owens River near Big Pine [Tinemaha], Calif., 1906–
Owens River near Lone Pine, Calif., 1909–1918.
Owens River near Citrus, Calif., 1903–1906.
Owens Lake near Lone Pine (Olancha), Calif., 1908–
Rock Creek near Round Valley, Calif, 1903–1923.
Pine Creek near Round Valley, Calif., 1903–1923.
Owens River Canal near Bishop., Calif., 1903–1905.
McNally Canal near Bishop, Calif., 1903–1905.
Farmers Canal near Bishop, Calif., 1903–1905.
Bishop Creek near Bishop, Calif., 1903–1911.
Hillside (North) Canal near Bishop, Calif., 1903–1905.
Hillside (South) Canal near Bishop, Calif., 1903–1905.
Powers Canal near Bishop, Calif., 1903–1905.
Bishop Creek Canal near Bishop, Calif., 1903–1905.
Collins (George) Canal near Bishop, Calif., 1903–1906.
Collins (A. O.) Canal near Bishop, Calif., 1903–1906.
Dell Canal near Bishop, Calif., 1903–1906.
Big Pine and Owens River Canal near Bishop, Calif., 1903–1905.
Rawson Canal near Bishop, Calif., 1903–1905.
Sanger Canal near Alvord, Calif., 1903–1905.
Baker Creek near Big Pine, Calif., 1908–1911.
Big Pine Creek near Big Pine, Calif., 1903–1911.
Tinemaha Creek near Big Pine [Tinemaha], Calif., 1906–1911.
Birch Creek near Big Pine [Tinemaha], Calif., 1905; 1906–1911.
Taboose Creek near Aberdeen, Calif., 1906–1911.
Goodale Creek near Aberdeen, Calif., 1906–1911.
Division Creek near Independence, Calif., 1906–1910.

Owens River tributaries—Continued.
Eightmile (Sawmill) Creek near Independence, Calif., 1906–1910.
Thibault Creek near Independence, Calif., 1908–1911.
East Side Canal near Citrus, Calif., 1903–1906.
Stevens Canal near Citrus, Calif., 1903–1905.
Oak Creek near Independence, Calif., 1905–1911.
Little Pine (Independence) Creek near Independence, Calif., 1905–1911.
Shepard Creek near Theve, Calif., 1906–1910.
Bairs Creek near Thebe, Calif., 1906–1911.
George Creek near Thebe, Calif., 1906–1911.
Lone Pine Creek near Lone Pine, Calif., 1906–1911.
Tuttle Creek near Lone Pine, Calif., 1906–1911.
Cottonwood Creek near Olancha, Calif., 1906–1911.
Ash Creek near Olancha, Calif., 1907–1911.

ANTELOPE VALLEY BASIN

Littlerock Creek near Palmdale, Calif., 1896–1898.
Rock Creek near Valyermo, Calif., 1923–

MOHAVE RIVER BASIN

Mohave River near Victorville, Calif., 1899–1906.

MONO LAKE BASIN

Mono Lake near Mono Lake, Calif., 1912–
Rock Creek near Valyermo, Calif., 1923–
Leevining Creek near Mono Lake, Calif., 1910–1916.

WALKER LAKE BASIN

East Walker River (head of Walker River), Bridgeport, Calif., 1911–1914; 1921—
East Walker River above Mason Valley, near Mason, Nev., 1916–1918; 1921–
East Walker River near Yerington, Nev., 1902–1908.
East Walker River near Mason, Nev., 1910–1912; 1913–1916.
Walker River near Nordyke, Nev., 1895.
Walker River at Mason, Nev., 1910–1912; 1913–1916; 1921–1923.
Walker River near Wabuska, Nev., 1902–1908; 1920–
Walker River at Schurz, Nev., 1913–
Robinson Creek near Bridgeport, Calif., 1910–1914.
Buckeye Creek near Bridgeport, Calif., 1910–1914.
Swagger Creek near Bridgeport, Calif., 1911–1915.
West Walker River near Coleville, Calif., 1902–1908; 1909–1910; 1915–
West Walker River near Wellington, Nev., 1910; 1917–
West Walker River at Smith, Nev., 1910.
West Walker River at Hudson, Nev., 1914–1921.
West Walker River near Hudson, Nev., 1921–
East Fork of West Walker River near Bridgeport, Calif., 1910.
Saroni Canal near Wellington, Nev., 1920–1923.

HUMBOLDT–CARSON SINK

Carson River basin:
Carson River, East Fork (head of Carson River), at Silver King Valley, near Markleeville, Calif., 1910–1913.
Carson River, East Fork, near Markleeville, Calif., 1910–

Carson River basin—Continued.
- Carson River, East Fork at Rodenbah's ranch, near Gardnerville, Nev., 1900–1906.
- Carson River, East Fork, at Horseshoe Bend, near Gardnerville, Nev., 1908–1910; 1917.
- Carson River, East Fork, at California-Nevada State line, 1911–1914.
- Carson River near Empire, Nev., 1895; 1900–1923.
- Carson River near Fort Churchill, Nev., 1911–
- Carson River near Hazen, Nev., 1908–1910.
  - Silver Creek near Markleeville, Calif., 1910–1913.
  - Markleeville Creek above Markleeville, Calif., 1911–
  - Markleeville Creek at Markleeville, Calif., 1910–
    - Pleasant Valley Creek near Markleeville, Calif., 1910–1911.
  - West Fork of Carson River at Woodfords, Calif., 1890–1892; 1900–1920.

Humboldt River basin:
- Humboldt River near Elko, Nev., 1895–1902.
- Humboldt River at Palisade, Nev., 1902–1906; 1911–
- Humboldt River at Battle Mountain, Nev., 1896–97; 1921–
- Humboldt River at Comus, Nev., 1917–1923.
- Humboldt River near Golconda, Nev., 1894–1909; 1910–1917.
- Humboldt River near Oreana, Nev., 1896–1909; 1910–1922.
- Humboldt River near Lovelock, Nev., 1912–
  - Bishop Creek near Wells, Nev., 1910.
  - Starr Creek near Deeth, Nev., 1913–
  - Marys River at Marys River Cabin, near Deeth, Nev., 1913–14.
  - Marys River at Buena Vista ranch, near Deeth, Nev., 1913–14.
  - Marys River near Deeth, Nev., 1902–3; 1912–
    - Hanks Creek near Deeth, Nev., 1913–14.
  - Lamoille Creek near Lamoille, Nev., 1915–1923.
  - Lamoille Creek near Halleck, Nev., 1913–1919.
  - Secret Creek near Halleck, Nev., 1917–
  - North Fork of Humboldt River near Peko, Nev., 1898–1900.
  - North Fork of Humboldt River at Devils Gate, near Halleck, Nev.; 1913–1921.
  - North Fork of Humboldt River near Halleck, Nev., 1902–1909; 1910–1913.
  - South Fork of Humboldt River near Elko, Nev., 1896–1909; 1910–1922.
  - Maggie Creek at Carlin, Nev., 1913–
  - Pine Creek at Palisade, Nev., 1902–1904; 1912–1914.
  - Rock Creek at Rock ranch, near Battle Mountain, Nev., 1915–1917.
  - Rock Creek near Battle Mountain, Nev., 1896; 1918–
  - Reese River near Berlin, Nev., 1913–1916.
    - Big Creek near Austin, Nev., 1913–14; 1916.
  - Little Humboldt River near Paradise Valley, Nev., 1921–
    - Martin Creek near Paradise Valley, Nev., 1921–
  - Humboldt-Lovelock Irrigation Light & Power Co.'s feeder canal near Mill City, Nev., 1914–
  - Humboldt-Lovelock Irrigation Light & Power Co.'s outlet canal near Humboldt, Nev., 1914–1920; 1921–

PYRAMID AND WINNEMUCCA LAKE BASINS

Lake Tahoe at Tahoe, Calif., 1900–
Truckee River at Tahoe, Calif., 1895–96; 1900–
Truckee River near Boca, Calif., 1890.
Truckee River at Iceland, Calif., 1912–
Truckee River at Nevada-California State line, 1890–1912.
Truckee River at Laughton, Nev., 1890.
Truckee River at Reno, Nev., 1906–1919.
Truckee River near Essex, Nev., 1889.
Truckee River at Vista, Nev., 1899–1908.
Truckee River at Clarks, Nev., 1907–1915.
Truckee River at Derby Dam, Nev., 1907–1910.
Truckee River near Wadsworth, Nev., 1902–1905.
Lake Winnemucca inlet near Wadsworth, Nev., 1902–1905.
Donner Creek at Donner Lake, near Truckee, Calif., 1909–10.
Donner Creek near Truckee, Calif., 1902–1914.
Prosser Creek near Hobart Mills (Truckee), Calif., 1903–4; 1907–1912.
Prosser Creek near Boca, Calif., 1899–90; 1902–3.
South Fork of Prosser Creek near Truckee, Calif., 1909–10.
Little Truckee River near Truckee, Calif., 1909–10.
Little Truckee River near Boca, Calif., 1890.
Little Truckee River at Boca, Calif., 1911–1914.
Little Truckee River at Pine Station and Starr, Calif., 1903–1910.
Webber Creek near Truckee, Calif., 1909–10.
Independence Creek below Independence Lake, Calif., 1902–1907.
Independence Creek near Truckee, Calif., 1909–10.
Steamboat Creek at Steamboat Springs, Nev., 1900–1901.
Galena Creek near Washoe, Nev., 1913–14.

HONEY LAKE BASIN

Long Valley Creek near Scotts, Calif., 1917–1919.
Long Valley Creek near Doyle, Calif., 1917.
Susan River at Susanville, Calif., 1900–1905; 1917–1921.
Gold Run Creek near Susanville, Calif., 1913; 1915–16.
Lassen Creek near Susanville, Calif., 1913; 1915–16.
Willow Creek at Merrillville, Calif., 1904–5.
Willow Creek near Standish, Calif., 1900–1901; 1905.
Baxter Creek near Lassen (Janesville), Calif., 1913–1916; 1917–1919.
Schloss Creek at Lassen (Janesville), Calif., 1915; 1917–1919.
Janesville Creek at Lassen (Janesville), Calif., 1913; 1915; 1917–1919.

RED ROCK CREEK BASIN

Red Rock Creek near Red Rock, Calif., 1917.

SURPRISE VALLEY DRAINAGE BASIN

Bidwell Creek near Fort Bidwell, Calif., 1917–1919.
Bidwell Creek at Fort Bidwell, Calif., 1911–12; 1917–1919.
Box Canyon Creek near Fort Bidwell, Calif., 1918–19.

WARNER LAKES BASIN

Cowhead Lake near Fort Bidwell, Calif., 1911–1913; 1918–19.
Twentymile Creek near Warner Lake, Oreg., 1910–1916; 1917–1919; 1921–22.
Keeno Creek near Fort Bidwell, Calif., 1917–1919.
Fifteenmile Creek near Warner Lake, Oreg., 1913; 1917–1919; 1922.
Fifteenmile Creek below Rock Creek, near Fort Bidwell, Calif., 1913; 1917–1919.
Twelvemile Creek near Fort Bidwell, Calif., 1912–13; 1917–1919; 1922.
East Fork of Horse Creek near Fort Bidwell, Calif., 1917–1919.
West Fork of Horse Creek near Fort Bidwell, Calif., 1917–1919.
Rock Creek near Fort Bidwell, Calif., 1913; 1917–1919.
Deep Creek above Dismal Creek, near Warner, Oreg., 1917–1919.
Deep Creek below Dismal Creek, near Warner Lake, Oreg., 1913; 1917–1919.
Deep Creek at Big Valley, near Lakeview, Oreg., 1911–1915.
Deep Creek above Adel, Oreg., 1922–23.
Deep Creek at Adel, Oreg., 1909–1916; 1917–1919; 1921–22.
Dismal Creek above Big Valley near Warner Lake, Oreg., 1913; 1919.
Dismal Creek near Warner Lake, Oreg., 1919.
Camas Creek near Plush, Oreg., 1911–12.
Camas Creek below Blue Creek, near Lakeview, Oreg., 1912–1915.
Mud Creek near Plush, Oreg., 1911–12; 1915.
Crane Creek near Lakeview, Oreg., 1914.
Drake Creek near Adel, Oreg., 1915; 1922–23.
M. C.-Given ditch near Adel, Oreg., 1915.
Company ditch near Adel, Oreg., 1915.
M. C. ditch at Adel, Oreg., 1915.
Fish Creek near Plush, Oreg., 1914.
Honey Creek at Chalstrand's ranch, near Plush, Oreg., 1910–11.
Honey Creek near Plush, Oreg., 1909–1914; 1915; 1921–22.
Twelvemile Creek near Plush, Oreg., 1911.
Snyder Creek near Plush, Oreg., 1911.
Pelican Lake near Adel, Oreg., 1913–1915.
Crump Lake near Adel, Oreg., 1910–1912; 1913; 1914; 1915.
Hart Lake near Plush, Oreg., 1910–1915.
Flagstaff Lake inlet near Plush, Oreg., 1914.
Flagstaff Lake near Plush, Oreg., 1910–1915.
Lower Campbell Lake near Plush, Oreg., 1914; 1915.
Stone Corral Lake near Plush, Oreg., 1914; 1915.
Bluejoint Lake near Plush, Oreg., 1911–1915.

ABERT LAKE BASIN

Chewaucan River at dam site, near Paisley, Oreg., 1912–1916.
Chewaucan River above Mill Creek, near Paisley, Oreg., 1912–1914.
Chewaucan River near Paisley, Oreg., 1914–1921.
Chewaucan River above Conn ditch, near Paisley, Oreg., 1912.
Chewaucan River at Paisley, Oreg., 1905–1907; 1909–1912; 1913.
Chewaucan River at Narrows, near Paisley, Oreg., 1914–1921.
Chewaucan River at Hotchkiss Ford, near Paisley, Oreg., 1914–1921.
Abert Lake near Valley Falls, Oreg., 1915–
Conn ditch near Paisley, Oreg., 1914–1920.
Smalls Creek at Paisley, Oreg., 1914–1921.
Bagley ditch at Paisley, Oreg., 1914–1920.
Jones-Innis-ZX ditch near Paisley, Oreg., 1914–1921.
Crooked Creek near Valley Falls, Oreg., 1912–13.

SUMMER LAKE BASIN

Ana River near Summer Lake, Oreg., 1905; 1909–10.

SILVER LAKE BASIN

Silver Lake near Silver Lake, Oreg., 1917; 1922.
Silver Creek near Silver Lake, Oreg., 1904–1907; 1909–1922.
Silver Lake inlet near Silver Lake, Oreg., 1922.
West Fork of Silver Creek near Silver Lake, Oreg., 1919–1923.
Bridge Creek near Silver Lake, Oreg., 1905–6; 1911–12; 1922–23.
Buck Creek near Silver Lake, Oreg., 1905–6; 1909–1911; 1919–1923.
Duncan Creek near Silver Lake, Oreg., 1922–23.

MALHEUR AND HARNEY LAKES BASIN

Malheur Lake outlet at Narrows, Oreg., 1903–1906; 1911–12; 1913; 1914; 1916.
Mud Lake outlet near Narrows, Oreg., 1916–1918; 1921–22.
Silvies River near Silvies, Oreg., 1903–1905; 1909–1912; 1916; 1921–1923.
Silvies River near Burns, Oreg., 1903–1906; 1909–1915; 1916–
West Fork of Silvies River near Lawen, Oreg., 1916–17; 1919; 1922.
East Fork of Silvies River near Lawen, Oreg., 1916.
Emigrant Creek near Burns, Oreg., 1921.
Poison Creek near Burns, Oreg., 1921–22.
Prather Creek near Burns, Oreg., 1921–1923.
Donner und Blitzen River near Diamond, Oreg., 1909–1921.
Donner und Blitzen River near Narrows, Oreg., 1915; 1916–1920.
Donner und Blitzen River near Voltage, Oreg., 1916–1922.
Mud Creek near Diamond, Oreg., 1911–1916.
Bridge Creek near Diamond, Oreg., 1911; 1912–1916.
Krumbo Creek near Diamond, Oreg., 1911; 1913.
Buena Vista Canal near Narrows, Oreg., 1915–1920.
Keiger Creek near Diamond, Oreg., 1909–10; 1911; 1912–13; 1916–1921.
Cucamonga Creek near Diamond, Oreg., 1911–1913; 1916.
McCoy Creek near Diamond, Oreg., 1909–1914; 1916–1921.
Riddle Creek near Smith, Oreg., 1911.
Riddle Creek near Diamond, Oreg., 1917–1921.
Silver Creek below Suntex,[3] Oreg., 1912; 1913; 1914; 1919; 1921–1923.
1911–12; 1914–
Silver Creek below Suntex,[3] Oreg., 1912; 1913; 1914; 1919; 1921–1923.
Silver Creek near Narrows, Oreg., 1917–
Chickahominy Creek near Suntex, Oreg., 1917; 1922–23.
Rock Quarry Creek near Suntex, Oreg., 1922.
Dunn Field ditch near Narrows, Oreg., 1917.

ALVORD LAKE BASIN

Trout Creek near Denio, Oreg., 1911–12; 1922–23.
Little Cottonwood Creek near Denio, Oreg., 1911–12.

TUMTUM LAKE BASIN

Van Horn Creek near Denio, Oreg., 1911.

[2] Records prior to 1919 published as "Silver Creek above Riley, Oreg."
[3] Records prior to 1921 published as "Silver Creek below Riley, Oreg."

CATLOW VALLEY, DRAINAGE BASIN

Home Creek near Beckley (Narrows), Oreg., 1911; 1912; 1915–1917.

REPORTS ON WATER RESOURCES OF THE GREAT BASIN

PUBLICATIONS OF THE UNITED STATES GEOLOGICAL SURVEY

WATER-SUPPLY PAPERS

Water-supply papers may be purchased (at price quoted below) from the SUPERINTENDENT OF DOCUMENTS, WASHINGTON, D. C. An asterick (*) indicates that the report is out of print. Water-supply papers are of octavo size.

7. Seepage water of northern Utah, by Samuel Fortier. 1897. 50 pp., 3 pls. 10c.

Describes Cache Valley and its water supply and seepage waters in Ogden Valley.

*43. Conveyance of water in irrigation canals, flumes, and pipes, by Samuel Fortier. 1901. 86 pp., 15 pls.

Describes the location and construction of various types of canals for irrigation.

*44. Profiles of rivers in the United States, by Henry Gannett. 1901. 100 pp., 11 pls.

Gives elevations and distances along Sevier, Bear, and Humboldt Rivers; also brief descriptions.

*57. Preliminary list of deep borings in the United States, Part I (Alabama-Montana), by N. H. Darton. 1902. 60 pp.

*61. Preliminary list of deep borings in the United States, Part II (Nebraska-Wyoming), by N. H. Darton. 1902. 67 pp.

A second, revised, edition of Nos. 57 and 61 was published in 1905 as Water-Supply Paper 149 (q. v.).

68. Water storage in the Truckee basin, California-Nevada, by L. H. Taylor. 1902. 90 pp., 8 pls. 10c.

Discusses reservoir sites, water rights for power and irrigation, irrigable lands, duty of water, and necessity for national control of water.

78. Preliminary report on artesian basins in southwestern Idaho and southeastern Oregon, by I. C. Russell. 1903. 53 pp., 2 pls. 5c.

Discusses briefly the rocks and geologic structure of a part of the Snake River Plains in Canyon and Owyhee Counties, Idaho, and Malheur and Harney Counties, Oreg.; describes briefly the conditions on which artesian flow depends, and in some detail the springs and drilled wells in the Lewis, Otis, Harney, and Whitehorse artesian basins; also describes artesian wells in alluvial deposits and discusses the size of drillholes, casings, etc., the preservation of well records, and the importance of laws to govern the use of artesian waters; gives list of publications bearing on artesian waters.

81. California hydrography, by J. B. Lippincott. 1903. 488 pp., 1 pl. 25c.

A collection of published records of stream flow "hitherto much scattered, some of them out of print and difficult to procure," brought together as a book of reference.

*103. A review of the laws forbidding pollution of inland waters in the United States, by E. B. Goodell. 1904. 130 pp. Superseded by Water-Supply Paper 152.

Cites statutory restrictions of water pollution in California, Idaho, Nevada, Oregon, Utah, and Wyoming.

*122. Relation of the law to underground waters, by D. W. Johnson. 1905. 55 pp.

Cites legislative acts affecting ground waters in California, Idaho, Nevada, Oregon, Utah, and Wyoming.

*140. Field measurements of the rate of movement of underground waters, by C. S. Slichter. 1905. 122 pp., 15 pls.

Discusses flow in Rio Hondo, San Gabriel, and Mohave River Valleys, Calif.; gives results of tests of wells and pumping plants and describes stovepipe method of well construction.

146. Proceedings of second conference of engineers of the Reclamation Service with accompanying papers, compiled by F. H. Newell, chief engineer. 1905. 267 pp. 10c. [Inquiries concerning this report should be addressed to the Bureau of Reclamation.] Contains:

A brief report on "Hydrographic investigations in Nevada," by A. E. Chandler. Gives notes concerning fluctuations and average discharge at stations on Truckee, Humboldt, Carson, and Walker Rivers.

A report on "Underground waters of southern California," by W. C. Mendenhall. Discusses the origin, distribution, and character of the artesian waters, the causes of fluctuations in the supply, and the need of moderation in use.

149. Preliminary list of deep borings in the United States, second edition, with additions, by N. H. Darton. 1905. 175 pp. 10c.

Gives by States (and within the States by counties) location, depth, diameter, yield, height of water, and other information concerning wells 400 feet or more in depth; includes all wells listed in Water-Supply Papers 57 and 61; mentions also principal publications relating to deep borings.

*152. A review of the laws forbidding pollution of inland waters in the United States (second edition), by E. B. Goodell. 1905. 149 pp.

Cites statutory restrictions of water pollution in California, Idaho, Nevada, Oregon, Utah, and Wyoming.

157. Underground water in the valleys of Utah Lake and Jordan River, Utah, by G. B. Richardson. 1906. 81 pp., 9 pls. 20c.

Discusses the source, distribution, recovery, and quality of waters; contains list of typical wells.

*162. Destructive floods in the United States in 1905, with a discussion of flood discharge and frequency and an index to flood literature, by E. C. Murphy and others. 1906. 105 pp., 4 pls.

Gives estimates of flood flow and frequency of Bear River at Collinston, Utah, and Humboldt River at Golconda, Nev. (p. 85).

*181. Geology and water resources of Owens Valley, Calif., by W. T. Lee. 1906. 28 pp., 6 pls.

Discusses artesian conditions, utilization of ground waters by pumping and power plants and undrained lakes as registers of climate. See also Water-Supply Paper 294.

199. Underground water in Sanpete and central Sevier Valleys, Utah, by G. B. Richardson. 1907. 63 pp., 6 pls. 25c.

Describes topography and geology of the area, the sources, distribution, recovery, and quality of the ground water; presents tabulated data concerning springs and wells.

217. Water resources of Beaver Valley, Utah., by W. T. Lee. 1908. 57 pp., 1 pl. 10c.

Describes possible development of surface and ground waters and quality of waters; contains field assays of well water and sanitary and other exact analyses.

*220. Geology and water resources of a portion of south-central Oregon, by G. A. Waring. 1908. 86 pp., 10 pls.

Describes the rocks, streams, lakes and lake valleys, deep and shallow wells, climate, soils, vegetation, industries, and reclamation projects in Lake County; gives analyses of soils and waters.

*224. Some desert watering places in southeastern California and southwestern Nevada, by W. C. Mendenhall. 1909. 98 pp., 4 pls.

Describes physical features of the Colorado and Mohave Deserts and the Death Valley region, mineral resources and industrial development, climate, rivers, springs, and camping places; gives hints on desert traveling; describes main routes of travel and gives details concerning the springs.

*225. Ground waters of the Indio region, California, with a sketch of the Colorado Desert, by W. C. Mendenhall. 1909. 56 pp., 12 pls.

Describes the structural features and deposits of the Colorado Desert, rainfall, and drainage, the origin, source, character, and development of ground waters; gives history of development of the Indio region, and discusses soils, crops, and cost of reclamation.

231. Geology and water resources of the Harney Basin region, Oregon, by G. A. Waring. 1909. 93 pp., 5 pls. 25c.

Describes topography, climate, vegetation, settlements, and industries, the rocks and their succession, lakes, springs, and streams, and artesian conditions: discusses conservation of water supply, temperature of ground waters, and well-drilling methods; describes in detail Harney, Catlow, Alvord, and Whitehorse Basins, and Malheur River Basin.

237. The quality of the surface waters of California, by Walton Van Winkle and F. M. Eaton. 1910. 142 pp., 1 pl. 20c.

Describes geography, climate, industrial development, and drainage, and gives results of mineral analyses of the river waters.

*274. Some stream waters of the western United States, with chapters on sediment carried by the Rio Grande and the industrial application of water analyses, by Herman Stabler. 1911. 188 pp.

Describes collection of samples, plan of analytical work and methods of analyses; discusses soap-consuming power of waters, water softening, boiler waters, and water for irrigation; gives results of analyses of waters of Carson, Truckee, and Owens Rivers.

277. Ground water in Juab, Millard, and Iron Counties, Utah, by O. E. Meinzer. 1911. 162 pp., 5 pls. 25c.

Describes the physiographic features, geologic formations, and history, the rainfall, soil, vegetation, streams, and industrial development; discusses the occurrence of ground water in the bedrock and in unconsolidated sediments, artesian conditions and springs, the quality of the ground waters, irrigation, construction of wells, and watering places, on routes of travel; describes in detail Juab Valley and Round, Little, Sage, Dog, and Fernow Valleys, Tintic Valley and Tintic mining district, Pavant and Lower Beaver Valleys, Old River Bed and Cherry Creek region, Drum and Swasey Wash region, Sevier Desert, Wah Wah Valley, Sevier Lake bottoms, White, Fish Springs, Snake, Parowan, and Rush Lake Valleys, and Escalante Desert; analyses.

*278. Water resources of Antelope Valley, Calif., by H. R. Johnson. 1911. 92 pp., 7 pls.

Describes topography, drainage, climate, physiography, and the water-bearing and nonwater-bearing rocks of areas in Kern, Los Angeles, and San Bernardino Counties; discusses the influence of rainfall on the surface and ground waters, the artesian water and nonartesian water, bedrock springs, chemical character (analyses, alkali, dissolved solids, hygienic conditions), fallacies as to origin and quantities of artesian water, and the present and future development of the underground supplies.

294. An intensive study of the water resources of a part of Owens Valley, Calif., by C. H. Lee. 1912. 135 pp., 30 pls. 55c.

Describes topography, drainage, and structure of the valley, and discusses precipitation, stream flow, evaporation, percolation, and ground waters; bibliography.

297. Gazetteer of surface waters of California, Pt. III: Pacific coast and Great Basin streams, by B. D. Wood. 1913. 244 pp. 20c.

Contains description of streams and lakes of the Great Basin in California.

300. Water resources of California, Pt. III: Stream measurements in the Great Basin and Pacific coast river basins, by H. D. McGlashan and H. J. Dean. 1913. 956 pp., 4 pls. 55c.

Describes the general features of the Great Basin in California, the Great Basin lakes in California and Nevada and gives results of stream-flow investigations available up to June 30, 1912.

333. Ground water in Box Elder and Tooele Counties, Utah, by Everett Carpenter. 1913. 90 pp., 2 pls. 10c.

338. Springs of California, by Gerald A. Waring. 1915. 410 pp., 13 pls. 60c.

Describes briefly the physical features of California, including the coast ranges, Great Central Valley, the lava-covered region, the Sierra Nevada, the southeastern desert, and faults; defines "mineral water" and "pure water"; discusses source and amount of substances in waters, degree of concentration of natural waters and their properties, and the therapeutic value, temperature, and classification of mineral waters. The springs are described under the headings "hot," "carbonated," "sulphur," "saline," "magnesic," "iron," "artesian," "large cold," and "minor perennial" springs.

350. Profile surveys in Bear River Basin, Idaho, prepared under the direction R. B. Marshall, chief geographer. 1914. 7 pp., 6 pls. 10c.

Contains a brief description of Bear River Basin and a list of the gaging stations that have been maintained and mentions publications containing the results of the measurements of stream flow in the basin. The maps show not only the outlines of the river banks, the islands, the positions of rapids, falls, shoals, and existing dams, and the crossings of all ferries and roads, but the contours of banks to an elevation high enough to indicate the possibility of using the stream for the development of power by low or medium heads.

363. Quality of the surface waters of Oregon, by Walton Van Winkle. 1914. 137 pp., 2 pls. 20c.

Gives the results of an investigation made in cooperation with the State of Oregon "to determine the chemical composition of the waters of said State for a period of 14 months from July 1, 1911." Describes the natural features of Oregon, discusses water for domestic and industrial uses, purification of water, and gives the results of analyses of waters of streams tributary to the Pacific and of a number of those discharging into the Great Basin; gives an outline of the geological history of the Great Basin, and brief descriptions of the general features of the Harney, Warner Lakes, Alkali Lake, Christmas Lake, and Chewaucan Basins.

364. Water analyses from the laboratory of the United States Geological Survey tabulated by F. W. Clarke, chief chemist. 1914. 40 pp. 5c.

Contains analyses of waters of rivers, lakes, wells, and springs in Utah, Nevada, California, and Oregon, and of mine waters from Tintic, Utah, and Tonopah and Kimberly, Nev.

*365. Ground water in southeastern Nevada, by Everett Carpenter. 1915. 86 pp., 5 pls.

Describes an area in Clark, Lincoln, White Pine, and Nye Counties drained in part by streams tributary to Colorado River and in part by streams discharging into the Great Basin. Discusses stream, lake, and wind topography, vegetation, crops, and industrial development, rainfall, occurrence of water in bedrock and unconsolidated sediments, source and permanence of artesian waters, and character and distribution of springs; also the quality of waters for domestic use and for irrigation, and gives analyses. Gives details of water supply by areas in Las Vegas and Virgin River Basins and the Great Basin. Gives information in regard to watering places on routes of travel.

370. Surface water supply of Oregon, 1878–1910, by F. F. Henshaw and H. J. Dean. 1915. 829 pp., 1 pl. 45c.

Contains information pertaining to the surface waters of Oregon collected by the United States Geological Survey and cooperating parties from 1878 to September 30, 1910.

*375. Contributions to the hydrology of the United States, 1915; Nathan C. Grover, chief hydraulic engineer. 1916. 181 pp., 19 pls. Contains:

(*d*) Ground water in Big Smoky Valley, Nev., by O. E. Meinzer, pp. 85–116, pls. 6–7. Describes a typical Nevada desert valley—a plain hemmed in by mountain ranges and underlain by porous rock waste eroded from these ranges and saturated with water discharged from them. This valley was selected for investigation not because it afforded exceptional opportunity for the utilization of ground waters, but because it was considered more or less typical of the undeveloped valleys of the State. Preliminary report. See 423.

420. Profile surveys along Henrys Fork, Idaho, and Logan River and Blacksmith Fork, Utah, prepared under the direction of W. H. Herron, acting chief geographer. 1916. 8 pp., 10 pls. 10c.

Contains a brief description of the general features of Logan River Basin and a list of the gaging stations that have been maintained in the basin. The maps show not only the outlines of the river banks, the islands, the positions of rapids, falls, shoals, and existing dams, and the crossings of all ferries and roads, but the contours of banks to an elevation high enough to indicate the possibility of using the stream for the development of power by low or medium heads.

423. Geology and water resources of Big Smoky, Clayton, and Alkali Spring Valleys, Nevada, by Oscar E. Meinzer. 1917. 167 pp., 15 pls. 30c.

Covers in detail the area described briefly in Water-Supply Paper 375 (*d*) and two small adjoining areas.

*425. Contributions to the hydrology of the United States, 1917; N. C. Grover, chief hydraulic engineer. 1918. Contains:

*(*d*) Ground water in Reese River Basin and adjacent parts of Humboldt River Basin, Nevada, by G. A. Waring.

450. Contributions to the hydrology of the United States, 1919; N. C. Grover, chief hydraulic engineer. 1921. iv, 86 pp., 11 pls. 40c. Contains:

*(*b*) Ground water in Lanfair Valley, Calif., by D. G. Thompson.

(*c*) Ground water in Pahrump, Mesquite, and Ivanpah Valleys, Nev. and Calif., by G. A. Waring. 5c.

*467. Exploratory drilling for water and use of ground water for irrigation in Steptoe Valley, Nev., by W. O. Clark and C. W. Riddell, with an introduction by O. E. Meinzer. 1920. 70 pp., 6 pls.

Discusses surface features of the region, soils, climate, surface streams, occurrence and source of ground water, depth to water table, discharge, quantity and quality of ground water, springs and wells, and irrigation.

468. Records of water levels in wells in southern California, by F. C. Ebert. 1921. 156 pp., 4 pls. 25c.

Scope of report indicated by title.

490. Routes to desert watering places in California and Arizona.

(*a*) Routes to desert watering places in the Salton Sea region, Calif., by J. S. Brown. 1920. pp. 1–86, pls. i–vii. 40c.

*(*b*) Routes to desert watering places in the Mohave Desert region, Calif., by D. G. Thompson. 1921. pp. i-vii, 1–4, 87–269, pls. i-iv, viii-xviii.

These two reports contain a general description of the region covered, suggestions for desert travel, and road logs giving mileage and detailed instructions.

493. Hydroelectric power systems of California and their extensions into Oregon and Nevada, by F. H. Fowler. 1923. xlix, 1276 pp., 73 pls. $2.25.

This report contains a vast amount of first-hand information on the history, markets, electric systems, finances, and rates of each of the operating hydroelectric companies in the State and shows the general conditions under which they have attained their present stage of development.

*497. The Salton Sea region, Calif., a geographic, geologic, and hydrologic reconnaissance, with a guide to desert watering places, by J. S. Brown. 1923. xv, 292 pp., 19 pls.

Scope of report indicated by title.

517. Water powers of the Great Salt Lake Basin, by R. R. Woolley, with an introduction by N. C. Grover. 1924. XVI, 270 pp., 13 pls. 30c.

Describes the geography, geology, physiography, climate, lake levels, and general features of this basin. Discusses, by drainage basins, the reservoirs, reservoir sites, and developed and undeveloped water power. Discusses also water rights and appropriations, irrigation and its relation to the development of power, market conditions in the Great Salt Lake Basin, and the relation of the Federal Government to the development of water power. Records of stream flow are contained in an appendix to the report.

ANNUAL REPORTS

Each of the papers contained in the annual reports was also issued in separate form. Annual reports may be purchased from the SUPERINTENDENT OF DOCUMENTS, WASHINGTON, D. C., at the price noted below. An asterisk (*) indicates that the report is out of print.

Third Annual Report of the United States Geological Survey, 1881–82, J. W. Powell, Director. 1883. xviii, 564 pp., 67 pls. $2.35. Contains:

*Sketch of the geological history of Lake Lahontan, by I. C. Russell, pp. 189–235, pls. 18–23. Describes the physical features of the Great Basin.

Fourth Annual Report of the United States Geological Survey, 1882–83, J. W. Powell, Director. 1884. xxxii, 473 pp., 85 pls. $1.65. Contains:

*A geological reconnaissance in southern Oregon, by I. C. Russell, pp. 431–464, pls. 83–85. Describes the interior drainage of southern Oregon; discusses the area, extent, quality of waters, and recent changes in the existing lakes.

Eighth Annual Report of the United States Geological Survey, 1886–87, J. W. Powell, Director. 1889. 2 parts. Part I, xix, 474, xii pp., 76 pls. $1.50. Contains:

*The Quaternary history of Mono Valley, Calif., by I. C. Russell, pp. 261–394, pls. 16–44. Describes the physiographic features and drainage of the Mono Lake Basin, the sources of water supply of the present lake, including streams and springs, and discusses the chemical composition of the water and the fluctuations in lake level.

Tenth Annual Report of the United States Geological Survey, 1888–89, J. W. Powell, Director. 1890. 2 parts. Pt. II. Irrigation, viii, 123 pp. 35c.

Makes a preliminary report on the organization and prosecution of the survey of the arid lands for purposes of irrigation; includes an account of the methods of topographic and hydraulic work, the segregation work on reservoir sites and irrigable lands, field and office methods, and brief descriptions of the topography of some of the river basins.

Eleventh Annual Report of the United States Geological Survey, 1889–90, J. W. Powell, Director. 1891. 2 parts. Pt. II, Irrigation, xiv, 395 pp., 30 plates and maps. $1.25. Contains:

*Hydrography, pp. 1–110. Discusses scope of work, methods of stream measurement, rainfall and evaporations, and describes the more important streams.

*Engineering, pp. 111–200. Defines the scope of the work and gives an account of the survey in the Sun River Basin and in the Arkansas, Rio Grande, California, Lahontan, Utah, and Snake River divisions.

*The arid lands, pp. 201–289. Includes statements of the Director to the House Committee on Irrigation and extracts from the constitutions of States relating to irrigation.

*Topography, pp. 291–343. Comprises reports of the topographic surveys in California, Nevada, Colorado, Idaho, Montana, and New Mexico, and a report on reservoir sites.

*Irrigation literature, pp. 345–388. Gives a list of books and pamphlets on irrigation and allied subjects, mainly contained in the library of the United States Geological Survey.

Twelfth Annual Report of the United States Geological Survey, 1890–91, J. W. Powell, Director. 1891. 2 parts. Pt. II. Irrigation, xvii, 576., 93 pls. $2.00. Contains:

*Report upon the location and survey of reservoir sites during the fiscal year ending June 30, 1891, by A. H. Thompson, pp. 1–212, pls. 54–57. Describes reservoir sites in Carson River Basin at Red Lake, Pleasant Valley, Mountain Bullion, Indian Pool, Heenan Lake, Silver King Valley, Wolf Creek, Dumonts Meadow, all in Alpine County, along Rush Creek, in Hulls Meadow on Little Truckee River, at Twin Valley on the North Fork of Prosser Creek, at Monument Peak, at Grass Lake, and at Hope Valley, in California, and on Truckee River, Nev.; for each reservoir site gives the location, height of dam, area inclosed by contour approximate contents of reservoir, position of irrigable lands, and areas of segregated lands.

Thirteenth Annual Report of the United States Geological Survey, 1891–92, J. W. Powell, Director. 1892. (Pts. II and III, 1893.) 3 parts. Pt. III, Irrigation, xi, 486 pp., 77 pl. $1.85. Contains:

*Engineering results of irrigation survey, by H. Wilson, pp. 351–427, pls. 147–182. Describes Donner Lake, Independence Lake, and Webber Lake Reservoirs, also Truckee Canal in the Truckee River system, and Long Valley Hope Valley Reservoirs in the Carson River Basin, Nev.

*Report upon the location and survey of reservoir sites during the fiscal year ending June 30, 1892, by A. H. Thompson, pp. 451–478. Describes Bear Lake Reservoir site (Utah-Idaho), Silver Lake, Twin Lakes, and Marys Lake sites, and sites on Sanpitch, Sevier, East Fork of Sevier, Otter Creek, Panquitch Lake, and at Blue Spring, Utah.

*Sixteenth Annual Report of the United States Geological Survey, 1894–95, Charles D. Walcott, Director. 1896. (Pts. II, III, and IV, 1895.) 4 parts. Pt. II. Papers of an economic character, xix, 598 pp., 43 pls. $1.25. Contains:

The public lands and their water supply, by F. H. Newell, pp. 457–533, pls. 34–39, 20c. Describes general character of the public lands disposed of (railroad lands grant, and swamp lands, and private miscellaneous entries), land reserved (Indian, forest, and military reservations), the vacant lands, and the rate of disposal of vacant lands; discusses the streams, wells, and reservoirs as sources of water supply; gives details for each State.

*Eighteenth Annual Report of the United States Geological Survey, 1896–97, Charles D. Walcott, Director. 1897. (Pts. II and III, 1898.) 5 parts in 6 vols. Pt. IV, Hydrography, x, 756 pp., 102 pls. $1.75. Contains:

*Reservoirs for irrigation, by J. D. Schuyler, pp. 617–640, pls. 47–102. Discusses proposed Rock Creek reservoir in Humboldt River, Nev.; gives tables of reservoir capacities and areas; describes proposed reservoir of Antelope Valley Water Co., California, and on Rock Creek, Humboldt River Basin, Nev.

*Twentieth Annual Report of the United States Geological Survey, 1898–99, Charles D. Walcott, Director. 1899. (Pts. II, III, IV, V, and VII, 1900.) 7 parts in 8 vols., and separate case for maps with Pt. V. Pt. V, Forest Reserves, xix, 498 pp., 159 pls., 8 maps in separate case. $2.80. Contains:

*The San Gabriel Forest Reserve, by J. B. Leiberg, pp. 411–428, pls. 143–146.

*The San Bernardino Forest Reserve, by J. B. Leiberg, pp. 429–454, pls. 147–153.

*The San Jacinto Forest Reserve, by J. B. Leiberg, pp. 455–478, pls. 154–159.

Describes general topographic features of forest reserves and drainage, part of which is by streams tributary to the Pacific, and part by streams that are lost in the sands of the Mohave and other deserts.

MONOGRAPHS

Monographs may be purchased (at price quoted below) from the Superintendent of Documents, Washington, D. C. An asterisk (*) indicates that the report is out of print. Monographs are of quarto size.

*1. Lake Bonneville, by G. K. Gilbert. 1890. xx, 438 pp., 51 pls., 1 map.

Contains in the introduction a description of the Great Basin; describes the present lakes and their oscillations, and gives analyses of the waters of Great Salt Lake and of fresh waters in the Salt Lake Basin.

*11. Geological history of Lake Lahontan, a Quaternary lake of northwestern Nevada, by I. C. Russell. 1885. xiv, 288 pp., 46 pls.

Contains descriptions of the present rivers and lakes; discusses the chemical deposits of the area and gives analysis showing the composition of the principal rivers and lakes of the Lahontan Basin.

PROFESSIONAL PAPERS

Professional papers may be purchased (at the price quoted below) from the SUPERINTENDENT OF DOCUMENTS, WASHINGTON, D. C. An asterisk (*) indicates that the report is out of print. Professional papers are of quarto size.

*95. Shorter contributions to general geology, 1915; David White, chief geologist. 1916. 120 pp., 7 pls.

Issued also in separate chapters. The following paper relates in part to ground water:

*The composition of muds from Columbus Marsh, Nev., by W. B. Hicks (pp. 1–11). Gives data in regard to shallow wells on Columbus Marsh.

BULLETINS

An asterisk (*) indicates that the report is out of print.

Bulletins may be purchased (at prices quoted below) from the SUPERINTENDENT OF DOCUMENTS, Washington, D. C. Bulletins are of octavo size.

252. Preliminary report on the geology and water resources of central Oregon, by I. C. Russell. 1905. 138 pp., 24 pls. 15c.

Describes a portion of the extreme northern part of the Great Basin and a part of the drainage area of Deschutes River and its principal tributary, Crooked River; gives an account of the topography, drainage, rainfall, and temperature, winds, and forests; describes the volcanic and sedimentary rock formations and discusses, by counties, the geology and topography, the surface and underground waters; treats of artesian conditions in the Deschutes Basin and makes suggestions concerning artesian-well records.

*264. Record of deep well drilling for 1904, by M. L. Fuller, E. F. Lines, and A. C. Veach. 1895. 106 pp.

Discusses the importance of accurate well records to the driller, to owners of oil, gas, and water wells, and to geologists; describes the general methods of work; gives tabulated records of wells in Utah.

*298. Record of deep-well drilling for 1905, by M. L. Fuller and Samuel Sanford. 1906. 299 pp.

Gives an account of progress in the collection of well records and samples; contains tabulated records of wells in California, Idaho, Nevada, Oregon, and Utah; and detailed record of well at Salt Lake City, Utah. The well of which a detailed section is given was selected because it affords valuable stratigraphic information.

*540. Contributions to economic geology, 1912, Part I, Metals and nonmetals except fuel; David White, chief geologist. 1914. 563 pp., 11 pls.

Issued also in separate chapters. The following papers contain information on ground water:

*(n) Prospecting for potash in Death Valley, Calif., by H. S. Gale (pp. 407–415). Included detailed sections of five wells, 30 to 70 feet deep, with data in regard to their waters, practically all of which are salty, as is shown by the analyses given.

Potash tests at Columbus Marsh, Nev., by H. S. Gale (pp. 422–427). Includes detailed sections of two wells, 32 and 82 feet deep, respectively, with data in regard to their waters, some of which are not salty.

*(*p*) Potash in western saline deposits, by J. H. Hance (pp. 457–469). Gives total solids in waters from various wells and springs in the drainage basins of Railroad Valley, Fourmile Flat, and Dixie Salt Marsh, in Nevada, and the record of a 305-foot well at Adamana, Ariz.

GEOLOGIC FOLIOS

Under the plan adopted for the preparation of a geologic map of the United States the entire area is divided into small quadrangles, bounded by certain meridians and parallels, and these quadrangles, which number several thousand, are separately surveyed and mapped. The unit of survey is also the unit of publication, and the maps and description of each quadrangle are issued in the form of a folio. When all the folios are completed they will constitute the Geologic Atlas of the United States.

A folio is designated by the name of the principal town or of a prominent natural feature within the quadrangle. Each folio includes maps showing the topography, geology, underground structure, and mineral deposits of the area mapped and several pages of descriptive text. The text explains the maps and describes the topographic and geologic features of the country and its mineral products. The topographic map shows roads, railroads, waterways, and, by contour lines, the shapes of the hills and valleys and the height above sea level of all points in the quadrangle. The areal-geology map shows the distribution of the various rocks at the surface. The structural-geology map shows the relations of the rocks to one another underground. The economic-geology map indicates the location of mineral deposits that are commercially valuable. The artesian-water map shows the depth to underground-water horizons. Economic-geology and artesian-water maps are included in folios if the conditions in the areas mapped warrant their publication. The folios are of special interest to students of geography and geology and are valuable as guides in the development and utilization of mineral resources.

The folios numbered from 1 to 163, inclusive, are published in only one form (18 by 22 inches), called the library edition. Some of the folios that bear numbers higher than 163 are published also in an octavo edition (6 by 9 inches). Owing to a fire in the Geological Survey Building May 18, 1913, the stock of geologic folios was more or less damaged by fire and water, but 80 or 90 per cent of the folios are usable. They will be sold at the uniform price of 5 cents each, with no reduction for wholesale orders. This rate applies to folios in stock from 1 to 184, inclusive, also to the library edition of folio 186. The library edition of folios 185, 187, and higher numbers sell for 25 cents a copy, except that some folios which contain an unusually large amount of matter sell for 50 cents a copy. The octavo edition of folio 185 and higher numbers sells for 50 cents a copy. If 34 folios selling at 25 cents each (or their equivalent in higher-priced folios) are ordered at one time a discount of 40 per cent is allowed; $5.10 is the minimum amount accepted at this rate.

All folios contain descriptions of the drainage of the quadrangles.

*39. Truckee, California.

Describes the general and economic geology of an area extending westward and northward from Truckee Lake, drained to streams a part of which flow through Yuba and American Rivers to the Sacramento, and part through Lake Tahoe to the Great Basin, discusses the topography and geology, and under "Economic geology" the mineral springs which occur abundantly throughout the area.

MISCELLANEOUS REPORTS

Other Federal bureaus and State and other organizations have from time to time published reports relating to the water resources of various sections of the country. Notable among those pertaining to the Great Basin are the reports of the Reclamation Board, the State engineer and surveyor, the State Conservation Commission of California, the reports of the State engineers of Idaho, Oregon, Utah, and Wyoming, the biennial reports of the Bureau of Industry. Agriculture, and Irrigation of Nevada, and the annual reports of the United States Bureau of Reclamation.

The following reports deserve special mention:

Oregon system of water titles, by John H. Lewis: Oregon State Engineer Bull. 2, 1912.

State and national water laws, with detailed statement of the Oregon system of water titles, by John H. Lewis, with a discussion by Messrs. Clarence T. Johnston and L. J. Conte: Am. Soc. Civil Eng. Trans., vol. 76. pp. 637–758, 1913.

Irrigation pumping in Nevada, etc., by Charles Norcross: Nevada Bureau of Industry, Agriculture, and Irrigation Bull. 8, 1913.

Report of irrigation investigations in Utah, under the direction of Elwood Mead: U. S. Dept. Agr. Office Exper. Sta. Bull. 124, 1903.

How to appropriate the public waters of the State of Nevada, compiled by W. M. Kearney, State engineer, 1911.

Requirements and regulations, including suggestions and instructions in relation to the appropriation, use, and measurement of water in the State of Nevada: State engineer of Nevada, 1912.

AREAS AND PUBLICATIONS COVERED

[A=Annual Report; M=Monograph; B=Bulletin; P=Professional Paper; W=Water-Supply Paper; G F= Geologic folio]

[1] Many chemical analyses are scattered through the reports, as indicated by abstracts.

STREAMS ON WHICH GAGING STATIONS HAVE BEEN MAINTAINED

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