DEPARTMENT OF THE INTERIOR
ALBERT B. FALL, Secretary

UNITED STATES GEOLOGICAL SURVEY
GEORGE OTIS SMITH, Director

WATER-SUPPLY PAPER 483

SURFACE WATER SUPPLY OF THE UNITED STATES
1918

PART XII. NORTH PACIFIC DRAINAGE BASINS
B. SNAKE RIVER BASIN

NATHAN C. GROVER, Chief Hydraulic Engineer
G. C. BALDWIN, G. L. PARKER, A. B. PURTON, and F. F. HENSHAW
District Engineers

Prepared in cooperation with the States of
OREGON, NEVADA, AND WASHINGTON

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SURFACE WATER SUPPLY OF SNAKE RIVER BASIN, 1918.

AUTHORIZATION AND SCOPE OF WORK.

This volume is one of a series of 14 reports presenting results of measurements of flow made on streams in the United States during the year ending September 30, 1918.

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 sundry civil bills passed by Congress have carried the following item and appropriations:

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, 1895–1919.

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	148,244.00

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 4,510 points in the United States and also at many points in Alaska and the Hawaiian Islands. In July, 1918, 1,180 gaging stations were

being maintained by the Survey and the cooperating organizations. Many miscellaneous discharge measurements are 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 the regular water-supply papers from time to time.

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, miners' 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 of inches.

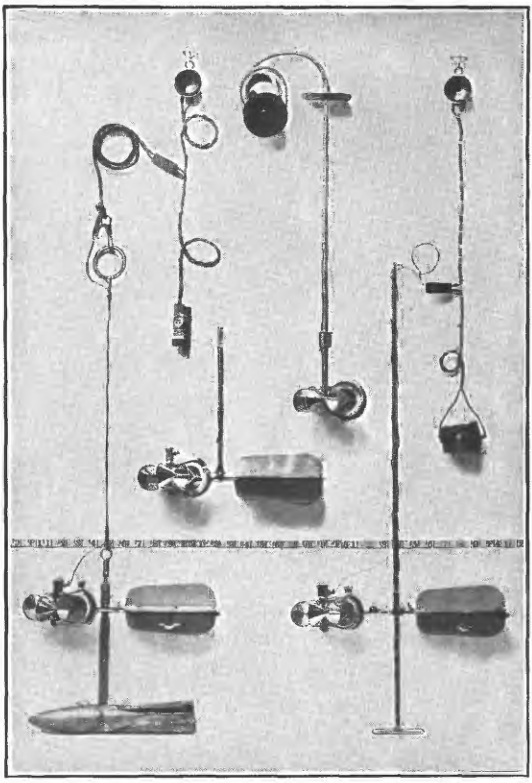
An "acre-foot," equivalent to 43,560 cubic feet, is the quantity required to cover an acre to the depth of 1 foot. The term is commonly used in connection with storage for irrigation.

The following terms not in common use are here defined:

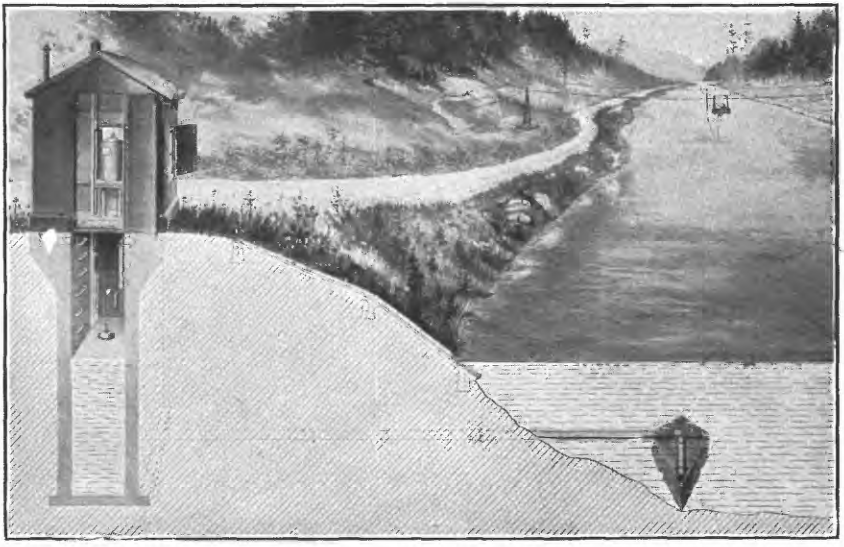
"Stage-discharge relation"; an abbreviation for the term "relation of gage height to discharge."

"Control"; a term used to designate the natural section or stretch of the channel or artificial structure below the gage which determines 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.

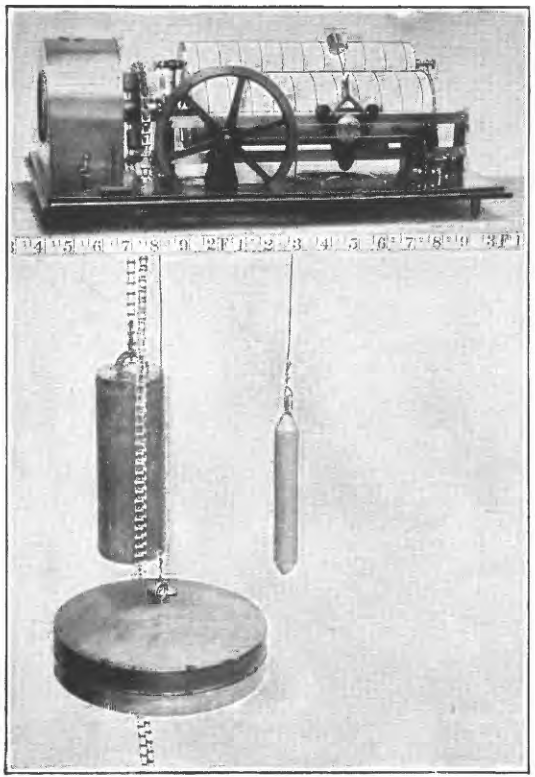
The "point of zero flow" for a gaging station is that point on the gage—the gage height—to which the surface of the stream falls when the discharge is reduced to zero.



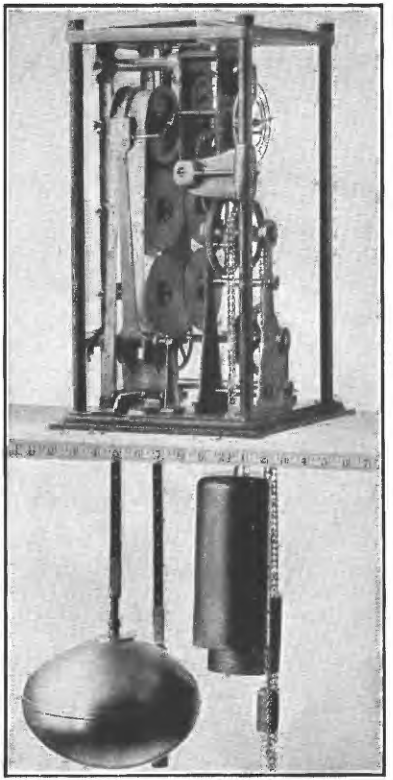
A. PRICE CURRENT METERS.



B. TYPICAL GAGING STATION.



A. STEVENS CONTINUOUS.



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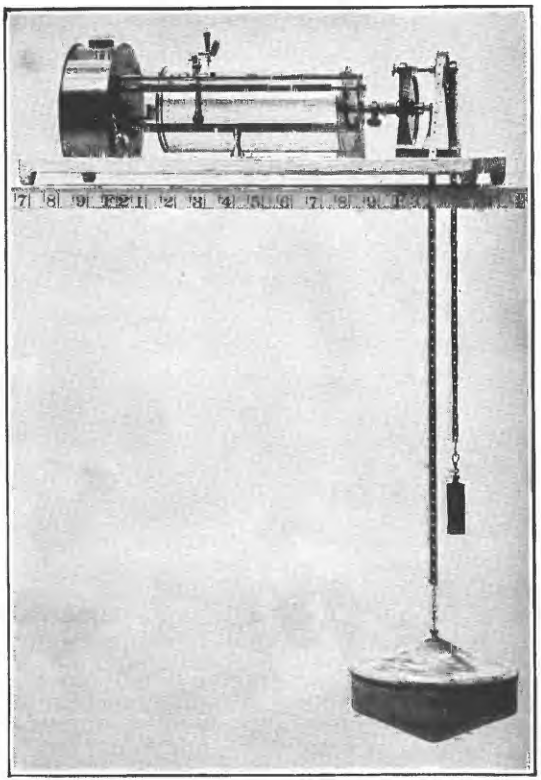

C. FRIEZ.

WATER-STAGE RECORDERS.

EXPLANATION OF DATA.

The data presented in this report cover the year beginning October 1, 1917, and ending September 30, 1918. 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 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. (See Pls. I, II.) The general methods are outlined in standard textbooks on the measurement of river discharge.

From the discharge measurements rating tables are prepared that give the discharge for any stage, and these rating tables, when applied to gage heights, give the daily discharge from which the monthly and yearly means of discharge are determined.

The data presented for each gaging station in the area covered by this report comprise a description of the station, a table giving results 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 channel, 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 fluctuation 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 quantities of discharge for regular intervals during the day, or by means of a 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 (1) on the permanence of the stage-discharge relation and (2) on the accuracy of observation of stage, measurement 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 the daily gage height to the rating table to obtain the daily discharge.[1]

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

[1] For a more detailed discussion of the accuracy of records see Grover, N. C., and Hoyt, J. C. Accuracy of stream-flow data: U. S. Geol. Survey Water-Supply Paper 400, pp. 53-59, 1916.

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" previously published by the Survey should be used with caution because of possible inherent sources of error not known by the Survey.

The table of monthly discharge gives 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.

During the year ending September 30, 1918, work in the Snake River basin was carried on in cooperation with the States of Oregon, Nevada, and Washington, effected under contracts made between the Director of the Federal Survey and the State engineers or other officials and authorized by legislative acts appropriating money.

Special acknowledgments are due to John H. Lewis, State engineer of Oregon; to Henry Landes, State geologist of Washington; and to J. G. Scrugham, State engineer of Nevada, for the efficient manner in which they represented their States in the investigations.

Acknowledgments are due also to the United States Reclamation Service and the United States Office of Indian Affairs, which permitted the freest use of data gathered exclusively for them and paid for by them. The United States Weather Bureau and the officials of Yellowstone National Park furnished hydrometric and climatic data.

The following cities, private companies, and individuals have aided in the collection of records by paying the expense of work or otherwise assisting: City of Pocatello, Twin Falls Canal Co., and Twin Falls North Side Land & Water Co.

DIVISION OF WORK.

The data for stations in Nevada were collected and prepared for publication under the direction of C. C. Jacob and A. B. Purton, district engineers, who were assisted by L. W. Jordan, W. E. Dickinson, J. W. Bones, and Miss Ruby Christensen.

For stations in Idaho (except in the Clearwater and upper Columbia basins), in Wyoming and in the Salmon Falls Creek basin in Nevada, the data were collected under the direction of G. C. Baldwin, district

engineer, and prepared for publication under the direction of G. C. Baldwin and C. G. Paulsen, district engineers, who were assisted by H. J. Dean, William Kessler, T. R. Newell, E. C. Howard, R. B. Kilgore, C. W. Kief, C. E. Tappan, C. F. Elford, A. G. Fiedler, B. A. Howell, A. G. Hewel, Miss E. H. Haugse, Miss E. M. Klemm, and Mrs. F. G. Cure.

Data for stations in Oregon were collected and prepared for publication under the direction of F. F. Henshaw, district engineer, who was assisted by C. L. Batchelder and R. C. Briggs.

For stations in Washington and in the Palouse River basin in Idaho records were collected and prepared for publication by G. L. Parker, district engineer, assisted by Lasley Lee, W. E. Dickinson T. R. Newell, L. D. Carson, R. B. Kilgore, and E. C. Howard.

The manuscript was reviewed and assembled by Robert Follansbee and B. J. Peterson.

GAGING-STATION RECORDS.

SNAKE RIVER.

SNAKE RIVER AT SOUTH BOUNDARY OF YELLOWSTONE NATIONAL PARK.

LOCATION.—A quarter of a mile below junction of Lewis and Snake rivers, half a mile north of Snake River soldier station and south boundary of Yellowstone National Park, and 25 miles north of Moran, Wyo.

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

RECORDS AVAILABLE.—June 19, 1913, to September 30, 1918.

GAGE.—Overhanging chain gage on right bank; read by G. L. Van Norman and W. J. Burns. Auxiliary chain gage on bridge about 2½ miles downstream, used August 4 to September 2 and September 4–14; read by Ed Sheffield.

DISCHARGE MEASUREMENTS.—Made from cable about 225 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of coarse gravel; clean except for occasional lodgment of drift. Control probably permanent at ordinary stages. One channel at gage but divided by an island into two channels at control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.65 feet on May 14 (discharge, 1,350 second-feet); minimum stage recorded, 1.9 feet November 10–15 and 20–26 (discharge, 279 second-feet).

1913–1918: Maximum stage recorded, 6.3 feet June 2, 1914 (discharge, 5,690 second-feet); minimum stage recorded, 1.4 feet October 26–31, 1915 (discharge, 160 second-feet).

ICE.—Stage-discharge relation not affected by ice, the formation of which is evidently prevented by hot springs above the gage.

DIVERSIONS.—None above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Standard rating curve well defined between 250 and 5,000 second-feet by measurements in 1916 and 1917. Two parallel curves used. Rating curve for auxiliary gage record based on two measurements made in 1918. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating tables. Records fair.

COOPERATION.—Gage-height record furnished by superintendent of Yellowstone National Park and by the United States Reclamation Service.

Discharge measurements of Snake River at south boundary of Yellowstone National Park, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Oct. 3	William Kessler	2.33	414
July 21	T. R. Newell	[a] 3.28	896
Sept. 3	G. C. Baldwin	[b] 2.34	385

[a] Sheffield gage at highway bridge read 3.67 feet. [b] Sheffield gage at highway bridge read 2.72 feet.

Daily discharge, in second-feet, of Snake River at south boundary of Yellowstone National Park, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	416	360	448	496	381	381	360	710	.....	.....	764	415
2	462	360	360	496	381	360	381	681	.....	.....	734	376
3	412	360	360	472	360	360	368	625	.....	.....	703	385
4	403	360	360	448	381	360	360	710	.....	.....	673	376
5	360	360	360	448	360	360	368	740	.....	.....	673	376
6	403	360	368	448	394	381	381	802	.....	.....	592	356
7	360	318	360	426	381	381	381	867	.....	.....	592	356
8	360	318	381	412	403	360	368	867	.....	.....	592	398
9	403	298	360	412	394	360	403	771	.....	.....	565	465
10	403	279	318	426	403	360	403	867	.....	.....	514	376
11	360	279	360	403	394	360	412	935	.....	.....	514	376
12	360	279	381	381	412	381	426	1,050	.....	.....	490	368
13	318	279	403	403	394	360	403	1,260	.....	.....	465	368
14	360	279	403	403	381	381	426	1,350	.....	.....	465	398
15	330	279	381	381	360	381	403	1,260	.....	.....	490	.....
16	360	310	403	412	360	403	426	1,010	.....	.....	514	.....
17	360	318	403	426	368	403	426	935	.....	.....	514	.....
18	381	318	381	403	381	381	403	971	.....	.....	490	.....
19	403	298	403	426	403	381	403	.....	.....	.....	490	.....
20	403	279	403	403	403	360	426	.....	.....	.....	465	.....
21	330	279	381	412	381	381	403	.....	.....	880	465	.....
22	360	279	403	394	360	360	403	.....	.....	915	465	.....
23	318	279	426	394	381	360	368	.....	.....	1,230	465	.....
24	318	279	448	403	360	381	394	.....	.....	949	442	.....
25	360	279	448	412	360	360	412	.....	.....	771	442	.....
26	318	279	448	403	381	360	426	.....	.....	915	442	.....
27	318	298	448	412	403	394	403	.....	.....	915	419	.....
28	360	298	496	403	360	403	520	.....	.....	885	419	.....
29	318	298	496	426	.....	394	598	.....	.....	854	419	.....
30	360	339	520	403	.....	381	652	.....	.....	824	419	.....
31	360	.....	545	403	.....	360	.....	.....	.....	794	415	.....

NOTE.—No record obtained May 19 to July 20 and Sept. 15–30. Record Aug. 4 to Sept. 2 and Sept. 4–14 from auxiliary gage 2½ miles downstream.

Monthly discharge of Snake River at south boundary of Yellowstone National Park, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	462	318	368	22,600
November	360	279	307	18,300
December	545	318	408	25,100
January	496	381	419	25,800
February	412	360	381	21,200
March	403	360	374	23,000
April	652	360	417	24,800
May 1–18	1,350	625	912	32,600
July 21–31	1,230	771	903	19,700
August	764	415	520	32,000
September 1–14	465	356	385	10,700

JACKSON LAKE AT MORAN, WYO.

LOCATION.—In sec. 18, T. 45 N., R. 114 W., a short distance above gates at outlet of lake at Moran, Lincoln County.

RECORDS AVAILABLE.—June 1, 1909, to September 30, 1918. Records for years 1909 and 1910 fragmentary.

GAGE.—Inclined staff on right shore just below engineers' cottage. Zero of gage, 6,700 feet above sea-level.

COOPERATION.—Gage-height record and table showing storage capacity of the lake furnished by United States Reclamation Service.

Jackson Lake impounds water for the irrigation of lands in the Minidoka and Twin Falls tracts. It has a capacity of 847,000 acre-feet between the elevations 6,730 and 6,769 feet sea-level datum.

Daily contents, in acre-feet, of Jackson Lake at Moran, Wyo., for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1...	342,740	365,490	387,140	429,700	460,780	488,090	514,450	547,110	718,120	796,260	657,850	281,310
2...	344,050	366,360	388,470	430,370	461,700	488,780	515,850	549,450	725,020	796,770	647,440	273,560
3...	345,350	367,240	389,800	431,050	462,850	489,470	516,540	552,250	732,440	797,280	637,100	265,180
4...	346,220	368,120	391,130	432,630	463,990	490,160	517,010	556,020	743,560	796,260	623,640	254,410
5...	347,080	369,000	392,240	433,980	465,140	490,860	517,940	560,260	756,240	796,240	606,680	243,860
6...	347,950	369,870	393,350	434,660	466,280	491,780	518,630	566,150	765,710	796,770	587,900	233,040
7...	348,820	370,530	394,460	435,330	467,430	492,700	519,330	570,620	767,700	796,260	568,500	222,840
8...	349,700	371,410	395,580	436,010	468,120	493,860	519,800	575,340	770,940	795,760	550,850	213,390
9...	350,570	372,300	396,700	436,910	468,580	494,550	520,490	582,680	771,180	797,530	532,130	205,140
10...	351,230	372,960	398,040	438,040	469,260	495,240	521,420	586,480	774,700	796,260	512,360	196,190
11...	351,890	373,850	399,380	438,950	469,950	496,390	522,820	588,850	778,460	796,260	492,700	186,880
12...	352,550	374,520	400,280	439,860	470,640	498,240	523,750	592,170	780,210	796,770	478,890	178,820
13...	353,210	375,180	401,170	440,770	471,550	499,860	524,680	597,150	782,720	796,770	463,990	171,220
14...	353,860	375,840	402,510	441,680	472,240	500,550	525,840	602,140	786,230	797,020	449,180	165,180
15...	354,520	376,510	403,860	442,590	472,930	501,470	527,700	609,070	788,740	796,010	436,010	159,010
16...	355,180	377,170	404,750	443,730	473,620	502,160	528,630	614,080	790,240	794,260	423,150	153,830
17...	355,840	377,840	405,640	444,860	474,990	502,860	529,790	617,190	792,250	793,000	409,670	154,210
18...	356,500	378,500	406,990	446,000	476,370	503,550	530,960	625,080	792,500	791,000	397,370	154,600
19...	357,150	379,170	408,330	446,910	477,510	504,240	531,430	628,200	794,260	788,490	387,800	155,560
20...	357,810	379,830	409,670	447,360	478,660	504,930	532,130	633,490	796,010	785,980	379,170	156,320
21...	358,470	380,500	411,010	448,280	479,800	505,860	533,070	637,580	796,260	784,480	369,000	157,280
22...	359,130	381,160	412,350	449,410	480,720	506,550	534,000	642,390	796,770	779,460	359,350	158,240
23...	359,570	381,820	413,690	450,550	481,410	507,250	535,170	648,400	796,260	774,700	350,360	159,200
24...	360,000	382,490	415,040	451,690	482,550	507,940	536,340	655,910	797,530	769,690	342,310	160,160
25...	360,440	383,150	416,390	452,820	483,700	508,870	537,750	664,140	795,010	764,010	334,500	161,310
26...	360,880	383,820	419,090	453,960	485,080	509,340	540,320	672,620	795,760	754,750	326,910	162,460
27...	361,320	384,480	421,800	454,870	486,470	510,040	541,720	678,960	795,760	736,640	318,110	163,620
28...	361,980	385,150	424,280	455,780	487,620	511,200	543,130	685,790	795,260	717,630	312,310	164,790
29...	362,850	385,810	427,210	457,370	.....	511,900	544,300	692,370	795,260	700,200	305,020	165,960
30...	363,730	386,480	428,340	459,190	.....	512,360	545,940	698,230	797,530	681,150	297,390	167,130
31...	364,610	.....	429,020	460,100	.....	513,060	.....	708,300	.....	669,230	289,540	.....

SNAKE RIVER NEAR MORAN, WYO.

LOCATION.—In sec. 17, T. 45 N., R. 114 W., 1½ miles below Moran post office, Lincoln County, and United States Reclamation Service dam at outlet of Jackson Lake. No important tributaries between dam and station.

DRAINAGE AREA.—820 square miles.

RECORDS AVAILABLE.—September 21, 1903, to September 30, 1918.

GAGE.—Inclined staff on left bank. Datum lowered 1.0 foot July 26, 1915. Stevens 8-day water-stage recorder installed June 14, 1917, on bank to rear of staff gage. Gage read by employees of United States Reclamation Service.

DISCHARGE MEASUREMENTS.—Made from cable about 100 feet below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders. Control practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 10.41 feet at 8 p. m. June 12 (discharge, 15,100 second-feet); minimum stage recorded, 0.43 foot at 1 a. m. September 26 (discharge, 22 second-feet).

1903–1918: Maximum stage recorded, 10.41 feet at 8 p. m. June 12, 1918 (discharge, 15,100 second-feet); practically no flow during a few days in 1907 and 1909 as a result of closing of gates in Jackson Lake dam.

ICE.—Stage-discharge relation affected by ice. Gates in dam at Jackson Lake are closed during winter. Flow past gage represents leakage through dam and inflow from springs.

DIVERSIONS.—None between dam and station and practically none above Jackson Lake.

REGULATION.—Flow controlled by operation of gates in Jackson Lake dam. Storage capacity of reservoir 847,000 acre-feet.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths once daily October 16 to May 12. Operation of water-stage recorder satisfactory for rest of year. Daily discharge ascertained by applying daily gage height to rating table except for period June 1 to September 30, when discharge given is the mean of hourly discharges as determined from gage-height graph and rating table. Records fair for periods of ice effect; excellent for rest of year.

COOPERATION.—Gage-height record furnished by United States Reclamation Service.

Discharge measurements of Snake River near Moran, Wyo., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 5	William Kessler.....	0.71	42.9	Aug. 8	T. R. Newell.....	8.98	11,000
5	.....do.....	.71	42.2	10	.....do.....	8.41	9,690
June 11	T. R. Newell.....	10.28	15,000	23	.....do.....	6.30	5,620
11	.....do.....	10.29	14,700	24	.....do.....	5.83	4,800
30	.....do.....	5.54	4,270	Sept. 2	Newell and Baldwin ...	5.80	4,780
30	.....do.....	5.88	4,780	11	T. R. Newell.....	6.29	5,510
July 20	.....do.....	4.65	2,950	23	.....do.....	.48	24.1
22	.....do.....	1.25	168	24	.....do.....	.45	22.9
22	.....do.....	1.17	141				
24	.....do.....	5.38	4,080				

Daily discharge, in second-feet, of Snake River near Moran, Wyo., for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	45	36	34	35	.....	49	41	65	72	4,620	7,190	4,800
2	45	36	34	35	.....	49	40	72	67	3,680	7,090	4,690
3	43	35	34	34	.....	49	40	78	55	4,330	7,520	5,180
4	43	35	34	34	.....	49	39	87	55	4,090	9,270	6,200
5	42	35	34	33	.....	49	38	70	1,460	2,710	10,520	6,040
6	42	35	34	33	.....	49	38	70	4,690	4,120	11,500	5,860
7	42	35	34	.....	.....	49	37	61	8,950	3,640	11,290	5,660
8	42	35	34	.....	.....	49	37	65	9,310	2,440	11,120	5,480
9	41	35	34	.....	42	49	37	65	11,280	2,610	10,890	5,320
10	41	35	34	.....	42	49	38	65	10,940	3,300	10,190	5,450
11	41	35	34	.....	42	49	38	65	14,350	2,170	9,840	5,390
12	40	35	34	.....	43	49	38	69	14,440	2,160	9,350	4,380
13	40	35	34	.....	43	49	38	55	14,720	2,050	8,460	4,280
14	40	35	34	.....	45	49	39	56	14,560	2,970	8,310	4,170
15	40	35	34	.....	45	49	39	58	14,040	2,920	8,180	4,080
16	39	35	34	.....	46	49	39	60	14,070	3,000	8,060	2,590
17	39	35	35	.....	46	49	40	61	12,630	3,000	7,750	32
18	39	35	35	.....	46	50	40	60	11,970	3,000	6,940	26
19	39	35	35	.....	48	50	40	52	9,410	2,990	5,540	24
20	38	35	35	.....	48	52	40	49	11,180	2,940	5,680	23
21	38	35	35	.....	49	52	40	49	8,980	2,740	5,760	23
22	38	35	35	.....	49	53	40	50	10,070	3,500	5,700	22
23	38	35	36	.....	49	53	40	50	10,300	4,480	5,350	23
24	38	35	36	.....	49	42	40	50	12,920	3,920	4,740	23
25	38	35	36	.....	49	42	40	50	9,640	4,520	4,690	23
26	38	35	36	.....	49	42	41	50	7,420	8,230	4,600	23
27	37	35	36	.....	49	42	41	61	6,850	10,990	4,580	23
28	37	35	36	.....	49	42	45	72	6,100	11,200	4,490	23
29	37	35	36	.....	.....	42	52	78	3,050	11,170	4,440	23
30	37	35	35	.....	.....	42	58	69	4,320	10,070	4,540	24
31	36	.....	35	.....	.....	42	.....	72	.....	7,230	4,910	.....

NOTE.—Stage-discharge relation affected by ice Jan. 7 to Feb. 8. Gates in dam at Jackson Lake remained closed but the leakage through the gates increased, owing to increasing head on gates. Mean discharge estimated as follows: Jan. 7–31, 36 second-feet; Feb. 1–8, 40 second-feet.

Monthly discharge of Snake River near Moran, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	45	36	39.8	2,450
November	36	35	35.1	2,090
December	36	34	34.7	2,130
January	.....	.....	35.6	2,190
February	.....	.....	44.6	2,480
March	53	42	47.7	2,930
April	58	37	40.4	2,400
May	87	49	62.4	3,840
June	14,720	55	8,600	512,000
July	11,200	2,050	4,540	279,000
August	11,500	4,440	7,370	453,000
September	6,200	22	2,660	158,000
The year	14,720	22	1,970	1,420,000

SNAKE RIVER AT ALPINE, IDAHO.

LOCATION.—In T. 3 S., R. 46 E., 300 yards below ranch house and 1 mile below highway bridge at Alpine, Bonneville County, and Idaho-Wyoming State line. Salt River enters just above station.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—June 20, 1916, to September 30, 1918.

GAGE.—Stevens 8-day water-stage recorder installed June 2, 1917, on right bank; also vertical staff in two sections at same site. Gage inspected by William Kizer and C. W. Kief.

DISCHARGE MEASUREMENTS.—Made from cable 200 feet downstream from gage.

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

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 12.67 feet at 10 p. m June 15 (discharge, 49,200 second-feet); minimum stage undoubtedly occurred during that portion of the year for which no records are available.

1916–1918: Maximum stage recorded, that of June 15, 1918; minimum stage, 2.70 feet at 9 a. m. November 15 and 16, 1916 (discharge, 2,130 second-feet).

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

DIVERSIONS.—None above station.

REGULATION.—Flow controlled by storage at Jackson Lake reservoir, which was completed during 1918 to a capacity of about 847,000 acre-feet.

ACCURACY.—Stage-discharge relation not permanent. Standard rating curve fairly well defined between 4,000 and 33,000 second-feet. Several parallel curves used. Operation of water-stage recorder satisfactory except for one short period. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph, or by shifting-control method. Records fair for June; good for rest of period.

Discharge measurements of Snake River at Alpine, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 3	T. R. Newell	3.17	3,740	Aug. 17	C. W. Kief	6.55	13,000
June 5	Baldwin and Howard	7.23	17,300	24	do	5.45	9,120
July 5	C. W. Kief	6.99	16,700	29	do	5.19	8,300
12	do	6.28	12,300	Sept. 5	do	5.61	9,700
17	do	6.30	12,500	8	do	5.44	9,230
24	do	6.00	11,000	16	do	4.98	7,770
26	do	6.07	11,100	18	do	3.64	3,750
Aug. 2	do	6.51	13,100	22	do	3.47	3,400
9	Kief and Baldwin	7.21	15,700	30	do	3.40	3,140
12	C. W. Kief	7.01	14,900				

Daily discharge, in second-feet, of Snake River at Alpine, Idaho, for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1	.....	19,300	12,600	8,530	16	48,100	13,200	13,000	7,740
2	.....	18,300	12,600	8,360	17	.....	12,300	13,000	5,800
3	.....	17,800	12,600	8,360	18	.....	11,900	11,700	3,750
4	.....	17,800	13,900	9,030	19	.....	11,500	10,900	3,570
5	17,200	16,800	14,900	9,730	20	.....	11,500	10,100	3,480
6	21,900	16,100	16,400	9,730	21	.....	11,100	10,100	3,390
7	27,000	16,900	16,400	9,380	22	.....	10,700	10,100	3,390
8	27,600	15,800	16,400	9,200	23	.....	11,100	9,730	3,390
9	33,600	13,700	15,900	9,380	24	.....	11,500	9,380	3,390
10	36,600	14,900	15,400	9,200	25	.....	11,000	8,860	3,390
11	40,800	13,800	14,900	9,200	26	.....	11,200	8,690	3,350
12	45,100	12,300	14,900	8,690	27	.....	15,700	8,530	3,320
13	46,300	11,900	13,500	7,890	28	.....	17,200	8,360	3,200
14	48,100	12,800	13,000	7,740	29	.....	17,200	8,200	3,170
15	48,700	14,100	13,500	7,890	30	.....	17,200	8,200	3,130
					31	.....	14,600	8,360	.....

NOTE.—No record obtained Oct. 1 to May 31. Discharge estimated June 1–4, 13,000 second-feet: June 17–30, 37,000 second-feet.

Monthly discharge of Snake River at Alpine, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June	48,700		33,700	2,010,000
July	19,300	10,700	14,200	873,000
August	16,400	8,200	12,100	744,000
September	9,730	3,130	6,330	377,000
The period				4,000,000

SNAKE RIVER NEAR HEISE, IDAHO.

LOCATION.—In sec. 5, T. 3 N., R. 41 E., 600 feet above Anderson dam, in Bonneville County, 3 miles above Heise, and 25 miles below site of station formerly maintained near Lyon. Several small creeks enter between old site and station.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—September 25, 1910, to September 30, 1918.

GAGE.—Friez water-stage recorder on left bank; installed July 8, 1913, and referred to vertical staff gage. Gage inspected by J. T. Morgan, W. J. Kremer, and E. C. Howard.

DISCHARGE MEASUREMENTS.—Made from cable about 100 feet below gage.

CHANNEL AND CONTROL.—Bed composed of coarse gravel and cobblestones. One channel at all stages. Control formed by crest of Anderson dam. Part of this dam washed out during high water June 13–24, following which the control shifted at frequent intervals.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.10 feet at 9 a. m. June 13. Maximum discharge, about 52,000 second-feet June 16; minimum stage recorded, 0.34 foot September 29 (discharge, 3,880 second-feet). Actual minimum probably occurred during period of no record.

1910–1918: Maximum discharge, about 52,000 second-feet June 16, 1918; minimum discharge, 2,180 second-feet at 10 a. m. March 10, 1915.

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

DIVERSIONS.—No large diversions above station. A small ditch of about 20 second-feet capacity takes out just above this station.

REGULATION.—Flow controlled to a large extent by storage in Jackson Lake reservoir.

ACCURACY.—Stage-discharge relation changed during high water in June by washing out of Anderson dam. Standard rating curve used before the change well defined between 4,000 and 20,000 second-feet. Several parallel rating curves used after the change. Operation of water-stage recorder satisfactory except April 9–20 and June 11 to July 1. Daily discharge ascertained by applying mean daily gage height to rating table except June 1–10 and July 1 to September 30, when the mean of hourly discharge was used. Records good.

Discharge measurements of Snake River near Heise, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Apr. 9	C. F. Elford	1.80	4,310	Aug. 3	E. C. Howard	3.23	13,500
10	do	2.10	4,990	5	do	3.73	15,100
11	do	2.40	5,730	13	Baldwin and Howard	3.48	13,700
May 21	G. C. Baldwin	4.04	11,300	15	E. C. Howard	3.52	13,600
June 9	Baldwin and Howard	9.04	40,100	17	do	3.42	12,900
29	E. C. Howard	5.60	25,500	27	do	2.26	8,860
July 12	G. C. Baldwin	3.32	13,200	28	do	2.22	8,680
15	E. C. Howard	3.66	14,400	31	do	2.11	8,190
16	do	3.48	13,500	Sept. 13	do	2.06	8,250
19	do	3.12	12,300	14	do	2.02	7,950
Aug. 1	do	3.31	13,200	17	do	1.92	8,270
2	do	3.26	13,300	23	G. C. Baldwin	.46	4,010

Daily discharge, in second-feet, of Snake River near Heise, Idaho, for the year ending Sept. 30, 1918.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Day.	Apr.	May.	June.	July.	Aug.	Sept.
1	.....	8,840	15,430	20,320	13,350	8,780	16	6,280	.....	51,600	14,070	13,360	7,950
2	.....	9,570	14,680	20,030	13,150	8,730	17	6,000	.....	50,400	13,360	13,330	7,460
3	.....	11,600	14,880	19,020	13,050	8,670	18	5,470	12,400	48,000	12,720	12,810	4,890
4	.....	13,800	16,970	19,310	13,450	8,820	19	5,220	12,000	46,200	12,270	11,870	4,340
5	.....	15,700	19,670	18,060	15,020	10,060	20	4,980	11,200	43,200	12,000	10,520	4,220
6	.....	15,700	24,010	16,540	15,930	9,940	21	4,980	11,200	43,200	11,800	10,340	4,160
7	.....	15,200	29,250	18,100	16,640	9,720	22	5,340	12,100	42,000	11,060	10,380	4,090
8	.....	15,200	35,610	16,680	16,460	9,450	23	6,280	12,900	41,400	11,550	10,240	4,060
9	4,320	15,700	38,130	14,870	16,210	9,500	24	6,570	13,800	41,400	11,950	9,950	4,100
10	4,980	14,300	41,670	14,820	15,900	9,340	25	7,020	14,800	42,000	11,250	9,260	4,040
11	5,730	12,000	43,800	15,120	15,410	9,320	26	7,820	14,800	37,300	11,640	9,080	4,000
12	6,570	.....	49,200	13,490	14,890	9,160	27	7,500	14,300	33,200	14,500	8,970	3,960
13	7,500	.....	49,800	12,680	14,380	8,190	28	6,870	13,400	30,900	17,590	8,770	3,920
14	7,820	.....	50,400	13,190	13,390	8,050	29	6,870	12,900	26,300	17,550	8,590	3,880
15	7,180	.....	51,600	14,650	13,750	8,040	30	7,660	12,900	23,300	17,340	8,480	3,880
							31	.....	.....	14,800	.....	16,360	8,460	.....

NOTE.—No record obtained Oct. 1 to Apr. 8. Discharge estimated 12,000 second-feet, May 12–17.

Monthly discharge of Snake River near Heise, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
April 9–30	7,820	4,320	6,320	276,000
May	15,700	8,840	13,000	799,000
June	51,600	14,680	36,500	2,170,000
July	20,320	11,060	15,000	922,000
August	16,640	8,460	12,400	762,000
September	10,060	3,880	6,820	406,000
The period				5,340,000

SNAKE RIVER NEAR SHELLEY, IDAHO.

LOCATION.—In sec. 17, T. 1 N., R. 37 E., a quarter of a mile upstream from Woodville highway bridge and 3 miles north of Shelley, Bingham County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 18, 1915, to September 30, 1918.

GAGE.—Friez water-stage recorder on right bank, standard hook gage in float well, and combination vertical and inclined staff gage outside. Observer, James Thorne.

DISCHARGE MEASUREMENTS.—Made from cable 600 feet upstream from gage.

CHANNEL AND CONTROL.—Control is a lava-rock reef extending across the channel about 500 feet below gage. Banks high and clean at gage and control.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 16.97 feet at 1.30 p. m. June 17 (discharge, 47,200 second-feet); minimum stage, 6.20 feet at 12 p. m. September 30 (discharge, 3,810 second-feet); absolute minimum stage probably occurred during period of no record.

1915–1918: Maximum stage from water-stage recorder, that of June 17, 1918; minimum stage, 4.88 feet at 6 p. m. September 2, 1915 (discharge, 1,800 second-feet).

ICE.—Stage-discharge relation probably seriously affected by ice; observations discontinued during winter.

DIVERSIONS.—Practically the entire natural summer flow of the river above the station is appropriated by numerous diversions in the Idaho Falls district.

REGULATION.—Natural flow during the irrigation season is augmented by the release of stored flood waters in Jackson Lake for use on the Minidoka project and Twin Falls tracts.

ACCURACY.—Stage-discharge relation practically permanent. 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. Records good.

Discharge measurements of Snake River near Shelley, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 7	T. R. Newell	6.52	4,560	June 12	G. C. Baldwin	14.55	37,300
Apr. 12	C. F. Elford	7.05	6,610	July 11	.....do	8.64	11,600
May 19	Newell and Baldwin	8.52	11,500	Sept. 21	.....do	6.52	4,690

Daily discharge, in second-feet, of Snake River near Shelley, Idaho, for the year ending Sept. 30, 1918.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Day.	Apr.	May.	June.	July.	Aug.	Sept.
1	5,430	9,000	14,200	19,000	9,000	6,500	16	8,310	13,000	46,000	13,800	10,100	7,800
2	5,580	10,100	15,000	17,000	7,640	6,660	17	7,800	13,000	46,900	13,400	10,400	7,800
3	5,580	11,200	14,600	15,400	7,470	6,660	18	6,820	12,300	46,900	12,300	10,800	7,140
4	5,280	13,000	14,600	14,600	7,470	6,660	19	5,880	11,200	45,100	11,200	10,400	5,580
5	4,850	15,000	16,200	14,600	8,310	6,820	20	5,580	10,400	42,800	10,400	9,350	4,850
6	4,710	17,000	18,600	13,400	9,350	7,300	21	5,430	9,350	41,000	9,700	8,480	4,710
7	4,440	17,000	22,700	12,300	10,400	7,300	22	5,880	8,830	39,600	8,480	8,310	4,710
8	4,310	17,000	26,100	13,000	11,200	7,300	23	6,500	8,660	39,600	7,470	8,310	4,710
9	4,180	17,800	29,900	12,300	11,200	7,470	24	7,300	8,830	39,200	7,300	8,140	4,440
10	4,580	17,800	31,600	11,200	10,800	7,640	25	7,800	9,700	39,200	7,140	7,800	4,440
11	5,430	16,200	33,800	11,500	10,800	7,970	26	8,660	10,800	39,600	6,660	7,470	4,440
12	6,190	14,200	36,000	11,900	10,100	8,140	27	9,350	11,500	39,600	6,190	7,140	4,440
13	6,980	12,300	38,700	11,200	10,100	7,970	28	9,350	12,300	32,100	8,660	6,980	4,180
14	7,800	11,500	41,900	11,200	9,350	7,640	29	8,480	12,300	27,300	10,100	6,820	3,930
15	8,480	12,300	44,600	12,300	9,700	7,640	30	8,310	11,900	23,600	10,400	6,660	3,810
							31	.....	12,300	.....	10,400	6,500	.....

NOTE.—No record obtained Oct. 1 to Mar. 31.

Monthly discharge of Snake River near Shelley, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
April	9,350	4,180	6,510	387,000
May	17,800	8,660	12,500	769,000
June	46,900	14,200	32,800	1,950,000
July	19,000	6,190	11,400	701,000
August	11,200	6,500	8,920	548,000
September	8,140	3,810	6,220	370,000
The period				4,720,000

SNAKE RIVER AT PORTERVILLE BRIDGE, NEAR BLACKFOOT, IDAHO.

LOCATION.—In sec. 26, T. 2 S., R. 35 E., 3½ miles north of Blackfoot, Bingham County, one-fourth mile below Porterville Bridge, and immediately below heading of Danskin canal. Station was formerly maintained at Porterville Bridge, above heading of Danskin canal.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 13 to September 30, 1918, at present site: June 12 to September 30, 1916, at site at Porterville highway bridge.

GAGE.—Inclined staff gage on left bank opposite tenant house of Mrs. Anenine Hanson; read by Henry Ronfeld. Gage used prior to September 30, 1916, vertical staff on right abutment of Porterville Bridge.

DISCHARGE MEASUREMENTS.—Made from cables over two channels about a quarter of a mile below gage. Cables washed out by high water in June, 1918, but were replaced July 18.

CHANNEL AND CONTROL.—Bed composed of cobble in gravel drift; clean except for occasional lodgment of drift. Control shifts at high stages. One channel at gage but divided by an island into two channels at control, except at extreme low stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 13.5 feet at 7 p. m. June 17 and 6 a. m. June 18 (discharge, 46,900 second-feet); minimum stage, 5.5 feet at 6 a. m. and 7 p. m. September 30 (discharge, 2,800 second-feet).

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

DIVERSIONS.—Practically the entire natural summer flow of the river is diverted above the station.

REGULATION.—Natural flow during the irrigation season is augmented by the release of stored flood waters in Jackson Lake for use on the Minidoka and Twin Falls tracts.

ACCURACY.—Stage-discharge relation not permanent. Two parallel rating curves used, fairly well defined between 4,000 and 10,000 second-feet; one applicable May 13–30, the other June 13 to September 30. Gage read to half-tenths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair.

Discharge measurements of Snake River at Porterville Bridge, near Blackfoot, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
May 30	T. R. Newell	7.60	10,400	Aug. 3	G. C. Baldwin	6.21	4,900
July 19	R. B. Kilgore	7.45	9,180	Sept. 19	do	6.01	4,260

Daily discharge, in second-feet, of Snake River at Porterville Bridge, near Blackfoot, Idaho, for the year ending Sept. 30, 1918.

Day.	May.	June.	July.	Aug.	Sept.	Day.	May.	June.	July.	Aug.	Sept.
1	.....	.....	16,800	6,880	4,560	16	10,700	44,000	11,600	8,340	6,190
2	.....	.....	14,500	5,190	4,560	17	11,300	46,200	11,300	8,720	6,190
3	.....	.....	13,600	4,870	4,560	18	9,700	46,200	10,300	9,110	6,190
4	.....	.....	13,300	5,030	4,560	19	9,600	44,000	9,300	9,110	4,250
5	.....	.....	13,300	5,520	4,720	20	9,500	41,800	8,340	8,160	3,500
6	.....	.....	12,400	6,700	5,190	21	8,160	39,500	7,420	7,240	3,220
7	.....	.....	11,300	7,970	5,360	22	7,060	38,100	6,530	6,700	3,080
8	.....	.....	10,500	8,920	5,520	23	7,420	38,100	5,520	6,530	3,080
9	.....	.....	10,300	8,920	5,520	24	7,780	38,100	4,870	6,360	3,080
10	.....	.....	9,110	8,720	5,850	25	8,160	37,400	4,560	6,190	3,080
11	.....	.....	9,110	8,720	6,190	26	8,920	38,100	4,100	5,680	3,080
12	.....	.....	9,700	8,340	6,190	27	9,510	35,900	3,800	5,190	3,080
13	11,100	35,200	9,300	7,780	6,530	28	10,100	30,900	5,030	5,190	2,940
14	9,500	38,800	9,300	7,240	6,190	29	10,700	25,400	7,240	5,030	2,940
15	9,700	42,500	10,100	7,420	6,190	30	10,300	21,500	7,600	4,870	2,800
						31	11,000	.....	7,600	4,720	.....

NOTE.—No record Oct. 1 to May 12. Discharge June 1–12, estimated 20,000 second-feet.

Monthly discharge of Snake River at Porterville Bridge, near Blackfoot, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
May 13–31	11,300	7,060	9,480	357,000
June	46,200	.....	30,700	1,830,000
July	16,800	3,800	9,280	571,000
August	9,110	4,720	6,950	427,000
September	6,530	2,800	4,610	274,000
The period	.....	.....	.....	3,460,000

SNAKE RIVER NEAR BLACKFOOT, IDAHO.

LOCATION.—In sec. 31, T. 3 S., R. 34 E., a quarter of a mile below mouth of Blackfoot River and 14 miles southwest of Blackfoot, Bingham County. Blackfoot River is only large tributary between station and mouth of Henrys Fork, about 60 miles above. Portneuf and Bannock rivers and 2,500 second-feet of spring water enter between this station and station at Neeley.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—June 6, 1910, to September 30, 1918.

GAGE.—Friez water-stage recorder on right bank: installed July 6, 1913, at same site and datum as staff gage installed October 1, 1912. Original gage, used June 6, 1910, to September 30, 1912, was 50 feet above present site. Datum of gage raised 0.06 foot June 25, 1911, and 0.03 foot October 1, 1912, when new staff gage was installed. Observer, J. A. Clough.

DISCHARGE MEASUREMENTS.—Made by wading or from a cable about 50 feet above the gage.

CHANNEL AND CONTROL.—Bed composed of very coarse gravel. Two channels at low and medium stages. Control shifts slightly during high water.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 14.80 feet (approximately), at 5 p. m. June 18 (discharge, about 46,200 second-feet); exact discharge uncertain because of probable shift in stage-discharge relation at about this period. Minimum stage, 3.45 feet at 3.40 p. m. February 3 (discharge, 1,790 second-feet).

1910–1918: Maximum stage recorded as stated above; minimum stage, 1.89 feet August 11 and 15, 1910 (discharge, 238 second-feet).

ICE.—Floating ice sometimes present for short periods; stage-discharge relation apparently not affected.

DIVERSIONS.—Practically all the natural summer flow of the river is diverted above station.

REGULATION.—Flow regulated by storage in Jackson Lake reservoir and also by storage in Blackfoot-Marsh reservoir on Blackfoot River. Practically all the summer flow is water released from these reservoirs.

ACCURACY.—Stage-discharge relation not permanent. Two rating curves used; well defined for low and medium stages; one, with several parallel curves, applicable October 1 to June 26, the other July 7 to September 30. Operation of water-stage recorder satisfactory except for periods October 16–31 and February 1–3 when staff gage readings were made. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph. Shifting-control method used June 27 to July 6. Records good.

Discharge measurements of Snake River near Blackfoot, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Mar. 2	C. F. Elford	4.20	2,990	Aug. 1	G. C. Baldwin	6.32	6,730
11	do	4.77	3,780	4	do	5.61	4,860
July 10	G. C. Baldwin	7.42	9,240	16	do	7.00	8,290
18	do	7.87	11,100	Sept. 20	do	5.10	3,800

Daily discharge, in second-feet, of Snake River near Blackfoot, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	4,610	4,510	4,200	4,830	2,180	3,100	4,940	8,090	12,000	18,500	6,880	4,430
2	4,610	4,510	4,400	4,610	2,160	3,010	5,390	9,050	13,600	15,600	5,080	4,540
3	4,510	4,510	4,510	4,400	1,790	3,010	5,510	10,100	13,600	14,200	4,860	4,540
4	4,510	4,510	4,300	4,300	1,980	3,360	5,390	11,200	13,200	13,600	4,970	4,640
5	4,400	4,510	4,100	4,200	2,770	3,270	4,940	13,200	13,600	13,500	5,310	4,640
6	4,400	4,510	3,900	4,200	3,180	3,360	4,610	15,800	15,400	12,500	6,620	5,200
7	4,400	4,510	4,100	4,200	3,440	3,440	4,510	16,300	18,600	11,200	7,520	5,420
8	4,300	4,510	3,810	4,100	3,360	3,440	4,200	16,300	22,400	11,200	8,320	5,540
9	4,300	4,510	3,720	4,000	3,270	3,270	4,100	16,300	26,300	10,300	8,590	5,770
10	4,300	4,510	4,300	3,270	3,180	3,530	4,300	16,700	28,800	9,440	8,590	6,010
11	4,100	4,400	3,530	2,770	3,100	3,900	4,940	15,800	30,300	9,150	8,590	6,250
12	4,000	4,400	3,360	2,460	3,100	4,100	5,750	13,600	32,300	9,730	8,320	6,620
13	3,900	4,400	4,510	2,250	3,100	4,300	6,390	11,600	34,900	9,440	7,780	6,750
14	3,840	4,300	4,610	2,390	3,010	4,200	7,210	10,100	37,400	9,440	7,780	6,500
15	3,780	4,400	4,610	2,770	3,100	4,000	8,090	10,100	41,000	10,000	7,780	6,500
16	3,720	4,300	4,300	3,010	3,010	3,620	8,400	10,800	43,600	11,200	8,320	6,620
17	3,900	4,300	4,300	3,270	3,010	3,620	8,090	11,200	45,700	11,200	8,870	6,620
18	4,060	4,400	4,100	3,620	3,100	3,720	7,350	10,800	46,200	10,600	9,150	6,380
19	4,120	4,300	4,200	3,530	2,770	3,810	6,260	10,100	45,200	9,730	9,150	4,860
20	4,160	4,200	4,200	3,620	3,010	3,900	5,510	9,390	42,600	8,590	8,590	3,910
21	4,280	4,100	4,300	3,530	3,100	3,900	5,160	8,090	40,500	7,780	7,520	3,320
22	4,320	4,200	4,200	3,440	2,850	3,900	5,390	7,210	39,000	7,000	7,000	2,960
23	4,340	4,200	4,200	3,360	3,180	3,810	5,880	6,790	39,000	5,660	6,880	2,960
24	4,300	4,200	4,100	3,440	3,440	3,900	6,650	6,920	38,400	5,080	6,750	2,870
25	4,300	4,300	4,200	3,810	3,530	3,900	7,350	7,350	37,900	4,640	6,500	2,960
26	4,380	4,200	4,300	3,720	3,360	4,000	7,940	8,400	38,400	4,320	6,130	3,050
27	4,400	4,300	4,200	3,530	3,440	4,300	8,720	9,740	37,500	3,710	5,540	3,050
28	4,510	4,300	4,200	3,620	3,100	4,400	9,050	10,800	32,200	4,220	5,200	2,960
29	4,550	4,200	4,400	3,270	.....	4,400	8,720	11,200	27,000	6,750	4,970	2,870
30	4,510	4,200	4,610	3,010	.....	4,510	8,090	10,800	22,900	7,260	4,860	2,700
31	4,530	.....	4,830	2,620	.....	4,610	.....	10,800	.....	7,260	4,750	.....

Monthly discharge of Snake River near Blackfoot, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	4,610	3,720	4,270	263,000
November	4,510	4,100	4,360	259,000
December	4,830	3,360	4,210	259,000
January	4,830	2,250	3,520	216,000
February	3,530	1,790	2,990	166,000
March	4,610	3,010	3,790	233,000
April	9,050	4,100	6,290	374,000
May	16,700	6,790	11,100	682,000
June	46,200	12,000	31,000	1,840,000
July	18,500	3,710	9,450	581,000
August	9,150	4,750	7,010	431,000
September	6,750	2,700	4,710	280,000
The year	46,200	1,790	7,720	5,580,000

SNAKE RIVER AT NEELEY, IDAHO.

LOCATION.—In sec. 11, T. 8 S., R. 30 E., half a mile north of Neeley post office, Power County, 4 miles southwest of American Falls, and 32 miles above the Minidoka dam. Portneuf and Bannock rivers and 2,500 second-feet of spring water enter Snake River between station near Blackfoot and that at Neeley. Raft River enters about 18 miles below Neeley.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 17, 1906, to September 30, 1918.

GAGE.—Friez water-stage recorder installed August 8, 1910, on left bank at site of staff gage originally used. Observers, Morgan and Wallis.

DISCHARGE MEASUREMENTS.—Made from cable at gage.

CHANNEL AND CONTROL.—Bed of river at measuring section rough, especially near right bank. Banks high and clean. One channel at all stages. Control is of lava rock, probably partly overlain with coarse gravel; shifts slightly.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, somewhat doubtful. Maximum mean for day, 13.5 feet June 20 (discharge, 48,400 second-feet); minimum stage, 4.67 feet at 8 a. m. February 5 (discharge, 4,280 second-feet).

1906–1918: Maximum stage doubtful; maximum daily mean, 13.5 feet June 20, 1918 (discharge, 48,400 second-feet); minimum stage, 3.65 feet August 20–22 1906 (discharge, 2,220 second-feet).

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

DIVERSIONS.—Numerous canals near Blackfoot and Idaho Falls divert practically the entire natural summer flow of Snake River.

REGULATION.—Summer flow augmented by stored water from Jackson Lake for use on the Minidoka project and Twin Falls tracts. Diurnal fluctuations sometimes result from operation of power plant 4 miles upstream.

ACCURACY.—Stage-discharge relation not permanent. Standard curve well defined. Parallel curve used for period June 24 to September 30. Operation of water-stage recorder satisfactory except for short periods mentioned in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph; shifting-control method used June 22–23. Records good except those for short periods during January and February, which are fair.

Discharge measurements of Snake River at Neeley, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 23	William Kessler.....	5.62	6,870	July 31	G. C. Baldwin.....	6.39	9,420
Feb. 26	C. E. Tappan.....	5.44	6,590	Aug. 27	.....do.....	6.06	8,480
May 18	G. C. Baldwin.....	7.40	13,800	Sept. 25	.....do.....	5.19	5,810
July 19	.....do.....	7.32	13,500				

Daily discharge, in second-feet, of Snake River at Neeley, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	7,850	7,340	7,180	7,680	5,050	5,650	7,600	11,000	14,000	27,300	9,730	6,910
2	7,680	7,340	7,340	7,680	4,700	5,650	7,950	11,400	15,800	21,200	8,980	6,750
3	7,510	7,340	7,340	7,510	4,620	5,550	8,500	11,800	16,300	18,600	7,580	6,910
4	7,340	7,340	7,510	7,340	4,490	6,220	8,600	13,100	15,800	17,600	7,580	6,910
5	7,340	7,340	7,340	7,180	4,360	6,370	8,500	14,400	15,800	17,100	7,580	7,080
6	7,340	7,340	7,010	7,010	5,170	6,220	8,000	16,000	16,800	16,100	7,920	7,240
7	7,340	7,340	6,850	7,100	5,610	6,370	7,680	18,500	18,800	15,200	8,980	7,750
8	7,340	7,340	6,850	7,000	5,760	6,530	7,510	18,800	22,500	14,300	10,500	7,750
9	7,340	7,340	6,690	6,900	5,170	6,530	7,180	18,800	25,200	14,300	11,300	8,090
10	7,180	7,340	6,690	6,690	5,320	6,370	7,180	18,800	28,600	13,400	11,300	8,260
11	7,010	7,340	7,010	6,000	5,760	6,650	7,180	19,300	30,400	12,100	11,300	8,620
12	7,010	7,340	6,370	5,300	5,760	7,000	7,850	17,800	32,200	12,500	11,300	8,800
13	6,850	7,340	6,370	5,000	5,910	7,200	8,730	15,800	33,300	13,000	10,900	9,160
14	6,690	7,180	7,180	4,800	5,760	7,400	9,460	13,500	35,100	12,500	10,500	9,160
15	6,690	7,180	7,340	5,000	5,760	7,300	10,200	12,700	36,900	12,500	10,500	8,980
16	6,530	7,340	7,510	5,300	5,760	7,100	11,400	12,700	39,300	13,400	10,900	9,160
17	6,530	7,180	7,340	5,800	5,460	6,750	11,400	13,500	41,700	14,700	11,300	9,160
18	6,690	7,180	7,180	6,200	5,170	6,750	11,000	14,000	44,800	14,300	11,700	9,160
19	6,850	7,180	7,010	6,530	5,030	6,850	10,000	13,100	48,000	13,400	12,100	8,620
20	6,850	7,180	7,010	6,530	5,000	6,950	8,910	12,700	48,400	12,100	11,700	7,080
21	7,010	7,010	7,010	6,370	5,300	6,900	8,550	11,800	47,800	11,300	10,900	6,120
22	7,010	7,010	7,010	6,370	5,400	6,900	8,200	11,000	45,900	10,100	10,100	5,820
23	7,010	7,010	7,010	6,060	5,030	6,900	8,550	10,000	44,000	9,160	9,730	5,820
24	7,180	7,010	7,010	5,910	5,460	6,850	8,910	9,650	42,700	7,920	9,540	5,670
25	7,180	7,010	7,010	6,060	6,000	6,850	9,840	9,650	42,100	7,410	9,350	5,520
26	7,180	7,070	7,010	6,370	6,530	6,850	10,200	10,200	41,500	7,080	9,160	5,520
27	7,180	7,120	7,180	6,220	6,100	7,010	11,400	11,800	41,500	6,430	8,620	5,670
28	7,180	7,180	7,180	6,060	6,250	7,340	12,200	13,100	38,500	5,970	8,090	5,670
29	7,340	7,180	7,180	6,200	.....	7,340	12,200	14,000	35,600	7,410	7,750	5,670
30	7,340	7,180	7,340	5,850	.....	7,510	11,400	14,000	32,600	9,730	7,410	5,520
31	7,340	.....	7,510	5,450	.....	7,510	.....	14,000	.....	9,730	7,240	.....

NOTE.—Stage-discharge relation affected by ice at times during January and February, and discharge estimated by comparison with record at Blackfoot station above and by study of temperature graph, Jan. 7–18, Jan. 29 to Feb. 2, Feb. 20–22, Feb. 27 to Mar. 3, Mar. 11–23, Apr. 1–6, May 6–7, and June 19. Discharge interpolated because of lack of gage-height record, Nov. 26–27, Feb. 25 and June 28–29.

Monthly discharge of Snake River at Neeley, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	7,850	6,530	7,130	438,000
November	7,340	7,010	7,220	430,000
December	7,510	6,370	7,080	435,000
January	7,680	4,800	6,300	387,000
February	6,530	4,360	5,420	301,000
March	7,510	5,550	6,750	415,000
April	12,200	7,180	9,210	548,000
May	19,300	9,650	13,800	848,000
June	48,400	14,000	33,100	1,970,000
July	27,300	5,970	12,800	787,000
August	12,100	7,240	9,730	598,000
September	9,160	5,520	7,280	433,000
The year	48,400	4,360	10,500	7,590,000

LAKE WALCOTT NEAR MINIDOKA, IDAHO.

LOCATION.—In sec. 1, T. 9 S., R. 25 E., in backwater of Reclamation Service dam 6 miles southeast of Minidoka post office, Minidoka County.

RECORDS AVAILABLE.—April 1, 1909, to September 30, 1918.

GAGE.—Hook gage in wooden stilling well on face of dam at entrance to power house. Early gage-height record from hook gage in concrete stilling well on point of rocks in front of power house. Same datum as present gage. Zero of gage, 4,200 feet above sea-level.

ACCURACY.—Gage heights occasionally affected by wind.

COOPERATION.—Gage-height record furnished by United States Reclamation Service.

Lake Walcott impounds water for the irrigation of lands in the North Side Minidoka project and the South Side Minidoka project of the United States Reclamation Service. It has a capacity of 107,240 acre-feet between elevations 4,236 and 4,246 feet; elevation of spillway, 4,240 feet, sea level datum.

Daily contents, in acre-feet, of Lake Walcott near Minidoka, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	76,550	64,470	85,870	85,640	83,200	84,120	85,980	92,860	102,050	101,450	94,370	101,210
2	79,140	64,580	85,870	86,450	82,300	83,310	87,380	92,040	102,050	100,010	95,910	99,880
3	82,070	65,340	85,870	85,980	81,740	83,540	85,870	92,160	100,970	103,020	94,840	98,560
4	85,980	66,550	85,640	84,820	82,070	83,540	86,450	92,860	100,850	102,410	91,570	96,510
5	89,130	66,990	85,520	85,750	81,740	83,200	86,800	93,090	98,800	102,410	90,060	95,910
6	91,570	67,210	84,700	85,870	82,190	84,120	86,220	96,030	98,680	102,900	88,660	95,180
7	94,250	69,190	85,050	85,400	83,090	84,120	83,540	98,320	99,640	104,340	90,290	95,180
8	96,990	71,280	84,700	85,980	83,540	84,120	83,540	96,870	101,930	103,380	92,860	95,790
9	97,350	76,770	84,820	85,980	84,120	84,120	83,540	97,230	101,690	104,220	96,630	97,230
10	95,790	80,950	85,170	85,870	82,980	84,470	83,540	97,110	103,380	103,980	102,410	100,490
11	94,370	82,190	85,290	84,700	83,310	84,350	83,540	97,110	101,930	103,140	104,820	101,930
12	92,510	82,520	83,090	83,540	83,540	85,170	83,540	97,470	102,900	103,020	105,190	103,020
13	91,340	82,520	84,120	82,860	82,980	84,350	83,540	95,910	101,690	104,700	105,310	104,220
14	88,310	84,700	85,640	82,980	83,540	86,100	86,680	93,440	102,410	104,700	104,100	105,070
15	84,940	85,640	85,750	82,860	83,090	85,870	87,500	92,510	103,020	104,220	105,310	105,070
16	80,830	85,870	85,870	83,310	83,090	85,520	89,130	92,860	103,740	104,580	105,550	103,260
17	77,110	85,980	85,870	83,540	83,310	84,940	87,850	93,670	103,620	105,430	104,820	104,820
18	74,630	85,290	85,750	81,850	83,200	85,170	88,780	94,020	103,860	104,460	105,310	105,430
19	71,720	85,520	85,520	84,470	83,090	84,700	88,550	93,550	103,860	104,820	105,310	105,910
20	69,520	85,640	85,400	84,470	83,310	85,050	84,700	94,020	103,860	104,220	102,900	105,790
21	67,980	85,520	85,640	84,700	82,860	85,290	82,860	93,550	104,100	104,700	104,820	105,790
22	66,550	85,400	85,640	84,240	83,200	85,520	82,410	92,040	102,900	104,460	101,690	105,910
23	65,450	85,290	85,640	84,120	82,980	85,640	81,060	90,880	104,220	103,500	104,460	105,910
24	64,360	84,940	85,640	84,120	83,540	85,870	79,030	88,780	102,780	102,900	103,620	105,910
25	64,250	85,520	85,870	84,010	84,010	85,870	77,450	89,250	103,620	100,270	104,820	105,670
26	63,040	85,640	85,290	84,470	84,120	85,980	76,100	89,940	104,700	97,230	103,620	105,430
27	63,920	85,870	85,400	84,700	84,120	85,640	77,110	90,990	104,340	94,950	102,050	105,670
28	64,140	85,290	85,290	84,700	83,770	85,980	80,160	94,020	104,100	92,740	103,380	103,380
29	64,140	85,520	85,980	82,860	.....	85,870	80,490	101,690	104,820	89,130	103,260	96,630
30	63,920	86,330	85,980	84,700	.....	85,980	80,610	101,930	100,010	89,940	102,660	91,230
31	64,250	.....	86,100	84,120	.....	85,290	.....	98,320	.....	92,510	102,170	.....

SNAKE RIVER NEAR MINIDOKA, IDAHO.

LOCATION.—In sec. 2, T. 9 S., R. 25 E., 100 yards below Howells ferry, 1 mile below Reclamation Service dam, 6 miles southeast of Minidoka post office, Minidoka County, nearest railroad point, and 6 miles above Montgomery's ferry station, which was discontinued December 31, 1910. Raft River enters between this station and the station at Neeley.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 21, 1910, to September 30, 1918.

GAGE.—Friez water-stage recorder on right bank directly across river from and at same datum as staff gage used prior to August 28, 1911; also Stevens long-distance recorder installed in 1915. Gage inspected by employees of United States Reclamation Service.

DISCHARGE MEASUREMENTS.—Made from cable about 50 feet below gage.

CHANNEL AND CONTROL.—Bed composed of coarse gravel. One channel at all stages. Control shifts slightly but infrequently.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 16.02 feet at 1 a. m. June 21 (discharge, 45,900 second-feet); minimum stage recorded, 5.85 feet at 6 p. m. September 26 (discharge, 3,950 second-feet).

1910–1918: Maximum stage recorded, that of June 21, 1918; minimum stage, 4.05 feet from 11 a. m. to 3 p. m. October 13, 1914 (discharge, 960 second-feet).

ICE.—Some shore ice forms in vicinity of gage and river closes farther down; stage-discharge relation slightly affected at times.

DIVERSIONS.—The North Side and South Side Minidoka canals divert water between the Neeley and Minidoka stations. The nearest diversions below the station are the Twin Falls North Side and South Side canals at Milner.

REGULATION.—Flow partly regulated by storage in Lake Walcott above Minidoka dam (storage capacity about 67,000 acre-feet above spillway).

ACCURACY.—Stage-discharge relation not permanent. Standard rating curve well defined. Parallel curve used during period July 3 to September 30. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph except as noted in footnote to daily-discharge table. Records good.

COOPERATION.—Gage-height record furnished by United States Reclamation Service.

Discharge measurements of Snake River near Minidoka, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Mar. 14	C. F. Elford	7.29	7,720	July 20	G. C. Baldwin	7.63	8,330
July 20	G. C. Baldwin	8.10	9,390	30	....do	6.61	5,630

Daily discharge, in second-feet, of Snake River near Minidoka, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	5,220	7,220	7,220	7,480		6,080	7,480	8,580	10,800	25,300	6,280	5,290
2	5,100	6,960	7,480	7,750	5,900	5,830	8,020	8,580	11,900	19,000	6,400	5,290
3	4,870	6,960	7,480	7,480		5,830	7,480	8,870	13,900	15,800	6,530	5,780
4	4,870	6,960	7,480	7,220	5,460	5,830	7,750	9,480	13,900	14,800	6,150	5,410
5	4,870	6,960	7,480	7,480	5,100	6,200	7,480	10,500	13,100	14,000	5,780	5,060
6	4,980	6,450	7,220	7,480	5,460	6,200	7,480	12,300	13,100	13,000	5,780	5,170
7	4,870	6,080	7,220	7,220	5,950	6,200	6,960	14,700	13,900	12,800	5,900	5,290
8	5,460	4,980	7,220	7,480	6,320	6,200	6,700	15,500	17,200	11,500	6,150	5,290
9	6,830	4,610	6,960	7,750	6,200	6,580	6,450	15,900	20,800	11,100	6,150	5,410
10	7,480	6,080	6,960	7,480	5,700	6,200	6,580	15,900	21,900	10,800	6,280	5,410
11	7,480	6,700	7,220	6,830	5,950	6,200	6,450	15,900	26,800	9,580	8,670	5,530
12	7,480	6,960	6,830	5,830	6,200	6,700	6,700	15,500	28,200	8,670	9,110	7,040
13	7,480	6,700	6,830	5,700	6,320	6,700	7,220	13,900	30,100	9,260	8,960	6,650
14	8,020	6,830	7,480	5,580	6,320	7,750	8,020	11,600	31,000	10,800	7,430	7,170
15	8,300	7,220	7,750	5,580	6,080	7,480	8,870	10,100	33,400	9,420	7,830	8,380
16	8,300	7,220	7,750	5,950	5,950	6,960	9,480	10,100	35,700	10,200	8,810	7,430
17	8,300	7,480	7,480	6,080	5,950	6,700	10,100	10,800	38,600	12,000	8,960	7,560
18	7,750	7,220	7,480	6,080	5,950	6,700	9,800	10,800	41,000	11,700	8,960	7,010
19	8,300	7,220	7,220	6,700	6,080	6,830	10,100	10,800	43,900	10,800	10,600	7,700
20	8,020	7,220	7,220	6,700	5,830	6,700	8,870	10,100	45,300	9,260	10,800	5,900
21	8,020	7,220	7,220	6,830	5,700	6,830	7,480	9,800	45,800	8,520	7,830	4,820
22	7,750	6,960	7,220	6,700	5,830	6,830	7,480	8,870	34,900	8,100	8,100	5,290
23	7,480	7,220	7,220	6,570	5,700	6,830	8,020	7,750	42,900	6,650	7,430	4,160
24	7,750	6,960	7,220	6,450	5,830	6,830	8,020	7,220	41,000	6,530	7,300	4,820
25	7,750	7,220	7,220	6,320	6,700	6,830	8,300	7,220	39,600	6,400	6,910	4,940
26	7,480	7,220	7,220	6,830	6,320	6,960	8,870	7,480	40,000	6,020	7,970	4,270
27	7,750	7,480	7,220	6,960	6,450	6,830	8,300	7,480	40,000	5,780	6,400	5,290
28	7,220	7,220	7,220	6,960	6,320	7,480	6,830	6,580	40,000	5,660	6,020	7,300
29	7,220	7,220	7,220	6,830	.....	7,220	6,830	8,870	39,600	5,660	5,780	7,700
30	7,220	7,480	7,220	6,700	.....	6,960	7,750	12,300	32,700	5,660	5,660	6,150
31	7,220	.....	7,480	6,400	.....	6,960	.....	10,100	.....	6,020	5,530	.....

NOTE.—Stage-discharge relation affected by ice Jan. 31 to Feb. 3. Discharge estimated Feb. 1-3, 5,900 second-feet.

Monthly discharge of Snake River near Minidoka, Idaho, for the year ending Sept. 30, 1918

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	8,300	4,870	6,990	430,000
November	7,480	4,640	6,880	409,000
December	7,750	6,830	7,280	448,000
January	7,750	5,580	6,760	416,000
February	6,700	5,100	5,980	332,000
March	7,750	5,830	6,660	410,000
April	10,100	6,450	7,860	468,000
May	15,900	6,580	10,800	664,000
June	45,800	10,800	30,400	1,810,000
July	25,300	5,660	10,300	633,000
August	10,800	5,530	7,310	449,000
September	8,380	4,160	5,950	354,000
The year	45,800	4,160	9,430	6,820,000

LAKE MILNER AT MILNER, IDAHO.

LOCATION.—In sec. 29, T. 10 S., R. 21 E., in backwater of Twin Falls companies' dam at Milner, Cassia County.

RECORDS AVAILABLE.—April 10, 1911, to September 30, 1918.

GAGE.—Staff gage at dam. A Lietz and a Friez water-stage recorder have also been used for short periods. All gages have same datum.

ACCURACY.—Gage heights occasionally seriously affected by wind.

COOPERATION.—Gage-height record furnished by Twin Falls North Side Land & Water Co. and Twin Falls Canal Co.

Daily gage height, in feet, of Lake Milner at Milner, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	8.70	9.00	8.30	8.30	8.80	8.70	8.65	10.00	10.53	10.66	10.76	10.94
2	9.28	8.90	8.30	8.20	7.50	8.50	9.02	10.25	10.54	10.67	10.87	10.89
3	9.58	8.90	8.50	8.30	7.90	8.50	9.04	10.06	10.48	10.68	11.01	10.93
4	9.28	8.70	8.40	8.20	8.00	8.20	9.08	10.20	10.54	10.71	11.00	10.90
5	9.16	7.80	8.35	8.20	7.94	8.60	9.16	10.26	10.50	10.72	10.75	10.88
6	9.24	7.50	8.40	9.00	7.94	8.65	9.17	10.35	10.52	10.71	10.72	10.88
7	9.50	7.00	8.20	7.90	8.20	8.56	8.79	10.35	10.54	10.71	10.72	10.90
8	10.26	7.50	8.40	9.80	8.50	8.60	8.75	10.30	10.52	10.72	10.76	10.88
9	8.20	6.90	8.50	10.00	8.72	8.70	8.86	10.38	10.49	10.71	10.82	10.94
10	8.00	7.00	8.30	9.60	8.40	8.75	8.89	10.37	10.52	10.72	10.89	10.92
11	8.00	8.40	8.20	9.50	8.20	8.70	9.08	10.37	10.52	10.72	10.88	10.88
12	8.00	9.20	7.60	9.40	8.40	8.80	9.02	10.34	10.52	10.72	10.92	10.92
13	8.00	9.20	8.20	8.40	8.20	8.40	8.91	10.34	10.51	10.74	10.94	10.94
14	8.00	8.00	8.00	8.40	8.50	8.90	9.05	10.36	10.54	10.74	10.92	10.92
15	8.45	8.20	8.20	8.30	8.50	8.95	9.42	10.38	10.54	10.73	10.88	10.91
16	8.60	8.20	8.20	8.30	8.50	8.55	9.28	10.40	10.55	10.78	10.95	10.92
17	8.70	8.40	8.30	8.50	8.35	8.40	9.27	10.38	10.62	10.78	10.90	10.64
18	9.00	8.60	8.30	8.40	8.30	8.20	9.35	10.40	10.64	10.76	10.88	10.02
19	9.00	7.80	8.30	8.40	8.40	8.50	9.21	10.44	10.65	10.75	10.89	10.40
20	9.20	8.10	8.00	8.40	8.50	8.58	9.24	10.40	10.63	10.74	10.92	10.78
21	8.90	8.20	8.00	8.40	8.40	8.48	8.82	10.43	10.62	10.74	10.92	10.80
22	9.00	8.30	8.00	8.20	8.40	8.50	8.91	10.40	10.60	10.76	10.91	10.86
23	9.00	8.10	8.40	8.50	8.40	8.74	9.18	10.40	10.62	10.78	10.91	10.37
24	9.60	8.30	8.10	8.50	8.40	8.64	9.38	10.32	10.63	10.68	10.91	10.48
25	9.40	8.10	8.10	8.50	8.20	8.54	9.50	10.38	10.65	10.96	10.92	10.56
26	8.00	8.35	8.10	8.30	8.70	8.54	9.79	10.40	10.67	10.95	10.90	10.58
27	8.40	8.30	8.30	8.30	8.60	8.70	9.94	10.37	10.67	10.81	10.88	10.42
28	8.60	8.30	8.10	9.20	8.70	8.90	9.62	10.34	10.66	10.80	10.89	10.28
29	8.20	8.30	8.10	8.60	.....	.....	9.68	10.42	10.66	10.34	10.90	9.93
30	8.70	8.30	8.00	8.50	.....	8.60	9.74	10.37	10.65	10.72	10.93	9.82
31	9.00	.....	8.00	8.20	.....	.....	.....	10.27	.....	10.61	10.91	.....

NOTE.—Data on contents corresponding to gage heights are not available.

SNAKE RIVER AT MILNER, IDAHO.

LOCATION.—In sec. 29, T. 10 S., R. 21 E., 300 yards below Milner dam, at Milner, Twin Falls County. No tributaries enter Snake River between Minidoka station and Milner, and no noteworthy amount of water between Milner and station near Twin Falls except seepage and spring water.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 10, 1909, to September 30, 1918.

GAGE.—Staff gage in three sections on left bank; installed October 20, 1909; high and low sections vertical, middle section inclined. An auxiliary gage in two sections is located about 100 yards below the main gage, to which it bears no definite relation; low-water section, an inclined staff on right bank; high-water section, an inclined staff on left bank. Datum of auxiliary gage lowered 1.00 foot July 30 and 1.00 foot September 7, 1916. Gage used prior to October 20, 1909, was a vertical staff on right bank, at about the same datum as present gage. Observers, Deming and McConnel.

DISCHARGE MEASUREMENTS.—Made from a cable at gage, from foot planks at the auxiliary low-water gage, or by wading. Measurements may also be made from the suspension highway bridge a quarter of a mile below the main gage but conditions for making measurements at this bridge are poor.

CHANNEL AND CONTROL.—Bed of stream at both the main gage and the auxiliary gage consists of lava rock, which forms the control for the low-water gage. Control for main gage is an old crib-and-rock diversion dam and is practically permanent for medium and high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 19.90 feet at 6.50 p. m. June 21 (discharge, 40,000 second-feet); minimum stage recorded, 1.56 feet July 26, 27, and 28 (discharge, 26.8 second-feet).

1909–1918: Maximum stage recorded, 20.1 feet June 12, 1909 (discharge, 44,400 second-feet); minimum stage, −1.08 feet (old datum of auxiliary gage) August 17–18, 1915 (discharge, 9 second-feet).

ICE.—Stage-discharge relation not seriously affected by ice; observations discontinued during part of winter because gages are inaccessible to observer.

DIVERSIONS.—The Twin Falls canals divert water at Milner dam, just above station. During part of the season practically the entire flow of the river is taken by these canals.

REGULATION.—Flow past station during the irrigation season is regulated at Milner dam.

ACCURACY.—Stage-discharge relation practically permanent during the year. Rating curve well defined below 24,000 second-feet. Gage read occasionally to half-tenths October 1–8 and January 15 to March 28; twice a day to hundredths April 6 to September 30. Daily discharge ascertained by applying mean daily gage height to rating table, except on days when marked changes occurred, when the mean of the discharge corresponding to the gage readings was used. Records poor October to March; fair April to June; good July to September.

COOPERATION.—Gage-height record and some discharge measurements furnished by Twin Falls North Side Land & Water Co. and the Twin Falls Canal Co.

Discharge measurements of Snake River at Milner, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
June 5	Burdick and McConnel.	13.70	7,010	July 29	Baldwin and McConnel.	1.57	28.2
July 25	Adams and McConnel..	1.90	42.3	Aug. 3	W. N. McConnel.....	1.93	39.4
27	W. N. McConnel.....	1.56	26.2	Sept. 6	.....do.....	1.68	34.4

NOTE.—Burdick and Adams, employees of the North Side Land & Water Co.; McConnel, employee of the Twin Falls Canal Co.

Daily discharge, in second-feet, of Snake River at Milner, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	2,280	.....	.....	5,560	5,630	2,790	7,130	20,300	30	36
2	2,490	.....	.....	5,440	5,890	2,790	5,390	15,000	36	32
3	2,490	.....	.....	5,310	6,150	3,130	8,220	9,940	46	32
4	2,350	.....	.....	5,180	6,410	3,130	7,610	9,240	298	30
5	2,280	.....	4,590	5,060	6,670	3,980	6,780	8,070	34	32
6	2,280	.....	4,590	5,830	6,970	5,690	7,010	6,970	30	34
7	2,490	.....	5,300	5,830	5,970	8,470	7,490	5,800	32	34
8	2,490	.....	5,830	5,830	4,380	8,720	16,800	5,100	32	32
9	.....	.....	5,970	5,830	3,970	10,800	15,600	4,060	34	292
10	.....	.....	5,970	5,970	3,790	10,300	16,200	4,550	32	284
11	.....	.....	5,060	5,830	3,970	9,750	21,000	3,630	2,660	292
12	.....	.....	4,820	5,970	3,790	9,230	21,800	2,810	2,320	2,910
13	.....	.....	5,060	5,060	3,520	8,470	23,100	3,500	3,080	1,520
14	.....	.....	5,300	6,500	4,170	6,550	24,200	6,330	1,540	772
15	.....	4,380	5,300	6,400	4,590	4,730	25,400	4,550	1,040	1,740
16	.....	4,380	5,180	5,900	6,970	4,060	29,300	5,290	2,730	4,730
17	.....	4,480	4,820	5,830	7,280	4,730	31,300	5,900	4,730	5,700
18	.....	4,480	4,710	5,060	7,900	4,640	33,700	7,370	4,220	2,600
19	.....	5,300	5,060	.....	7,280	4,910	37,200	5,800	3,880	2,210
20	.....	5,800	5,180	.....	7,280	4,300	38,300	3,560	7,010	1,170
21	.....	5,800	5,060	.....	5,180	4,910	39,800	2,760	2,520	54
22	.....	4,380	5,060	5,300	3,100	3,770	38,000	2,710	4,500	286
23	.....	4,840	5,060	5,060	3,350	3,190	36,500	805	2,080	738
24	.....	5,300	5,060	4,820	3,430	863	35,200	36	2,200	36
25	.....	5,300	4,590	4,820	2,940	1,560	33,700	38	549	1,080
26	.....	5,060	5,830	4,590	3,700	1,940	33,500	34	1,950	509
27	.....	4,820	5,830	4,380	4,270	2,820	34,700	26	606	512
28	.....	.....	5,830	4,590	2,490	1,720	33,000	26	769	3,420
29	.....	.....	.....	4,850	2,350	1,970	33,700	26	300	4,640
30	.....	.....	.....	5,110	1,790	7,490	28,900	28	36	2,920
31	.....	.....	.....	5,370	.....	4,730	.....	28	36	.....

NOTE.—No record obtained Oct. 9 to Jan. 14. Discharge interpolated or estimated because of lack of gage heights, Jan. 20–21, 23, Feb. 13, 27, Mar. 2–4, 8, 14–16, 23, and Mar. 29 to Apr. 4.
Discharge estimated from records at other stations as follows: Jan. 28 to Feb. 4, 5,000 second-feet, and Mar. 19–21, 5, 500 second-feet.

Monthly discharge of Snake River at Milner, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October 1–8	2,490	2,280	2,390	37,900
January 15–31	5,800	4,380	4,960	167,000
February	5,970	4,590	5,180	288,000
March	6,500	4,380	5,410	333,000
April	7,900	1,790	4,840	288,000
May	10,800	863	5,040	310,000
June	39,800	5,390	24,400	1,450,000
July	20,300	26	4,650	286,000
August	7,010	30	1,590	97,800
September	5,700	30	1,290	76,800

SNAKE RIVER AT KING HILL, IDAHO.

LOCATION.—In sec. 7, T. 5 S., R. 11 E., 300 feet east of Oregon Short Line Railroad station at King Hill, Elmore County. Big Wood River enters from north about 20 miles above station.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 13, 1909, to September 30, 1918.

GAGE.—Inclined staff on right bank; installed August 17, 1910. Original gage, used from May 13, 1909, to March 1, 1910, was vertical staff on left bank at practically same section as present gage, but at datum 2.2 feet higher; temporary staff gage three-quarters of a mile above present site used from March 7 to August 16, 1910.

DISCHARGE MEASUREMENTS.—Made from cable 100 feet below gage.

CHANNEL AND CONTROL.—Bed composed chiefly of gravel. Control is lava reef partly overlain with gravel; shifts slightly.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 16.3 feet June 22 (discharge, 47,200 second-feet); minimum stage, 6.0 feet on several days in July, August, and September (discharge, 7,530 second-feet).

1909–1918: Maximum stage recorded, 16.3 feet June 22, 1918 (discharge, 47,200 second-feet); minimum stage, 4.5 feet July 7–9 and August 15 and 16, 1910 (discharge, 4,760 second-feet).

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

DIVERSIONS.—No important diversions for irrigation are made between this station and the station at Milner.

REGULATION.—Flow regulated by diversions at Milner. During certain parts of irrigation season practically entire flow of river is appropriated and flow at King Hill is derived largely from springs and seepage water from Twin Falls tracts.

ACCURACY.—Stage-discharge relation practically permanent during year. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table and interpolating for days of no gage height. Records good.

COOPERATION.—Gage-height record furnished by United States Reclamation Service.

The following discharge measurement was made by G. C. Baldwin:

May 15: Gage height, 7.94 feet; discharge, 13,200 second-feet.

Daily discharge, in second-feet, of Snake River at King Hill, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1...	9,770	12,400	14,200	10,400	11,700	13,000	11,400	8,310	13,000	32,800	7,530	7,780
2...	10,400	14,100	16,600	11,400	11,700	13,000	11,700	9,170	15,500	26,600	7,530	7,530
3...	11,000	13,400	11,400	11,000	11,400	12,400	13,400	9,470	13,000	20,000	7,530	7,530
4...	11,000	15,900	11,000	11,400	11,700	12,400	13,800	10,400	16,200	17,400	7,530	7,530
5...	11,000	15,900	11,000	10,400	11,700	11,700	13,800	11,000	15,500	16,600	7,780	7,780
6...	11,000	11,400	11,000	14,100	12,000	12,700	13,000	10,700	14,800	15,500	7,780	7,780
7...	10,700	11,400	11,000	14,800	12,400	12,700	13,800	13,000	14,400	15,200	7,780	7,780
8...	11,000	12,000	10,400	15,200	12,400	12,400	12,700	16,200	15,200	14,400	7,780	7,780
9...	16,200	10,100	10,700	14,800	13,000	12,000	11,400	16,600	18,200	13,000	7,530	7,780
10...	13,000	9,770	11,000	9,170	13,800	12,200	11,000	18,800	21,100	13,000	7,530	8,310
11...	12,400	9,770	14,100	14,400	12,700	12,400	10,700	17,400	25,800	12,700	7,530	8,040
12...	12,400	9,770	11,700	15,200	12,000	12,700	10,700	17,000	27,400	12,000	7,530	8,310
13...	12,000	10,400	13,000	12,400	12,700	13,800	10,700	16,600	29,500	10,700	11,000	9,770
14...	12,000	10,400	10,700	12,400	11,700	12,400	10,400	15,500	30,700	10,400	11,000	10,100
15...	11,700	10,400	11,000	12,000	12,700	13,800	11,000	14,400	31,600	12,400	11,000	10,400
16...	13,000	10,400	12,000	12,000	12,700	14,400	12,700	12,700	34,100	11,000	9,470	11,000
17...	12,400	11,000	11,000	12,000	12,700	13,400	13,800	10,700	36,600	11,400	11,000	12,400
18...	13,400	13,200	11,400	12,400	12,400	13,000	13,800	11,400	39,200	12,700	10,700	15,900
19...	12,400	15,500	11,400	12,000	12,000	12,700	15,200	11,000	42,100	13,400	12,000	10,400
20...	12,400	10,400	12,400	12,400	12,400	13,800	13,400	11,400	44,700	12,400	12,400	10,400
21...	15,200	10,700	10,400	13,000	12,400	13,800	13,800	10,700	46,800	11,000	15,900	10,700
22...	17,000	11,700	10,700	13,000	12,400	13,800	11,700	11,400	47,200	9,470	9,770	9,790
23...	12,400	10,700	10,400	13,000	12,400	12,700	9,770	10,400	45,100	9,470	12,400	8,880
24...	13,000	10,700	11,000	12,400	12,400	12,000	9,770	9,170	44,300	8,880	9,170	9,770
25...	13,000	14,400	12,400	13,000	11,700	12,400	10,400	8,310	41,700	8,040	9,170	8,880
26...	12,400	11,000	10,400	12,000	12,400	12,000	9,770	8,040	40,900	7,530	9,170	8,590
27...	12,400	11,400	10,700	12,400	13,000	12,400	9,770	8,040	40,900	7,530	11,000	9,170
28...	14,400	12,700	10,700	12,000	13,000	11,700	10,700	9,470	40,000	7,530	9,470	9,770
29...	17,000	12,200	10,700	13,800	.....	12,400	9,770	9,770	40,000	7,530	8,880	13,400
30...	11,000	11,700	10,400	13,400	.....	12,000	8,310	8,310	36,400	7,530	8,310	13,800
31...	11,400	.....	10,700	13,000	.....	11,700	.....	15,500	.....	7,530	8,040	.....

NOTE.—Discharge interpolated because of lack of gage heights, Nov. 18, 29, Dec. 1, 5, 6, 9, 16, Mar. 10, June 9, 30, Aug. 25, and Sept. 22.

Monthly discharge of Snake River at King Hill, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum	Mean.	
October	17,000	9,770	12,500	769,000
November	15,900	9,770	11,800	702,000
December	16,600	10,400	11,400	701,000
January	15,200	9,170	12,600	775,000
February	13,800	11,400	12,300	683,000
March	14,400	11,700	12,700	781,000
April	15,200	8,310	11,700	696,000
May	18,800	8,040	12,000	738,000
June	47,200	13,000	30,700	1,830,000
July	32,800	7,530	12,800	787,000
August	15,900	7,530	9,390	577,000
September	15,900	7,530	9,570	569,000
The year	47,200	7,530	13,300	9,610,000

SNAKE RIVER NEAR MURPHY, IDAHO.

LOCATION.—In NW. ¼ sec. 18, T. 2 S., R. 1 E., three-quarters of a mile below Swan Falls power plant, 1¼ miles below company ferry, and 12 miles east of Murphy, Owyhee County. Gage is in Ada County, 38 miles below mouth of Bruneau River.

DRAINAGE AREA.—41,900 square miles (measured on United States Land Office maps).

RECORDS AVAILABLE.—August 21, 1913, to September 30, 1918.

GAGE.—Friez water-stage recorder on right bank a quarter of a mile below house on ranch of S. N. Glass, installed September 7, 1914; inspected by S. N. and J. G. Glass. Temporary vertical staff gage installed August 29, 1912, was replaced August 22, 1913; Friez water-stage recorder, temporarily installed from December 13, 1913, to June 27, 1914. All gages at practically same site and datum. Records prior to August 21, 1913, fragmentary.

DISCHARGE MEASUREMENTS.—Made from ferry boat 1¼ miles above gage.

CHANNEL AND CONTROL.—Bed composed of lava rock overlain with deposits of sand, silt, and gravel, where not scoured out by current. Control subject to shift within well-defined limits. Banks not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 13.95 feet at 10 p. m. June 22 (discharge, 47,300 second-feet); minimum stage not definitely determined, but probably occurred during period of no record.

1912–1918: Maximum stage recorded in 1918; minimum stage about −2.25 feet at 6 a. m. August 6, 1917 (discharge, about 5,000 second-feet).

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

DIVERSIONS.—A number of small pumping plants divert water for irrigation between this station and that at King Hill.

REGULATION.—Large diurnal fluctuations in stage are due to the manipulation of gates at dam above, and to variation in load at power plant, but because of small amount of storage obtained at dam the changes are of short duration.

ACCURACY.—Stage-discharge relation not permanent during year. Two rating curves used, one well defined applicable October 1 to June 22, the other fairly well defined applicable June 23 to September 6. Operation of water-stage recorder satisfactory. Discharge ascertained by applying to rating table mean daily gage height obtained by inspection of recorder graph. Records can not be considered better than fair, as no measurements were made during year.

COOPERATION.—Gage-height record furnished by Idaho Power Co.

No discharge measurements were made during year.

Daily discharge, in second-feet, of Snake River near Murphy, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1...	8,870	14,000	14,000	13,600	13,100	13,100	12,400	8,570	12,600	39,100	7,180	7,270
2...	10,000	14,500	14,300	13,600	11,800	12,900	12,400	8,000	13,800	35,800	6,910	7,180
3...	10,600	14,800	14,300	13,800	11,600	12,600	12,600	8,720	14,500		7,180	7,180
4...	11,200	15,300	14,000	13,800	11,400	12,400	13,800	9,350	13,800	22,500	7,090	6,910
5...	12,000	14,000	14,300	14,000	11,600	12,400	14,000	10,200	15,500		7,000	6,830
6...	14,500	15,500	14,300	12,600	11,800	12,000	14,000	10,600	15,500	15,800	7,000	6,830
7...	15,300	13,800	14,000	14,000	12,000	12,400	13,600	11,000	15,000	14,800	7,370	
8...	15,800	13,800	13,800	14,500	12,200	12,600	14,000	12,900	14,800	14,100	7,370	
9...	15,300	13,600	13,800	13,800	12,400	12,600	12,900	15,300	15,800	13,300	7,180	
10...	15,000	12,400	13,600	14,800	12,900	12,200	11,800	16,300	19,000	12,600	7,270	
11...	13,600	12,000	13,800	11,000	13,300	12,600	11,800	18,100	21,900	11,900	7,180	
12...	13,600	11,000	13,300	12,900	13,100	12,900	11,600	17,100	25,200	11,100	6,910	
13...	12,900	11,600	13,600	14,500	12,600	12,900	11,600	16,800	27,000	10,400	7,370	
14...	13,300	13,100	13,600	13,100	12,000	13,600	11,200	16,300	28,800		10,100	
15...	13,600	12,900	13,100	12,400	12,400	12,900	11,400	15,300	30,300		9,930	
16...	14,000	12,900	13,100	12,200	12,900	13,300	11,800	14,300	31,900	10,500	9,770	
17...	14,400	13,300	13,600	12,200	12,400	14,000	13,300	12,900	33,800		8,680	
18...	14,800	13,300	13,300	12,200	12,600	13,600	13,800	11,000	35,800		9,330	
19...	15,100	13,600	13,800	12,600	12,400	13,300	14,300	11,600	37,900	10,400	10,100	10,200
20...	15,500	15,000	13,600	12,000	12,000	13,100	14,800	11,600	41,200	9,890	10,400	
21...	14,500	13,100	13,600	12,400	12,200	13,800	13,800	11,800	44,000	9,380	11,200	
22...	15,500	13,600	13,300	12,900	12,400	13,800	13,600	11,200	46,100	8,870	13,100	
23...	16,300	13,800	13,600	12,600	12,200	13,800	12,000	11,000	46,100	8,360	9,930	
24...	14,800	13,600	12,600	12,900	12,400	13,300	10,400	10,400	45,300	7,850	10,800	
25...	14,800	13,600	13,800	12,600	12,600	13,100	10,000	9,190	44,000	7,330	8,440	
26...	14,400	13,800	13,600	12,900	12,000	12,900	10,200	8,280	41,600	6,820	9,470	
27...	14,000	13,600	13,300	12,400	12,200	13,100	10,000	7,870	40,800	6,310	8,320	
28...	14,300	13,600	13,300	12,200	13,100	13,300	10,000	8,280	40,800	6,670	8,800	
29...	13,600	14,000	13,300	12,200	.....	12,900	10,800	9,190	39,900	7,470	8,560	
30...	16,000	14,300	13,300	12,600	.....	12,900	9,860	10,000	39,500	6,830	7,990	
31...	13,800	.....	13,300	13,300	.....	12,600	.....	9,190	.....	6,910	7,770	.....

NOTE.—Braced figures indicate mean discharge for the period; estimated from flow at other stations on Snake River. Discharge interpolated because of no gage heights, Oct. 14-19, 26. Apr. 18, 19, July 8-12, 20-26.

Monthly discharge of Snake River near Murphy, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	16,300	8,870	13,900	855,000
November	15,500	11,000	13,600	809,000
December	14,300	12,600	13,600	836,000
January	14,800	11,000	13,000	799,000
February	13,300	11,400	12,300	683,000
March	14,000	12,000	13,000	799,000
April	14,800	9,860	12,300	732,000
May	18,100	7,870	11,700	719,000
June	46,100	12,600	29,700	1,770,000
July	39,100	6,310	13,000	799,000
August	13,100	6,910	8,570	527,000
September	.....	.....	9,570	569,000
The year	16,100	.....	13,700	9,900,000

SNAKE RIVER AT WEISER, IDAHO.

LOCATION.—In sec. 31, T. 11 N., R. 5 W., a third of a mile above wagon bridge at Weiser, Washington County. Between this station and that near Murphy, Sucker Creek and Owyhee and Malheur rivers enter Snake River on left and Boise, Payette, and Weiser rivers on right.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 8, 1910, to September 30, 1918. Fragmentary gage-height records obtained by Weather Bureau since 1895.

GAGE.—Inclined concrete gage on right bank; installed by Weather Bureau; read by J. W. Lapish. Gage used October 8, 1910, to September 30, 1914, was inclined staff on right bank 200 yards below wagon bridge at different datum.

DISCHARGE MEASUREMENTS.—Made from cable 200 yards below bridge.

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

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 11.0 feet June 24 (discharge, 63,400 second-feet); minimum stage, 2.0 feet on several days in July, August, and September (discharge, 7,140 second-feet).

1910–1918: Maximum stage recorded, 14.5 feet (United States Geological Survey gage datum) June 15, 1912 (discharge, 73,800 second-feet); minimum stage, 1.5 feet (Weather Bureau datum) at 8 a. m. August 28 and 29, 1915 (discharge, 5,550 second-feet).

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

DIVERSIONS.—Some water is diverted between Weiser and the station near Murphy.

REGULATION.—Diurnal fluctuations during periods of low water due to the operation of Swan Falls power plant above.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve well defined. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good, except for period July to September for which they are fair because of diurnal fluctuations caused by Swan Falls power plant above and infrequency of gage readings.

COOPERATION.—Gage-height record furnished by Weather Bureau.

No discharge measurements were made during year.

Daily discharge, in second-feet, of Snake River near Weiser, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	17,400	20,100	20,100	27,300	18,500	15,500	31,300	21,800	18,500	45,500	7,140	9,610
2	16,000	19,000	20,100	26,100	18,500	15,500	30,600	21,800	22,400	42,600	7,140	9,610
3	13,700	19,000	20,100	24,200	18,000	15,500	29,300	21,800	22,400	38,200	7,140	9,240
4	12,000	17,000	20,100	21,800	18,000	16,000	28,600	22,400	24,800	28,600	7,470	8,870
5	12,000	19,000	19,000	21,800	17,400	16,000	26,700	23,000	25,400	23,000	7,470	8,160
6	12,400	17,400	18,500	21,200	17,400	16,000	25,400	24,200	28,600	19,000	7,470	7,470
7	12,800	18,000	19,000	20,100	17,400	16,500	24,200	27,300	30,600	18,000	7,140	7,140
8	13,300	17,400	19,600	20,100	18,000	16,500	23,000	28,600	32,000	18,000	7,140	7,470
9	13,300	17,400	17,400	19,600	18,000	16,500	28,000	30,600	33,300	16,000	7,140	7,470
10	13,300	17,000	17,400	19,600	18,000	17,000	30,000	32,600	34,000	15,500	7,140	7,810
11	15,000	16,000	17,400	19,000	17,400	17,000	31,300	32,600	41,800	15,000	7,140	8,160
12	15,000	16,000	17,400	18,000	17,400	17,400	31,300	33,300	45,500	14,100	7,140	8,510
13	15,000	16,000	17,400	18,000	17,400	17,400	30,600	32,600	50,700	13,700	7,140	8,870
14	15,000	16,000	18,000	18,000	17,400	18,000	30,600	31,300	53,800	12,400	7,140	8,870
15	15,500	16,500	18,000	18,000	17,000	19,000	30,000	30,600	55,400	11,600	7,470	9,990
16	15,500	16,500	17,400	17,400	17,000	19,600	28,600	29,300	55,400	11,600	7,470	11,200
17	15,500	16,500	17,400	17,400	17,000	21,200	28,600	27,300	54,600	11,600	7,470	11,200
18	16,000	16,500	17,400	17,400	17,000	23,000	28,000	26,100	53,800	11,600	7,470	12,800
19	16,500	16,500	17,400	18,000	17,000	25,400	27,300	21,200	56,900	11,600	7,470	12,400
20	17,400	16,500	18,000	18,000	16,500	27,300	26,100	21,200	58,400	11,600	7,810	11,600
21	17,000	17,000	20,100	18,000	16,500	26,700	26,100	19,600	60,000	11,200	7,810	11,600
22	17,000	17,000	20,100	18,000	16,500	27,300	26,100	19,600	60,800	10,800	7,810	11,600
23	18,000	17,000	20,100	17,400	16,000	28,000	26,100	20,100	61,600	10,400	8,160	11,600
24	17,400	17,000	20,100	17,400	16,000	28,000	25,400	18,500	63,400	9,990	8,510	11,600
25	17,000	17,400	21,200	17,400	16,000	29,300	24,800	18,000	57,700	9,610	12,800	11,200
26	17,000	17,400	23,000	17,400	15,500	30,600	24,800	19,000	55,400	8,870	10,800	11,200
27	17,000	17,400	25,000	17,400	15,500	32,600	24,200	16,500	52,300	8,510	9,990	10,800
28	17,000	18,000	28,000	18,000	15,500	34,700	23,600	16,000	50,000	8,160	9,610	10,400
29	16,500	18,500	33,300	18,000	.....	36,100	22,400	16,500	47,800	7,470	9,610	11,200
30	16,500	20,100	30,600	18,000	.....	33,300	21,800	17,000	47,000	7,140	9,610	12,400
31	20,100	.....	29,300	18,500	.....	31,300	.....	18,500	.....	7,140	9,610	.....

Monthly discharge of Snake River at Weiser, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	20,100	12,000	15,600	959,000
November	20,100	16,000	17,400	1,040,000
December	33,300	17,400	20,600	1,270,000
January	27,300	17,400	19,200	1,180,000
February	18,500	15,500	17,100	950,000
March	36,100	15,500	22,700	1,400,000
April	31,300	21,800	27,200	1,620,000
May	33,300	16,000	23,800	1,460,000
June	63,400	18,500	45,100	2,680,000
July	45,500	7,140	15,800	972,000
August	12,800	7,140	8,080	497,000
September	12,800	7,140	10,000	595,000
The year	63,400	7,140	20,200	14,600,000

SNAKE RIVER AT RIPARIA, WASH.

LOCATION.—In sec. 31, T. 13 N., R. 38 W., at Oregon-Washington Railroad & Navigation Co.'s bridge at Riparia, Whitman County.

DRAINAGE AREA.—102,000 square miles (measured by Weather Bureau).

RECORDS AVAILABLE.—October 1, 1915, to September 30, 1918. Gage-height record May and June 1900–1902, May 1 to November 30, 1904; July 1, 1905, to December 31, 1906; February 1, 1908, to June 30, 1910; and August 1, 1910, to February 28, 1917, obtained and published by Weather Bureau.

GAGE.—Chain gage on downstream side of railroad bridge, installed September 12, 1917; read by R. E. Wilcox. Previous gage was vertical staff in three sections; referred to same datum.

DISCHARGE MEASUREMENTS.—Made from bridge at gage.

CHANNEL AND CONTROL.—Control for stages above low water is Texas Rapids, a solid lava bed half a mile below gage; permanent. Low-water control is sand and gravel channel above rapids; subject to change during high water.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 16.0 feet June 14 and 15 (discharge, 216,000 second-feet); minimum stage recorded, 1.4 feet September 8 and 9 (discharge, 15,000 second-feet).

1916–1918: Maximum stage recorded, 18.2 feet May 30, 1917 (discharge, 256,000 second-feet); minimum stage recorded in 1918.

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

DIVERSIONS.—A large amount of water is diverted for irrigation.

REGULATION.—Flow is regulated to some extent by storage for irrigation in Jackson Lake reservoir (capacity, 847,000 acre-feet) and in other smaller reservoirs in basin; also by diversions for irrigation.

ACCURACY.—Stage-discharge relation below 65,000 second-feet changed slightly during high water in June. Rating curves well defined. Gage read to half-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records excellent.

Discharge measurements of Snake River at Riparia, Wash., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Dec. 8	T. R. Newell	3.25	28,300
Mar. 23	do	7.63	74,900
May 20–21.	R. B. Kilgore	8.78	93,000

Daily discharge, in second-feet, of Snake River at Riparia, Wash., for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	26,400	25,600	29,800	131,000	43,600	36,000	95,300	103,000	93,800	86,300	21,000	17,300
2	28,000	25,600	31,500	120,000	36,900	35,100	93,800	111,000	87,800	80,700	20,300	16,800
3	28,000	26,400	35,100	108,000	39,800	35,100	87,800	122,000	83,500	77,900	20,300	16,800
4	27,200	26,400	33,300	92,300	41,600	36,000	84,900	131,000	92,300	67,200	19,000	16,300
5	25,600	26,400	32,400	90,800	42,600	37,800	76,500	155,000	101,000	64,600	19,000	15,800
6	21,900	26,400	30,600	89,300	46,600	39,800	72,400	166,000	117,000	60,800	18,400	15,400
7	21,900	27,200	29,800	87,800	47,600	39,800	69,800	153,000	131,000	57,200	17,800	15,400
8	21,900	27,200	28,000	87,800	58,600	36,900	68,500	141,000	151,000	46,000	17,800	15,000
9	21,900	26,400	26,400	86,300	61,000	36,900	80,700	134,000	167,000	44,000	19,000	15,000
10	21,900	25,600	23,300	79,300	55,100	36,000	87,800	124,000	173,000	42,000	19,000	15,000
11	21,900	25,600	25,600	77,900	48,600	36,900	95,300	119,000	184,000	41,000	18,400	15,400
12	21,900	26,400	27,200	69,800	48,600	36,900	109,000	112,000	189,000	40,000	17,800	15,800
13	21,900	26,400	28,000	61,000	48,600	42,600	111,000	108,000	198,000	38,000	17,800	15,800
14	24,000	26,400	30,600	57,400	48,600	44,600	114,600	119,000	216,000	36,000	18,400	16,300
15	23,300	24,800	38,800	56,200	46,600	44,600	104,000	127,000	216,000	34,000	18,400	16,300
16	23,300	23,300	37,800	55,100	45,600	43,600	99,800	134,000	194,000	34,000	16,800	17,300
17	24,000	24,800	36,000	52,900	44,600	45,600	96,800	127,000	180,000	34,000	17,300	17,800
18	24,000	24,800	43,600	50,700	43,600	47,600	84,900	131,000	173,000	32,000	17,300	17,800
19	23,300	24,800	75,100	52,900	41,600	57,400	80,700	111,000	166,000	29,200	17,800	18,400
20	24,000	24,800	117,000	51,800	39,800	64,600	76,500	99,800	153,000	28,300	18,400	19,600
21	24,800	24,800	86,300	51,800	36,000	71,100	80,700	92,300	153,000	27,400	21,700	20,300
22	24,800	23,300	67,200	48,600	35,100	73,700	84,900	83,500	144,000	26,500	26,500	20,300
23	24,800	23,300	62,200	47,600	34,200	76,500	93,800	82,100	143,000	26,500	26,500	20,300
24	24,800	24,000	89,300	44,600	35,100	80,700	84,900	80,700	141,000	26,500	25,600	19,000
25	26,400	24,800	86,300	50,700	35,100	92,300	86,300	80,700	138,000	26,500	24,800	17,800
26	28,000	24,800	72,400	68,500	34,200	98,300	101,000	77,900	138,000	26,500	24,800	17,800
27	28,000	24,800	61,000	63,400	36,900	108,000	95,300	75,100	131,000	26,500	24,000	19,600
28	26,400	26,400	116,000	55,100	36,000	111,000	92,300	72,400	117,000	26,500	21,000	19,600
29	26,400	26,400	151,000	52,900	.....	101,000	92,300	73,700	95,300	26,500	17,800	19,000
30	25,600	28,000	180,000	51,800	.....	95,300	95,300	75,100	89,300	25,600	17,800	19,000
31	24,800	.....	153,000	47,600	.....	95,300	.....	80,700	.....	24,000	17,300	.....

Monthly discharge of Snake River at Riparia, Wash., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	28,000	21,900	24,500	1,510,000
November	28,000	23,300	25,500	1,520,000
December	180,000	23,300	60,800	3,740,000
January	131,000	44,600	69,100	4,250,000
February	61,000	34,200	43,300	2,400,000
March	111,000	35,100	59,300	3,650,000
April	114,000	68,500	89,900	5,350,000
May	166,000	72,400	110,000	6,760,000
June	216,000	83,500	145,000	8,630,000
July	86,300	24,000	40,700	2,500,000
August	26,500	16,800	19,900	1,220,000
September	20,300	15,000	17,400	1,040,000
The year	216,000	15,000	58,800	42,600,000

TRIBUTARY BASINS.

PACIFIC CREEK NEAR MORAN, WYO.

LOCATION.—On line between secs. 22 and 23, T. 45 N., R. 114 W., 500 feet below highway bridge on road from Moran to Jackson, 5 miles east of Moran, Lincoln County, and half a mile above mouth of creek.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 20, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff in two sections on right bank, installed June 12, 1918, about 40 feet upstream from former gage and set at a datum 1.22 feet higher; read by R. B. Lozier. Vertical staff used in previous season washed out by high water.

DISCHARGE MEASUREMENTS.—Made by wading or from two highway bridges 500 feet above gage.

CHANNEL AND CONTROL.—Bed composed of gravel; shifts occasionally. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.98 feet at 9.30 a. m. June 15 (discharge, 3,030 second-feet); minimum stage, 0.20 foot at 6 p. m. September 7 (discharge, 62 second-feet).

1917–1918: Maximum and minimum stages recorded in 1918.

ICE.—Records discontinued during winter.

DIVERSIONS.—None below gage nor for distance of 3 miles above.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Two rating curves used, one well defined, used June 12 to September 11, the other fairly well defined, used September 24–30. Shifting-control method used September 12–23. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Pacific Creek near Moran, Wyo., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 5	William Kessler	0.70	70.7	Aug. 7	T. R. Newell	0.53	136
June 12	T. R. Newell	3.73	2,650	25	do	.33	89.1
29	do	2.18	898	Sept. 1	do	.24	69.8
July 19	do	.92	275	11	do	.30	79.0
24	do	.72	194	24	do	.24	77.1

Daily discharge, in second-feet, of Pacific Creek near Moran, Wyo., for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June	July.	Aug.	Sept.
1		786	131	69	16	2,980	340	123	71
2		704	131	69	17	2,810	323	118	71
3		737	148	67	18	2,600	302	110	67
4		662	140	66	19	2,480	270	102	66
5		646	134	66	20	2,310	253	102	67
6		635	131	64	21	2,140	236	102	69
7		532	134	62	22	1,770	220	91	69
8		482	128	73	23	1,640	203	91	71
9		448	128	66	24	1,510	203	82	75
10		420	123	76	25	1,380	203	84	69
11		388	120	78	26	1,260	196	78	71
12	2,640	357	123	71	27	1,140	189	76	69
13	2,770	482	120	69	28	1,020	189	76	71
14	2,900	458	120	80	29	899	176	75	69
15	3,030	366	120	76	30	825	151	75	73
					31		134	73	

NOTE.—Discharge interpolated because of lack of gage heights, June 13–14, 23–28, and July 20–22.

Monthly discharge of Pacific Creek near Moran, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 12–30	3,030	825	2,010	75,700
July	786	134	377	23,200
August	148	73	109	6,700
September	80	62	70	4,170
The period				110,000

BUFFALO FORK NEAR MORAN, WYO.

LOCATION.—In SE. ¼ sec. 26, T. 45 N., R. 114 W., 1½ miles north of Elk post office, half a mile above mouth of river, at highway bridge on road from Moran to Jackson, and 6 miles east of Moran, Lincoln County.

DRAINAGE AREA.—378 square miles (measured on topographic maps).

RECORDS AVAILABLE.—July 9, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff fastened to downstream side of left abutment of highway bridge; installed July 21, 1917; read by Mrs. J. G. Brown. A vertical staff, about 500 feet above present location was used for period July 9–20, 1917.

DISCHARGE MEASUREMENTS.—Made from highway bridge or by wading 600 feet below gage.

CHANNEL AND CONTROL.—Bed composed of gravel, shifting occasionally during high water. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.78 feet at 11.15 a. m. June 13 (measured discharge, 5,840 second-feet); minimum stage, 0.51 foot September 29 (discharge, 238 second-feet).

1917–1918: Maximum and minimum stages occurred in 1918.

ICE.—Record discontinued during winter.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during year. Rating curve well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Buffalo Fork near Moran, Wyo., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 5	William Kessler	1.00	239	Aug. 9	T. R. Newell	1.35	526
June 13	T. R. Newell	6.78	[a] 5,840	23	do	.92	369
29	do	4.36	3,450	Sept. 12	do	.65	282
July 23	do	2.54	1,180	25	do	.64	277
Aug. 7	do	1.46	566				

[a] Estimate for overflow in side channel included.

Daily discharge, in second-feet, of Buffalo Fork near Moran, Wyo., for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1		2,980	725	306	16		1,770	481	318
2		2,970	826	302	17		1,630	466	277
3		2,900	751	302	18		1,630	409	271
4		2,650	751	302	19		1,520	402	262
5		2,520	686	290	20		1,460	398	253
6		3,280	644	277	21		1,440	381	247
7		2,810	582	277	22		1,260	375	247
8		2,530	552	277	23		1,150	368	259
9		2,620	524	351	24		1,100	361	284
10		2,040	612	322	25		1,100	348	271
11		1,980	481	296	26		951	341	247
12		1,950	466	277	27		849	348	244
13		1,840	430	277	28	3,920	821	335	241
14		2,080	455	271	29	3,440	788	335	238
15		1,810	489	426	30	2,980	767	318	274
					31		746	309	

Monthly discharge of Buffalo Fork near Moran, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 28–30	3,920	2,980	3,450	20,500
July	3,280	746	1,800	111,000
August	826	309	482	29,600
September	426	238	283	16,800
The period				178,000

SPREAD CREEK NEAR ELK, WYO.

LOCATION.—In NW. ¼ sec. 9, T. 44 N., R. 114 W., 50 feet below heading of Wolff ditch, 500 feet above bridge on road from Moran to Jackson, 1½ miles above mouth of creek, and 3 miles south of Elk post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 14, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff on right bank; read by W. E. Wolff. Staff used during 1917 was on right bank 200 feet below present site.

DISCHARGE MEASUREMENTS.—Made by wading at gage.

CHANNEL AND CONTROL.—Bed composed of loose gravel; shifting. No well-defined control. Banks are low and subject to overflow at medium stages. Two channels at low stages; numerous channels at high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.60 feet at 6.30 p. m. June 15 (discharge, 715 second-feet); minimum stage, 2.18 feet at 7.30 p. m. September 4 (discharge, 48 second-feet).

1917–1918: Maximum and minimum stages recorded in 1918.

ICE.—Record discontinued during winter.

DIVERSIONS.—Wolff canal, a quarter of a mile above gage, diverts a maximum of 3 second-feet. No diversions of any size below gage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Three fairly well defined rating curves used; one applicable June 13–25, one July 18–21, and the other July 22 to September 30. Shifting-control method used June 26 to July 17. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

Discharge measurements of Spread Creek near Elk, Wyo., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 6	William Kessler	0.85	61.1	Aug. 6	T. R. Newell	2.42	81.7
June 14	T. R. Newell	4.40	666	25	do	2.28	60.5
24	do	3.81	517	Sept. 1	do	2.21	51.7
July 18	do	2.74	139	12	do	2.20	51.3
25	do	2.78	136	25	do	2.22	52.4

Daily discharge, in second-feet, of Spread Creek near Elk, Wyo., for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1		298	89	53	16	700	159	77	52
2		280	80	53	17	690	143	73	50
3		273	89	52	18	630	136	70	52
4		225	89	48	19	632	131	69	50
5		238	86	49	20	590	132	66	50
6		234	80	50	21	618	131	66	52
7		221	77	49	22	465	121	64	52
8		213	76	50	23	470	124	66	53
9		176	77	52	24	525	121	62	52
10		170	77	53	25	542	134	60	53
11		167	74	52	26	444	132	59	52
12		157	76	50	27	418	108	59	50
13	570	146	76	50	28	403	108	60	50
14	678	152	84	50	29	325	103	59	50
15	715	129	82	52	30	314	102	59	53
					31		92	58	

Monthly discharge of Spread Creek near Elk, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 13–30	715	314	540	19,300
July	298	92	163	10,000
August	89	58	72.2	4,440
September	53	48	51.1	3,040
The period				36,800

SPRING CREEK NEAR TETON, WYO.

LOCATION.—In NE. ¼ sec. 24, T. 43 N., R. 116 W., 200 yards above mouth of creek and 5 miles northeast of Teton post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 16, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff on right bank; read only when station was visited by engineer.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of loose gravel. Control formed by gravel riffle; shifting.

EXTREMES OF DISCHARGE.—Data too few.

ICE.—Record discontinued during winter.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permament. Rating curve well defined. Gage read only when visited by engineer. Daily discharge ascertained by applying daily gage height to rating table and interpolating for days of no gage height. Records fair, chiefly because of infrequent gage readings.

Discharge measurements of Spring Creek near Teton, Wyo., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 7	William Kessler	1.38	23.1	Aug. 12	T. R. Newell	1.41	29.3
June 8	T. R. Newell	1.42	29.4	29	do	1.39	26.4
July 1	do	1.43	32.3	Sept. 9	do	1.38	26.0
26	do	1.41	27.5	22	do	1.35	23.2

Daily discharge, in second-feet, of Spring Creek near Teton, Wyo., for the year ending Sept. 30, 1918.

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

NOTE.—Discharge interpolated June 9–26, 28–30; July 2–8, 10–25, July 27–Aug. 11, Aug. 13–21, 23–28, 30, Sept. 1–8, 10–21; estimated Sept. 24–30. Braced figure shows mean discharge for period indicated.

Monthly discharge of Spring Creek near Teton, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 8–30	31	30	30.6	1,400
July	31	29	29.7	1,830
August	29	26	28.3	1,740
September	26	23	24.5	1,460
The period				6,430

COTTONWOOD CREEK NEAR TETON, WYO.

LOCATION.—In SE. ¼ sec. 14, T. 43 N., R. 116 W., 1½ miles above mouth of creek and 5 miles northeast of Teton post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 16, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff on left bank; read by C. S. Horel. Gage used during 1917 was vertical staff on right bank one-eighth mile above mouth of creek.

DISCHARGE MEASUREMENTS.—Made by wading or from cable.

CHANNEL AND CONTROL.—Bed composed of sand and gravel. Control of coarse gravel; apparently permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 4.5 feet June 26 (discharge, 1,180 second-feet); a higher stage is reported to have occurred on June 16–18 (discharge not determined). Minimum stage, 2.18 feet at 7 p. m. September 30 (discharge, 40 second-feet).

1917–1918: Maximum and minimum stages recorded in 1918.

ICE.—Observations discontinued during winter.

DIVERSIONS.—None within 3 miles above or below gage.

REGULATION.—No artificial regulation; stream is outlet of Jenny and Taggart lakes and flow is therefore fairly regular.

ACCURACY.—Stage-discharge relation considered permanent. Rating curve well defined. Gage read to half-tenths twice daily until September 1 and thereafter to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Cottonwood Creek near Teton, Wyo., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 7	William Kessler	0.33	40.4	Aug. 12	T. R. Newell	2.96	180
June 8	T. R. Newell	1.64	435	29	do	2.71	105
27	do	4.33	1,020	Sept. 10	do	2.50	66.8
July 1	do	3.86	637	22	do	2.26	44.7
26	do	3.25	298				

Daily discharge, in second-feet, of Cottonwood Creek near Teton, Wyo., for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1		651	241	95	16		493	165	60
2		613	296	87	17		481	176	60
3		651	332	83	18		481	158	55
4		600	313	80	19		481	158	51
5		588	313	77	20		453	158	47
6		588	284	69	21		453	143	46
7		588	254	67	22		425	143	45
8	435	570	232	67	23		453	123	45
9		551	201	70	24		414	108	44
10		570	193	67	25		372	103	43
11		551	193	67	26	1,180	317	103	42
12		527	186	65	27	1,050	290	103	42
13		493	165	62	28	900	275	103	41
14		510	165	61	29	832	254	103	41
15	1,110	493	165	61	30	700	232	103	40
					31		254	101	

NOTE.—Discharge estimated July 27.

Monthly discharge of Cottonwood Creek near Teton, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 26–30	1,180	700	932	9,240
July	651	232	473	29,100
August	332	101	179	11,000
September	95	40	59.3	3,530
The period				52,900

SPRING CREEK NEAR ZENITH, WYO.

LOCATION.—In NE. ¼ sec. 32, T. 42 N., R. 116 W., 200 feet above mouth of creek and half a mile west of Zenith post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 24, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Reference stake on left bank, a short distance below forks of creek; read when station was visited by engineer. During 1917 reference stake was fastened to tree on right bank, at about same location; relation between two gages not determined.

DISCHARGE MEASUREMENTS.—Made by wading in several channels near gage.

CHANNEL AND CONTROL.—Bed composed of gravel and sand. Control formed by series of rapids; shifting. Several channels, number varying with stage.

EXTREMES OF DISCHARGE.—Data too few.

ICE.—Records discontinued during winter.

DIVERSIONS.—None.

REGULATION.—Flow regulated by springs, swamps, and seepage from irrigation ditches above, which divert from Gros Ventre River.

ACCURACY.—Stage-discharge relation not permanent. Rating curve fairly well defined. Gage read only when station was visited by engineer. Daily discharge ascertained by applying daily gage height to rating table, using actual measurements, and interpolating for days of no gage height. Records fair.

Discharge measurements of Spring Creek near Zenith, Wyo., during the year ending Sept. 30, 1918.

[Made by T. R. Newell.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
June 22	1.12	[a] 33.2	July 27	2.05	[b] 80.2	Sept. 14	1.57	21.7
July 10	.90	[a] 22.1	Aug. 13	1.67	[c] 33.1	26	1.48	18.2
11	1.69	35.5	28	1.58	24.3			

[a] Flow measured in only two channels, third channel submerged by water from Snake River.
[b] Includes 46.2 second-feet from Snake River.
[c] Includes 8.6 second-feet from Snake River.

Daily discharge, in second-feet, of Spring Creek near Zenith, Wyo., for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1		42	31	23	16		34	25	21
2		41	31	23	17		33	25	21
3		40	30	23	18		33	25	21
4		40	30	23	19		33	25	20
5		39	29	23	20		33	25	20
6		38	29	23	21		33	25	20
7		38	28	23	22	47	34	25	19
8		37	28	23	23	46	34	25	19
9		37	27	23	24	46	34	25	19
10		36	27	23	25	45	34	24	19
11		35	26	23	26	45	34	24	18
12		34	26	23	27	44	34	24	18
13		34	25	23	28	43	33	24	18
14		34	25	22	29	43	33	23	18
15		34	25	21	30	42	32	23	18
					31		32	23	

NOTE.—Used actual measurements corrected for inflow from Snake River, July 27 and Aug. 13. Used actual measurement direct, Aug. 28 and Sept. 14. Estimated June 22 and July 10, on basis of partial measurements. Estimated Sept. 28–30. Interpolated because of lack of gage heights for all other periods.

Monthly discharge of Spring Creek near Zenith, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 22–30	47	42	44.6	796
July	42	32	35.2	2,160
August	31	23	26.0	1,600
September	23	18	21.0	1,250
The period				5,810

GROS VENTRE RIVER AT KELLY, WYO.

LOCATION.—At corner of secs. 1, 2, 11, and 12, T. 42 N., R. 115 W., in Kelly, Lincoln County, 300 feet below highway bridge on main road from Jackson to Moran. Nearest tributary, Turpin Creek, enters 2 miles upstream.

DRAINAGE AREA.—725 square miles (measured on topographic map).

RECORDS AVAILABLE.—June 16 to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff on left bank; read by W. Kelly and J. Gamp.

DISCHARGE MEASUREMENTS.—Made by wading or from cable 200 feet above gage.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders. Control of same material; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 9.95 feet at 6 p. m. June 16 (discharge, 6,220 second-feet); minimum stage, 3.31 feet at 6 p. m. September 24–27, 29 and 30 (discharge, 245 second-feet).

ICE.—No record.

DIVERSIONS.—Canals above and below gage divert about 200 second-feet during irrigation season.

REGULATION.—None, except that due to diversions.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined. Gage read to quarter-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Gros Ventre River at Kelly, Wyo., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
June 16	T. R. Newell	9.95	[a]6,960	Aug. 15	T. R. Newell	3.79	398
21	do	9.41	5,620	26	do	3.50	298
25	do	7.76	3,570	31	Newell and Baldwin	3.42	273
July 13	do	5.03	1,150	Sept. 15	T. R. Newell	3.50	304
29	do	4.07	515	28	do	3.36	256

[a] Surface velocity by floats; coefficient of 0.90 used to reduce to mean velocity.

Daily discharge, in second-feet, of Gros Ventre River at Kelly, Wyo., for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1		1,600	510	278	16	6,220	1,360	384	272
2		1,600	510	272	17	5,760	1,200	369	272
3		1,600	498	272	18	5,290	1,040	369	272
4		1,520	486	272	19	4,830	971	341	272
5		1,440	455	269	20	4,410	900	328	266
6		1,600	446	272	21	5,590	831	318	258
7		1,440	414	287	22	4,530	702	318	258
8		1,400	406	302	23	4,950	642	318	250
9		1,400	398	334	24	4,190	603	309	245
10		1,400	387	309	25	3,530	586	309	245
11		1,280	376	296	26	3,040	560	299	245
12		1,130	369	278	27	3,140	534	296	245
13		1,140	362	278	28	2,570	524	296	256
14		1,200	351	287	29	1,860	520	296	245
15		1,520	398	299	30	1,680	515	287	245
					31		510	278	

NOTE.—Discharge interpolated because of lack of gage heights, June 17, 18, July 30, Aug. 1, 3, and 16.

Monthly discharge of Gros Ventre River at Kelly, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 16–30	6,220	1,680	4,110	122,000
July	1,600	510	1,070	65,800
August	510	278	370	22,900
September	334	245	272	16,200
The period				227,000

GROS VENTRE RIVER AT ZENITH, WYO.

LOCATION.—In NW. ¼ sec. 4, T. 41 N., R. 116 W., three-fourths mile above mouth of river and three-fourths mile south of Zenith post office, Lincoln County.

DRAINAGE AREA.—758 square miles (measured on topographic map).

RECORDS AVAILABLE.—July 13, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff on right bank; read by H. Barber and Jo Deyo. Gage used during 1917 was on right bank one-fourth mile below present location; relation between gages not determined.

DISCHARGE MEASUREMENTS.—Made by wading in several channels below gage.

CHANNEL AND CONTROL.—Bed composed of gravel and small boulders; practically permanent. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 2.9 feet at 7 a. m. July 15 (discharge, 934 second-feet); minimum stage, 1.35 feet at 6.20 p. m. September 6 (discharge, 121 second-feet).

1917–1918: Maximum stage recorded, 3.30 feet on 1917 gage at 5.30 p. m. July 13 (discharge, 1,800 second-feet); minimum stage recorded in 1918.

ICE.—Records discontinued during winter.

DIVERSIONS.—Canals above gage divert about 200 second-feet during irrigation season.

REGULATION.—None, except that caused by change of headgates on diversions.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined below 440 second-feet. Gage read to quarter-tenths twice daily prior to July 31 and once daily thereafter. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Gros Ventre River at Zenith, Wyo., during the year ending Sept. 30, 1918.

[Made by T. R. Newell.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 28	1.97	400	Aug. 14	1.58	215	Sept. 15	1.52	187
Aug. 5	1.77	298	27	1.47	171	27	1.44	153

Daily discharge, in second-feet, of Gros Ventre River at Zenith, Wyo., for the year ending Sept. 30, 1918.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1		340	179	11	824	222	200	21	578	196	139
2		327	159	12	740	200	179	22	533	244	155
3		314	159	13	699	179	179	23	522	179	159
4		290	179	14	849	200	179	24	489	179	159
5		300	159	15	897	179	183	25	467	139	159
6		267	121	16	782	222	179	26	440	179	159
7		222	139	17	705	200	179	27	414	171	151
8		222	159	18	693	222	159	28	394	159	139
9		200	222	19	635	200	159	29	368	139	139
10		179	200	20	624	179	159	30	353	179	139
								31	353	163	

NOTE.—Gage not read Aug. 1 and 2; discharge interpolated.

Monthly discharge of Gros Ventre River at Zenith, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 11–31	897	353	589	24,500
August	340	139	213	13,100
September	222	121	164	9,760
The period				47,400

SPRING CREEK AT WEST GROS VENTRE BUTTE, WYO.

LOCATION.—In NE. ¼ sec. 5, T. 41 N., R. 116 W., at West Gros Ventre Butte, Lincoln County, half a mile above mouth of creek.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 24, 1917, to September 30, 1918, when station was discontinued. Discharge measurements only, prior to June 19, 1918.

GAGE.—Vertical staff fastened to tree on right bank; read when station was visited by engineer.

DISCHARGE MEASUREMENTS.—Made by wading 300 feet below gage.

CHANNEL AND CONTROL.—Bed composed of sand, gravel, and small boulders; shifting. Control affected by growth of aquatic plants.

EXTREMES OF DISCHARGE.—Data too few.

ICE.—No record.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Rating curves poorly defined. Gage read only when visited by engineer. Daily discharge ascertained by applying daily gage height to rating table, using actual measurements, and interpolating for days of no gage height. Records poor.

Discharge measurements of Spring Creek at West Gros Ventre Butte, Wyo., during the year ending Sept. 30, 1918.

[Made by T. R. Newell.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
June 19	1.87	33.6	Aug. 14	1.70	21.0	Sept. 14	1.67	19.7
July 13	1.81	29.7	27	1.68	20.1	27	1.65	19.3
29	1.71	23.2						

Daily discharge, in second-feet, of Spring Creek at West Gros Ventre Butte, Wyo., for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1		33	23	20	16		29	21	20
2		33	22	20	17		29	21	20
3		33	22	20	18		28	21	20
4		33	22	20	19	34	28	21	20
5		33	22	20	20	33	27	21	20
6		33	22	20	21	33	27	21	19
7		33	22	20	22	33	26	21	19
8		33	22	20	23	33	26	21	19
9		33	22	20	24	33	26	20	19
10		33	21	20	25	33	25	20	19
11		32	21	20	26	33	25	20	19
12		31	21	20	27	33	24	20	19
13		30	21	20	28	33	24	20	19
14		30	21	20	29	33	23	20	19
15		30	21	20	30	33	23	20	19
					31		23	20	

NOTE.—Used actual measurements June 19, July 13, 29, Aug. 14, 27, Sept. 14 and 27. Discharge interpolated because of lack of gage heights, June 20 to July 10, July 12, 14–16, 18–28, 30, 31, Aug. 1–4, 6–13, 16–20, 22–26, 28–31, Sept. 1–13, 15–26, and 28–30.

Monthly discharge of Spring Creek at West Gros Ventre Butte, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 19–30	34	33	33.1	788
July	33	23	28.9	1,780
August	23	20	21.1	1,300
September	20	19	19.7	1,170
The period				5,040

SPRING CREEK AT ZENITH, WYO.

LOCATION.—In SE. ¼ sec. 32, T. 42 N., R. 116 W., a quarter of a mile above mouth of creek and three-quarters of a mile southwest of Zenith post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 24, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Reference stake on right bank; read when station was visited by engineer. Reference stake used during 1917 was at practically same location; relation between gages not determined.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and sand, well covered with moss; shifting. No well-defined control.

EXTREMES OF DISCHARGE.—Data too few.

ICE.—Records discontinued during winter.

DIVERSIONS.—None.

REGULATION.—Flow regulated by springs and swamps, and is fairly uniform.

ACCURACY. Stage-discharge relation not permanent. Rating curve poorly defined. Gage read only occasionally by engineer. Daily discharge ascertained by applying daily gage height to rating table, using actual measurements, and interpolating for days of no gage height, except for September 28–30, for which it was estimated. Records poor.

Discharge measurements of Spring Creek at Zenith, Wyo., during the year ending Sept. 30, 1918.

[Made by T. R. Newell.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
June 22	1.85	48.3	Aug. 13	1.72	21.4	Sept. 14	1.68	17.1
July 11	1.56	26.8	28	1.66	18.7	27	1.60	15.9
28	1.61	24.8						

Daily discharge, in second-feet, of Spring Creek at Zenith, Wyo., for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1		38	24	18	16		28	20	17
2		37	23	18	17		28	20	17
3		36	23	18	18		27	20	17
4		35	23	18	19		27	20	17
5		34	22	18	20		27	20	16
6		33	22	18	21		27	19	16
7		31	22	18	22	48	27	19	16
8		30	22	18	23	47	26	19	16
9		29	22	18	24	46	26	19	16
10		28	21	18	25	45	26	19	16
11		27	21	18	26	44	26	19	16
12		27	21	18	27	42	26	19	16
13		27	21	18	28	41	25	19	16
14		28	21	17	29	40	24	18	16
15		28	21	17	30	39	24	18	16
					31		24	18	

NOTE.—Used actual measurements June 22, July 11, 28, and Sept. 14. Estimated Sept. 28–30, 16 second-feet. Discharge interpolated June 23 to July 10, July 12–16, 18–27, 29–31, Aug. 1–4, 6–12, 16–20, 22–27, 29–31, Sept. 1–13, and 15–25.

Monthly discharge of Spring Creek at Zenith, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 22–30	48	39	43.6	778
July	38	24	28.6	1,760
August	24	18	20.5	1,260
September	18	16	17.1	1,020
The period				4,820

FISH CREEK NEAR WILSON, WYO.

LOCATION.—About sec. 27, T. 41 N., R. 117 W. (unsurveyed), 300 feet above mouth of creek and 4 miles southeast of Wilson, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 20, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Stevens continuous water-stage recorder on right bank, at same location and datum as vertical staff used during 1917; inspected by T. R. Newell.

DISCHARGE MEASUREMENTS.—Made by wading in two channels above gage.

CHANNEL AND CONTROL.—Bed covered by heavy growth of moss. Control formed by backwater from small irrigating dam at mouth of creek; shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year and for period of record, 2.13 feet July 3 (discharge, 622 second-feet); minimum discharge, 134 second-feet September 25, at stage of 1.07 feet.

ICE.—Station discontinued during winter.

DIVERSIONS.—Several small diversions during irrigation season.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Standard rating curve fairly well defined. Operation of recorder satisfactory. Daily discharge ascertained by applying daily gage height to rating table; shifting-control method used August 19 to September 30. Records prior to August 19 good, after that date fair.

Discharge measurements of Fish Creek near Wilson, Wyo., during the year ending Sept. 30, 1918.

[Made by T. R. Newell.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
June 6	1.94	463	Aug. 1	1.08	252	Sept. 17	1.00	145
July 3	2.14	637	18	.90	194	30	1.15	135
15	1.69	451	Sept. 8	.92	156			

Daily discharge, in second-feet, of Fish Creek near Wilson, Wyo., for the year ending Sept. 30, 1918.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1	690	246	151	11	472	204	146	21	351	190	140
2	650	240	154	12	443	195	146	22	337	187	140
3	622	243	151	13	447	192	144	23	323	182	140
4	611	240	149	14	476	198	146	24	317	176	138
5	569	233	146	15	457	204	151	25	307	171	134
6	569	233	151	16	439	201	144	26	290	173	136
7	546	224	151	17	418	198	144	27	281	168	136
8	520	221	156	18	396	195	142	28	271	166	138
9	509	215	154	19	382	198	140	29	243	161	136
10	491	207	149	20	368	192	140	30	249	158	138
								31	249	151	.....

NOTE.—Discharge estimated July 1 and 2.

Monthly discharge of Fish Creek near Wilson, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July	690	243	429	26,400
August	246	151	199	12,200
September	156	134	144	8,570
The period	.....	.....	.....	47,200

MOSQUITO CREEK NEAR WILSON, WYO.

LOCATION.—About sec. 15, T. 40 N., R. 117 W., near mouth of creek and 5 miles south of Wilson, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 20, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Reference point on left bank, at same location as vertical staff used during 1917; read when station was visited by engineer.

DISCHARGE MEASUREMENTS.—Made by wading above gage.

CHANNEL AND CONTROL.—Bed composed of small boulders. Control formed by riffle just below gage; shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year and for period of record, 3.55 feet June 6 (discharge, 308 second-feet); minimum stage, 0.81 foot September 17 (discharge, 8 second-feet). A lower discharge may have occurred on a day of no record.

ICE.—Records discontinued during winter.

DIVERSIONS.—Small diversion above during irrigation season.

REGULATION.—None except that due to diversion.

ACCURACY.—Stage-discharge relation not permanent. Rating curve well defined. Gage read only occasionally by engineer. Daily discharge ascertained by applying daily gage height to rating table; shifting-control method used July 4–14; interpolated for days of no gage height. Records fair.

Discharge measurements of Mosquito Creek near Wilson, Wyo., during the year ending Sept. 30, 1918.

[Made by T. R. Newell.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
June 6	3.55	308	Aug. 1	1.02	17.7	Sept. 4	0.86	9.9
July 3	1.54	66.7	18	.95	14.1	17	.81	8.7
15	1.30	35.6			–			

Daily discharge, in second-feet, of Mosquito Creek near Wilson, Wyo., for the year ending Sept. 30, 1918.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1	78	18	11	11	43	17	9	21	30	13	9
2	72	17	11	12	42	17	9	22	29	13	9
3	67	17	11	13	40	17	9	23	28	13	9
4	62	17	10	14	38	17	9	24	26	12	10
5	59	17	10	15	36	17	9	25	25	12	10
6	56	17	10	16	35	17	9	26	24	12	10
7	52	17	10	17	34	16	8	27	23	12	10
8	49	17	10	18	33	14	9	28	22	12	10
9	47	17	9	19	32	13	9	29	21	12	10
10	45	17	9	20	31	13	9	30	20	11	11
								31	19	11	.....

NOTE.—Discharge estimated July 1 and 2. Discharge interpolated July 6, 7, 9–14, 16–31, Aug. 2–16, 19–31, Sept. 1–3, 5, 6, 9–16, and 18–29.

Monthly discharge of Mosquito Creek near Wilson, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July	78	19	39.3	2,420
August	18	11	14.9	916
September	11	9	9.60	571
The period				3,910

BIG SPRING CREEK NEAR CHENEY, WYO.

LOCATION.—In sec. 24, T. 40 N., R. 117 W., 1 mile above mouth of creek and 2 miles west of Cheney post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—August 16, 1917, to September 30, 1918, when station was discontinued. Discharge measurements only, prior to June 18, 1918.

GAGE.—Vertical staff on left bank, at same site and datum as reference point used during 1917; read by Mrs. F. C. Karns.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Bed composed of gravel; shifting. Control seriously affected by growth of moss.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.30 feet June 25 (discharge, 108 second-feet); minimum stage, 1.96 feet August 2 (measured discharge, 32 second-feet).

ICE.—No record.

DIVERSIONS.—Several small diversions above, during irrigation season.

REGULATION.—Flow regulated by springs and waste water from irrigation above.

ACCURACY.—Stage-discharge relation not permanent. Standard rating curve well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table and interpolating for days of no gage height. Shifting-control method used June 19 to July 4. Records fair to July 5, good thereafter.

Discharge measurements of Big Spring Creek near Cheney, Wyo., during the year ending Sept. 30, 1918.

[Made by T. R. Newell.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
June 18	1.94	41.0	Aug. 4	2.04	42.4	Sept. 5	2.07	50.6
July 6	2.00	35.9	20	2.12	57.0	18	2.05	43.3
Aug. 2	1.96	31.6						

Daily discharge, in second-feet, of Big Spring Creek near Cheney, Wyo., for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1		39	37	51	16		58	37	52
2		39	33	47	17		64	37	52
3		37	37	49	18	42	54	37	46
4		37	40	49	19	42	54	54	46
5		37	37	49	20	47	54	56	46
6		37	37	47	21	49	46	54	46
7		37	37	47	22	68	46	54	49
8		37	37	54	23	76	46	54	49
9		37	37	54	24	92	46	54	49
10		37	37	54	25	108	51	54	49
11		37	37	54	26	96	54	54	46
12		37	37	54	27	83	37	54	45
13		46	37	54	28	62	37	54	45
14		54	37	54	29	42	37	54	44
15		54	37	52	30	42	37	46	44
					31		37	46	

NOTE.—Discharge interpolated Sept. 27 and 28.

Monthly discharge of Big Spring Creek near Cheney, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 18–30	108	42	65.3	1,680
July	64	37	43.9	2,700
August	56	33	43.6	2,680
September	54	44	49.2	2,930
The period				9,990

FLAT CREEK NEAR CHENEY, WYO.

LOCATION.—In NE. ¼ sec. 29, T. 40 N., R. 116 W., 2 miles above mouth of creek and 1 mile south of Cheney post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 7, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff on left bank; read by B. W. Clevenger and Elsie Tanner.

DISCHARGE MEASUREMENTS.—Made by wading above gage.

CHANNEL AND CONTROL.—Bed composed of gravel; practically permanent. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year and for period of record, 1.78 feet at 8 a. m. June 24 (discharge, 420 second-feet); minimum stage, 0.70 foot September 5, 6, and 12 (discharge, 101 second-feet).

ICE.—Records discontinued during winter.

DIVERSIONS.—No diversions immediately above or below gage, but valley above is irrigated by numerous canals; amount diverted not known.

REGULATION.—None except that due to diversions.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table and interpolating for days of no gage height. Records good.

Discharge measurements of Flat Creek near Cheney, Wyo., during the year ending Sept. 30, 1918.

[Made by T. R. Newell.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
June 18	1.45	316	Aug. 3	0.79	129	Sept. 5	0.70	102
July 7	1.02	188	16	.91	150	19	.72	103
16	.92	163	20	.78	121	29	.74	112

Daily discharge, in second-feet, of Flat Creek near Cheney, Wyo., for the year ending Sept. 30, 1918,

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1		261	130	130	16		160	162	130
2		243	124	124	17		160	160	127
3		202	124	119	18	316	154	157	124
4		188	132	106	19	337	157	157	106
5		185	132	101	20	343	146	122	106
6		188	132	101	21	353	157	124	109
7		188	132	104	22	368	162	130	106
8		174	132	106	23	416	160	132	130
9		165	146	104	24	420	157	146	132
10		160	154	104	25	384	154	154	132
11		149	165	104	26	381	157	151	130
12		146	174	101	27	306	160	146	106
13		151	174	104	28	316	151	151	106
14		174	174	106	29	291	157	149	109
15		165	165	130	30	282	143	132	106
					31		137	138	

NOTE.—Discharge interpolated Aug. 1, 5-7, and 17.

Monthly discharge of Flat Creek near Cheney, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 18-30	420	282	347	8,950
July	261	137	168	10,300
August	174	122	145	8,920
September	132	101	113	6,720
The period				34,900

HORSE CREEK NEAR CHENEY, WYO.

LOCATION.—In NW. ¼ SE. ¼ sec. 14, T. 39 N., R. 116 W., 300 feet above bridge on road from Hoback to Jackson, a quarter of a mile above mouth, and 6 miles southeast of Cheney post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 8 to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff on right bank at same location and at a datum 1.14 feet higher than reference point used in 1917; read when station was visited by engineer.

DISCHARGE MEASUREMENTS.—Made by wading above gage.

CHANNEL AND CONTROL.—Control for low stage composed of loose gravel; for high stages control formed by old log dam, short distance below; slightly shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.95 feet July 20 (discharge, 39 second-feet); minimum stage, 1.15 feet September 21 (discharge, 11 second-feet). A lower discharge may have occurred on a day of no record.

1917–1918: Maximum stage recorded, 3.76 feet July 8, 1917 (discharge, 139 second-feet); minimum stage in 1918.

ICE.—Records discontinued during winter.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve fairly well defined. Gage read only occasionally by engineer. Daily discharge ascertained by applying daily gage height to rating table and interpolating for days of no gage height. Records fair.

Discharge measurements of Horse Creek near Cheney, Wyo., during the year ending Sept. 30, 1918.

[Made by C. W. Kief.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 20	1.95	39.1	Aug. 14	1.60	19.3	Sept. 11	1.42	13.7
28	1.73	29.4	31	1.45	15.4	21	1.15	11.4

Daily discharge, in second-feet, of Horse Creek near Cheney, Wyo., for the year ending Sept. 30, 1918.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1		27	15	11		21	14	21	38	19	11
2		26	15	12		20	13	22	36	18	11
3		25	15	13		20	13	23	35	18	11
4		25	15	14		19	13	24	34	18	11
5		24	15	15		19	13	25	33	17	11
6		24	14	16		19	12	26	32	17	11
7		23	14	17		19	12	27	30	17	11
8		23	14	18		19	12	28	29	16	11
9		22	14	19		19	12	29	28	16	11
10		21	14	20	39	19	12	30	28	16	11
								31	27	15	

NOTE.—Used actual measurements, July 20, 28, Aug. 14, 31, Sept. 11, and 21. Discharge estimated Sept. 22–30. Discharge interpolated July 21–27, 29–31, Aug. 1–13, 15–20, 22–30, Sept. 1–10, and 12–20.

Monthly discharge of Horse Creek near Cheney, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 20–31	39	27	32.4	771
August	27	15	20.0	1,230
September	15	11	12.7	756
The period				2,760

HOBACK RIVER NEAR CHENEY, WYO.

LOCATION.—In NW. ¼ NW. ¼ sec. 26, T. 39 N., R. 116 W., a quarter of a mile above mouth and 8 miles southeast of Cheney post office, Lincoln County.

DRAINAGE AREA.—572 square miles.

RECORDS AVAILABLE.—July 9, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff in three sections on right bank; read by Jim C. Imeson.

DISCHARGE MEASUREMENTS.—Made by wading or from cable 700 feet below gage.

CHANNEL AND CONTROL.—Bed composed of large boulders. Control formed by series of rapids just below gage; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year and for period of record, 13.46 feet at 9.10 a. m. June 16 (discharge, 6,160 second-feet); minimum stage, 5.5 feet on numerous days during September (discharge, 326 second-feet).

ICE.—Records discontinued during winter.

DIVERSIONS.—Practically none.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during season. Rating curve well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records fair prior to July 19 and good for remainder of year.

Discharge measurements of Hoback River near Cheney, Wyo., during the year ending Sept. 30, 1918.

[Made by C. W. Kief.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
June 22	11.48	4,580	Aug. 14	5.85	490	Sept. 21	5.49	335
July 20	7.07	1,280	31	5.64	375			
28	6.36	859	Sept. 11	5.60	369			

Daily discharge, in second-feet, of Hoback River near Cheney, Wyo., for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1		2,230	718	350	16	6,120	1,590	506	350
2		2,160	718	398	17	5,960	1,450	506	326
3		2,230	655	398	18	5,800	1,380	506	326
4		2,160	655	373	19	5,560	1,310	506	326
5		2,090	624	373	20	5,320	1,250	506	326
6		2,020	594	350	21	5,160	1,310	535	326
7		1,940	564	326	22	4,530	1,310	506	326
8		1,800	535	326	23	4,600	1,110	492	326
9		1,730	535	326	24	4,370	1,040	479	350
10		1,730	535	326	25	4,060	782	465	326
11		1,660	535	373	26	3,820	750	451	326
12		1,660	535	326	27	3,280	815	438	326
13		1,590	506	326	28	2,900	880	424	326
14	5,960	2,020	506	326	29	2,530	782	398	326
15	5,720	1,800	506	326	30	2,380	782	398	326
					31		750	398	

NOTE.—Discharge interpolated July 27 and Aug. 23–27.

Monthly discharge of Hoback River near Cheney, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 14–30	6,120	2,380	4,590	155,000
July	2,230	750	1,490	91,600
August	718	398	524	32,200
September	398	326	339	20,200
The period				299,000

FALL CREEK NEAR CHENEY, WYO.

LOCATION.—About sec. 22, T. 39 N., R. 116 W. (unsurveyed), a short distance above mouth of creek and 8 miles south of Cheney, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 19, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff on right bank, 40 feet upstream from bridge at Sewell ranch; read by W. H. Sewell.

DISCHARGE MEASUREMENTS.—Made by wading below gage.

CHANNEL AND CONTROL.—Bed composed of hardpan; permanent. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year and for period of record, 3.80 feet June 15 (discharge, 440 second-feet); minimum stage, 1.46 feet September 28–30 (discharge, 28 second-feet).

ICE.—Records discontinued during winter.

DIVERSIONS.—Small diversion above gage during irrigation season.

REGULATION.—None except that caused by diversions during irrigation season.

ACCURACY.—Stage-discharge relation practically permanent during season. Rating curve fairly well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Fall Creek near Cheney, Wyo., during the year ending Sept. 30, 1918.

[Made by C. W. Kief.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 7	2.00	109	July 30	1.67	56.5	Sept. 2	1.54	35.7
21	1.79	68.5	Aug. 15	1.60	46.1	21	1.48	29.7

Daily discharge, in second-feet, of Fall Creek near Cheney, Wyo., for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1	.....	137	48	40	16	400	90	48	32
2	.....	132	46	37	17	410	87	45	31
3	.....	126	52	37	18	396	82	45	31
4	.....	123	52	35	19	380	79	45	31
5	.....	106	49	35	20	384	74	44	30
6	.....	114	45	35	21	370	74	45	30
7	.....	106	45	33	22	314	71	45	30
7	.....	103	45	33	23	323	66	45	32
9	.....	98	45	33	24	294	62	45	31
10	.....	96	45	32	25	256	62	45	30
11	.....	90	45	32	26	207	59	45	29
12	372	90	45	32	27	193	59	45	29
13	410	90	45	32	28	171	58	45	28
14	416	106	45	32	29	148	56	45	28
15	440	90	45	32	30	143	53	45	28
					31	.....	52	42	.....

NOTE.—Discharge interpolated June 30 and July 1.

Monthly discharge of Fall Creek near Cheney, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 12-30	440	143	317	11,900
July	137	52	86.8	5,340
August	52	42	45.7	2,810
September	40	28	32.0	1,900
The period				22,000

DOG CREEK NEAR CHENEY, WYO.

LOCATION.—About sec. 15, T. 38 N., R. 116 W. (unsurveyed), half a mile from mouth and 11 miles south of Cheney post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 18, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff on right bank; read when station was visited by engineer.

DISCHARGE MEASUREMENTS.—Made by wading above gage.

CHANNEL AND CONTROL.—Bed composed of gravel. Control formed by large boulders; somewhat shifting.

EXTREMES OF DISCHARGE.—Data too few.

ICE.—Records discontinued during winter.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve fairly well defined. Gage read only occasionally by engineer. Daily discharge ascertained by applying daily gage height to rating table; interpolated for days of no gage height. Records poor.

Discharge measurements of Dog Creek near Cheney, Wyo., during the year ending Sept. 30, 1918.

[Made by C. W. Kief.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 6	1.58	28.5	July 31	1.30	11.6	Sept. 15	1.21	6.6
22	1.38	12.7	Aug. 16	1.28	9.3			

Daily discharge, in second-feet, of Dog Creek near Cheney, Wyo., for the year ending Sept. 30, 1918.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1	31	10.0	8.3	11	22	9.6	7.6	21	13	9.0	7.2
2	30	10.0	8.2	12	21	9.6	7.6	22	13	9.0	7.2
3	29	9.9	8.2	13	20	9.5	7.5	23	13	8.9	7.2
4	28	9.9	8.1	14	19	9.5	7.4	24	13	8.8	7.2
5	27	9.9	8.0	15	19	9.4	7.4	25	12	8.8	7.1
6	26	9.8	8.0	16	18	9.4	7.4	26	12	8.7	7.1
7	26	9.8	7.9	17	17	9.3	7.4	27	12	8.6	7.1
8	25	9.7	7.8	18	16	9.2	7.3	28	11	8.6	7.1
9	24	9.7	7.8	19	15	9.2	7.3	29	11	8.5	7.0
10	23	9.6	7.7	20	14	9.1	7.3	30	11	8.4	7.0
								31	10	8.4	.....

NOTE.—Discharge estimated July 1-5 and Sept. 16-30. Discharge interpolated July 7-21, 23-30, Aug. 1-15, 17-31, and Sept. 1-14.

Monthly discharge of Dog Creek near Cheney, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July	31	10	18.7	1,150
August	10	8.4	9.28	571
September	8.3	7.0	7.51	447
The period				2,170

CABIN CREEK NEAR CHENEY, WYO.

LOCATION.—About sec. 27, T. 38 N., R. 116 W. (unsurveyed), near the mouth of creek and 14 miles south of Cheney post office, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 18, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff on left bank: read when station was visited by engineer.

DISCHARGE MEASUREMENTS.—Made by wading above gage.

CHANNEL AND CONTROL.—Bed composed of boulders embedded in gravel drift; shifting. No well-defined control.

ICE.—Records discontinued during winter.

REGULATION.—None.

ACCURACY.—Stage-discharge relation shifting during high water. Gage read only when visited by engineer. Daily discharge ascertained by using actual measurements and interpolating for days of no gage height. Records poor.

Discharge measurements of Cabin Creek near Cheney, Wyo., during the year ending Sept. 30, 1918.

[Made by C. W. Kief.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
June 15	1.47	66.4	July 22	0.81	5.3	Sept. 3	0.60	2.0
July 10	.91	9.2	31	.71	4.1			

Daily discharge, in second-feet, of Cabin Creek near Cheney, Wyo., for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1		22	3	3	16	64	7	3	2
2		20	3	3	17	62	7	3	2
3		18	3	2	18	59	6	3	2
4		16	3	2	19	56	6	3	2
5		14	3	2	20	53	6	3	2
6		13	3	2	21	50	6	3	2
7		12	3	2	22	47	5	3	2
8		11	3	2	23	44	5	3	3
9		10	3	2	24	41	5	3	2
10		9	3	2	25	38	5	3	2
11		8	3	2	26	35	5	3	2
12		8	3	2	27	32	4	3	2
13		8	3	2	28	29	4	3	2
14		7	3	2	29	26	4	3	2
15	66	7	3	2	30	24	4	3	2
					31		4	3	

NOTE.—Used actual measurements June 15, July 10, 22, 31, and Sept. 3. Discharge estimated June 16 to July 9, and Sept. 4-30; interpolated July 11-21, 23-30, Aug. 1 to Sept. 2.

Monthly discharge of Cabin Creek near Cheney, Wyo., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 15–30	66	24	45.4	1,440
July	22	4	8.58	528
August	3	3	3.00	184
September	3	2	2.07	123
The period				2,280

BAILEY CREEK NEAR ALPINE, IDAHO.

LOCATION.—About sec. 33, T. 38 N., R. 116 W. (unsurveyed), half a mile above mouth and 14 miles above Alpine, in Lincoln County, Wyo.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 11, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff on right bank. Stevens water-stage recorder at same site and datum used during 1917; inspected by engineer when station was visited.

DISCHARGE MEASUREMENTS.—Made by wading near mouth of stream.

CHANNEL AND CONTROL.—Control of rock just below gage; shifting at intervals. Banks not subject to overflow.

EXTREMES OF DISCHARGE.—Data too few.

ICE.—Records discontinued during winter.

DIVERSIONS.—None.

REGULATION.—Stream is outlet for Bailey Lake, which is spring fed; flow very uniform.

ACCURACY.—Stage-discharge relation shifted during later part of year. Rating curve fairly well defined. Gage read only occasionally by engineer. Daily discharge ascertained by applying daily gage height to rating table and interpolating for days of no gage height. Records fair.

Discharge measurements of Bailey Creek near Alpine, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 1	T. R. Newell	2.77	23.2	Aug. 13	C. W. Kief	2.83	24.1
June 21	C. W. Kief	3.00	31.7	30	.....do	2.80	22.8
July 19	.....do	2.90	26.6	Sept. 19	.....do	2.80	20.9

Daily discharge, in second-feet, of Bailey Creek near Alpine, Idaho, for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1		30	25	22	16		28	24	22
2		30	25	22	17		28	24	22
3		30	25	22	18		28	24	22
4		30	25	22	19		27	24	21
5		30	25	22	20		27	24	21
6		29	25	22	21	32	27	24	21
7		29	25	22	22	31	27	23	21
8		29	25	22	23	31	26	23	21
9		29	25	22	24	31	26	23	21
10		29	25	22	25	31	26	23	21
11		29	25	22	26	31	26	23	21
12		28	25	22	27	31	26	23	21
13		28	24	22	28	31	25	23	21
14		28	24	22	29	30	25	23	21
15		28	24	22	30	30	25	23	21
					31		25	22	

NOTE.—Actual measurement used Sept. 19. Discharge estimated Sept. 20–30; interpolated, June 22–July 18, 20–26, 28–31, Aug. 1–12, 14–29, 31, and Sept. 1–18.

Monthly discharge of Bailey Creek near Alpine, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 21–30	32	30	30.9	613
July	30	25	27.7	1,700
August	25	22	24.0	1,480
September	22	21	21.6	1,290
The period				5,080

WOLF CREEK NEAR ALPINE, IDAHO.

LOCATION.—About sec. 4, T. 37 N., R. 117 W. (unsurveyed), 400 feet above mouth of creek and 9 miles east of Alpine, in Lincoln County, Wyo. Wolf Creek enters Snake River 8 miles above mouth of Snake River canyon.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 17, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Lietz water-stage recorder on right bank referred to outside vertical staff; moved 300 feet downstream July 14, 1918; inspected by engineer.

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

CHANNEL AND CONTROL.—Bed composed of boulders. Control formed by rocky riffle just below gage; somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage from water-stage recorder, 1.70 feet at 11 p. m. July 14 (discharge, 48 second-feet); minimum stage, 1.27 feet September 26–28 (discharge, 11 second-feet).

1917–1918: Maximum stage recorded, 2.52 feet at 4 p. m. July 18, 1917 (discharge, about 70 second-feet); minimum stage in 1918.

ICE.—Records discontinued during winter.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Two fairly well defined rating curves used, one July 14 to August 16, the other August 26 to September 28. Shifting-control method used August 17–25. Operation of water-stage recorder not entirely satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph and interpolating for days of no gage height. Records fair.

Discharge measurements of Wolf Creek near Alpine, Idaho, during the year ending Sept. 30, 1918.

[Made by C. W. Kief.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 14	1.60	33.9	Aug. 16	1.43	17.3	Sept. 28	1.28	10.5
22	1.50	27.5	Sept. 3	1.33	14.9			
31	1.46	21.4	22	1.29	12.2			

Daily discharge, in second feet, of Wolf Creek near Alpine, Idaho, for the year ending Sept. 30, 1918.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1		21	16	11		18	14	21	27	16	12
2		20	16	12		18	13	22	26	16	12
3		20	16	13		18	13	23	25	16	12
4		20	15	14	36	17	13	24	25	17	12
5		19	15	15	36	17	12	25	24	17	12
6		19	15	16	34	17	12	26	24	17	11
7		19	14	17	32	17	12	27	23	17	11
8		19	14	18	32	16	12	28	23	17	11
9		19	15	19	30	16	12	29	22	16	11
10		18	14	20	29	16	12	30	22	16	11
								31	21	16	

NOTE.—Discharge interpolated July 23–30. Aug. 4–15, 31, Sept. 1, 2, 11–14. Discharge estimated Sept. 29 and 30.

Monthly discharge of Wolf Creek near Alpine, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
July 14–31	36	21	27.3	975
August	21	16	17.6	1,080
September	16	11	13.0	774
The period				2,830

GREYS RIVER NEAR ALPINE, IDAHO.

LOCATION.—About sec. 26, T. 37 N., R. 119 W. (unsurveyed), 1¾ miles above mouth of stream and 3 miles southeast of Alpine.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 6, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff in two sections on left bank; read by Mrs. Alice Gillis.

DISCHARGE MEASUREMENTS.—Made from cable 200 feet below gage.

CHANNEL AND CONTROL.—Bed composed of loose rock and boulders. Control formed by large boulders in riffle 500 feet below gage; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year and for period of record, 4.85 feet June 14 (discharge, 5,200 second-feet); minimum stage, 0.52 foot September 29 and 30 (discharge, 358 second-feet).

ICE.—Records discontinued during winter.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation apparently permanent. Rating curve well defined. Gage read once daily to tenths or half-tenths prior to August 1 according to the stage and thereafter read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Greys River near Alpine, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
June 4	G. C. Baldwin	2.76	2,360	Aug. 19	C. W. Kief	0.79	582
July 3	C. W. Kief	2.12	1,600	28	do	.71	481
17	do	1.44	1,010	Sept. 7	do	.65	428
26	do	1.14	799	16	do	.61	398
Aug. 2	do	.99	687	29	do	.52	367
10	do	.88	638				

Daily discharge, in second-feet, of Greys River near Alpine, Idaho, for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1	.....	1,690	680	466	16	4,980	1,060	568	414
2	.....	1,690	652	454	17	4,980	1,020	588	402
3	.....	1,590	637	454	18	4,830	980	568	396
4	2,360	1,400	637	454	19	4,530	980	540	389
5	2,360		637	454	20	4,830	1,020	547	377
6	2,990		637	447	21	3,530	980	533	371
7	3,120		602	440	22	3,250	902	533	371
8	3,390	1,240	602	447	23	3,530	902	520	389
9	3,670		602	447	24	2,990	864	520	396
10	3,810		595	440	25	2,860	864	513	389
11	4,680		568	440	26	2,600	789	506	377
12	4,980	1,310	568	434	27	2,240	864	500	371
13	5,130	1,140	568	434	28	2,010	789	480	371
14	5,130	1,220	568	421	29	1,900	752	480	358
15	5,130	1,140	533	402	30	1,690	716	466	358
					31	.....	680	466	.....

NOTE.—Discharge estimated July 5–11. Braced figure shows mean discharge for period indicated.

Monthly discharge of Greys River near Alpine, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 4–30	5,130	1,690	3,610	193,000
July	1,690	680	1,100	67,600
August	680	466	562	34,600
September	466	358	412	24,500
The period	.....	.....	.....	320,000

SALT RIVER NEAR ALPINE, IDAHO.

LOCATION.—About sec. 4, T. 36 N., R. 119 W. (unsurveyed), 3 miles south of State line bridge at Alpine.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 1, 1917, to September 30, 1918, when station was discontinued. Miscellaneous measurements during 1916.

GAGE.—Vertical staff on right bank, installed June 5, 1918, at same site but at a datum 1.33 feet lower than inclined staff used previously; read by Glidden McNeel.

DISCHARGE MEASUREMENTS.—Made from cable below gage.

CHANNEL AND CONTROL.—Bed composed of coarse gravel and boulders. Control formed by riffle 100 feet below gage; practically permanent during season.

EXTREMES OF DISCHARGE.— Maximum stage recorded during year and for period of record, 2.80 feet June 17 and 18 (discharge, 2,380 second-feet); minimum stage, 0.70 foot September 19–23 and 27–29 (discharge, 609 second-feet).

ICE.—Records discontinued during winter.

DIVERSIONS.—Considerable water diverted above gage for irrigation in Salt River valley; amount not determined. No diversions below gage.

REGULATION.—None, except that due to diversions.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Salt River near Alpine, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 4	T. R. Newell	2.29	817	Aug. 9	C. W. Kief	1.02	865
June 5	Kief and Baldwin	2.22	1,950	10	G. C. Baldwin	1.04	831
26	C. W. Kief	2.09	1,670	27	C. W. Kief	.87	764
July 12	.....do	1.44	1,160	Sept. 7	.....do	.78	659
24	.....do	1.27	1,090	17	.....do	.75	633
Aug. 3	.....do	1.03	897	29	.....do	.71	642

Daily discharge, in second-feet, of Salt River near Alpine, Idaho, for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1	.....	1,240	876	722	16	2,290	1,320	876	684
2	.....	1,240	876	722	17	2,380	1,320	837	646
3	.....	1,160	876	684	18	2,380	1,160	876	646
4	.....	1,160	837	722	19	2,290	1,110	876	609
5	1,840	1,110	837	684	20	2,200	1,110	837	609
6	1,840	1,070	837	684	21	2,110	1,110	760	609
7	1,930	1,110	876	684	22	2,110	1,110	760	609
8	1,930	1,070	837	722	23	2,110	1,070	760	609
9	1,930	1,070	837	722	24	2,110	1,070	760	646
10	2,020	1,030	876	722	25	2,110	1,030	760	684
11	1,930	1,030	837	722	26	1,750	1,070	760	646
12	1,930	1,200	837	684	27	1,580	1,030	722	609
13	1,930	1,030	837	684	28	1,400	994	722	609
14	1,930	1,240	837	646	29	1,400	954	722	609
15	2,020	1,240	915	646	30	1,240	954	722	646
					31	.....	915	722	.....

Monthly discharge of Salt River near Alpine, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 5–30	2,380	1,240	1,950	101,000
July	1,320	915	1,110	68,200
August	915	722	816	50,200
September	722	609	664	39,500
The period	.....	.....	.....	259,000

McCOY CREEK NEAR ALPINE, IDAHO.

LOCATION.—In sec. 6, T. 3 S., R. 46 E., half a mile from mouth of creek and 3 miles west of Alpine post office, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 15, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Lietz water-stage recorder on right bank, installed June 25, 1918, and referred to vertical staff used during 1917; inspected by engineer when station was visited.

DISCHARGE MEASUREMENTS.—Made by wading above gage.

CHANNEL AND CONTROL.—Bed composed of clean, coarse gravel and boulders, shifting at intervals. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage during year and for period of record, from water-stage recorder, 3.67 feet at 3 p. m. June 25 (discharge, 190 second-feet); minimum stage, 2.81 feet September 22 (discharge, 17 second-feet).

ICE.—Records discontinued during winter.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Rating curve fairly well defined. Operation of recorder fairly satisfactory. Daily discharge ascertained by applying mean daily gage height to rating table. Shifting-control method used July 3–10, August 5–10, and August 28 to September 5. Records fair.

Discharge measurements of McCoy Creek near Alpine, Idaho, during the year ending Sept. 30, 1918.

[Made by C. W. Kief.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
July 2	3.45	137	Aug. 3	3.04	37.9	Sept. 6	2.85	22.0
11	3.30	89.3	11	2.97	29.1	17	2.84	20.5
25	3.14	58.1	26	2.88	20.6			

Daily discharge, in second-feet, of McCoy Creek near Alpine, Idaho, for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1		145	44	21	16		84	40	20
2		135	41	21	17		80	44	19
3		133	38	21	18		86	38	18
4		133	38	22	19		73	36	18
5		121	38	22	20		71	34	18
6		119	35	22	21		69	32	18
7		114	35	21	22		65	30	17
8		108	33	21	23		63	27	18
9		102	33	23	24		61	25	19
10		96	31	21	25	190	57	23	22
11		90	30	21	26	183	55	21	20
12		88	30	21	27	176	53	21	18
13		86	30	21	28	171	49	21	18
14		112	30	20	29	166	47	21	18
15		92	51	20	30	154	45	19	17
					31		44	21	

NOTE.—Discharge interpolated Aug. 19–25, Sept. 14–16; estimated Sept. 26–30.

Monthly discharge of McCoy Creek near Alpine, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 25–30	190	154	173	2,060
July	145	44	86.3	5,310
August	51	19	31.9	1,960
September	23	17	19.9	1,180
The period				10,500

INDIAN CREEK NEAR BLOWOUT, IDAHO.

LOCATION.—In SE. ¼ sec. 13, T. 2 S., R. 45 E., 150 yards above mouth, three-quarters of a mile below Alpine Hot Springs, and 6 miles northwest of Alpine, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 14, 1917, to September 21, 1918, when station was discontinued.

GAGE.—Vertical staff on left bank 100 yards below bridge, used until June 15 when it was washed out by high water. Vertical staff installed 600 feet above former gage on left bank, July 10, 1918, and used for remainder of season; read by Mrs. Emma Marks. Relation between gages not determined.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and small boulders; shifting. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage during year and for period of record, 3.55 feet at 7.15 p. m. June 14 (discharge, 350 second-feet); minimum stage, 0.76 foot at 7.30 a. m. September 21 (discharge, 0.4 second-foot).

ICE.—Records discontinued during winter.

DIVERSIONS.—Small diversions above, none below.

REGULATION.—None other than that caused by diversion.

ACCURACY.—Stage-discharge relation not permanent. Two rating curves used; one fairly well defined used June 4 to 15; the other, well defined, used July 28 to September 21. Records fragmentary, gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

Discharge measurements of Indian Creek near Blowout, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
June 4	Kief and Howard	1.98	85.4	Aug. 10	G. C. Baldwin	0.93	1.7
July 10	E. C. Howard	1.66	45.1	23	E. C. Howard	.90	1.3
26	do	1.55	22.6	Sept. 7	do	.88	1.1
Aug. 10	do	.94	1.8	21	do	.76	.4

Daily discharge, in second-feet, of Indian Creek near Blowout, Idaho, for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1			7.5	1.1	16		37	1.1	0.8
2			4.5	1.2	17		35	1.2	.7
3			2.6	1.1	18		34	1.3	.7
4	86		1.3	1.1	19		33	1.3	.6
5	88		2.0	1.1	20		31	1.2	.5
6	103		1.7	1.1	21		30	1.2	.4
7	117		1.6	1.1	22		28	1.2	
8	163		1.7	1.1	23		27	1.3	
9	248		1.3	1.1	24		26	1.3	
10	284	45	1.7	1.1	25		24	1.1	
11	322	44	1.3	1.1	26		23	1.2	
12	341	42	1.2	1.1	27		20	1.2	
13	322	41	1.3	1.0	28		17	1.3	
14	350	40	1.3	1.0	29		13	1.1	
15	341	38	1.2	.9	30		12	1.1	
					31		11	1.1	

NOTE.—Actual measurements used July 10 and 26. Discharge interpolated July 11–25, 27, and Sept. 15–20.

Monthly discharge of Indian Creek near Blowout, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 4–15	350	86	230	5,470
July 10–31	45	11	29.6	1,290
August	7.5	1.1	1.66	102
September 1–21	1.2	.4	.95	40

BIG ELK CREEK NEAR BLOWOUT, IDAHO.

LOCATION.—In sec. 23, T. 1 S., R. 45 E., 100 yards above mouth of creek and 5 miles northwest of Blowout, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 15, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff on right bank; read by Oliver Jacobson.

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

CHANNEL AND CONTROL.—Bed composed of clean, coarse gravel and boulders. Control formed by riffle of gravel and boulders; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year and for period of record, 4.35 feet June 15 (discharge, 870 second-feet); minimum stage, 1.0 foot September 27 and 28 (discharge, 58 second-feet).

ICE.—Records discontinued during winter.

DIVERSIONS.—Small diversions above during irrigation season.

REGULATION.—None except that due to diversions.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to quarter-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Big Elk Creek near Blowout, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
June 6	Baldwin and Howard	3.27	540	Aug. 22	E. C. Howard	1.34	85.9
July 10	E. C. Howard	1.98	200	22	do	1.34	88.4
25	do	1.59	127	Sept. 6	do	1.11	64.8
Aug. 9	do	1.28	83.8	21	do	1.04	63.4

Daily discharge, in second-feet, of Big Elk Creek near Blowout, Idaho, for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1	.....	283	87	70	16	756	194	80	62
2	.....	295	91	70	17	788	194	83	62
3	345	283	95	70	18	772	201	85	62
4	453	226	97	70	19	708	151	83	62
5	510	237	91	70	20	740	145	83	62
6	533	233	85	68	21	661	145	80	62
7	614	226	83	65	22	655	136	85	62
8	614	226	83	65	23	646	124	74	62
9	692	216	81	65	24	554	124	74	59
10	692	197	80	65	25	524	127	72	59
11	788	194	80	65	26	481	124	72	59
12	756	184	80	64	27	439	119	72	58
13	853	184	80	64	28	384	114	72	58
14	836	174	80	64	29	308	111	72	58
15	870	174	80	64	30	308	97	72	58
					31	.....	91	72	.....

NOTE.—Discharge estimated Sept. 29 and 30.

Monthly discharge of Big Elk Creek near Blowout, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 3–30	870	308	617	34,300
July	295	91	178	10,900
August	97	72	80.8	4,970
September	70	58	63.5	3,780
The period				54,000

BEAR CREEK NEAR IRWIN, IDAHO.

LOCATION.—In sec. 20, T. 1 S., R. 45 E., at wagon bridge a quarter of a mile from mouth of creek and 7 miles southeast of Irwin, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 23, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff on right bank, at downstream side of bridge; read by Thelma E. Hill.

DISCHARGE MEASUREMENTS.—Made by wading above bridge.

CHANNEL AND CONTROL.—Bed consists of coarse gravel and boulders; shifting. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year and for period of record, 4.05 feet at 5.25 p. m. June 15 (discharge, 369 second-feet); minimum stage, 1.65 feet September 27–30 (discharge, 44 second-feet).

ICE.—Records discontinued during winter.

DIVERSIONS.—Several small diversions above gage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Two fairly well defined rating curves used; one June 9 to July 11, the other July 25 to September 30. Shifting-control method used July 12–24. Gage read to half-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

Discharge measurements of Bear Creek near Irwin, Idaho, during the year ending Sept. 30, 1918.

[Made by E. C. Howard.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
June 27	2.72	179	Aug. 10	1.92	69.9	Sept. 9	1.84	65.3
July 11	2.43	154	23	1.85	64.5	22	1.74	52.4
25	2.03	83.2	23	1.85	66.6			

Daily discharge, in second-feet, of Bear Creek near Irwin, Idaho, for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1	.....	170	81	59	16	327	139	81	54
2	.....	164	75	54	17	285	131	70	54
3	.....	164	75	54	18	257	124	64	54
4	.....	164	75	54	19	229	117	75	54
5	.....	160	75	54	20	222	115	64	49
6	.....	157	75	54	21	216	114	64	49
7	.....	150	75	54	22	216	108	64	51
8	.....	150	75	59	23	209	101	64	49
9	355	150	75	61	24	202	100	64	49
10	355	150	74	59	25	202	93	64	49
11	327	149	75	54	26	190	87	64	49
12	320	149	70	54	27	188	87	64	44
13	313	148	64	54	28	190	87	64	44
14	355	153	70	54	29	176	87	59	44
15	369	147	81	54	30	170	87	54	44
					31	.....	87	54	.....

NOTE.—Discharge interpolated June 12, 16, 20, and 23.

Monthly discharge of Bear Creek near Irwin, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 9–30	369	170	258	11,300
July	170	87	129	7,930
August	81	54	69.3	4,260
September	61	44	52.3	3,110
The period	.....	.....	.....	26,600

PALISADE CREEK NEAR IRWIN, IDAHO.

LOCATION.—In sec. 26, T. 1 N., R. 44 E., 20 feet above bridge, a quarter of a mile above mouth of creek, and 3½ miles southeast of Irwin, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 12, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff on left bank installed June 3, 1918, 20 feet above vertical staff at bridge used in 1917; read by C. A. Weeks.

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

CHANNEL AND CONTROL.—Bed composed of clean, coarse gravel; shifting during high water. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year and for period of record, 5.36 feet at 6.55 p. m. June 14 (discharge, 555 second-feet); minimum stage, 2.72 feet at 10.25 p. m. August 15 (discharge, 33 second-feet).

ICE.—Records discontinued during the winter.

DIVERSIONS.—Several diversions above gage.

REGULATION.—None, except that due to diversions.

ACCURACY.—Stage-discharge relation not permanent. Rating curve fairly well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table, except June 7 to 13 for which shifting-control method was used. Records fair.

Discharge measurements of Palisade Creek near Irwin, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
June 6	Howard and Baldwin..	4.26	376	Aug. 9	E. C. Howard	2.82	41.1
14	E. C. Howard.....	5.32	547	22	.....do.....	3.02	59.1
July 9	.....do.....	3.43	133	Sept. 6	.....do.....	3.00	67.3
25	.....do.....	3.21	107	21	.....do.....	3.02	61.8

Daily discharge, in second-feet, of Palisade Creek near Irwin, Idaho, for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1	.....	170	65	65	16	518	94	39	65
2	.....	162	62	68	17	440	98	43	68
3	.....	154	62	71	18	426	98	49	68
4	.....	150	62	71	19	404	94	52	68
5	.....	162	59	71	20	360	91	54	68
6	376	162	59	70	21	364	91	59	66
7	419	158	57	74	22	378	91	61	68
8	411	150	52	74	23	426	87	57	68
9	406	135	45	71	24	404	87	54	65
10	417	112	45	68	25	382	92	54	65
11	431	105	43	68	26	360	74	59	62
12	490	101	39	68	27	360	71	57	65
13	550	98	39	71	28	325	71	59	68
14	550	98	36	71	29	231	68	62	65
15	541	94	33	68	30	210	62	62	68
					31	.....	65	65	.....

NOTE.—Actual measurement used June 6.

Monthly discharge of Palisade Creek near Irwin, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 6–30	550	210	407	20,200
July	170	62	108	6,640
August	65	33	53.0	3,260
September	74	62	68.2	4,060
The period	.....	.....	.....	34,200

FALL CREEK NEAR SWAN VALLEY, IDAHO.

LOCATION.—In sec. 9, T. 1 N., R. 43 E., 1 mile above mouth of creek and 3 miles above Swan Valley, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 21, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff on right bank; read by Joseph Jones.

DISCHARGE MEASUREMENTS.—Made by wading above gage.

CHANNEL AND CONTROL.—Bed composed of clay and gravel. Control shifts with change in growth of vegetation.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year and for period of record, 3.82 feet at 5 p. m. June 7 (measured discharge, 109 second-feet); minimum discharge, 16 second-feet at 6.55 p. m. September 3, at stage of 2.95 feet.

ICE.—Records discontinued during winter.

DIVERSIONS.—None.

REGULATION.—None.

ACCURACY.—Stage-discharge relation seriously affected by growth of vegetation. Gage read to hundredths once daily. Shifting-control method used throughout season. Records fair.

Discharge measurements of Fall Creek near Swan Valley, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
June 7	Howard and Baldwin..	3.82	109	Aug. 11	E. C. Howard.....	3.59	25.7
25	E. C. Howard.....	3.62	72.2	24	.....do.....	3.31	23.8
July 12	.....do.....	3.74	51.7	Sept. 10	.....do.....	2.87	20.7
26	.....do.....	3.74	39.6	23	.....do.....	2.71	20.2

Daily discharge, in second-feet, of Fall Creek near Swan Valley, Idaho, for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1	.....	54	33	18	16	90	62	44	20
2	.....	55	34	18	17	87	59	32	20
3	.....	57	34	16	18	85	57	30	21
4	.....	52	34	18	19	84	52	25	21
5	.....	53	32	18	20	82	45	25	22
6	.....	52	32	18	21	80	42	25	21
7	109	51	30	19	22	82	41	25	20
8	108	49	31	20	23	85	40	24	20
9	105	53	30	20	24	78	39	24	20
10	103	55	30	20	25	72	40	24	20
11	100	57	27	20	26	64	40	23	20
12	97	55	28	20	27	62	38	22	20
13	94	62	28	20	28	60	38	21	20
14	93	66	28	20	29	58	36	20	20
15	91	64	25	20	30	56	34	20	21
					31	.....	34	19	.....

Monthly discharge of Fall Creek near Swan Valley, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 7–30	109	56	84.4	4,020
July	66	34	49.4	3,040
August	44	19	27.7	1,700
September	22	16	19.7	1,170
The period	.....	.....	.....	9,930

RAINY CREEK AT SWAN VALLEY, IDAHO.

LOCATION.—In sec. 3, T. 1 N., R. 43 E., 150 yards above wagon bridge, a quarter of a mile east of Swan Valley, Bonneville County, and 1½ miles above mouth of creek.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 14, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff on left bank; read by Pauline Brewer.

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

CHANNEL AND CONTROL.—Bed composed of gravel and clay. Control affected by backwater from Snake River and by growth of aquatic plants.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.90 feet at 10 a. m. June 14 (discharge, 195 second-feet); miminum stage, 2.21 feet September 28 and 29 (discharge, 43 second-feet).

1917–1918: Maximum stage in 1918. Minimum stage, 1.40 feet August 23, 1917 (discharge, 36 second-feet).

ICE.—Records discontinued during winter.

DIVERSIONS.—Several diversions above gage, none below.

REGULATION.—None except that due to diversions.

ACCURACY.—Stage-discharge relation continually changing. Standard rating curve not well defined. Gage read to hundredths once daily. Daily discharge ascertained by shifting-control method. Records poor.

Discharge measurements of Rainy Creek at Swan Valley, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
June 3	Kief and Baldwin	2.48	178	Aug. 11	G. C. Baldwin	2.34	53.0
14	E. C. Howard	4.30	195	21	E. C. Howard	2.43	50.1
July 8	do	1.89	56.0	Sept. 5	do	2.44	57.9
24	do	2.12	66.0	20	do	2.36	57.3
Aug. 8	do	2.28	60.3				

Daily discharge, in second-feet, of Rainy Creek at Swan Valley, Idaho, for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1	.....	71	57	59	16	180	61	56	53
2	.....	71	55	61	17	172	62	58	51
3	178	69	65	62	18	165	64	57	48
4	180	68	90	57	19	157	69	55	49
5	181	65	90	60	20	150	69	55	53
6	183	64	82	61	21	142	69	53	48
7	184	62	95	65	22	109	66	56	46
8	186	57	65	64	23	176	66	57	47
9	187	56	59	65	24	155	66	55	46
10	189	60	57	64	25	136	62	56	46
11	190	61	54	63	26	104	63	54	46
12	192	64	55	58	27	87	64	58	46
13	193	61	47	53	28	77	64	56	43
14	195	57	50	55	29	74	64	55	43
15	187	61	55	54	30	74	61	58	46
					31	.....	62	62	.....

Monthly discharge of Rainy Creek at Swan Valley, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 3-30	195	74	157	8,720
July	71	56	63.8	3,920
August	95	47	60.5	3,720
September	65	43	53.7	3,200
The period	.....	.....	.....	19,600

PINE CREEK NEAR SWAN VALLEY, IDAHO.

LOCATION.—About sec. 16, T. 2 N., R. 43 E., 7 miles below Swan Valley, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 16, 1917, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff on left bank, 150 feet above highway bridge; read by Mrs. Frank Soliday.

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

CHANNEL AND CONTROL.—Bed composed of gravel and boulders. Control practically permanent after June 16.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year and for period of record, 5.55 feet at 7.30 p. m. June 12 (discharge, 461 second-feet); minimum discharge September 29 and 30 (estimated, 13 second-feet).

ICE.—Records discontinued during winter.

DIVERSIONS.—Several diversions above gage; none below.

REGULATION.—None, except that due to diversions.

ACCURACY.—Stage-discharge relation not permanent. Two well-defined rating curves used, one June 5–12, the other June 16 to September 28. Shifting-control method used June 13–15. Gage read to quarter-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Pine Creek near Swan Valley, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
June 7	Howard and Baldwin.	5.38	441	Aug. 8	E. C. Howard.....	2.32	26.4
16	E. C. Howard.....	4.25	215	21	.....do.....	2.26	22.3
July 8	.....do.....	2.67	51.5	Sept. 5	.....do.....	2.16	14.3
24	.....do.....	2.43	34.0	20	.....do.....	2.13	12.5

Daily discharge, in second-feet, of Pine Creek near Swan Valley, Idaho, for the year ending Sept. 30, 1918.

Day.	June.	July.	Aug.	Sept.	Day	June.	July.	Aug.	Sept.
1.....	.....	66	26	18	16.....	227	47	28	14
2.....	.....	64	28	16	17.....	227	43	24	14
3.....	.....	62	43	16	18.....	196	41	28	14
4.....	.....	60	38	14	19.....	176	38	28	14
5.....	407	60	28	15	20.....	154	35	21	14
6.....	437	60	32	14	21.....	141	35	22	14
7.....	441	57	35	14	22.....	136	33	21	14
8.....	425	53	27	14	23.....	132	33	21	14
9.....	433	53	28	21	24.....	122	33	21	14
10.....	437	51	24	14	25.....	107	32	21	14
11.....	437	51	24	14	26.....	87	30	21	14
12.....	461	49	24	14	27.....	82	30	21	14
13.....	384	51	28	14	28.....	78	30	19	14
14.....	327	66	43	14	29.....	73	28	19	13
15.....	277	55	35	14	30.....	68	26	18	13
					31.....	.....	26	18	.....

NOTE.—Discharge estimated Sept. 29 and 30.

Monthly discharge of Pine Creek near Swan Valley, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
June 5–30	461	68	249	12,800
July	66	26	45.1	2,770
August	43	18	26.3	1,620
September	21	13	14.5	863
The period				18,100

HENRYS FORK AT WARM RIVER, IDAHO.

LOCATION.—In sec. 12, T. 9 N., R. 43 E., 300 yards above mouth of Warm River and half a mile above Warm River railroad station, in Fremont County; above all main tributaries.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—September 3, 1910, to March 22, 1915; April 3 to September 30, 1918.

GAGE.—Vertical staff on left bank; read by Axel Anderson. No change in gage datum.

DISCHARGE MEASUREMENTS.—Made from cable at gage.

CHANNEL AND CONTROL.—Bed of stream consists of cobbles, gravel, and sand. Stage-discharge relation at times affected by growth of moss; conditions with this exception are reasonably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 6.5 feet at 6 p. m. May 5 (discharge, 2,620 second-feet); minimum stage recorded, 4.10 feet at 3.30 p. m. April 3 (discharge, 900 second-feet).

1910–1915; 1918: Maximum stage recorded, 7.4 feet May 21, 1912 (discharge, 3,300 second-feet); minimum stage, 4.1 feet March 14 and 26, 1913 (discharge, 705 second-feet).

ICE.—Stage-discharge relation not seriously affected by ice; open channel rating used. Much ice reported present in the channel at various times for short periods.

DIVERSIONS.—Practically none.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent during year. Standard rating curve well defined; several parallel curves used. Gage read to half-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table or by shifting-control method. Records fair.

Discharge measurements of Henrys Fork at Warm River, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Apr. 4	C. F. Elford	4.62	1,240	May 23	G. C. Baldwin	5.09	1,510
5	do	4.50	1,160	July 16	do	4.81	1,270
May 3	G. C. Baldwin	5.61	1,950	Sept. 8	do	4.37	939

Daily discharge, in second-feet, of Henrys Fork at Warm River, Idaho, for the year ending Sept. 30, 1918.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Day.	Apr.	May.	June.	July.	Aug.	Sept.
1	.....	1,720	1,510	1,210	1,100	970	16	1,510	1,790	1,560	1,250	1,000	970
2	.....	1,790	1,440	1,210	1,100	970	17	1,480	1,710	1,530	1,190	1,000	970
3	900	1,950	1,440	1,210	1,100	970	18	1,440	1,710	1,530	1,150	1,000	970
4	1,240	2,240	1,430	1,210	1,040	970	19	1,440	1,670	1,460	1,120	1,000	970
5	1,160	2,620	1,430	1,170	1,040	970	20	1,480	1,590	1,430	1,120	1,000	970
6	1,160	2,380	1,470	1,170	1,040	970	21	1,510	1,560	1,430	1,120	1,000	970
7	1,160	2,200	1,500	1,130	1,040	970	22	1,580	1,520	1,460	1,110	1,000	970
8	1,160	2,200	1,540	1,130	1,040	964	23	1,650	1,510	1,460	1,110	1,000	970
9	1,230	2,150	1,570	1,170	1,000	970	24	1,720	1,510	1,500	1,110	1,000	970
10	1,370	1,920	1,570	1,130	1,000	970	25	1,720	1,510	1,450	1,110	1,000	1,000
11	1,370	1,800	1,610	1,130	1,000	970	26	1,720	1,540	1,380	1,110	1,000	970
12	1,440	1,690	1,610	1,130	1,000	970	27	1,580	1,580	1,310	1,110	970	970
13	1,540	1,690	1,590	1,130	1,000	970	28	1,580	1,580	1,280	1,110	1,000	970
14	1,620	1,690	1,570	1,200	1,000	970	29	1,580	1,510	1,280	1,110	1,000	970
15	1,580	1,760	1,600	1,240	1,000	970	30	1,650	1,480	1,280	1,110	1,000	970
							31	.....	1,510	.....	1,110	1,000	.....

Monthly discharge of Henrys Fork at Warm River, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
April 3–30	1,720	900	1,450	80,500
May	2,620	1,480	1,780	109,000
June	1,610	1,280	1,470	87,500
July	1,250	1,110	1,150	70,700
August	1,100	970	1,020	62,700
September	1,000	964	971	57,800
The period	.....	.....	.....	468,000

HENRYS FORK NEAR REXBURG, IDAHO.

LOCATION.—In sec. 30, T. 6 N., R. 39 E., just below highway bridge, 1 mile below mouth of south channel of Teton River, 7 miles below mouth of main channel of Teton River, and 7 miles due west of Rexburg; below all tributaries.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 13, 1909, to September 30, 1918.

GAGE.—Friez water-stage recorder on right bank about 250 feet below bridge. Prior to April 5, 1913, vertical staff on right bank about 25 feet farther downstream. Datum of gage used prior to January 1, 1912, 0.67 foot higher than that of present gage. Observer, H. S. Sorensen.

DISCHARGE MEASUREMENTS.—Made from cable a quarter of a mile below gage, from highway bridge above, or by wading.

CHANNEL AND CONTROL.—Stream bed composed of mud, sand, and fine gravel; shifting. Except at bridge left bank is overflowed at high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.96 feet at 11.30 a. m. June 25 (discharge, 7,560 second-feet); minimum stage recorded, 2.45 feet at 2 a. m. August 9 (discharge, 564 second-feet).

1909–1918: Maximum stage recorded, 8.7 feet (equivalent to 9.37 feet present datum) June 6 and 7, 1909 (discharge, 7,680 second-feet); minimum stage, 1.90 feet at 6 p. m. August 10, 1915 (discharge, 481 second-feet).

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

DIVERSIONS.—A large percentage of the natural summer flow diverted above station.

REGULATION.—None except that due to opening and closing of headgates of irrigation canals.

ACCURACY.—Stage-discharge relation not permanent. Standard rating curve well defined. Several parallel curves used. Operation of water-stage recorder satisfactory. Mean daily gage height obtained by inspecting recorder graph. Daily discharge ascertained by applying mean daily gage height to rating table or by shifting-control method. Records good.

Discharge measurements of Henrys Fork near Rexburg, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
May 22	G. C. Baldwin	4.87	2,370	Aug. 12	G. C. Baldwin	2.48	581
June 21	do	9.34	6,820	29	do	3.54	1,110
July 13	do	5.00	2,320	Sept. 22	do	3.86	1,600
Aug. 7	C. F. Elford	2.53	574				

Daily discharge, in second-feet, of Henrys Fork near Rexburg, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	May.	June.	July.	Aug.	Sept.	Day.	Oct.	May.	June.	July.	Aug.	Sept.
1	2,140		3,180	3,700	642	1,100	16			7,370	2,730	917	1,600
2	2,140		3,630	3,050	604	1,040	17			7,250	2,630	1,050	1,620
3	2,140		3,270	2,770	592	999	18			6,890	2,540	1,130	1,610
4	2,100		2,910	2,500	576	1,020	19			6,650	2,370	1,130	1,640
5			3,270	2,240	588	1,010	20			6,770	2,120	1,160	1,880
6			3,720	2,320	584	971	21			6,770	1,860	1,190	1,740
7			4,300	2,320	580	999	22		2,400	6,770	1,640	1,220	1,660
8			4,700	2,400	576	1,060	23		2,240	7,010	1,460	1,250	1,600
9			5,220	2,400	572	1,250	24		2,240	7,370	1,280	1,220	1,630
10			5,550	2,400	580	1,400	25		2,320	7,490	1,160	1,220	1,770
11			6,100	2,400	584	1,460	26		2,400	7,230	1,070	1,220	1,800
12			6,540	2,480	576	1,410	27		2,640	6,840	993	1,160	1,770
13			7,010	2,320	588	1,480	28		2,820	6,250	839	1,100	1,700
14			7,010	2,320	637	1,540	29		2,640	5,680	776	1,100	1,660
15			7,250	2,560	780	1,570	30		2,480	4,700	716	1,070	1,700
							31		2,820		676	1,060	

NOTE.—No record Oct. 5 to May 21.

Monthly discharge of Henrys Fork near Rexburg, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October 1–4	2,140	2,100	2,130	16,900
May 22–31	2,820	2,240	2,500	49,600
June	7,490	3,180	5,820	346,000
July	3,700	676	2,030	125,000
August	1,250	572	879	54,000
September	1,880	971	1,460	86,900

WARM RIVER AT WARM RIVER, IDAHO.

LOCATION.—In sec. 13, T. 9. N., R. 43 E. Boise meridian, at highway bridge half a mile above Warm River station on Yellowstone branch of Oregon Short Line Railroad, less than one-fourth mile above Robinson Creek, and half a mile above confluence of Warm River and Henrys Fork, in Fremont County.

DRAINAGE AREA.—About 144 square miles (measured on Forest Service maps).

RECORDS AVAILABLE.—January 24, 1912, to March 22, 1915; April 3 to September 30, 1918.

GAGE.—Vertical staff attached to downstream side of bridge pier; read by Axel Anderson.

DISCHARGE MEASUREMENTS.—Made by wading at various sections near the gage.

CHANNEL AND CONTROL.—One channel at all stages. Bed of stream rocky. Control apparently fairly permanent. The stage-discharge relation during part of the year is somewhat affected by growth of moss.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.70 feet May 4–7 (discharge, 370 second-feet); minimum stage recorded, 1.35 feet July 5 and 6 and August 27 to September 7 (discharge, 208 second-feet.)

1912–1918: Maximum stage recorded, 2.3 feet June 2, 1912 (discharge, 900 second-feet); minimum stage, 1.3 feet February 15 and 20 and May 2, 5, and 7, 1912 (discharge, 192 second-feet).

ICE.—Stage-discharge relation is unaffected by ice and open channel ratings are applicable.

DIVERSIONS.—None above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Standard rating curve well defined; several parallel curves used. Gage read to half-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table or by shifting-control method. Records good.

Discharge measurements of Warm River at Warm River, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Apr. 3	C. F. Elford	1.38	234	July 16	G. C. Baldwin	1.42	240
May 3	G. C. Baldwin	1.62	330	Sept. 8	do	1.39	223

Daily discharge, in second-feet, of Warm River at Warm River, Idaho, for the year ending Sept. 30, 1918.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Day.	Apr.	May.	June.	July.	Aug.	Sept.
1	.....	324	274	229	229	208	16	281	298	274	242	229	234
2	.....	324	274	229	229	208	17	281	298	274	252	229	234
3	231	331	274	229	229	208	18	258	298	252	252	229	234
4	227	370	274	229	229	208	19	214	298	229	229	229	234
5	223	370	274	208	229	208	20	214	298	229	229	229	234
6	214	370	274	208	229	208	21	277	274	252	229	229	238
7	214	370	274	229	229	208	22	324	274	274	229	229	238
8	214	346	298	229	229	216	23	324	274	274	229	229	238
9	258	346	298	252	229	229	24	349	274	274	229	229	238
10	281	321	321	229	229	234	25	349	274	274	229	229	238
11	281	298	321	229	229	234	26	324	274	274	229	229	238
12	305	298	321	229	229	234	27	300	274	252	229	208	238
13	329	298	321	229	229	234	28	277	274	229	229	208	238
14	329	298	298	252	229	234	29	300	274	252	229	208	238
15	281	298	274	252	229	234	30	324	252	252	229	208	238
							31	.....	274	.....	229	208	.....

Monthly discharge of Warm River at Warm River, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
April 3-30	349	214	278	15,400
May	370	252	305	18,800
June	321	229	274	16,300
July	252	208	232	14,300
August	229	208	226	13,900
September	238	208	228	13,600
The period				92,300

ROBINSON CREEK AT WARM RIVER, IDAHO.

LOCATION.—In sec. 13, T. 9 N., R. 43 E. Boise meridian, Fremont County, at Oregon Short Line Railroad bridge one-third mile above Warm River station on Yellowstone branch and 300 yards above mouth of the creek.

DRAINAGE AREA.—About 41 square miles (measured on Forest Service map).

RECORDS AVAILABLE.—January 24, 1912, to March 22, 1915; April 4 to September 30, 1918.

GAGE.—Vertical staff attached to a pile on downstream side of railroad bridge; read by Axel Anderson.

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

CHANNEL AND CONTROL.—Control is a well-defined cobble riffle about 150 feet below the gage and is apparently practically permanent. Bed of stream composed of coarse gravel.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.50 feet at 6 p. m. May 5 (discharge, 524 second-feet); minimum stage recorded, 1.75 feet at 11.15 a. m. September 8 (discharge, 82 second-feet).

1912–1915; 1918: Maximum stage recorded, 4.3 feet May 28, 1912 (discharge, 1,140 second-feet); minimum stage, 1.50 feet February 15, 1912 (discharge, 51 second-feet).

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

DIVERSIONS.—None above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to half-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Robinson Creek at Warm River, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Apr. 4	C. F. Elford	1.95	111	July 16	G. C. Baldwin	1.98	105
May 3	G. C. Baldwin	3.12	381	Sept. 8	do	1.80	82.4
23	do	2.79	284				

Daily discharge, in second-feet, of Robinson Creek at Warm River, Idaho, for the year ending Sept. 30, 1918.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Day.	Apr.	May.	June.	July.	Aug.	Sept.
1	.....	286	346	120	90	83	16	188	346	199	112	83	83
2	.....	330	286	112	90	83	17	167	346	210	112	83	83
3	.....	395	259	112	90	83	18	167	346	188	104	83	83
4	104	448	259	112	90	83	19	167	300	167	97	83	83
5	104	524	246	112	90	83	20	178	300	147	97	83	83
6	97	485	234	112	90	83	21	188	300	147	90	83	83
7	97	448	234	112	90	83	22	222	286	210	90	83	83
8	147	448	234	112	83	83	23	234	286	210	90	83	83
9	167	448	222	129	83	83	24	259	286	234	90	83	83
10	210	362	210	129	83	83	25	286	286	188	97	83	90
11	234	300	210	112	83	83	26	300	286	147	97	83	90
12	259	286	210	112	83	83	27	259	286	147	97	83	83
13	286	315	210	112	83	83	28	234	272	129	97	83	83
14	246	346	188	147	83	83	29	234	246	129	90	83	83
15	210	346	188	129	83	83	30	272	272	129	90	83	90
							31	.....	346	.....	90	83	.....

Monthly discharge of Robinson Creek at Warm River, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
April 4–30	300	97	204	10,900
May	524	246	341	21,000
June	346	129	204	12,100
July	147	90	107	6,580
August	90	83	84.6	5,200
September	90	83	83.7	4,980
The period	.....	.....	.....	60,800

FALL RIVER NEAR SQUIRREL, IDAHO.[1]

LOCATION.—In sec. 35, T. 9 N., R. 44 E., 9 miles southeast of Marysville, 4 miles northeast of Squirrel post office, 3 miles downstream from former site of Wilson's sawmill, and 1 mile below head of Marysville Land & Improvement Co.'s canal. Same location as Fremont station.

DRAINAGE AREA.—390 square miles.

RECORDS AVAILABLE.—January 1, 1904, to June 30, 1909; May 2 to September 30, 1918.

GAGE.—Vertical staff on left bank, installed January 1, 1904. Original gage established in 1902 was located about 3 miles upstream. Observer, Martin Luetjen.

DISCHARGE MEASUREMENTS.—Made from cable 200 feet below gage or by wading.

CHANNEL AND CONTROL.—Stream bed composed of boulders in gravel drift. Control formed by riffle below gage; fairly permanent. Both banks are high, clean, and not subject to overflow. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.57 feet at 5.30 p. m. June 15 (discharge, 5,380 second-feet); minimum stage recorded, 1.97 feet September 19–22 (discharge, 452 second-feet).

1904–1909; 1918: Maximum stage recorded, 6.8 feet June 6, 1909 (discharge, 7,620 second-feet); minimum stage, 1.4 feet April 5, 1905 (discharge, 168 second-feet).

[1] Records for 1904–1909 published under name "Fall River at Fremont, Idaho."

ICE.—Stage-discharge relation sometimes affected by ice. No winter record.
DIVERSIONS.—Three irrigation canals divert above the station.
REGULATION.—None except that attributable to headgate changes on canals above station.
ACCURACY.—Stage-discharge relation permanent. Rating curve well defined for stages under 3,000 second-feet; extended for higher stages. Gage read to hundredths once daily. Daily discharges ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Fall River near Squirrel, Idaho, during the year ending Sept. 30, 1918.

[Made by G. C. Baldwin.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
May 6	3.44	1,900	July 15	2.46	809
22	2.98	1,310	Sept. 7	1.98	420

Daily discharge, in second-feet, of Fall River near Squirrel, Idaho, for the year ending Sept. 30, 1918.

Day.	May.	June.	July.	Aug.	Sept.	Day.	May.	June.	July.	Aug.	Sept.
1	.....	1,880	1,880	535	470	16	1,680	5,020	759	570	464
2	1,220	1,440	1,940	535	470	17	1,500	4,300	720	535	464
3	1,560	1,380	1,620	535	470	18	1,380	4,300	720	535	458
4	1,940	1,810	1,680	502	470	19	1,220	4,480	680	535	452
5	2,220	2,080	1,440	502	464	20	1,170	4,130	680	535	452
6	1,880	2,360	1,440	502	458	21	1,280	3,960	642	535	452
7	1,880	2,580	1,380	470	458	22	1,330	4,840	642	535	452
8	2,080	2,810	1,220	470	458	23	1,380	5,380	642	535	470
9	1,880	3,290	1,170	470	458	24	1,500	5,200	605	535	470
10	1,440	3,620	978	470	464	25	1,560	4,840	642	502	470
11	1,330	4,300	888	470	470	26	1,560	3,620	570	502	470
12	1,170	4,480	888	570	470	27	1,380	2,970	535	502	458
13	1,400	4,660	720	570	470	28	1,330	2,660	535	470	458
14	1,620	5,380	888	570	470	29	1,280	2,220	535	470	458
15	1,680	5,380	801	570	464	30	1,380	1,810	535	470	470
						31	1,880	.....	535	470	.....

Monthly discharge of Fall River near Squirrel, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
May 2-31	2,220	1,170	1,540	91,600
June	5,380	1,380	3,570	212,000
July	1,940	535	933	57,400
August	570	470	515	31,700
September	470	452	463	27,600
The period	.....	.....	.....	420,000

WILLOW CREEK NEAR RIRIE, IDAHO.

LOCATION.—In T. 3 N., R. 40 E., at Cutler ranch, 3 miles above mouth of canyon and 6 miles southeast of Ririe, Bonneville County.
DRAINAGE AREA.—Not measured.
RECORDS AVAILABLE.—December 23, 1916, to September 30, 1918.
GAGE.—Vertical staff on right bank. Gage used prior to May 1, 1917, was a vertical staff on right bank a quarter of a mile upstream. Observer, Pearl Cutler.
DISCHARGE MEASUREMENTS.—Made by wading or from cable 200 feet downstream from gage.
CHANNEL AND CONTROL.—Stream bed composed of boulders in gravel drift; fairly permanent. Left bank is overflowed at high stages; both banks are brush cove r e

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.75 feet at 6.30 p. m. April 26 (discharge, 1,500 second-feet); minimum stage recorded, 2.30 feet September 2 and 3 (discharge, 36 second-feet).

1916–1918: Maximum stage recorded, 16.3 feet May 15, 1917 (discharge, 4,200 second-feet); minimum stage, 2.53 feet January 13, 1917 (discharge, 34 second-feet).

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

DIVERSIONS.—No irrigation canals of any consequence above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation fairly permanent. Standard rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table or as indicated in footnote to daily-discharge table. Records good during open-water season.

Discharge measurements of Willow Creek near Ririe, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 12	William Kessler	2.80	67.7	May 20	G. C. Baldwin	5.49	584
Jan. 19	G. C. Baldwin	[a] 3.01	75.7	June 26	R. B. Kilgore	3.97	236
Mar. 5	C. F. Elford	2.99	114	Sept. 9	G. C. Baldwin	2.41	42.4
Apr. 10	do	4.43	339				

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Willow Creek near Ririe, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	68	75	81	75	.....	217	1,100	636	165	60	37
2	68	66	88	88	.....	226	1,060	574	161	62	36
3	68	73	.....	66	.....	197	1,030	490	157	60	36
4	68	72	.....	70	.....	170	1,030	468	150	59	36
5	68	72	.....	81	86	150	1,030	445	142	57	37
6	68	70	.....	70	66	142	1,030	422	142	60	37
7	68	70	.....	60	66	134	972	400	134	56	38
8	68	70	.....	.....	88	173	914	378	127	53	39
9	68	69	.....	.....	82	190	886	378	127	52	41
10	68	68	.....	.....	77	302	886	346	134	52	42
11	68	63	.....	.....	93	336	832	336	127	48	43
12	68	63	.....	.....	92	346	778	325	124	47	40
13	68	66	.....	.....	90	444	700	314	121	46	40
14	68	70	.....	.....	88	562	674	284	157	62	40
15	68	70	.....	.....	119	526	649	284	176	77	42
16	69	72	.....	.....	119	468	624	281	173	72	43
17	68	70	.....	.....	108	389	599	278	142	60	45
18	68	68	.....	.....	86	336	574	264	127	54	42
19	63	68	73	76	79	294	574	254	110	52	41
20	70	75	73	.....	72	347	567	245	105	49	40
21	70	81	72	.....	77	400	526	254	100	47	42
22	68	88	72	.....	88	562	502	259	93	47	39
23	70	70	70	.....	90	872	479	264	86	47	39
24	70	70	75	.....	90	1,060	474	294	81	47	46
25	70	70	84	.....	105	1,150	468	264	81	46	46
26	68	72	77	.....	120	1,500	485	237	79	45	46
27	68	73	75	.....	134	1,340	502	208	77	41	45
28	66	73	84	.....	150	1,170	562	190	73	40	43
29	65	73	103	.....	142	1,030	562	182	70	39	42
30	62	75	98	.....	165	1,060	550	174	66	37	42
31	75	.....	93	.....	182	.....	562	.....	62	38	.....

NOTE.—Stage-discharge relation affected by ice Dec. 3–18, Jan. 8 to Mar. 4. Discharge estimated from observer's notes, weather records, and one current-meter measurement as follows: Dec. 3–18, 63 second-feet; Jan. 8–18, 61 second-feet; Jan. 20–31, 66 second-feet; Feb. 1–8, 71 second-feet; Feb. 9–12, 75 second-feet; Feb. 13–15, 79 second-feet; Feb. 16–23, 68 second-feet; Feb. 24–28, 64 second-feet; Mar. 1–4, 77 second-feet. Discharge interpolated Oct. 2, 17, 28, Nov. 4, 9, 13, 17, 20, 21, 26, 28, Dec. 30, Jan. 6, Mar. 9, 19, 26, Apr. 20, 27, 30, May 7, 24, 26, June 5, 11, 16, 22, 30, July 2, 20, 28, Aug. 3, 7, 14, 19, 28, Sept. 4, 5, 15, 19, 30.

Monthly discharge of Willow Creek near Ririe, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	75	62	68.1	4,190
November	88	63	71.2	4,240
December	103	.....	71.8	4,410
January	88	.....	66.1	4,060
February	.....	.....	70.3	3,900
March	182	66	98.8	6,080
April	1,500	134	536	31,900
May	1,100	468	716	44,000
June	636	174	324	19,300
July	176	62	118	7,260
August	77	37	52.0	3,200
September	46	36	40.8	2,430
The year	1,500	36	186	135,000

WILLOW CREEK NEAR IONA, IDAHO.

LOCATION.—In sec. 19, T. 3 N., R. 38 E., at concrete bridge 9 miles out on main road east from Idaho Falls. Boomer canal crosses in a flume 600 feet above station.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—December 22, 1916, to September 30, 1918.

GAGE.—Vertical staff attached to downstream face of right abutment of concrete arch bridge; read by C. N. Kemper.

DISCHARGE MEASUREMENTS.—Made from highway bridge, footbridge 50 feet downstream, or by wading.

CHANNEL AND CONTROL.—Stream bed composed of mud, sand, and gravel; shifting. Banks subject to overflow at very high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.44 feet at 11 a. m. May 2 (discharge, 264 second-feet); minimum stage recorded, 0.60 foot at 5 p. m. November 8 (discharge, 2 second-feet).

1916–1918: Maximum stage recorded, 7.75 feet May 16 and 17, 1917 (discharge, 603 second-feet); minimum stage, 0.60 foot November 8, 1918 (discharge, 2 second-feet).

ICE.—Stage-discharge relation seriously affected by ice; data inadequate for determination of daily discharge during period of ice effect.

DIVERSIONS.—Sand Creek diverts above station; also irrigation canals, but definite information as to the number of canals and quantity of water diverted is not available.

REGULATION.—Flow regulated at diversion works above station. Several irrigation canals waste water into this channel.

ACCURACY.—Stage-discharge relation not permanent. Standard rating curve fairly well defined; parallel curves used. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table or as noted in footnote to daily-discharge table. Records fair during open-water season.

Discharge measurements of Willow Creek near Iona, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 13	William Kessler	1.03	14.4	May 20	G. C. Baldwin	2.86	133
Jan. 20	G. C. Baldwin	[a] 1.04	7.9	June 25	R. B. Kilgore	3.60	179
Mar. 6	C. F. Elford	[a] 1.40	8.4	26	.....do	3.45	169
Apr. 8	.....do	1.12	22.9	July 12	G. C. Baldwin	3.02	146
11	.....do	2.02	69.6	Sept. 9	.....do	2.56	105

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Willow Creek near Iona, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	20	4	12	22	.....	20	255	154	142	94	74
2	20	4	12	22	.....	23	264	151	138	94	75
3	18	4	20	20	.....	26	256	151	136	90	75
4	18	4	12	18	.....	30	250	146	134	94	74
5	18	4	17	18	.....	32	250	138	130	101	74
6	18	3	12	18	.....	28	250	133	126	112	75
7	16	3	12	14	.....	27	241	130	138	122	76
8	16	2	16	10	.....	23	170	130	154	122	76
9	16	3	17	.....	.....	24	198	126	146	108	105
10	15	3	12	.....	.....	47	196	130	148	108	94
11	15	7	18	.....	.....	70	192	130	149	105	81
12	14	15	18	.....	.....	74	192	138	140	108	77
13	14	18	18	.....	.....	85	191	170	146	109	76
14	13	18	18	.....	.....	87	187	174	146	108	75
15	12	18	12	.....	.....	87	162	178	154	104	74
16	11	19	14	.....	.....	94	146	178	162	94	69
17	11	20	18	.....	46	102	152	182	166	101	73
18	10	18	18	.....	43	80	138	182	149	94	59
19	10	18	18	.....	41	69	130	178	146	94	47
20	10	19	20	.....	41	67	127	178	148	91	27
21	9	18	17	.....	38	81	111	180	148	88	37
22	8	18	18	.....	37	87	122	178	146	87	37
23	8	19	18	.....	38	187	151	174	142	88	37
24	8	19	18	.....	37	234	152	187	138	87	36
25	8	18	17	.....	36	236	146	182	134	87	34
26	7	18	18	.....	35	250	170	174	134	83	34
27	6	18	20	.....	33	260	182	170	130	81	33
28	6	18	18	.....	34	241	178	154	130	75	32
29	5	18	18	.....	33	250	162	154	126	75	32
30	4	20	22	.....	31	250	157	142	126	75	30
31	3	.....	22	.....	19	.....	160	.....	122	74	.....

NOTE.—Stage-discharge relation affected by ice Jan. 9 to Mar. 16; discharge estimated from observer's notes, weather records and two current-meter measurements as follows: Jan. 9–19, 5 second-feet; Jan. 21–31, 6 second-feet; Feb. 1–3, 2 second-feet; Feb. 4, 5 second-feet; Feb. 5–9, 6 second-feet; Feb. 10–20, 5 second-feet; Feb. 21–28, 8 second-feet; Mar. 1–5, 12 second-feet; Mar. 7–16, 35 second-feet.

Monthly discharge of Willow Creek near Iona, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	20	3	11.8	726
November	20	2	12.9	768
December	22	12	16.8	1,030
January	22	.....	8.74	537
February	.....	.....	5.71	317
March	.....	.....	31.0	1,910
April	260	20	106	6,310
May	264	111	182	11,200
June	187	126	159	9,460
July	166	122	141	8,670
August	122	74	95.3	5,860
September	105	27	59.9	3,560
The year	264	.....	69.5	50,300

GRAYS LAKE OUTLET NEAR HERMAN, IDAHO.

LOCATION.—In sec. 15, T. 3 S., R. 42 E., 3 miles below bridge at outlet of lake and 3¼ miles west of Herman, Bonneville County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 5, 1916, to September 30, 1918.

GAGE.—Stevens continuous water-stage recorder on right bank, installed April 20, 1918; inspected by C. H. Johnson and Thomas Priest. Vertical staff at practically same site and datum used during 1916.

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

CHANNEL AND CONTROL.—Bed composed of gravel; practically permanent. No well-defined control. Left bank subject to overflow at high stages.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 4.65 feet about April 25 (discharge, 624 second-feet); minimum stage recorded, 0.72 foot August 31 (discharge, 1.1 second-feet). A lower discharge may have occurred during period of no record.

1916—1918: Maximum stage recorded, 5.9 feet at 9 a. m. May 15, 1917 (discharge, 1,350 second-feet); minimum stage occurred in 1918.

ICE.—Ice practically stops flow from lake at times but springs probably keep channel near gage free from ice. Records discontinued during winter.

DIVERSIONS.—No diversions between lake and station. Diversions for irrigation are made above lake, but amount of water diverted is not known.

REGULATION.—No artificial regulation above station.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined. Operation of recorder not entirely satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph. Records prior to July 18 fair; thereafter good.

Discharge measurements of Grays Lake outlet near Herman, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 19	T. R. Newell	0.93	5.8	Apr. 28	C. F. Elford	4.40	512
Apr. 20	C. F. Elford	3.34	263	May 28	R. B. Kilgore	2.79	181
27	do	4.44	546	Aug. 8	G. C. Baldwin	1.11	13.9

Daily discharge, in second-feet, of Grays Lake outlet near Herman, Idaho, for the year ending Sept. 30, 1918.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Day.	Apr.	May.	June.	July.	Aug.	Sept.
1	.....	472	200	66	18	1.4	16	.....	278	92	36	7.6	2.2
2	.....	455	180	64	18	1.6	17	.....	268	91	34	7.3	2.7
3	.....	410	159	62	17	1.8	18	.....	258	89	32	6.5	3.5
4	.....	369	154	60	16	1.8	19	.....	258	88	31	5.5	3.8
5	.....	326	148	58	16	1.9	20	274	245	86	30	4.8	3.8
6	.....	322	143	58	15	1.9	21	258	232	85	29	4.6	3.5
7	.....	319	137	56	14	1.9	22	344	219	83	28	4.3	3.5
8	.....	315	132	54	13	2.1	23	430	206	82	27	4.0	3.5
9	.....	312	124	51	12	2.1	24	517	193	80	26	3.5	3.2
10	.....	308	118	49	11	1.9	25	603	180	79	25	3.2	3.2
11	.....	308	109	45	10	2.1	26	574	172	77	24	3.2	3.5
12	.....	308	101	43	9.1	1.9	27	544	165	75	22	2.7	3.8
13	.....	308	97	41	8.3	2.2	28	525	180	73	22	2.1	4.0
14	.....	298	95	40	8.7	2.4	29	525	185	71	21	1.8	4.3
15	.....	288	94	38	8.7	2.4	30	507	190	69	20	1.4	4.6
							31	.....	195	.....	19	1.1	.....

NOTE.—Discharge estimated April 21-26; interpolated May 6-9, 11, 12, 14-17, 20-24, 26, 29, 30, June 14-25, 27-30, July 1-4, 7-9, and 12-16.

Monthly discharge of Grays Lake outlet near Herman, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
April 20–30	603	258	464	10,100
May	472	165	276	17,000
June	200	69	107	6,370
July	66	19	39.1	2,400
August	18	1.1	8.34	513
September	4.6	1.4	2.75	164
The period				36,500

IDAHO (GOVERNMENT) CANAL NEAR SHELLEY, IDAHO.

LOCATION.—In sec. 31, T. 1 N., R. 37 E., Bingham County, 600 feet below canal headgates, 1½ miles southwest of Shelley, and 10 miles above point where Sand Creek crosses canal.

RECORDS AVAILABLE.—June 20, 1912, to September 30, 1918. No water diverted during 1913 because of break in the canal.

GAGE.—Inclined staff on right bank set in the concrete of the rating section; read by Mitchell and Vaughn.

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

CHANNEL AND CONTROL.—Trapezoidal concrete rating section. Growth of weeds and brush causes changes in the stage-discharge relation, but bottom of rating section evidently furnishes a permanent point of zero flow at about 0.0 foot gage height.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.83 feet at 9 a. m. July 29 (discharge, 262 second-feet); minimum flow probably zero when headgates are closed, but has not been definitely determined, as no records are obtained when gates are closed.

1912–1918: Maximum stage recorded, 3.7 feet July 29, 1912 (discharge, 308 second-feet); minimum as stated above.

ICE.—Canal not operated during winter.

DIVERSIONS.—None.

REGULATION.—Flow controlled at the headgates 600 feet above.

ACCURACY.—Stage-discharge relation not permanent; affected by growth of vegetation. Rating curve well defined; several parallel curves used. Gage read twice daily to hundredths. Daily discharge ascertained by applying mean daily gage height to rating table or by shifting-control method. Records fair.

Discharge measurements of Idaho (Government) canal near Shelley, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
May 19	Baldwin and Newell	0.30	4.5	July 17	G. C. Baldwin	2.00	170
June 15	Elford and Martin	2.42	222	30	C. F. Elford	2.65	238
27	R. B. Kilgore	2.50	220	Aug. 16	do	2.76	228
27	C. F. Elford	2.50	223	Sept. 10	G. C. Baldwin	2.60	200

NOTE.—D. G. Martin and C. F. Elford, State employees.

Daily discharge, in second-feet, of Idaho (Government) canal near Shelley, Idaho, for the year ending Sept. 30, 1918.

Day.	May.	June.	July.	Aug.	Sept.	Day.	May.	June.	July.	Aug.	Sept.
1			193	224	190	16		224	191	215	200
2			216	211	191	17		237	169	199	200
3			226	211	195	18		244	191	200	198
4			222	221	201	19	5	244	222	199	156
5			222	223	201	20		252	222	193	156
6			224	233	211	21		252	215	187	156
7			224	232	200	22		252	215	204	167
8			224	213	200	23		246	222	203	167
9			222	215	198	24		226	224	203	167
10			213	225	200	25		196	224	201	168
11		100	218	217	200	26		193	224	196	167
12		186	224	216	203	27		218	218	189	167
13		193	221	208	205	28		233	252	187	166
14		208	222	204	203	29		222	253	189	165
15		213	213	228	203	30		211	240	192	165
						31			240	192	

NOTE.—Discharge, May 20 to June 10, estimated at 5 second-feet on assumption that leakage through headgates noted May 19 continued throughout the period.

Monthly discharge of Idaho (Government) canal near Shelley, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
May 19–31			5	129
June	252		147	8,750
July	253	169	220	13,500
August	233	187	207	12,700
September	211	156	186	11,100
The period				46,200

BLACKFOOT RIVER ABOVE RESERVOIR, NEAR HENRY, IDAHO.

LOCATION.—About sec. 9, T. 7 S., R. 42 E., at Cully's ranch, 1½ miles above flow line of Blackfoot-Marsh reservoir, 7 miles south of Henry, Bannock County, and 13 miles north of Soda Springs.

DRAINAGE AREA.—360 square miles (measured on Land Office map).

RECORDS AVAILABLE.—March 25, 1914, to September 30, 1918.

GAGE.—Inclined staff on right bank half a mile above Cully's house and 200 feet below shearing plant; installed October 12, 1917, at practically same location and datum as vertical staff used since October 23, 1914. Read by Mrs. T. W. Cully and Mrs. A. C. Swanson. Original gage was vertical staff attached to right bridge pier three-quarters of a mile above.

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

CHANNEL AND CONTROL.—Bed composed of loose rocks, boulders, and gravel. Control composed of loose rock; fairly permanent. Right bank subject to overflow at high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 3.45 feet at 9.30 a. m. May 30 (discharge, 520 second-feet); minimum stage recorded, 1.46 feet September 2, 3, and 18 (discharge, 58 second-feet). Minimum discharge for year probably occurred during period of no record.

1914–1918: Maximum stage, 6.85 feet May 16, 1917, estimated from high-water mark above gage (discharge, 2,060 second-feet); minimum stage recorded, 1.65 feet November 13, 1916 (measured discharge, 52 second-feet). Minimum discharge probably occurred during winter.

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

DIVERSIONS.—A few small diversions are made above gage.

REGULATION.—None. Entire flow passing gage is stored in Blackfoot-Marsh reservoir 1½ miles below.

ACCURACY.—Stage-discharge relation shifted slightly. Rating curve fairly well defined. Gage read to quarter-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table, except during period June 3 to August 5, for which shifting-control method was used. Records good, except for December for which they are fair.

Discharge measurements of Blackfoot River above reservoir, near Henry, Idaho, during year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 21	T. R. Newell	1.74	98.1	June 1	R. B. Kilgore	2.86	326
Mar. 9	C. F. Elford	2.70	73.8	2	do	2.80	326
Apr. 24	do	3.03	401	Aug. 6	G. C. Baldwin	1.69	86.1

Daily discharge, in second-feet, of Blackfoot River above reservoir, near Henry, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	115	89	95	99	.....	214	455	347	127	87	65
2	121	99	89	82	.....	238	487	318	134	87	58
3	96	95		86	.....	172	503	287	127	83	58
4	100	95		92	.....	154	487	287	132	83	62
5	96	86		89	.....	137	487	287	132	83	62
6	100	82		.....	.....	120	503	274	124	86	65
7	110	89		.....	.....	135	471	274	95	89	67
8	106	99		.....	.....	154	408	274	109	82	69
9	103	86		.....	74	192	392	260	116	79	69
10	106	82	80	.....	.....	250	455	260	116	79	77
11	103	89		.....	.....	318	439	260	112	79	69
12	100	82		.....	.....	377	408	248	121	79	67
13	96	99		.....	.....	377	347	236	132	89	67
14	103	89		.....	.....	332	304	224	258	82	67
15	100	82		.....	.....	332	290	212	233	79	67
16	96	99		.....	.....	318	304	236	207	79	67
17	103	95		.....	.....	318	318	224	158	86	65
18	92	92	92	.....	.....	238	332	224	140	82	58
19	103	73	99	.....	.....	250	377	236	132	77	62
20	103	67	95	.....	.....	238	377	212	123	73	62
21	98	82	103	.....	98	226	276	201	126	77	62
22	95	118	103	.....	95	238	263	224	115	77	65
23	98	137	92	.....	120	347	250	201	108	73	73
24	103	82	95	.....	91	392	263	258	105	73	73
25	95	89	95	.....	124	362	290	178	100	73	69
26	99	95	99	.....	120	439	304	168	96	73	73
27	103	103	89	.....	115	487	347	151	105	69	69
28	92	86	106	.....	112	377	362	142	93	67	67
29	86	124	129	.....	135	332	439	168	91	67	67
30	118	82	118	.....	154	408	520	142	91	67	73
31	124	.....	92	.....	163	.....	455	.....	87	67	.....

NOTE.—Braced figure shows estimated mean discharge for period indicated.

Monthly discharge of Blackfoot River above reservoir, near Henry, Idaho, for the year ending Sept. 30, 1918.

[Drainage area, 360 square miles.]

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	124	86	102	6,270
November	137	67	92.2	5,490
December	129	.....	90.0	5,530
January 1–5	99	82	89.6	889
March 21–31	163	91	121	2,640
April	487	120	282	16,800
May	520	250	384	23,600
June	347	142	234	13,900
July	258	87	127	7,810
August	89	67	78.3	4,810
September	77	58	66.5	3,960

BLACKFOOT-MARSH RESERVOIR NEAR HENRY, IDAHO.

LOCATION.—In sec. 12, T. 5 S., R. 40 E., 12 miles northwest of Henry, Bannock County.

RECORDS AVAILABLE.—January 1, 1912, to September 30, 1918.

GAGE.—Vertical staff near spillway at right end of dam; read by B. B. Reynolds. Prior to April 23, 1918, all gage readings were made on gage 51.6 feet higher in elevation. All gage readings subsequent to April 23, 1918, are corrected to agree with former datum. To reduce gage heights to elevation above sea level add 6048.40 feet.

EXTREMES OF STAGE.—Maximum stage recorded during year, 61.00 feet May 26 and 27; minimum stage, 52.00 feet October 10.

1912–1918: Maximum stage recorded, 68.60 feet June 27–30, 1912; minimum stage, 42.02 feet December 14, 1916.

ACCURACY.—Gage affected by ice and gage heights prior to April 18 may be a maximum of about 1.70 feet in error in reference to correct datum.

COOPERATION.—Gage-height record furnished by United States Indian Service.

Daily gage height, in feet, of Blackfoot-Marsh reservoir near Henry, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	52.55	52.42	53.06	54.20	55.05	55.39	56.49	60.54	60.94	59.74	57.42	54.58
2	52.44	52.43	53.08	54.22	55.09	55.40	56.56	60.58	60.92	59.69	57.32	54.56
3	52.39	52.44	53.16	54.24	55.12	55.41	56.62	60.61	60.90	59.64	57.22	54.54
4	52.32	52.45	53.22	54.26	55.12	55.42	56.67	60.64	60.86	59.59	57.12	54.52
5	52.24	52.46	53.30	54.28	55.14	55.43	56.72	60.68	60.83	59.54	57.02	54.50
6	52.19	52.47	53.36	54.30	55.16	55.44	56.76	60.70	60.82	59.48	56.92	54.50
7	52.14	52.48	53.38	54.32	55.20	55.45	56.81	60.72	60.80	59.42	56.82	54.49
8	52.08	52.49	53.40	54.34	55.22	55.46	56.86	60.74	60.80	59.34	56.72	54.48
9	52.02	52.50	53.43	54.36	55.24	55.47	56.91	60.74	60.78	59.27	56.58	54.47
10	52.00	52.52	53.46	54.38	55.27	55.50	56.96	60.76	60.76	59.22	56.49	54.46
11	52.02	52.54	53.48	54.40	55.30	55.52	57.02	60.77	60.75	59.14	56.38	54.45
12	52.04	52.54	53.50	54.42	55.32	55.54	57.12	60.78	60.73	59.08	56.28	54.45
13	52.06	52.56	53.52	54.44	55.34	55.56	57.21	60.81	60.69	59.02	56.16	54.45
14	52.08	52.60	53.54	54.46	55.34	55.60	57.30	60.84	60.64	58.95	56.07	54.45
15	52.10	52.62	53.56	54.48	55.34	55.63	57.38	60.86	60.60	58.88	55.96	54.44
16	52.12	52.65	53.58	54.51	55.35	55.67	57.49	60.88	60.57	58.81	55.86	54.44
17	52.14	52.70	53.60	54.54	55.35	55.72	57.64	60.90	60.52	58.74	55.77	54.44
18	52.15	52.76	53.65	54.56	55.36	55.80	57.75	60.91	60.46	58.70	55.68	54.44
19	52.16	52.81	53.72	54.60	55.36	55.88	.....	60.92	60.40	58.62	55.57	54.45
20	53.20	52.84	53.76	54.64	55.36	55.95	.....	60.94	60.34	58.56	55.47	54.44
21	52.22	52.86	53.83	54.68	55.36	55.99	.....	60.96	60.31	58.48	55.38	54.45
22	52.24	52.88	53.90	54.71	55.37	56.04	.....	60.96	60.27	58.44	55.28	54.44
23	52.26	52.90	53.95	54.74	55.37	56.08	59.85	60.98	60.28	58.37	55.18	54.42
24	52.28	52.92	53.99	54.78	55.37	56.14	59.94	60.98	60.24	58.28	55.08	54.42
25	52.30	52.94	54.03	54.81	55.38	56.18	60.02	60.99	60.19	58.16	54.98	54.41
26	52.32	52.96	54.07	54.86	55.38	56.22	60.08	61.00	60.12	58.04	54.90	54.40
27	52.34	52.98	54.10	54.88	55.38	56.26	60.18	61.00	60.06	57.92	54.82	54.39
28	52.36	53.00	54.12	54.91	55.38	56.31	60.28	60.99	59.98	57.82	54.74	54.39
29	52.38	53.02	54.14	54.95	.....	56.36	60.38	60.99	59.90	57.72	54.69	54.38
30	52.40	53.04	54.16	54.99	.....	56.41	60.48	60.98	59.81	57.62	54.65	54.38
31	52.40	.....	54.18	55.02	.....	56.45	.....	60.96	.....	57.52	54.61	.....

NOTE.—Gage torn out by ice Apr. 18; reset Apr. 23.

BLACKFOOT RIVER NEAR HENRY, IDAHO.

LOCATION.—In sec. 11, T. 5 S., R. 40 E., 200 feet below wagon bridge at Rockyford crossing, 1 mile below Blackfoot-Marsh dam of United States Indian Service, and 12 miles northwest of Henry, Bannock County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 15, 1908, to September 30, 1918.

GAGE.—Friez water-stage recorder installed September 18, 1912, on left bank; inspected by B. B. Reynolds. Prior to September 18, 1912, gage was vertical staff located a few feet downstream from present gage. Datum of original gage lowered 0.11 foot between July 15, 1908, and May 25, 1912; datum of present gage is same as original gage on May 25, 1912.

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

CHANNEL AND CONTROL.—Bed composed of lava rock, boulders, and gravel; fairly permanent. Control affected at times by growth of moss.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 3.02 feet June 22 (discharge, 760 second-feet); minimum stage, 0.95 foot April 24 to May 6 (discharge, 23 second-feet).

1908–1918: Maximum stage recorded, 4.15 feet May 14, 1909 (discharge, 1,640 second-feet); minimum stage recorded, 0.50 foot May 11 and 12, 1917 (discharge, 1 second-foot).

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

DIVERSIONS.—Few small diversions for irrigation above station.

REGULATION.—Flow entirely regulated by storage in reservoir, which has a capacity of 312,000 acre-feet.

ACCURACY.—Stage-discharge relation affected by growth of moss. Two well-defined rating curves used, one October 1 to 8, the other October 9 to June 25; shifting-control method used June 26 to August 7. Operation of water-stage recorder satisfactory during periods October 1–8 and June 8–30; staff gage read to hundredths twice daily during remaining periods. Daily discharge ascertained by applying mean daily gage height to rating table except as noted in footnote to daily-discharge table. Records good, except from July to September for which they are fair.

Discharge measurements of Blackfoot River near Henry, Idaho, during the year ending Sept. 30, 1918.

Date	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 13	T. R. Newell	1.50	133	Apr. 23	C. F. Elford	1.92	270
Apr. 22	C. F. Elford	1.25	75.3	May 31	R. B. Kilgore	2.50	515
23	do	2.10	342	Aug. 7	G. C. Baldwin	2.96	634

Daily discharge, in second-feet, of Blackfoot River near Henry, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	522	73	73	73	73	73	73	23	515	673	640	
2	522	73	73	73	73	73	73	23	515	673	640	
3	522	73	73	73	73	73	73	23	515	673	640	
4	522	73	73	73	73	73	73	23	515	673	640	370
5	522	73	73	73	73	73	73	23	515	673	640	
6	522	73	73	73	73	73	73	23	515	673	640	
7	522	73	73	73	73	73	73	156	515	673	635	
8	522	73	73	73	73	73	73	156	515	673		
9	404	73	73	73	73	73	73	156	515	673		
10	321	73	73	73	73	73	73	156	515	668		
11	321	73	73	73	73	73	73	156	584	668		320
12	207	73	73	73	73	73	73	301	607	668		
13	139	73	73	73	73	73	73	301	607	668		
14	184	73	73	73	73	73	73	301	607	668	630	
15	227	73	73	73	73	73	73	301	607	668		
16	227	73	73	73	73	73	73	301	607	668		
17	224	73	73	73	73	73	73	301	607	668		
18	133	73	73	73	73	73	73	470	630	668		
19	73	73	73	73	73	73	73	470	702	668		
20	73	73	73	73	73	73	73	470	750	668		
21	73	73	73	73	73	73	73	470	750	668		185
22	73	73	73	73	73	73	73	470	750	668		
23	73	73	73	73	73	73	123	515	750	668	475	
24	73	73	73	73	73	73	23	515	750	664		
25	73	73	73	73	73	73	23	515	726	664		
26	73	73	73	73	73	73	23	515	721	640		
27	73	73	73	73	73	73	23	515	721	640		
28	73	73	73	73	73	73	23	515	721	640		
29	73	73	73	73	.....	73	23	515	721	640	400	85
30	73	73	73	73	.....	73	23	515	697	640		
31	73	.....	73	73	.....	73	.....	515	.....	640		.....

NOTE.—Braced figures show mean discharge for periods indicated; estimated by comparison with flow at station near Shelley.

Monthly discharge of Blackfoot River near Henry, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	522	73	242	14,900
November	73	73	73.0	4,340
December	73	73	73.0	4,490
January	73	73	73.0	4,490
February	73	73	73.0	4,050
March	73	73	73.0	4,490
April	123	23	63.0	3,750
May	515	23	313	19,200
June	750	515	626	37,200
July	673	640	664	40,800
August	640	.....	565	34,700
September	.....	.....	256	15,200
The year	750	23	259	188,000

BLACKFOOT RIVER NEAR SHELLEY, IDAHO.

LOCATION.—In sec. 7, T. 2 S., R. 38 E., Bingham County, 1½ miles above mouth of canyon, 3 miles above N. A. Just's ranch, 10 miles southeast of Shelley, and 18 miles northeast of Blackfoot. Below all important tributaries.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—June 26, 1909, to September 30, 1918. From April 17, 1903, to December 31, 1909, records were obtained near Presto, about 5 miles below site of present station. No tributaries enter between the two sites, but during the irrigation season several ditches divert probably 50 second-feet.

GAGE.—Friez water-stage recorder on right bank; inspected by Rufus E. Reid.

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

CHANNEL AND CONTROL.—Bed rocky and rough. One channel at all stages. Control somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during the year, 5.37 feet at 11 p. m. June 20 (discharge, 986 second-feet); minimum stage recorded, 3.38 feet at 11 p. m. December 11 (discharge, 87 second-feet).

1909–1918: Maximum stage recorded, 5.80 feet at 11.45 p. m. April 1, 1913 (discharge, 1,370 second-feet); minimum stage, 3.00 feet at 12.30 p. m. January 6, 1917 (discharge estimated less than 45 second-feet).

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

DIVERSIONS.—No noteworthy diversions are made from river or tributaries above station.

REGULATION.—Flow regulated largely by storage in the Blackfoot-Marsh reservoir of the United States Indian Service, about 40 miles upstream.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined for open-channel conditions. Operation of water-stage recorder satisfactory except during winter when occasional staff observations were obtained. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph. Records good.

Discharge measurements of Blackfoot River near Shelley, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 19	William Kessler	3.68	173	Apr. 16	C. F. Elford	3.92	255
Mar. 4	C. F. Elford	3.47	125	June 20	R. B. Kilgore	5.14	887
12	....do	3.56	136	Aug. 15	G. C. Baldwin	4.88	680

Daily discharge, in second-feet, of Blackfoot River near Shelley, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	613	145	158	130	.....	120	267	188	653	797	769	442
2	608	145	139	127	.....	121	263	188	653	769	769	438
3	603	145	121	127	.....	110	213	188	648	769	769	438
4	603	148	164	127	.....	113	199	192	643	769	769	433
5	603	148	139	127	121	102	195	195	638	797	764	433
6	603	145	127	118	110	108	192	228	638	769	758	428
7	603	148	113	136	110	158	199	299	638	764	753	424
8	603	148	118	133	113	121	217	295	633	764	747	428
9	569	148	130	.....	108	108	259	308	633	764	731	433
10	424	145	113	.....	126	108	308	303	623	758	710	393
11	420	148	95	.....	151	127	299	295	643	758	699	380
12	384	148	124	.....	155	127	291	329	710	753	689	376
13	228	148	136	.....	142	121	312	350	710	753	689	376
14	225	148	145	.....	.....	110	320	380	710	769	699	376
15	303	148	130	.....	.....	110	283	460	715	758	731	376
16	308	148	127	127	.....	115	255	574	726	747	699	324
17	303	148	136	127	.....	121	240	584	720	742	684	255
18	295	145	133	133	.....	127	228	598	715	737	673	244
19	178	145	133	113	.....	124	225	618	764	731	673	244
20	161	142	133	110	.....	130	217	608	883	731	673	240
21	158	145	130	121	.....	130	221	598	883	742	658	240
22	148	148	130	130	.....	136	236	598	883	747	545	244
23	148	145	127	133	133	139	291	643	913	753	540	244
24	148	145	136	133	133	145	259	653	883	758	540	244
25	145	151	133	136	124	158	225	653	854	769	540	244
26	145	151	133	133	118	171	213	663	854	797	535	244
27	145	139	136	.....	136	195	206	679	854	797	530	244
28	145	142	145	.....	120	199	188	694	825	797	474	181
29	171	148	158	.....	.....	210	181	679	825	797	451	142
30	151	148	155	.....	.....	228	185	658	825	797	446	139
31	145	.....	139	.....	.....	251	.....	658	.....	797	446	.....

NOTE.—Stage-discharge relation affected by ice Jan. 9–15; Jan. 26 to Feb. 4; Feb. 14–22; discharge estimated from observer's notes, weather records, and record at station below Blackfoot-Marsh reservoir as follows: Jan. 9–15, 110 second-feet; Jan. 27–31, 115 second-feet; Feb. 1–4, 105 second-feet; Feb. 14–22, 120 second-feet.

Monthly discharge of Blackfoot River near Shelley, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	613	145	332	20,400
November	151	139	146	8,690
December	164	95	133	8,180
January	136	.....	121	7,440
February	155	.....	121	6,720
March	251	102	140	8,610
April	320	181	240	14,300
May	694	188	463	28,500
June	913	623	743	44,200
July	797	731	766	47,100
August	769	446	650	40,000
September	442	139	322	19,200
The year	913	.....	350	253,000

BLACKFOOT RIVER NEAR BLACKFOOT, IDAHO.

LOCATION.—In sec. 27, T. 3 S., R. 34 E., Bingham County, at old Jarvis ranch, 2 miles above junction of Blackfoot and Snake rivers and 8 miles southwest of Blackfoot.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—July 27, 1913, to September 30, 1918.

GAGE.—Inclined staff on right bank half a mile south of the Jarvis ranch house; read by Oliver L. Kofoed.

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

CHANNEL AND CONTROL.—Bed composed of gravel. Control presumably of the same material; fairly permanent. One channel at all stages. Banks covered with heavy growth of brush and willows which may affect stage-discharge relation at high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, in excess of 9.3 feet during period June 15-18 when stage-discharge relation was affected by overflow and backwater from Snake River. Maximum discharge attributable to Blackfoot River probably 544 second-feet noted September 16 at gage height of 8.1 feet; minimum stage probably occurred during period of no record when water surface was below gage (estimated discharge, 18 second-feet).

1913–1918: Maximum discharge recorded, 673 second-feet September 21–22, 1914; minimum stage as above noted.

ICE.—No records obtained during winter.

DIVERSIONS.—Principal diversions above gage are the Fort Hall canals near Blackfoot, but several smaller diversions are made near Blackfoot.

REGULATION.—Flow regulated by storage in the Blackfoot-Marsh reservoir of the United States Indian Service.

ACCURACY.—Stage-discharge relation permanent during period of record. Rating curve fairly well defined. Gage read to half-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

Discharge measurements of Blackfoot River near Blackfoot, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
May 21	T. R. Newell	5.76	187	Aug. 14	G. C. Baldwin	5.71	168
July 9	G. C. Baldwin	6.19	261	Sept. 10	do	6.33	273
Aug. 2	do	4.42	18.3				

Daily discharge, in second-feet, of Blackfoot River near Blackfoot, Idaho, for the year ending Sept. 30, 1918.

Day.	May.	June.	July.	Aug.	Sept.	Day.	May.	June.	July.	Aug.	Sept.
1	434	374	315	23	73	16	198	.....	496	359	544
2	389	374	259	18	73	17	198	.....	496	434	496
3	374	374	259	23	68	18	232	.....	464	496	374
4	315	359	259	109	132	19	217	.....	329	496	301
5	287	245	287	109	141	20	198	.....	344	449	198
6	259	217	315	109	154	21	198	.....	315	389	84
7	259	102	245	78	166	22	96	.....	301	374	90
8	259	73	217	84	245	23	96	.....	245	344	102
9	259	73	259	73	259	24	109	.....	224	344	96
10	245	63	287	73	273	25	109	.....	208	301	198
11	287	43	301	78	287	26	198	.....	232	259	154
12	245	18	315	198	287	27	315	.....	78	217	141
13	245	.....	315	166	287	28	389	329	73	141	123
14	198	.....	374	182	315	29	389	344	78	208	141
15	166	.....	480	217	344	30	389	374	63	73	141
						31	359	.....	23	84	.....

NOTE.—Stage-discharge relation, June 13–27, affected by overflow and backwater from Snake River; data insufficient for determination of discharge. Water reported as below gage about 0.10 foot on June 12.

Monthly discharge of Blackfoot River near Blackfoot, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
May	434	96	255	15,700
July	496	23	273	16,800
August	496	18	210	12,900
September	544	68	210	12,500

LITTLE BLACKFOOT RIVER AT HENRY, IDAHO.

LOCATION.—In sec. 10, T. 6 S., R. 42 E., on Skinner's ranch at Henry, Bannock County, a short distance above flow line of Blackfoot-Marsh reservoir.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 24, 1914, to September 30, 1918.

GAGE.—Vertical staff fastened to log across stream just below Skinner's barn; read by Mrs. W. J. Chester.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of rock overlain with sand and gravel. Control is rock crest of 8-foot falls; affected by growth of aquatic plants.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.53 feet at 5 p. m. April 13 (discharge, 138 second-feet); minimum discharge estimated at 11 second-feet from August 16 to 20 and from September 28 to 30.

1914–1918: Maximum stage recorded, 3.5 feet at 8 p. m. April 19, 1914 (discharge, determined from extension of rating curve, 292 second-feet); minimum stage, 1.20 feet March 24, April 1 and 2, and July 4 at 6 p. m. to July 7,1914 (minimum discharge determined by indirect method for shifting control, 7 second-feet on July 5, 6, and 7, 1914).

ICE.—Stage-discharge relation not affected by ice on account of warm springs.

DIVERSIONS.—One small diversion above station and one below.

REGULATION.—No artificial regulation.

ACCURACY.—Stage-discharge relation affected by growth of aquatic plants. Standard rating curve fairly well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table from October 26 to May 14; shifting-control method used during remainder of year. Records fair during summer; good for remainder of year.

Discharge measurements of Little Blackfoot River at Henry, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 12	T. R. Newell	1.52	21.0	May 29	R. B. Kilgore	1.95	34.0
Mar. 7	C. F. Elford	1.28	14.3	Aug. 6	G. C. Baldwin	1.64	16.2
Apr. 19	do	1.45	24.6				

Daily discharge, in second-feet, of Little Blackfoot River at Henry, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	17	19	22	16	15	14	26	26	25	23	18	13
2	18	19	22	16	14	14	26	30	25	23	18	14
3	18	19	21	16	14	14	25	33	25	25	18	14
4	17	19	20	16	14	14	23	36	25	25	18	14
5	16	19	20	16	14	14	22	37	25	24	17	14
6	17	19	20	16	14	14	21	36	25	23	16	14
7	18	19	20	16	14	14	20	35	25	23	16	14
8	18	19	20	16	13	14	22	35	24	22	16	15
9	19	19	19	16	14	14	37	37	24	22	16	15
10	19	19	18	16	14	14	49	40	25	22	14	14
11	19	19	18	16	14	14	52	41	24	21	14	14
12	20	20	18	16	14	14	105	35	24	22	14	12
13	20	19	18	14	14	14	136	35	23	22	13	12
14	19	19	16	14	14	14	62	35	23	22	13	12
15	17	19	16	14	14	14	45	35	27	20	13	12
16	16	19	16	14	14	14	33	34	27	20	11	13
17	16	20	16	14	14	14	27	36	28	22	11	13
18	17	20	16	14	14	14	26	41	28	21	11	12
19	17	20	16	14	14	14	25	38	28	21	11	13
20	18	20	16	14	14	14	28	31	28	21	11	13
21	18	20	16	14	13	14	30	30	28	21	13	12
22	19	20	16	14	13	14	30	28	28	18	13	12
23	19	20	16	14	14	14	28	28	25	18	14	13
24	20	20	16	14	14	14	25	28	25	17	13	12
25	20	21	16	14	14	14	27	28	25	19	13	12
26	21	21	16	14	14	14	28	28	23	21	13	12
27	20	21	16	14	14	16	28	28	25	17	13	12
28	20	21	16	14	14	19	28	37	24	17	14	11
29	20	21	16	16	.....	21	28	33	23	18	14	11
30	19	22	18	14	.....	20	28	28	24	17	14	11
31	19	.....	18	14	.....	21	.....	28	.....	17	14	.....

Monthly discharge of Little Blackfoot River at Henry, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	21	16	18.4	1,130
November	22	19	19.7	1,170
December	22	16	17.7	1,090
January	16	14	14.8	910
February	15	13	13.9	772
March	21	14	14.9	916
April	136	20	36.3	2,160
May	41	26	33.2	2,040
June	28	23	25.3	1,510
July	25	17	20.8	1,280
August	18	11	14.1	867
September	15	11	12.8	762
The year	136	11	20.2	14,600

MEADOW CREEK NEAR HENRY, IDAHO.

LOCATION.—In sec. 3, T. 6 S., R. 42 E., half a mile above flow line of Blackfoot-Marsh reservoir, three-quarters of a mile below Goose Lake or Pelican Slough, and 1½ miles northeast of Henry, Bannock County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 17, 1914, to September 30, 1918.

GAGE.—Stevens water-stage recorder installed June 27, 1914, on left bank, referred to vertical staff at same location and datum.

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

CHANNEL AND CONTROL.—Bed composed of rock and gravel; somewhat shifting. No well-defined control. At high stages partial control may be heavy growth of brush on banks.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 3.40 feet at 3 p. m., April 17 (discharge, 114 second-feet); minimum stage, 1.20 feet at 2 a. m. September 11 (discharge, about 3 second-feet).

1914–1918: Maximum stage recorded, 4.81 feet May 17, 1917 (discharge, 424 second-feet); minimum stage, 1.06 feet July 17, 1916 (discharge, about 0.4 second-foot).

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

DIVERSIONS.—None above gage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent. Two fairly well defined rating curves used, one October 1 to November 15, April 17 to May 25, and July 2 to September 30, the other from May 30 to June 25. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph and by indirect method for shifting control. Records fair.

Discharge measurements of Meadow Creek near Henry, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 21	T. R. Newell	1.93	16.6	May 30	R. B. Kilgore	2.79	51.0
Apr. 18	C. F. Elford	3.24	95.5	Aug. 7	G. C. Baldwin	1.74	12.1

Daily discharge, in second-feet, of Meadow Creek near Henry, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Apr.	May.	June.	July.	Aug.	Sept.
1	14	17	.....	77	46	8	12	9
2	14	18	.....	75	42	8	13	9
3	14	18	.....	71	38	8	12	9
4	14	18	.....	70	34	8	12	8
5	14	18	.....	68	32	7	12	8
6	14	18	.....	67	29	7	12	8
7	14	18	.....	64	27	7	12	9
8	15	18	.....	62	25	6	12	9
9	15	18	.....	60	23	7	12	9
10	16	18	.....	60	21	8	12	5
11	16	18	.....	62	18	8	12	5
12	17	18	.....	61	16	9	12	5
13	17	18	.....	56	14	10	11	6
14	17	18	.....	51	13	13	12	6
15	17	19	.....	49	12	13	13	5
16	17	.....	.....	47	11	12	14	6
17	17	.....	110	47	10	12	14	5
18	17	.....	96	47	11	12	14	5
19	17	.....	89	47	11	12	13	5
20	18	.....	83	47	11	19	13	6
21	17	.....	79	45	11	20	12	6
22	17	.....	79	42	12	16	12	6
23	17	.....	89	40	11	14	12	7
24	17	.....	100	40	12	12	11	7
25	18	.....	106	39	12	12	11	7
26	18	.....	108	40	12	12	11	7
27	17	.....	107	40	11	12	11	7
28	17	.....	100	46	10	12	10	7
29	17	.....	89	51	8	12	9	7
30	17	.....	81	51	8	12	9	7
31	17	.....	.....	48	.....	11	9	.....

Monthly discharge of Meadow Creek near Henry, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	18	14	16.2	996
November 1-15	19	17	18.0	536
April 17-30	110	79	94.0	2,610
May	77	39	53.9	3,310
June	46	8	18.4	1,090
July	20	6	10.9	670
August	14	9	11.8	726
September	9	5	6.8	406

IDAHO (GOVERNMENT) CANAL NEAR FIRTH, IDAHO.

LOCATION.—In sec. 13, T. 2 S., R. 36 E., Bingham County, 100 feet above double metal flume by which canal crosses Eastern Idaho Slough, one-fourth of a mile below nearest highway bridge, 1½ miles below point where Sand Creek crosses canal, and about 5 miles southeast of Firth.

RECORDS AVAILABLE.—March 29, 1914, to September 30, 1918.

GAGE.—Friez water-stage recorder on left bank; inspected by J. A. Vaughn.

DISCHARGE MEASUREMENTS.—Made by wading or from one of the highway bridges above.

CHANNEL AND CONTROL.—Bed composed of silt, sand, and fine gravel; probably shifts slightly but flume heading just below furnishes a permanent control for high stages. Point of zero flow at about 0.5 to 0.6 foot gage height.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.45 feet in the morning September 6 (discharge, 430 second-feet); zero discharge reported March 22.

1914–1918: Maximum stage recorded, 5.45 feet in the morning September 6, 1918 (discharge, 430 second-feet); minimum discharge, no flow, on several dates.

ICE.—Stage-discharge relation seriously affected by ice. Data inadequate for determination of winter discharge.

DIVERSIONS.—None.

REGULATION.—Flow partly regulated by Snake River headgates, about 12 miles above, and partly by gates at the Sand Creek crossing, about 1½ miles above.

ACCURACY.—Stage-discharge relation not permanent. Standard rating curve well defined. Several parallel curves used. Operation of water-stage recorder satisfactory except for period of ice effect when the staff gage was read daily. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph, except as noted in footnote to table of daily discharge. Records good for periods for which daily discharge was computed.

Idaho (Government) canal diverts water from left bank of Snake River in sec. 31, T. 1 N., R. 37 E., and discharges into Blackfoot River in sec. 24, T. 2 S., R. 36 E. The canal receives water from Sand Creek just above this station.

Discharge measurements of Idaho (Government) canal near Firth, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 19	William Kessler	2.35	69.1	Apr. 15	C. F. Elford	3.29	180
21	do	2.25	64.7	16	do	3.23	169
Jan. 14	G. C. Baldwin	*a*.71	.05	May 19	Newell and Baldwin	2.37	81.9
Mar. 3	C. F. Elford	*a* 1.30	1.0	June 19	R. B. Kilgore	4.18	233
13	do	*a* 1.70	9.0	29	do	4.20	270

a Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Idaho (Government) canal near Firth, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	57	70	33	27	.....	29	227	239	245	216	257
2	69	55	.....	21	.....	30	227	245	245	216	269
3	69	53	.....	20	.....	21	227	251	263	245	299
4	54	56	.....	18	.....	30	233	222	281	281	335
5	35	38	.....	20	.....	45	239	178	257	263	311
6	33	19	.....	18	.....	53	239	156	239	227	411
7		21	.....	21	.....	48	239	150	263	194	398
8		16	.....	16	.....	36	205	156	257	216	398
9		19	.....	13	.....	36	205	188	251	233	372
10	37	19	.....	.....	.....	55	194	135	251	263	348
11		21	.....	.....	.....	92	183	70	257	245	324
12		26	2	.....	.....	117	188	178	281	233	299
13	41	28	12	.....	.....	127	172	188	281	227	275
14	43	20	50	.....	.....	144	161	205	323	205	251
15	43	22	19	.....	.....	168	150	210	347	269	275
16	42	22	32	.....	.....	169	129	215	347	347	269
17	48	24	39	.....	.....	154	123	229	275	311	239
18	54	18	33	.....	11	138	97	224	269	299	233
19	66	24	26	.....	14	113	80	229	227	257	188
20	67	25	20	.....	7	103	87	265	188	227	188
21	65	22	24	.....	23	116	60	308	200	222	233
22	67	17	18	.....	0	135	54	353	166	251	222
23	61	22	14	.....	21	161	82	372	188	275	227
24	49	28	15	.....	21	183	145	398	210	257	239
25	51	27	15	.....	24	205	205	353	194	251	257
26	51	28	16	.....	21	233	293	275	194	239	257
27	46	27	19	.....	36	243	287	263	194	216	257
28	64	30	20	.....	29	257	257	305	227	194	257
29	75	30	18	.....	34	257	239	293	251	205	257
30	70	30	20	.....	34	233	227	257	216	269	257
31	70	.....	27	.....	115	.....	227	.....	216	239	.....

NOTE.—Discharge, Oct. 7–12, Oct. 30 to Nov. 2 and Mar. 31 to Apr. 5, estimated. Stage-discharge relation affected by ice Dec. 2–11; Jan. 10 to Mar. 17; discharge, Dec. 2–11, estimated from observer's notes and temperature record at 12 second-feet. Data inadequate for determination of discharge Jan. 10 to Mar. 17 except for days when current-meter measurements were made. Sept. 10–13 interpolated.

Monthly discharge of Idaho (Government) canal near Firth, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	75	.....	52.0	3,200
November	70	16	28.6	1,700
December	50	2	19.1	1,170
January 1–9	27	13	19.3	345
March 18–31	115	0	27.9	775
April	257	21	124	7,380
May	293	54	183	11,300
June	398	70	237	14,100
July	347	166	245	15,100
August	347	194	245	15,100
September	411	188	280	16,700

SAND CREEK NEAR FIRTH, IDAHO.

LOCATION.—In T. 2 S., R. 37 E., Bingham County, 400 feet downstream from point where Idaho (Government) canal crosses creek and 4 miles east of Firth.

RECORDS AVAILABLE.—December 21, 1916, to September 30, 1918.

GAGE.—Vertical staff on left bank on upstream side of highway bridge; read by J. A. Vaughn. Prior to May 17, 1917, vertical staff on left bank, 300 feet upstream.

DISCHARGE MEASUREMENTS.—Made by wading, from highway bridge, or from small flume crossing creek 50 feet downstream.

CHANNEL AND CONTROL.—Bed composed of silt, sand, and fine gravel; probably not permanent. Banks clean but subject to overflow at high stages. Point of zero flow, about 0.8 foot gage height.

EXTREMES OF DISCHARGE.—1916–1918: Maximum stage recorded, 3.95 feet at 11.30 a. m. July 15, 1918 (discharge, 288 second-feet); minimum flow zero on numerous dates when headgates were closed.

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

DIVERSIONS.—None below Idaho (Government) canal crossing and above the station.

REGULATION.—The Idaho (Government) canal has been constructed directly across the channel of the creek above the station. The canal receives the entire flow of the creek as tributary and regulates the flow returned to creek channel below by means of headgates. Above this point numerous canal systems utilize the creek channel as a waste ditch.

ACCURACY.—Stage-discharge relation not permanent. Rating curve well defined for open-water conditions; parallel curve used. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table or by shifting-control method. Records fair.

Discharge measurements of Sand Creek near Firth, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 21	William Kessler	2.04	76.5	May 19	Baldwin and Newell	2.49	132
Jan. 14	G. C. Baldwin	[a] 2.42	43.0	June 19	R. B. Kilgore	.85	3.0
Mar. 3	C. F. Elford	[a] 2.12	25.2	21	do	2.35	121
13	do	[a] 2.70	48.4	29	do	3.20	204
Apr. 15	do	2.85	185	Aug. 15	G. C. Baldwin	2.33	113
16	do	2.78	179				

[a] Stage-discharge relation affected by ice.

Daily discharge, in second-feet, of Sand Creek near Firth, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	100	63	92	68	.....	116	213	213	102	0	8
2	100	71	92	81	.....	120	209	205	113	0	11
3	98	68	94	72	25	134	219	203	112	0	12
4	81	70	90	90	.....	130	213	202	147	39	15
5	81	63	90	94	.....	120	208	194	183	183	14
6	89	81	92	81	.....	117	206	183	183	157	40
7	81	81	72	72	.....	117	203	183	112	142	132
8	89	74	72	70	.....	102	196	122	147	33	132
9	95	81	90	68	.....	126	195	109	129	8	183
10	91	83	88	.....	.....	120	191	102	249	6	172
11	89	86	68	.....	.....	135	188	0	216	112	162
12	90	86	63	.....	.....	141	187	0	222	112	162
13	93	86	90	.....	48	173	186	0	218	110	167
14	90	78	94	43	.....	185	182	0	264	102	167
15	90	81	92	.....	.....	186	175	0	288	132	162
16	89	83	90	.....	.....	178	132	2	266	184	160
17	85	86	85	.....	.....	170	132	26	216	216	122
18	72	86	85	.....	.....	153	131	40	238	205	122
19	75	100	65	.....	.....	150	131	1	183	183	102
20	72	86	67	.....	.....	152	142	1	83	174	11
21	74	91	67	.....	86	155	105	74	78	122	8
22	75	90	65	.....	88	195	102	142	65	122	8
23	75	89	67	.....	86	203	88	275	26	132	8
24	72	89	68	.....	95	236	14	282	11	129	9
25	70	88	72	.....	100	258	0	249	10	132	10
26	70	92	70	.....	100	259	122	216	10	134	14
27	76	89	70	.....	100	261	278	92	8	132	14
28	81	86	67	.....	105	263	253	127	14	112	11
29	71	88	65	.....	105	261	234	220	0	122	10
30	72	92	67	.....	112	259	225	146	0	117	10
31	63	.....	68	.....	25	.....	219	.....	0	112	.....

NOTE.—Stage-discharge relation affected by ice Jan. 10 to Mar. 20; discharge estimated from observer's notes, temperature record, and 3 current-meter measurements, as follows: Jan. 10–13, 42 second-feet; Jan. 15–31, 30 second-feet; Feb. 1–28, 26 second-feet; Mar. 1–2, 22 second-feet; Mar. 4–12, 31 second-feet; and Mar. 14–20, 65 second-feet.

Monthly discharge of Sand Creek near Firth, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	100	63	82.2	5,050
November	100	63	82.9	4,930
December	94	63	78.0	4,800
January	94	.....	45.7	2,810
February	.....	.....	26.0	1,440
March	112	.....	59.8	3,680
April	263	102	172	10,200
May	278	0	170	10,500
June	282	0	120	7,140
July	288	0	126	7,750
August	216	0	112	6,890
September	183	8	71.9	4,280
The year	288	0	96.0	69,500

FORT HALL UPPER CANAL NEAR BLACKFOOT, IDAHO.

LOCATION.—In sec. 13, T. 3 S., R. 35 E., Bingham County, 500 feet below headgates and 3½ miles southeast of Blackfoot.

RECORDS AVAILABLE.—May 8, 1912, to September 30, 1918.

GAGE.—Vertical staff in stilling well on right bank and sloping gage painted on right side about midway of concrete rating section. Bristol water-stage recorder used during 1912 and parts of 1913 and 1914. All gages set to same datum and at practically same site. Gage read by ditch rider and gate tender.

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

CHANNEL AND CONTROL.—Concrete trapezoidal rating section.

EXTREMES OF DISCHARGE.—1912–1918: Maximum stage recorded, 4.90 feet at 7 a. m. July 14, 1918 (discharge, 431 second-feet); minimum flow occurs during winter, when a very small quantity of water is run for stock.

ICE.—Observations discontinued during winter.

DIVERSIONS.—None above station or for several miles below.

REGULATION.—Flow regulated at headgates 500 feet above.

ACCURACY.—Stage-discharge relation changed during winter. Rating curve well defined both before and after change for open-channel conditions. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Fort Hall upper canal diverts water from left bank of Blackfoot River in sec. 12, T. 3 S., R. 35 E. Water is used for irrigation on Fort Hall Indian Reservation.

Discharge measurements of Fort Hall upper canal near Blackfoot, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Oct. 22	William Kessler	0.25	0.1
May 20	T. R. Newell	3.50	264
June 16	R. B. Kilgore	4.73	410

Daily discharge, in second-feet, of Fort Hall upper canal near Blackfoot, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	May.	June.	July.	Aug	Sept.	Day.	Oct.	May.	June.	July.	Aug.	Sept.
1	121	.....	310	406	424	352	16	121	262	408	418	370	3
2	126	.....	310	404	425	352	17	126	250	408	411	322	74
3	121	.....	322	396	424	360	18	131	248	396	406	334	150
4	121	.....	316	400	424	336	19	141	256	402	406	329	178
5	121	.....	322	405	416	344	20	48	262	408	400	322	192
6	116	159	332	410	418	344	21	.....	272	411	406	324	210
7	116	174	340	416	412	334	22	.....	272	408	406	312	192
8	118	183	346	419	416	324	23	.....	284	411	408	299	163
9	98	178	352	418	394	328	24	.....	296	411	413	296	152
10	89	181	358	419	382	322	25	.....	304	412	411	310	150
11	87	172	310	418	364	300	26	.....	310	408	413	340	150
12	126	194	372	420	357	276	27	.....	308	404	418	347	178
13	111	218	380	418	348	262	28	.....	310	408	418	334	174
14	96	238	388	425	348	136	29	.....	308	411	419	346	178
15	106	244	399	420	360	5	30	.....	310	406	420	353	181
							31	.....	310	.....	424	356	.....

NOTE.—Discharge Oct. 8–10 estimated on basis of gage heights furnished by C. H. Southworth, U. S. Indian Service engineer.

Monthly discharge of Fort Hall upper canal near Blackfoot, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October 1–20	141	48	112	4,440
May 6–31	310	159	250	12,900
June	412	310	376	22,400
July	425	396	413	25,400
August	425	296	361	22,200
September	360	3	223	13,300

FORT HALL LOWER CANAL NEAR BLACKFOOT, IDAHO.

LOCATION.—In sec. 15, T. 3 S., R. 35 E., Bingham County, 200 feet below ford where road to headgates half a mile above crosses canal and 2½ miles southeast of Blackfoot.

RECORDS AVAILABLE.—May 15, 1912, to September 30, 1918.

GAGE.—Inclined staff on right bank near center of concrete rating station; read by ditch rider for the United States Indian Service. Bristol water-stage recorder at same site, referred to a datum 1.53 feet lower than that of staff gage, was used from 1912 to 1914.

DISCHARGE MEASUREMENTS.—Made from suspension footbridge at gage.

CHANNEL AND CONTROL.—Channel at gage is trapezoidal concrete rating section, at sides of which sand and silt have been deposited. Principal control is a wooden check across the canal about a third of a mile below gage. Variations in amount of water carried in a large lateral that diverts between the gage and the check and the growth of moss and weeds in the canal caused several changes in the stage-discharge relation during the season.

EXTREMES OF DISCHARGE.—1912–1918: Maximum discharge, 268 second-feet August 5, 9, and 10, 1918. Canal reported dry on numerous days.

ICE.—No records obtained during winter. Small quantities of water are run at times for use of stock, but during most of the winter the headgates are closed.

DIVERSIONS.—None above gage; one large and one small lateral divert between the gage and the check that acts as the main control.

REGULATION.—Flow regulated at the headgates half a mile above gage.

ACCURACY.—Stage-discharge relation not permanent; affected by variation in quantity of water diverted immediately below gage, by variable conditions at the control, and by growth of aquatic vegetation. Standard rating curve fairly well defined; several parallel curves used. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table, or by shifting-control method. Records good.

Discharge measurements of Fort Hall lower canal near Blackfoot, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 22	William Kessler	1.10	7.2	June 28	R. B. Kilgore	2.90	195
May 20	T. R. Newell	2.41	117	Aug. 5	G. C. Baldwin	3.28	254
June 18	R. B. Kilgore	2.83	175	Sept. 11	.....do	2.90	204

Daily discharge, in second-feet, of Fort Hall lower canal near Blackfoot, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	May.	June.	July.	Aug.	Sept.	Day.	Oct.	May.	June.	July.	Aug.	Sept.
1	107	.....	156	212	232	180	16	36	108	188	189	262	149
2	107	.....	154	202	254	177	17	34	124	210	188	246	147
3	87	.....	151	218	254	180	18	30	126	175	181	202	147
4	62	.....	146	196	262	182	19	30	126	199	180	196	144
5	50	.....	134	190	261	185	20	20	118	225	178	195	146
6	50	.....	132	190	252	195	21	12	121	236	183	194	144
7	50	84	150	190	248	206	22	8	114	242	104	182	144
8	50	86	168	196	234	205	23	.....	106	255	73	171	142
9	50	86	174	198	262	206	24	.....	138	233	71	168	144
10	50	63	156	196	254	205	25	.....	151	196	68	168	127
11	50	37	115	196	256	204	26	.....	154	194	121	163	124
12	50	37	152	196	251	206	27	.....	167	196	175	137	127
13	50	41	170	202	240	204	28	.....	164	204	174	171	127
14	38	72	181	202	243	193	29	.....	162	217	196	158	124
15	36	111	192	205	248	149	30	.....	159	212	182	177	124
							31	.....	156	.....	225	182	.....

Monthly discharge of Fort Hall lower canal near Blackfoot, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October 1–22	107	8	48	2,090
May 7–31	167	37	112	5,550
June	255	115	184	10,900
July	225	68	177	10,900
August	262	137	217	13,300
September	206	124	165	9,820

PORTNEUF RIVER AT POCATELLO, IDAHO.

LOCATION.—In sec. 27, T. 6 S., R. 34 E., 90 feet above old slaughter-house bridge at foot of Carson Street, in Pocatello, Bannock County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—August 31, 1911, to September 30, 1918. For station 1 mile upstream, May 18, 1897, to October 14, 1899.

GAGE.—Vertical staff on left bank just below highway bridge; read by W. S. Hutson. Gage used from 1897 to 1899 was vertical staff fastened to pier of wagon bridge one-eighth mile below plant of Pocatello Electric Light Co.

DISCHARGE MEASUREMENTS.—Made by wading or from upstream side of old slaughter-house bridge.

CHANNEL AND CONTROL.—Bed composed of rocks and boulders; shifts between narrow limits. No well-defined control. Left bank subject to overflow at extremely high water.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.65 feet at 8 a. m. March 28 (discharge, 579 second-feet); minimum stage recorded, 2.25 feet August 4–6, 8–10, 12, and 14 (discharge, 80 second-feet).

1911–1918: Maximum stage recorded, 7.8 feet May 30, 1917 (discharge in excess of 2,000 second-feet during period from May 13 to June 14, when left bank was overflowed); minimum stage recorded, 2.0 feet July 4, 1915 (discharge, 52 second-feet).

1897–1899: Maximum stage recorded, 12.80 feet May 18, 1897 (discharge, 1,880 second-feet); minimum stage recorded, 6.10 feet July 4–11, 13, and 17–18, 1898 (discharge, 14 second-feet).

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

DIVERSIONS.—Numerous diversions above station. The largest single diversion is canal of Portneuf-Marsh Valley Canal Co. which irrigates land near Downey.

REGULATION.—None below head of Portneuf-Marsh Valley Canal Co.'s canal. Storage reservoir of company near Chesterfield has capacity of about 28,000 acre-feet.

ACCURACY.—Stage-discharge relation shifted slightly; affected by ice during winter. Rating curves well defined. Gage read to quarter-tenths three times weekly, except during June and July when daily readings were obtained. Daily discharge ascertained by applying daily gage height to rating table and interpolating for days of no gage height. Records good.

Discharge measurements of Portneuf River at Pocatello, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Mar. 6	C. F. Elford	3.70	339
May 24	Kilgore and Baldwin	2.88	169
Sept. 11	G. C. Baldwin	2.72	142

Daily discharge, in second-feet, of Portneuf River at Pocatello, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	288	329	351	351		313	554	454	280	181	85	110
2	288	329	351	351		313	545	446	270	181	85	110
3	288	329	351	351	290	335	535	437	260	181	85	110
4	288	329	351	351		335	526	429	249	172	80	110
5	288	329	351	351		335	516	405	249	172	80	110
6	288	329	351	351	358	335	507	389	229	172	80	117
7	288	329	351	351	358	335	507	374	209	164	80	124
8	288	329	351	351	358	335	516	358	200	164	80	132
9	288	329	329	351	358	335	526	343	190	139	80	139
10	288	329	329	330	358	358	535	328	181	132	80	139
11	288	329	329	309	358	374	535	313	172	132	80	139
12	298	329	329	288	358	389	535	313	164	132	80	139
13	308	329	329		358	405	535	292	147	139	80	139
14	308	329	329		358	439	564	270	132	155	80	139
15	308	329	329		358	473	554	249	124	164	118	147
				300								
16	308	329	329		358	507	545	239	117	172	155	147
17	308	329	329		358	507	535	229	110	164	140	147
18	308	351	329		358	507	517	222	110	155	125	155
19	308	351	329	308	358	521	498	216	110	147	110	181
20	308	351	329	308	358	535	480	209	124	139	110	186
21	311	351	329	308	350	550	480	200	139	132	110	190
22	313	351	329	308	343	564	471	190	190	124	110	190
23	316	351	329	308	335	564	463	181	310	124	110	195
24	318	351	329	308	313	564	454	172	429	117	110	200
25	321	351	329	308	313	564	454	190	381	117	110	200
26	324	351	329	308	313	564	454	225	291	110	110	200
27	326	351	336	308	313	564	454	260	249	104	110	210
28	329	351	344	308	313	564	454	291	229	97	110	219
29	329	351	351	308	.....	564	454	291	209	97	110	239
30	329	351	351	308	.....	564	454	280	190	91	110	239
31	329	.....	351	308	.....	564	.....	280	.....	85	110	.....

NOTE.—Braced figures show mean discharge for periods indicated; estimated because of ice.

Monthly discharge of Portneuf River at Pocatello, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	329	288	306	18,800
November	351	329	339	20,200
December	351	329	338	20,800
January	351	.....	319	19,600
February	358	.....	336	18,700
March	564	313	457	28,100
April	564	454	505	30,000
May	454	172	293	18,000
June	429	110	208	12,400
July	181	85	140	8,610
August	155	80	100	6,150
September	239	110	160	9,520
The year	564	80	291	211,000

NORTH SIDE MINIDOKA CANAL NEAR MINIDOKA, IDAHO.

LOCATION.—In sec. 1, T. 9 S., R. 25 E., 650 feet below Minidoka dam and 6 miles south of Minidoka, Minidoka County.

RECORDS AVAILABLE.—May 1, 1909, to September 30, 1918.

GAGE.—Friez water-stage recorder on left bank, 300 feet below site of gage used prior to October 31, 1914; inspected by employees of United States Reclamation Service.

DISCHARGE MEASUREMENTS.—Made from suspension footbridge a few feet above present gage.

CHANNEL AND CONTROL.—Rock cut; practically permanent but rough.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 9.35 feet on April 30, May 5 and 6 (discharge, 1,500 second-feet). No flow at various times when headgates were closed.

1909–1918: Maximum stage recorded, 9.44 feet May 20, 1914 (discharge, 1,520 second-feet); no flow at various times when headgates were closed.

ICE.—Observations discontinued during winter.

DIVERSIONS.—None above station and none close enough below to affect stage-discharge relation.

REGULATION.—Flow controlled by headgates at Minidoka dam.

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

COOPERATION.—Records furnished by United States Reclamation Service.

North Side Minidoka canal diverts from the right bank of Snake River in sec. 1, T. 9 S., R. 25 E. Water is used for irrigating the North Side Minidoka project of the United States Reclamation Service. Project has about 20 miles of main canal and about 260 miles of laterals.

Discharge measurements of North Side Minidoka canal near Minidoka, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Apr. 19	Hugh Crawford	7.40	1,030	Aug. 17	Crawford and Anderson	7.95	1,140
30	Crawford and Anderson	9.30	1,500	Sept. 17	.....do	6.06	711
June 29	.....do	8.33	1,260	27	E. P. Anderson	6.05	693
July 13	.....do	9.30	1,490				

NOTE.—Measurements made by employees of U. S. Reclamation Service.

Daily discharge, in second-feet, of North Side Minidoka canal near Minidoka, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	557	.....	215	1,490	1,490	1,250	1,490	1,340
2	540	.....	215	1,490	1,490	1,340	1,490	1,360
3	514	.....	256	1,490	1,490	1,370	1,480	1,340
4	523	.....	455	1,490	1,490	1,370	1,480	1,330
5	532	.....	575	1,500	1,490	1,410	1,340	1,340
6	523	.....	575	1,500	1,490	1,480	1,290	1,340
7	523	.....	575	1,490	1,490	1,490	1,290	1,340
8	506	.....	584	1,490	1,490	1,490	1,300	1,360
9	322	.....	647	1,490	1,490	1,490	1,140	1,280
10	.....	.....	723	1,490	1,490	1,490	1,080	1,020
11	.....	.....	879	1,490	1,480	1,490	1,080	970
12	.....	.....	1,030	1,490	1,490	1,490	1,080	958
13	.....	.....	1,020	1,490	1,490	1,490	1,160	970
14	.....	.....	1,020	1,490	1,490	1,490	1,180	804
15	.....	.....	1,030	1,490	1,490	1,490	1,160	723
16	.....	.....	1,020	1,490	1,490	1,490	1,150	714
17	.....	.....	1,020	1,490	1,490	1,490	1,150	714
18	.....	.....	1,020	1,490	1,490	1,480	1,200	714
19	.....	.....	1,000	1,490	1,490	1,490	1,210	723
20	.....	.....	1,000	1,490	1,490	1,490	1,200	714
21	.....	.....	1,000	1,490	1,490	1,490	1,210	723
22	.....	.....	1,080	1,490	1,490	1,490	1,200	723
23	.....	.....	1,150	1,490	1,490	1,490	1,210	714
24	.....	.....	1,150	1,480	1,460	1,490	1,200	723
25	.....	.....	1,230	1,490	1,320	1,490	1,210	723
26	.....	.....	1,320	1,490	1,150	1,480	1,200	714
27	.....	.....	1,370	1,490	1,150	1,410	1,200	714
28	.....	.....	1,450	1,490	1,200	1,340	1,230	714
29	.....	134	1,490	1,490	1,230	1,360	1,270	694
30	.....	215	1,500	1,480	1,210	1,360	1,320	685
31	.....	215	.....	1,460	.....	1,380	1,360	.....

Monthly discharge of North Side Minidoka canal near Minidoka, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October 1–9	557	322	504	9,000
March 29–31	215	134	188	1,120
April	1,500	215	920	54,700
May	1,500	1,460	1,490	91,600
June	1,490	1,150	1,430	85,100
July	1,490	1,250	1,450	89,200
August	1,490	1,080	1,240	76,200
September	1,360	685	939	55,900

SOUTH SIDE MINIDOKA CANAL NEAR MINIDOKA, IDAHO.

LOCATION.—In sec. 12, T. 9 S., R. 25 E., Cassia County, 300 yards below headgates at Minidoka dam and 6 miles south of Minidoka.

RECORDS AVAILABLE.—April 21, 1909, to September 30, 1918.

GAGE.—Friez water-stage recorder on right bank; inspected by employees of United States Reclamation Service. Prior to irrigation season of 1910 gage was 200 or 300 feet upstream. Datum unchanged since spring of 1910.

DISCHARGE MEASUREMENTS.—Made from suspension footbridge a few feet above gage.

CHANNEL AND CONTROL.—Canal section is in earth; may shift. Stage-discharge relation affected by growth of aquatic plants.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.60 feet July 21 and 22 (discharge, 1,060 second-feet); probably no flow during period of no record. 1909–1918: Maximum discharge, 1,060 second-feet July 21 and 22, 1918; minimum discharge as above stated.

ICE.—No records obtained during winter.

DIVERSIONS.—None above gage.

REGULATION.—Flow controlled by headgates at Minidoka dam.

ACCURACY.—Stage-discharge relation not permanent. Standard rating curve well defined; several parallel curves used. Operation of water-stage recorder satisfactory. Mean daily gage height obtained by inspecting recorder graph. Daily discharge ascertained by applying mean daily gage height to rating table or by shifting-control method. Records good.

South Side Minidoka canal diverts from the left bank of Snake River in sec. 1, T. 9 S., R. 25 E. Water is used for irrigating the South Side Minidoka project of the United States Reclamation Service. Project has about 13 miles of main canal and about 20 miles of laterals.

Discharge measurements of South Side Minidoka canal near Minidoka, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Apr. 20	Hugh Crawford	1.82	211	Aug. 9	Crawford and Anderson	5.36	922
May 3	Crawford and Anderson	4.63	792	22	do	4.71	732
June 29	do	4.70	796	Sept. 17	do	3.98	524
July 13	do	5.54	1,030	27	E. P. Anderson	3.88	532
20	do	5.59	1,080				

NOTE.—Measurements made by employees of U. S. Reclamation Service.

Daily discharge, in second-feet, of South Side Minidoka canal near Minidoka, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Apr.	May.	June.	July.	Aug.	Sept.
1	409	.....	574	877	794	992	939
2	399	.....	661	877	807	989	939
3	386	.....	780	919	948	986	951
4	378	.....	849	934	977	980	951
5	371	.....	891	962	962	948	951
6	378	.....	934	992	977	931	962
7	380	.....	962	1,010	992	925	962
8	386	.....	962	1,020	1,010	922	931
9	388	.....	934	1,020	1,020	919	888
10	386	.....	934	1,040	1,040	902	818
11	384	.....	934	1,040	1,040	874	802
12	382	.....	919	1,050	1,040	846	775
13	380	.....	905	1,050	1,040	846	695
14	375	.....	877	1,050	1,040	843	603
15	369	.....	821	1,040	1,040	843	591
16	366	.....	835	1,010	1,040	829	567
17	360	.....	835	1,020	1,050	802	541
18	353	.....	821	1,020	1,050	785	532
19	351	.....	753	1,020	1,050	718	536
20	344	210	753	1,010	1,050	679	527
21	.....	210	740	992	1,060	745	529
22	.....	208	753	992	1,060	729	532
23	.....	207	821	977	1,050	740	525
24	.....	210	835	934	1,050	740	527
25	.....	224	835	934	1,050	740	529
26	.....	280	835	919	530	764	522
27	.....	294	821	877	824	804	502
28	.....	313	766	863	992	860	429
29	.....	353	794	807	1,000	885	401
30	.....	429	821	807	997	913	384
31	.....	.....	877	.....	994	928	.....

Monthly discharge of South Side Minidoka canal near Minidoka, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October 1–20	409	344	376	14,900
April 20–30	429	207	267	5,830
May	962	574	833	51,200
June	1,050	807	969	57,700
July	1,060	530	986	60,600
August	992	679	852	52,400
September	962	384	678	40,300

NORTH SIDE TWIN FALLS CANAL AT MILNER, IDAHO.

LOCATION.—In sec. 20, T. 10 S., R. 21 E., Jerome County, at highway bridge half a mile north of Milner post office and three-fourths mile below headgates at Milner dam.

RECORDS AVAILABLE.—May 10, 1909, to September 30, 1918.

GAGE.—Vertical staff attached to downstream side of bridge near left bank; read by F. W. Deming October 1, 1917, to March 31, 1918; from April 1, 1918, Stevens 8-day water-stage recorder at slightly different site and datum. Datum of bridge gage unchanged since establishment of station. A slide gage installed on bridge in 1911 and set to read same as staff gage was discontinued in 1913. A Lietz water-stage recorder which was installed in 1912 in a shelter over the staff gage, never operated entirely satisfactorily and was abandoned in 1913. New datum used after April 1, 1918.

DISCHARGE MEASUREMENTS.—Made from cable 150 feet below gage.

CHANNEL AND CONTROL.—Channel is a permanent concrete-lined section. Moss growth is heavy during summer and stage-discharge relation is seriously affected. Control apparently indeterminate.

EXTREMES OF DISCHARGE.—Maximum stage recorded during the year, 8.34 feet at 8 p. m. July 16 (discharge, 2,970 second-feet); canal dry October 21 to November 5, and for a few hours on other days.

1909–1918: Maximum and minimum stages as noted above.

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

DIVERSIONS.—None between gage and headgates and none for some distance below. Surplus water may be discharged into river through waste gates about 200 feet below head of canal.

REGULATION.—Flow regulated by head and waste gates.

ACCURACY.—Stage-discharge relation not permanent, changes being due largely to growth of aquatic plants. Standard rating curve well defined; several parallel curves used. Staff gage read to half-tenths once daily October 1 to March 31; September 8–13 and 22–30; operation of water-stage recorder satisfactory for remainder of year. Daily discharge ascertained by applying to rating table mean daily gage height obtained from staff reading or by inspecting recorder graph. Discharge also ascertained by shifting-control method. Records for periods in which water-stage recorder operated, excellent; other records fair.

COOPERATION.—Some discharge measurements furnished by State engineer of Idaho. Gage-height record and some measurements furnished by Twin Falls North Side Land & Water Co.

The North Side Twin Falls canal diverts water from the north side of Snake River at the Milner dam and furnishes water for stock and irrigation for about 240,000 acres in Minidoka, Lincoln, and Gooding counties. The distribution system comprises about 100 miles of main canal and 625 miles of laterals.

Discharge measurements of North Side Twin Falls canal at Milner, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Apr. 11	Finkelnburg and McConnel	5.32	1,560	July 9	Crandall and Adams	8.23	2,920
29	E. A. Finkelnburg	7.43	2,410	24	R. M. Adams	8.21	2,890
May 15	Burdick and McConnel	7.95	2,530	30	Baldwin and McConnel	7.79	2,680
16	L. T. Burdick	7.96	2,520	Aug. 12	R. M. Adams	8.25	2,930
17	McConnel and Burdick	7.97	2,720	19	McConnel and Adams	8.02	2,810
29	L. T. Burdick	7.90	2,380	19	do	8.03	2,800
30	Crandall and Burdick	8.02	2,400	Sept. 19	R. M. Adams	8.22	2,630
June 1	do	8.11	2,850	27	Baldwin and McConnel	7.11	2,160
8	L. T. Burdick	7.90	2,740	27	do	7.14	2,140
19	do	8.19	2,750				

NOTE.—Finkelnburg, Burdick, Crandall, and Adams, employees of Twin Falls North Side Land & Water Co. McConnel employee of State of Idaho.

Daily discharge, in second-feet, of North Side Twin Falls canal at Milner, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	291	0	291	811	548	480	1,300	2,500	712	2,870	2,900	2,570
2	353	0	291	811	517	480	1,220	2,590	2,870	2,870	2,950	2,560
3	376	0	291	811	487	480	810	2,510	2,820	2,870	2,920	2,550
4	376	0	291	811	456	480	497	1,920	2,800	2,900	2,920	2,540
5	311	0	291	811	426	480	512	2,590	2,750	2,900	2,920	2,530
6	332	291	291	811	453	480	630	2,610	2,750	2,900	2,900	2,490
7	311	480	291	597	453	480	1,290	2,570	2,750	2,900	2,920	2,510
8	311	700	291	597	200	480	1,500	2,560	2,750	2,900	2,920	2,500
9	291	700	291	597	664	480	1,530	2,560	2,750	2,900	2,920	2,510
10	291	597	291	400	597	480	1,530	2,520	2,750	2,900	2,900	2,500
11	353	700	291	537	597	480	1,550	2,540	2,750	2,900	2,900	2,470
12	353	737	291	597	597	480	1,540	2,500	2,750	2,920	2,920	2,460
13	353	700	291	480	538	480	1,510	2,490	2,720	2,920	2,920	2,450
14	353	962	291	480	480	630	1,570	2,510	2,720	2,920	2,920	2,440
15	353	962	291	480	480	664	1,600	2,520	2,720	2,920	2,920	2,480
16	353	737	291	538	480	664	1,580	2,550	2,820	2,950	2,920	2,540
17	353	291	291	597	480	664	1,640	2,520	2,870	2,950	2,870	2,470
18	353	291	291	597	480	664	1,810	2,510	2,900	2,920	2,850	2,340
19	353	291	291	597	480	664	1,830	2,480	2,900	2,920	2,850	2,490
20	353	291	291	582	480	664	1,820	2,440	2,900	2,920	2,820	2,540
21	0	272	291	567	480	664	1,740	2,430	2,900	2,920	2,140	2,540
22	0	291	291	552	480	664	1,970	2,390	2,900	2,920	2,800	2,470
23	0	291	291	537	480	932	2,200	2,400	2,900	2,920	2,800	2,320
24	0	291	291	537	480	1,200	2,290	2,390	2,900	2,900	2,770	2,370
25	0	291	291	737	480	1,200	2,330	2,410	2,870	2,920	2,760	2,190
26	0	291	291	700	480	1,160	2,430	2,420	2,900	2,920	2,730	2,170
27	0	291	886	700	480	1,370	2,520	2,410	2,900	2,900	2,690	2,170
28	0	291	952	670	480	1,460	2,380	2,370	2,870	2,800	2,680	2,120
29	0	291	932	639	.....	1,500	2,350	2,410	2,900	2,670	2,650	2,000
30	0	291	962	609	.....	1,500	2,390	2,410	2,870	2,720	2,640	2,000
31	0	.....	811	578	.....	1,400	.....	602	.....	2,770	2,600	.....

NOTE.—Period Oct. 21 to Nov. 5 estimated at zero discharge. Discharge interpolated Jan. 16, 20-22, 24, Jan. 28 to Feb. 4, Feb. 13, Mar. 18, 23, and 31.

Monthly discharge of North Side Twin Falls canal at Milner, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	376	0	218	13,400
November	962	0	387	23,000
December	962	291	392	24,100
January	811	400	628	38,600
February	664	200	490	27,200
March	1,500	480	771	47,400
April	2,520	497	1,660	98,800
May	2,610	602	2,410	148,000
June	2,900	712	2,760	164,000
July	2,950	2,670	2,890	178,000
August	2,950	2,140	2,820	173,000
September	2,570	2,000	2,410	143,000
The year	2,950	0	1,490	1,080,000

SOUTH SIDE TWIN FALLS CANAL AT MILNER, IDAHO.

LOCATION.—In sec. 29, T. 10 S., R. 21 E., at wagon bridge one-eighth of a mile below headgates at Milner, in Twin Falls County.

RECORDS AVAILABLE.—May 10, 1909, to September 30, 1918.

GAGE.—Vertical staff in two sections, read by F. W. Deming and W. N. McConnel. The main or upper section of the gage is on the left bank of the canal about 100 feet upstream from the highway bridge, to the lower side of which the low-water section is fastened. This low-water section is the original gage, but on account of the difficulty in making readings accurately at high stage, the high-water section was installed early in the summer of 1912 and has since been used exclusively for stages above 5.3 feet. The two sections read practically the same, although the datum of the upstream section is about 0.1 foot higher than the other. A Friez water-stage recorder is installed opposite the upper staff gage; used April 5 to September 30, 1918.

DISCHARGE MEASUREMENTS.—Made from highway bridge and suspension bridge 150 feet upstream; also from cable.

CHANNEL AND CONTROL.—Channel at gage is blasted out of rock; practically permanent. Occasional slight changes in control are due to washing in and deposition of silt.

EXTREMES OF DISCHARGE.—Maximum discharge recorded during year, 4,600 second-feet August 12; minimum stage, 2.00 feet February 12 (discharge, 120 second-feet).

1909–1918: Maximum discharge as noted above; minimum stage recorded, 0.8 foot April 7, 1913 (discharge, 11 second-feet).

ICE.—Stage-discharge relation seldom affected by ice; open channel rating curve used throughout the year. Because of the close proximity of the gaging-station to the headgates, ice never forms in the immediate vicinity of the gage but has been known to form to a sufficient extent farther down the canal to affect stage-discharge relation.

DIVERSIONS.—None above gage and none of consequence for several miles below.

REGULATION.—Flow regulated by headgates.

ACCURACY.—Stage-discharge relation considered permanent throughout year. Rating curve well defined. Gage read daily to tenths October 1 to April 4; operation of water-stage recorder satisfactory from April 5 to September 30. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph or from staff gage reading. Records October to April 4, fair; for rest of year, good.

COOPERATION.—Gage-height record and part of the discharge measurements furnished by the Twin Falls Canal Co. and by the State engineer of Idaho.

The South Side Twin Falls canal diverts water from the south side of Snake River at the Milner dam. This canal furnishes water for stock and for irrigation of about 200,000 acres near Twin Falls. The distribution system comprises about 110 miles of main canal and 590 miles of laterals.

Discharge measurements of South Side Twin Falls canal at Milner, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Sept. 6	W. N. McConnel	9.44	3,060
26	G. C. Baldwin	8.05	2,090
27	Baldwin and McConnel	6.12	1,270

NOTE.—W. N. McConnel, an employee of the State of Idaho.

Daily discharge, in second-feet, of South Side Twin Falls canal at Milner, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	1,990	1,350	572	629	629	517	1,330	3,220	3,460	3,560	3,560	3,060
2	2,040	1,350	572	629	877	517	1,500	3,280	3,430	3,490	3,650	3,030
3	2,140	1,350	572	629	629	517	1,700	3,190	3,430	3,460	3,680	3,370
4	2,650	1,350	572	629	629	517	1,560	3,370	3,460	3,520	3,620	3,250
5	2,710	1,350	572	629	1,050	517	1,410	3,490	3,430	3,590	3,340	3,220
6	1,470	1,350	572	629	1,050	572	1,410	3,560	3,430	3,620	3,220	2,940
7	1,520	1,350	572	572	718	572	1,370	3,590	3,520	3,090	3,220	3,090
8	1,600	1,350	572	572	718	517	1,410	3,620	3,590	3,150	3,250	3,160
9	1,310	1,350	572	572	230	364	1,500	2,420	3,590	3,620	3,370	3,280
10	1,890	1,350	877	572	317	364	1,500	2,650	3,590	3,560	3,430	3,190
11	2,140	1,350	877	572	153	364	1,540	3,430	3,590	3,560	3,900	3,120
12	1,890	1,350	877	572	120	364	1,840	3,430	3,590	3,560	4,600	3,000
13	1,890	944	877	629	464	572	1,940	3,430	3,590	3,560	4,300	3,650
14	1,230	944	877	629	517	718	1,990	2,590	3,590	3,560	3,870	4,150
15	1,430	944	877	629	517	718	2,010	2,090	3,590	3,560	3,400	3,520
16	1,430	944	877	572	517	718	1,990	3,430	3,590	3,590	3,340	3,250
17	1,430	944	877	517	517	.....	1,960	3,430	3,590	3,560	3,280	2,820
18	1,230	877	877	517	517	.....	1,990	3,490	3,590	3,590	3,280	2,500
19	1,230	877	718	464	517	.....	1,940	3,490	3,590	3,590	3,280	3,060
20	1,230	877	718	464	517	.....	1,990	3,490	3,590	3,620	3,120	3,400
21	438	718	718	572	517	.....	1,890	3,520	3,590	3,620	3,000	2,760
22	1,430	718	718	877	517	.....	1,910	3,460	3,590	3,620	3,000	2,470
23	1,430	718	718	877	517	.....	2,280	3,430	3,400	3,590	3,000	2,280
24	1,430	572	718	877	517	877	2,470	3,430	3,520	3,560	3,500	2,170
25	1,430	572	877	544	658	1,080	2,500	3,520	3,490	3,680	3,450	2,500
26	1,430	572	877	517	517	1,350	2,650	3,520	3,430	3,620	3,650	2,360
27	1,350	572	572	572	517	1,350	2,790	3,520	3,560	3,340	3,400	1,960
28	1,350	572	572	572	517	1,050	2,820	3,460	3,560	3,310	3,550	2,300
29	1,350	572	572	572	.....	1,050	3,060	3,430	3,620	3,250	3,450	2,420
30	1,350	572	572	572	.....	1,050	3,120	3,430	3,560	3,250	3,510	2,500
31	1,350	.....	629	572	.....	.....	.....	3,430	.....	3,310	3,090	.....

NOTE.—Data insufficient to warrant an estimate during the period Mar. 17-23. Waste gate below gage open all or part of Aug. 11-14; 24-30 and Sept. 13-14; discharge estimated from available data. Waste gate open June 20-22 but data too meager to estimate total discharge past gage; therefore quantity passing on down canal estimated.

Monthly discharge of South Side Twin Falls canal at Milner, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	2,710	438	1,570	96,500
November	1,350	572	990	58,900
December	877	572	710	43,700
January	877	464	605	37,200
February	1,050	120	553	30,700
April	3,120	1,330	1,980	118,000
May	3,620	2,090	3,320	204,000
June	3,620	3,400	3,540	211,000
July	3,680	3,090	3,500	215,000
August	4,600	3,000	3,460	213,000
September	4,150	1,960	2,930	174,000

BIG WOOD RIVER AT HAILEY, IDAHO.

LOCATION.—In sec. 9, T. 2 N., R. 18 E., at steel highway bridge a quarter of a mile southwest of Hailey, Blaine County.

DRAINAGE AREA.—640 square miles (measured on topographic maps).

RECORDS AVAILABLE.—June 11, 1915, to September 30, 1918.

GAGE.—Vertical staff in two sections; high-water section on left bank attached to bridge pier and low-water section at different datum directly opposite on right bank; all readings are corrected to datum of high-water section. Prior to April 3, 1917, an inverted stadia board spiked to pile near left abutment of bridge was used. Zero gage height on vertical staff at gage height 6 feet on inverted stadia board gage. Gage read by employee of Idaho Irrigation Co.

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

CHANNEL AND CONTROL.—Channel fairly straight above and below station. Banks covered with light brush; subject to overflow at high stages when river may flow in from one to three channels, the number depending on the stage. Bed composed of coarse gravel and sand; clean. Low-water control formed by sheet piling used to protect a water main that crosses the river; high-water control subject to shift.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year ending September 30, 1917, 4.80 feet June 17 (discharge, 3,450 second-feet); minimum discharge probably somewhat less than 2 second-feet during period December 24 to January 31, when practically entire flow of river was diverted through Big Wood Slough by power plant above.

Maximum stage recorded during year ending September 30, 1918, 4.4 feet June 13 and 14 (discharge, 2,630 second-feet); minimum stage, −0.16 foot December 4-8, 10, and 11 (discharge, 10 second-feet).

1915–1918: Maximum stage recorded, 4.8 feet June 17, 1917 (discharge, 3,450 second-feet); minimum discharge probably somewhat less than 2 second-feet during period December 24, 1916, to January 31, 1917, when practically entire flow of river was diverted through Big Wood Slough by power plant above.

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

DIVERSIONS.—Only a few small diversions for irrigation are made above station. Hailey power plant, half a mile upstream, utilizes as a tailrace a natural channel on east side of river known as Big Wood Slough. A large amount of water is diverted from the main stream in this manner and is returned to river below the station. Records of the flow of Big Wood Slough have been obtained (see p. 120), and the total flow of Big Wood River is represented by the amount of water passing both stations (pp. 108 and 109).

REGULATION.—Variation in the amount of water used at Hailey power plant causes some diurnal fluctuation at gage, but as observations on the river and on Big Wood Slough are practically simultaneous each day, the effect of such regulation is probably eliminated.

ACCURACY.—Stage-discharge relation not permanent; affected by ice January 12 to February 5, 1918. Three rating curves used. Curve used October 1, 1916, to April 3, 1917, well defined; was used direct. Curve used April 4 to May 13, 1917, well defined; was used direct April 4–25. Curve used May 18, 1917, to September 30, 1918, well defined between 25 and 3,000 second-feet; was used direct June 9, July 7–21, 1917, August 14, 1917, to January 11, 1918, and June 11 to September 30, 1918. Indirect method for shifting control used for all periods for which rating curves were not used direct, except for periods indicated in footnote to tables of daily discharge. Gage read to hundredths once daily; gage-height record unsatisfactory for winter of 1916–17. Daily discharge ascertained by applying daily gage height to rating table for periods for which shifting-control method was not used, except for periods during which stage-discharge relation was affected by ice, for which it was ascertained by means of gage heights, weather records, and comparison with flow of Big Wood Slough, and except as indicated in footnote to tables of daily discharge. Records fair prior to April 1, 1918; good thereafter.

COOPERATION.—Gage-height record and several discharge measurements furnished by Idaho Irrigation Co. Discharge measurements also furnished by Idaho State engineer.

Discharge measurements of Big Wood River at Hailey, Idaho, during the years ending Sept. 30, 1917 and 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1917.		*Feet.*	*Sec.-ft.*	1917.		*Feet.*	*Sec.-ft.*
May 11	Crosby and McConnel..	3.23	1,150	Aug. 28	H. Armstrong.....	1.29	227
19	Lothrop Crosby[e].....	3.44	1,520	Sept. 5	.....do.....	(*a*)	32.6
30	Atkinson[f] and McConnel[f].....	3.89	1,910	14	.....do.....	[*b*]4.71 *c* .25	30.0
June 2	Lothrop Crosby.....	3.77	1,800				
8	.....do.....	3.73	1,760	1918.			
9	.....do.....	4.30	2,500	Apr. 22	Armstrong and Chapman.....	2.12	558
18	F. M. Atkinson.....	4.40	3,230	May 1	S. H. Chapman[f].....	2.43	825
20	Lothrop Crosby.....	4.32	2,820	15	.....do.....	2.57	892
26	Armstrong and Crosby..	3.68	2,150	June 11	.....do.....	4.35	2,570
July 7	H. Armstrong[e].....	3.57	1,710	July 6	.....do.....	1.93	534
16	.....do.....	2.59	974	9	Lothrop Crosby.....	1.86	500
21	.....do.....	2.35	795	10	S. H. Chapman.....	1.83	469
30	.....do.....	1.86	564	17	Carrol[e] and Chapman..	1.59	336
30	F. M. Atkinson.....	1.84	545	Aug. 3	S. H. Chapman.....	1.04	148
Aug. 7	H. Armstrong.....	1.56	371	7	.....do.....	.75	90
14	F. M. Atkinson.....	1.16	184	12	.....do.....	[*d*].39	43.0
16	H. Armstrong.....	1.17	210	Sept. 16	Mathews[e].....	1.27	213
21	.....do.....	1.16	193				

a Water surface below gage.
b Reading from temporary low-water gage installed Sept. 14, 1917.
c Corrected to agree with datum of present gage.
d Reading from temporary gage at same datum as present gage.
e Employee of Idaho Irrigation Co.
f Employee of Idaho State engineer.

Daily discharge, in second-feet, of Big Wood River at Hailey, Idaho, for the years ending Sept. 30, 1917 and 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	183	183	169				50	334	1,750	1,840	625	
2	183	183	174				69	183	1,750	1,840	625	
3	188	183	197				69	192	1,750	1,840	594	40
4	183	183	188				60	236	1,670	1,840	503	
5	183	178	188				63	231	1,590	1,750	422	33
6	183	178	95				63	242	1,510	1,590	397	
7	216	178	89				63	387	1,670	1,590	374	
8	216	178	63				66	818	1,840	1,590	350	
9	212	178	58				69	948	2,630	1,510	291	
10	212	174	5				92	1,040	3,030	1,430	271	32
11	268	169					92	1,140	2,500	1,270	230	
12	257	156	95				95	1,300	2,160	1,270	206	
13	226	160	169			5	95	1,360	1,940	1,200	199	
14	226	160	129				95	2,070	1,750	1,120	193	30
15	226	156	118		3		95	2,690	2,160	1,040	190	
16	221	151	146	2			95	2,440	3,030	970	187	
17	221	146					95	1,750	3,450	900	187	30
18	207	146					95	1,590	3,030	900	216	
19	197	169					58	1,510	2,900	900	196	
20	183	160	4				95	1,510	2,760	900	216	
21	183	156					89	1,510	2,760	900	216	30
22	183	174					95	1,510	2,760	760	178	30
23	183	174					118	1,670	2,380	760	166	30
24	183	174					160	1,840	2,380	760	166	47
25	183	174				8	216	1,750	2,260	726	153	59
26	183	174				8	300	1,750	2,160	726	140	59
27	183	174	2			36	340	1,750	2,160	625	129	59
28	183	174				63	306	1,750	2,160	625	118	47
29	183	174			.....	63	306	1,940	2,260	625	107	30
30	188	160			.....	66	295	1,940	2,040	625	75	30
31	183	.....			.....	66	.....	1,940	.....	625		
1917–18.												
1	30	47	42	210		150	374	795	795	726	136	156
2	30	47	28	199		150	374	900	903	691	145	156
3	30	47	14	190	140	150	287	970	1,010	625	166	156
4	24	47	10	206		163	287	1,120	1,120	578	156	150
5	24	47	10	199		163	263	1,270	1,120	532	145	145
6	24	47	10	184	163	138	287	1,270	1,350	532	136	143
7	24	47	10	196	138	143	287	1,200	1,430	476	96	143
8	24	47	10	178	163	148	303	1,200	1,590	448	87	156
9	24	47	14	178	138	153	374	1,120	1,750	503	82	199
10	24	47	10	127	163	158	398	970	2,160	476	59	199
11	24	47	10	127	163	163	422	865	2,380	448	43	193
12	24	47	12		163	156	422	830	2,380	422	44	190
13	24	47	14		163	150	476	865	2,630	397	38	193
14	24	178	116		138	138	462	900	2,630	448	34	206
15	24	193	116		116	138	448	970	2,260	562	39	241
16	24	193	163		138	138	422	865	1,940	476	41	220
17	24	193	210		163	150	397	865	1,750	350	41	213
18	19	178	210		150	163	374	795	1,750	328	89	178
19	127	178	210		127	175	397	726	1,670	299	70	169
20	210	178	210		138	178	422	691	1,630	291	64	166
21	107	38	193	155	138	181	476	691	1,590	260	64	190
22	107	47	210		138	193	594	691	1,670	210	64	190
23	89	47	203		156	190	658	726	1,750	196	62	199
24	89	47	206		150	216	658	726	1,590	193	59	203
25	59	47	196		138	241	691	726	1,350	196	54	203
26	59	47	210		163	241	658	760	1,090	193	30	196
27	59	47	216		138	274	626	760	830	172	29	196
28	59	38	223		127	307	594	726	812	163	24	196
29	47	38	210		.....	307	625	726	795	161	24	193
30	59	42	216		.....	350	726	760	760	156	22	223
31	53	.....	213		.....	397	.....	791	.....	140	156	.....

NOTE.—Practically entire flow of river diverted through Big Wood Slough December 17, 1916, to March 24, 1917; estimated discharge represents leakage through diversion dam. Water surface below gage August 30 to September 20, 1917, discharge estimated by means of two discharge measurements. Discharge interpolated on account of missing gage readings, Nov. 26, 1916; Nov. 25, Dec. 2, 16, 1917; Feb. 21, March 7–10, 12, 17, 20, 24, 27, Apr. 10, 14, 27, May 4, 21, 30, June 2, 3, 8, 20, 22, 26, 28, and July 4, 1918. Braced figures show mean discharge for periods indicated.

Monthly discharge of Big Wood River at Hailey, Idaho, for the years ending Sept. 30, 1917 and 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
1916–17.				
October	268	183	200	12,300
November	183	146	169	10,100
December	197	.....	62.3	3,830
January	.....	.....	2.0	123
February	.....	.....	3.0	167
March	66	.....	13.9	855
April	340	50	127	7,560
May	2,690	183	1,330	81,800
June	3,450	1,510	2,270	135,000
July	1,840	625	1,130	69,500
August	625	.....	258	15,900
September	59	.....	36.0	2,140
The year	3,450	.....	469	339,000
1917–18.				
October	210	19	50.6	3,110
November	193	38	78.0	4,640
December	223	10	120	7,380
January	210	.....	164	10,100
February	163	.....	145	8,050
March	397	138	192	11,800
April	726	263	459	27,300
May	1,270	691	880	54,100
June	2,630	760	1,550	92,200
July	726	140	376	23,100
August	166	22	74.2	4,560
September	241	143	185	11,000
The year	2,630	10	356	257,000

Combined daily discharge, in second-feet, of Big Wood River and Big Wood Slough at Hailey, Idaho, for the years ending Sept. 30, 1917 and 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	197	203	172	176	138	151	116	394	1,900	1,860	630	210
2	197	203	177	176	168	142	147	377	1,910	1,860	630	194
3	202	203	200	196	168	142	139	396	1,910	1,850	600	202
4	197	203	191	176	168	170	123	440	1,830	1,860	509	194
5	197	199	191	176	168	170	139	435	1,740	1,770	428	187
6	197	198	135	176	168	170	141	486	1,660	1,600	406	186
7	231	198	120	176	168	170	141	631	1,840	1,600	386	186
8	231	198	88	176	168	170	146	942	2,000	1,620	365	179
9	227	203	82	176	168	170	149	1,070	2,800	1,520	352	179
10	227	201	142	167	168	170	199	1,200	3,200	1,440	355	186
11	283	193	170	167	168	151	199	1,300	2,630	1,290	301	186
12	275	175	205	176	168	133	203	1,480	2,290	1,290	262	186
13	243	175	175	132	168	142	205	1,540	2,070	1,220	295	194
14	243	169	133	132	168	161	205	2,220	1,900	1,140	289	200
15	243	159	122	132	168	170	205	2,860	2,310	1,050	286	192
16	238	154	150	132	168	151	193	2,620	3,180	977	282	184
17	238	149	194	132	168	142	173	1,940	3,580	906	289	192
18	227	167	188	132	168	142	181	1,620	3,180	906	333	177
19	217	173	188	148	168	142	184	1,530	3,050	906	306	192
20	203	164	169	186	149	151	188	1,530	2,880	905	318	192
21	203	159	169	167	168	112	215	1,530	2,890	905	318	184
22	203	177	169	152	168	89	223	1,530	2,880	765	266	192
23	203	177	178	148	168	103	264	1,690	2,470	765	268	207
24	203	177	186	148	168	107	325	1,860	2,530	765	268	217
25	203	177	186	176	187	110	400	1,770	2,390	731	259	221
26	204	177	186	176	149	89	360	1,770	2,280	731	251	221
27	204	177	172	167	168	138	414	1,770	2,180	630	245	221
28	204	177	167	167	131	135	365	1,920	2,180	630	235	209
29	204	177	152	167	.....	141	365	2,100	2,270	630	231	192
30	207	163	152	167	.....	144	355	2,100	2,060	630	245	192
31	202	.....	158	142	.....	144	.....	2,100	.....	630	245	.....

Combined daily discharge, in second-feet, of Big Wood River and Big Wood Slough at Hailey, Idaho, for the years ending Sept. 30, 1917 and 1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.												
1	192	179	204	213	142	159	387	804	803	735	280	174
2	192	179	182	202	143	160	386	912	914	701	289	180
3	192	179	161	193	143	160	296	985	1,020	635	322	180
4	178	179	157	209	143	173	296	1,140	1,140	588	306	176
5	178	187	164	202	143	173	271	1,290	1,140	542	289	171
6	171	187	164	187	183	145	296	1,290	1,370	542	280	169
7	171	179	157	199	155	151	296	1,210	1,450	490	265	168
8	171	179	157	181	174	156	312	1,210	1,610	465	256	182
9	171	179	161	181	146	162	381	1,130	1,770	522	251	220
10	171	187	157	129	174	167	406	977	2,200	497	228	224
11	171	179	157	129	173	173	431	871	2,430	475	226	219
12	171	179	159	157	173	166	431	836	2,430	449	213	214
13	171	179	161	157	173	160	485	871	2,700	425	207	217
14	178	197	201	157	145	147	471	907	2,690	462	203	229
15	171	212	198	157	122	147	457	980	2,290	578	236	265
16	178	210	205	157	148	147	431	871	1,960	493	238	242
17	178	210	212	158	174	161	405	870	1,760	452	238	233
18	181	195	213	158	160	175	382	800	1,770	446	157	225
19	241	197	213	158	134	187	405	731	1,690	419	226	218
20	321	193	213	158	146	191	430	696	1,650	415	233	213
21	215	170	196	158	146	195	485	696	1,610	380	233	209
22	212	179	213	157	146	209	604	695	1,700	366	233	210
23	203	171	206	158	166	206	669	731	1,780	340	231	220
24	203	171	209	158	158	234	669	731	1,620	337	215	223
25	191	171	199	158	145	260	702	731	1,370	340	210	223
26	199	171	213	158	173	260	668	766	1,110	333	213	215
27	199	209	219	158	146	288	635	765	850	312	212	214
28	199	200	226	157	134	317	603	731	828	303	207	214
29	179	200	213	159	.....	315	634	731	806	301	207	210
30	199	204	219	158	.....	358	736	766	770	291	205	243
31	193	.....	216	157	.....	410	.....	803	.....	280	179	.....

Combined monthly discharge of Big Wood River and Big Wood Slough at Hailey, Idaho, for the years ending Sept. 30, 1917 and 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
1916–17.				
October	283	197	218	13,400
November	203	149	181	10,800
December	205	82	163	10,000
January	196	132	162	9,960
February	187	131	165	9,160
March	170	89	143	8,790
April	414	116	222	13,200
May	2,860	377	1,460	89,800
June	3,580	1,660	2,400	143,000
July	1,860	630	1,140	70,100
August	630	231	337	20,700
September	221	177	195	11,600
The year	3,580	82	566	410,000
1917–18.				
October	321	171	192	11,800
November	212	170	187	11,100
December	226	157	191	11,700
January	213	129	167	10,300
February	183	122	154	8,550
March	410	145	204	12,500
April	736	271	469	27,900
May	1,290	696	888	54,600
June	2,700	770	1,570	93,400
July	735	280	449	27,600
August	322	157	235	14,400
September	265	168	210	12,500
The year	2,700	122	410	296,000

BIG WOOD RIVER NEAR BELLEVUE, IDAHO.

LOCATION.—In sec. 20, T. 1 S., R. 18 E., three-fourths of a mile below Blair's ranch, 1¼ miles above flow line of Magic reservoir, and 10 miles southwest of Bellevue, Blaine County. Camas Creek enters reservoir 3 miles below station.

DRAINAGE AREA.—823 square miles (measured on topographic and Land Office maps).

RECORDS AVAILABLE.—July 6, 1911, to September 30, 1918.

GAGE.—Gurley water-stage recorder on right bank referred to a hook gage inside stilling well and a staff gage outside; installed July 11, 1917, at a datum 0.99 foot lower than former Gurley recorder, which was destroyed by the high water of June 11, 1917. On April 9, 1918, all gages were corrected to former datum. All records referred to this gage prior to April 9, 1918, were reduced to former datum. A Lallie recorder was in use prior to May 3, 1916, when a Gurley recorder was installed at the same location and datum, and referred to an outside staff gage. After the destruction of the Gurley recorder the staff gage was used until about June 22, 1917, when it also was destroyed by high water, and a temporary staff gage was installed at a different datum and used until July 11, 1917. A Stevens 8-day recorder was temporarily installed June 28, 1918, and used until August 2, 1918, when the Gurley recorder was reinstalled. An employee of Idaho Irrigation Co. acted as observer.

DISCHARGE MEASUREMENTS.—Made from cable 30 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of coarse gravel. Control of same material; shifts occasionally. Both banks clean; may be overflowed at extreme high stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year ending September 30, 1917, 5.29 feet at noon June 19 (discharge, 2,760 second-feet); minimum stage, 0.71 foot 5 p. m. to 8 p. m. September 8 (discharge, 75 second-feet).

Maximum stage recorded during year ending September 30, 1918, 5.34 feet June 13 (discharge, 2,660 second-feet); minimum stage, from water-stage recorder, 0.58 foot at 3 a. m. September 2 (discharge, 52 second-feet).

1911–1918: Maximum discharge[1] recorded, 2,760 second-feet, at noon June 19, 1917; minimum stage, 0.57 foot February 22 and 23, 1916 (discharge, 46 second-feet).

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

DIVERSIONS.—Numerous small diversions are made for irrigation in the vicinity of Bellevue and Hailey. Flood waters are stored in Magic reservoir of the Idaho Irrigation Co. Magic dam is about 9 miles downstream.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent; slightly affected by ice January 1–9, 1918. Three well-defined rating curves used, applicable October 1 to November 30, 1916; April 1, 1917, to May 4, 1918, and May 23 to June 12, 1918; May 7–17, June 13 to July 14, and July 22 to September 27, 1918. Curves were used direct except for periods April 1 to July 10, 1917, May 5, 6, 18–22, and July 19–21, 1918, for which the indirect method for shifting control was used. Operation of water-stage recorder satisfactory during 1917, but unsatisfactory during 1918; staff gage read to hundredths every other day during periods when recorder was not operating. Daily discharge ascertained by applying to rating table the staff gage reading or the mean daily gage height obtained by inspection of recorder graph, except for days of no record, for which it was estimated or interpolated; except for periods for which the shifting-control method was used; and except for periods during which stage-discharge relation was affected by ice, for which it was ascertained by means of gage heights and weather records. Records fair for April and June 21 to July 10, 1917, and for 1918; good for other periods.

COOPERATION.—Gage-height record furnished by Idaho Irrigation Co. Discharge measurements furnished by Idaho Irrigation Co. and Idaho State engineer.

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[1] Published incorrectly in previous reports.

Discharge measurements of Big Wood River near Bellevue, Idaho, during the years ending Sept. 30, 1917 and 1918.

Date	Made by—	Gage height.	Discharge.	Date	Made by—	Gage height.	Discharge.
1917.		*Feet.*	*Sec.-ft.*	1918.		*Feet.*	*Sec.-ft.*
May 10	McConnel [a] and Atkinson [a]	3.27	1,170	Apr. 9	Armstrong and Chapman	1.84	301
10	Crosby and McConnel	3.27	1,180	16	S. H. Chapman [a]	2.13	398
19	Lothrop Crosby [b]	3.76	1,580	22	Armstrong and Chapman	2.22	427
June 2	Crosby and Denecke [b]	4.20	1,860	26	H. Armstrong	2.46	546
21	do	5.25	2,690	May 1	S. H. Chapman	2.65	643
27	Armstrong and Crosby	6.12	1,910	7	do	3.32	1,030
July 7	H. Armstrong [b]	5.51	1,390	15	do	2.80	689
13	Armstrong and Denecke	3.01	885	23	do	2.12	425
17	H. Armstrong	2.59	574	30	do	1.69	258
21	Armstrong and Denecke	2.46	553	June 13	do	5.34	[c] 1,980
24	H. Armstrong	2.19	434	20	do	3.20	948
26	do	1.97	353	24	do	3.36	1,050
27	F. M. Atkinson	1.96	325	30	do	2.18	392
28	Armstrong and Denecke	1.93	324	July 6	do	1.33	162
31	H. Armstrong	1.54	242	9	Lothrop Crosby	1.25	135
Aug. 2	F. M. Atkinson	1.30	184	11	S. H. Chapman	1.29	155
3	Armstrong and Denecke	1.12	142	17	do	1.54	186
6	do	.95	115	17	do	1.54	188
7	do	.91	109	21	do	1.34	160
7	F. M. Atkinson	.90	106	26	do	1.06	113
10	Armstrong and Denecke	.89	102	29	do	.90	86
11	do	.86	98	Aug. 2	do	.95	89
15	do	.84	95	22	do	.74	71
16	do	.77	82	31	do	.63	57
18	do	.80	80	Sept. 6	do	.60	55
18	F. M. Atkinson	.81	90	17	Mathews [b] and Kopelman [b]	.77	69
21	Armstrong and Denecke	.80	87	17	do	.77	76
23	do	.83	94	24	S. H. Chapman	.99	105
28	H. Armstrong	.78	94				
Sept. 4	do	.73	72				
14	do	.77	85				

[a] Employee of Idaho State engineer.
[b] Employee of Idaho Irrigation Co.
[c] Measurement evidently not accurately made.

Daily discharge, in second-feet, of Big Wood River near Bellevue, Idaho, for the years ending Sept. 30, 1917 and 1918.

Day.	Oct.	Nov.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.								
1	115	131	165	562	1,830	1,680	210	84
2	117	128	165	578	1,830	1,560	177	82
3	124	128	167	606	1,790	1,560	142	80
4	124	128	171	666	1,680	1,600	149	78
5	122	128	173	672	1,600	1,640	139	81
6	117	128	175	710	1,560	1,500	129	81
7	133	128	181	810	1,710	1,400	103	81
8	158	124	185	958	1,910		105	80
9	156	124	189	1,070	2,190	1,200	106	78
10	156	128	214	1,140	2,270		102	81
11	169	126	231	1,250	2,110	1,100	96	82
12	180	124	258	1,400	1,870	1,100	94	82
13	169	122	281	1,480	1,600	1,030	94	85
14	166	122	286	1,750	1,480	873	94	85
15	161	122	292	2,190	1,710	824	92	85
16	158	122	271	2,350	2,190	749	87	85
17	156	122	258	2,030	2,430	666	82	85
18	150	122	254	1,710	2,590	666	87	85
19	153	122	249	1,520	2,670	684	88	82
20	150	117	268	1,480	2,590	612	88	82
21	150	119	309	1,480	2,590	542	88	82
22	148	124	373	1,520	2,590	511	90	84
23	148	124	456	1,680	2,430	465	87	96
24	145	126	516	1,830	2,190	414	85	106
25	145	126	547	1,830	2,030	355	84	117
26	138	128	562	1,790	1,910	348	85	120
27	136	124	606	1,790	1,870	298	87	120
28	134	124	601	1,870	1,870	258	85	120
29	133	122	589	1,950	1,910	244	85	120
30	132	119	573	1,990	1,830	231	84	120
31	131	.....	.....	1,910	.....	216	82	.....

Daily discharge in second-feet, of Big Wood River near Bellevue, Idaho, for the years ending Sept. 30, 1917 and 1918—Continued.

Day.	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.											
1	120	133		87	144	332	635	245	348	90	55
2	120	.....		102	145	315	749	263	297	95	54
3	120	.....		118	146	318	831	263	250	99	55
4	120	.....		126	130	321	1,030	365	208	103	55
5	120	.....	110	133	113	304	1,140	452	191	100	55
6	117	.....		136	114	286	1,140	584	161	96	54
7	115	.....		140	115	286	1,010	769	153	95	54
8	106	.....		131	116	286		887	147	93	56
9	103	.....		122	118	301	940	1,100	147	92	61
10	105	.....	118	120	120	387		1,330	147	86	60
11	103	.....	127	118	122	387	693	1,480	153	81	58
12	103	.....	136	116	118	387	654	1,520	147	79	57
13	106	.....	136	113	115	396	642	2,510	139	74	58
14	108	.....	136	114	116	406	673	2,460	139	74	63
15	108	.....	137	115	118	396	686	2,380	135	75	71
16	110	.....	138	116	119	387	667	2,180	161	74	72
17	115	.....	137	118	120	383	594	1,980	168	71	71
18	115	.....	136	126	124	362	556	1,940	166	72	72
19	112	.....	127	133	155	355	511	1,900	175	72	84
20	113	.....	118	134	196	362	466	962	172	72	95
21	115	.....	116	136	238	365	434	1,820	161	71	96
22	118	.....	115	138	216	410	402	1,840	147	68	97
23	120	.....	116	140	195	522	395	1,860	137	68	102
24	123	.....	118	141	216	635	395	1,080	128	66	100
25	125	.....	116	142	236	591	376	1,780	124	65	102
26	127	.....	115	141	285	547	358	1,620	106	64	102
27	127	.....	116	140	334	521	364	1,460	99	62	103
28	125	.....	118	142	338	492	369	515	92	62	
29	122	.....	110	.....	341	511	312	462	88	61	105
30	127	.....	102	.....	344	567	254	392	84	58	
31	133	.....	94	.....	348	.....	242	.....	84	56	.....

NOTE.—Discharge estimated on account of lack of gage-height record, July 6, 8–10, 1917; May 8–10, and Sept. 28–30, 1918. Discharge interpolated, Oct. 27–30, 1916; July 29, Aug. 5, Sept. 2, 3, Oct. 21–25, 1917; Jan. 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, Feb. 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, Mar. 2, 4, 6, 8, 10, 12, 14, 16, 20, 22, 24, 26, 28, 30, Apr. 1, 3, 5, 7, 11, 13, 15, 23, 25, May 19, 21, 25, 27, 29, June 14, 16, 18, 22, 26, and Aug. 3, 30, 1918. No record obtained during periods for which no discharge is given. Braced figures show mean discharge for periods indicated.

Monthly discharge of Big Wood River near Bellevue, Idaho, for the years ending Sept. 30, 1917 and 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
1916–17.				
October	180	115	144	8,850
November	131	117	124	7,380
April	606	165	319	19,000
May	2,350	562	1,440	88,500
June	2,670	1,480	2,030	121,000
July	1,680	216	862	53,000
August	210	82	103	6,330
September	120	78	91.0	5,410
1917–18.				
October	133	103	116	7,130
January	138	94	118	7,260
February	142	87	126	7,000
March	348	113	182	11,200
April	635	286	404	24,000
May	1,140	242	626	38,500
June	2,540	245	1,280	76,200
July	348	84	157	9,650
August	103	56	77.2	4,750
September	.....	54	75.9	4,520

BIG WOOD RIVER BELOW MAGIC DAM, NEAR RICHFIELD, IDAHO.

LOCATION.—In sec. 18, T. 2 S., R. 18 E., half a mile below Magic dam of Idaho Irrigation Co. and 18 miles northwest of Richfield, Blaine County. No tributaries between dam and station.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 19, 1911, to September 30, 1918.

GAGE.—Gurley water-stage recorder on right bank; installed April 20, 1916, to replace former Lallie recorder at same location; inspected by employees of Idaho Irrigation Co. Datum presumably unchanged since establishment of station.

DISCHARGE MEASUREMENTS.—Made from cable about 10 feet above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of clean, coarse gravel and small boulders. Control of same material; somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year ending September 30, 1917, from water-stage recorder, 8.97 feet at 11 a. m. and 8 p. m. May 25 (discharge, 3,840 second-feet); minimum stage, 1.42 feet midnight March 27–28 to 11 a. m. March 29 (discharge, 14 second-feet).

Maximum stage recorded during year ending September 30, 1918, from water-stage recorder, 5.23 feet June 15 and 16 (discharge, 1,610 second-feet); minimum stage, 1.49 feet August 21 and 22 (discharge, 15 second-feet).

1911–1918: Maximum stage recorded, 9.2 feet May 18, 1911 (discharge, 5,070 second-feet); "zero discharge" reported February 3, 1915.

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

DIVERSIONS.—No diversions are made by the Idaho Irrigation Co. immediately above station but numerous ranch diversions are made in the upper drainage basin, the largest quantity of water probably being used in the district around Hailey. Flood waters are stored in Magic reservoir just above station, and first diversion by the company is Richfield canal about 2 miles below.

REGULATION.—Flow past station completely regulated by gates in outlet tunnel at Magic dam.

ACCURACY.—Stage-discharge relation for stages above 1,130 second-feet changed during high water of latter part of May, 1917. Three rating curves used, the first applicable October 1, 1916, to May 25, 1917, well defined between 90 and 1,600 second-feet and extended outside those limits, the second applicable May 26 to September 30, 1917, well defined between 90 and 3,200 second-feet, and the third applicable October 1, 1917, to September 30, 1918, well defined within range of stage which occurred and differing from previous curves only in that it better averages later discharge measurements. Operation of water-stage recorder satisfactory except during period November 26 to December 1, 1916. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspection of recorder graph, except for period during which recorder was not operating for which it was estimated from record of gate opening in Magic dam. Records good.

Discharge measurements of Big Wood River below Magic dam, near Richfield, Idaho, during the years ending Sept. 30, 1917 and 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1917.		*Feet.*	*Sec.-ft.*	1918.		*Feet.*	*Sec.-ft.*
May 3	W. N. McConnel [a]	2.42	138	Mar. 31	Wallis [a] and Chapman	2.02	61
18	Lothrop Crosby [b]	7.96	3,250	Apr. 2	H. Armstrong	2.38	134
29	F. M. Atkinson [a]	6.32	2,440	2	do	2.30	114
June 1	Crosby and Denecke [b]	6.69	2,610	20	do	2.56	157
12	do	6.52	2,450	25	do	2.99	292
20	Lothrop Crosby	7.42	3,020	26	S. H. Chapman	3.06	319
22	F. M. Atkinson	6.92	2,770	May 2	do	3.98	798
26	Armstrong and Crosby	6.19	2,320	14	do	4.54	1,210
July 5	F. M. Atkinson	4.74	1,400	24	do	4.80	1,370
7	H. Armstrong [b]	5.06	1,630	June 15	do	5.22	1,630
17	do	5.08	1,530	24	do	5.04	1,550
17	do	5.08	1,510	July 20	S. S. Carroll [b]	4.69	1,340
28	do	4.94	1,480	24	S. H. Chapman	4.67	1,330
31	F. M. Atkinson	4.84	1,390	30	Morrill [b] and Mathews [b]	4.68	1,370
Aug. 3	Armstrong and Denecke	4.78	1,400	Aug. 4	Mathews and Morrill	1.82	35.3
10	do	4.62	1,230	12	Mathews	2.25	107
18	do	4.48	1,140	15	do	3.51	555
23	do	4.39	1,140	21	do	1.49	14.7
29	H. Armstrong	4.31	1,090	23	S. H. Chapman	1.49	12.7
1918.				28	Mathews	1.64	23.1
Mar. 28	do	2.01	64	Sept. 5	do	3.53	560
30	S. H. Chapman [a]	2.02	56				

[a] Employee of Idaho State engineer. [b] Employee of Idaho Irrigation Co.

Daily discharge, in second-feet, of Big Wood River below Magic dam, near Richfield, Idaho, for the years ending Sept. 30, 1917 and 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	76	98	76	90	93	54	102	136	2,520	1,720	1,430	1,030
2	65	98	90	90	93	54	102	138	2,520	1,660	1,390	1,030
3	59	82	90	90	93	54	102	141	2,400	1,560	1,390	1,030
4	56	90	90	90	93	54	102	141	2,220	1,590	1,360	998
5	53	90	90	90	93	54	102	141	2,040	1,530	1,330	998
6	54	90	90	90	95	54	102	143	1,910	1,390	1,330	964
7	58	90	90	92	95	54	102	412	1,910	1,530	1,300	964
8	58	90	90	92	95	54	102	1,230	2,040	1,490	1,300	964
9	40	88	90	92	95	54	103	1,740	2,220	1,390	1,300	939
10	68	88	90	92	95	54	103	2,210	2,520	1,360	1,260	930
11	88	90	90	92	95	54	103	2,500	2,940	1,430	1,260	895
12	136	90	90	92	95	53	103	2,680	2,520	1,460	1,300	860
13	157	90	90	92	79	53	103	2,740	2,100	1,490	1,300	840
14	159	90	90	93	63	53	103	2,860	1,790	1,590	1,300	806
15	159	90	90	93	62	52	103	3,050	1,750	1,620	1,260	759
16	159	90	90	93	62	52	103	3,230	1,980	1,620	1,260	746
17	159	90	90	93	55	51	103	3,420	2,640	1,590	1,230	739
18	159	90	90	93	52	51	103	3,170	3,000	1,590	1,200	739
19	152	88	90	93	52	51	103	2,680	3,250	1,620	1,160	739
20	143	96	90	93	52	51	103	2,440	3,130	1,620	1,160	759
21	141	206	90	93	52	51	112	2,380	2,700	1,620	1,160	772
22	128	206	90	93	52	51	136	2,320	2,760	1,620	1,130	752
23	128	243	90	93	52	51	128	2,440	2,580	1,620	1,130	739
24	128	330	90	93	52	51	120	2,860	2,400	1,620	1,130	726
25	109	330	90	93	53	47	118	3,610	2,280	1,590	1,100	726
26	96		90	93	54	34	120	2,940	2,220	1,560	1,100	707
27	96		90	93	54	30	124	2,760	1,980	1,560	1,100	676
28	98	275	90	93	54	14	130	2,820	1,980	1,490	1,100	646
29	98		90	93	.....	28	134	2,580	2,040	1,490	1,060	576
30	98		90	93	.....	58	134	2,820	1,980	1,460	1,060	385
31	98	.....	90	93	.....	102	.....	3,060	.....	1,430	1,030	.....

Daily discharge in second-feet of Big Wood River below Magic dam, near Richfield, Idaho, for the years ending Sept. 30, 1917 and 1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917-18.												
1	58	100	125	66	49	50	66	746	1,220	210	1,330	27
2	58	100	202	66	49	52	113	805	1,220	219	1,330	98
3	63	89	202	66	49	52	105	853	1,160	292	1,220	288
4	69	63	202	66	49	52	107	934	1,120	1,280	50	343
5	86	69	202	66	49	52	117	1,090	1,120	1,360	16	502
6	86	69	202	68	49	52	131	1,190	1,160	1,360	16	424
7	84	69	241	68	49	52	131	1,190	1,220	1,310	16	210
8	94	69	277	68	49	52	131	1,190	1,280	1,280	16	189
9	111	69	277	68	50	52	131	1,190	1,280	1,250	16	149
10	117	69	277	68	50	52	131	1,190	1,330	1,250	24	149
11	117	69	277	68	50	52	119	1,220	1,410	1,250	44	121
12	117	69	273	69	50	52	111	1,220	1,500	1,250	100	63
13	117	69	163	69	50	52	113	1,220	1,550	1,280	98	45
14	117	69	163	69	50	52	113	1,220	1,610	1,280	151	57
15	117	69	163	69	50	52	113	1,250	1,610	1,280	581	62
16	117	69	163	69	50	52	119	1,310	1,610	1,280	670	72
17	117	69	163	69	50	52	129	1,390	1,610	1,280	664	80
18	117	69	151	69	50	52	159	1,390	1,550	1,310	475	77
19	117	69	96	69	50	52	159	1,390	1,550	1,330	207	77
20	115	69	84	69	50	52	163	1,360	1,550	1,330	15	77
21	115	69	84	69	50	52	186	1,360	1,550	1,330	15	79
22	115	69	84	69	50	52	199	1,360	1,550	1,330	15	86
23	115	69	72	69	50	53	205	1,360	1,500	1,330	15	86
24	111	70	66	63	50	53	230	1,390	1,500	1,330	20	86
25	100	70	66	49	50	53	292	1,390	1,500	1,330	23	86
26	100	93	66	49	50	54	334	1,410	1,470	1,310	22	86
27	100	105	66	49	50	54	362	1,410	1,440	1,330	22	86
28	100	105	66	49	50	57	419	1,390	1,410	1,330	24	86
29	100	105	66	49	.....	60	460	1,390	1,410	1,330	27	86
30	100	105	66	49	.....	60	552	1,360	326	1,330	27	80
31	100	.....	66	49	.....	60	.....	1,310	.....	1,330	27	.....

NOTE.—Braced figure shows mean discharge for period indicated. Discharge estimated Aug. 4, 1918, on account of unsatisfactory operation of recorder.

Monthly discharge of Big Wood River below Magic dam, near Richfield, Idaho, for the years ending Sept. 30, 1917 and 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
1916-17.				
October	159	40	106	6,520
November	330	82	150	8,930
December	90	.....	89.5	5,500
January	93	90	92.2	5,670
February	95	52	72.5	4,030
March	102	14	50.9	3,130
April	136	102	110	6,550
May	3,610	136	2,120	130,000
June	3,250	1,750	2,340	139,000
July	1,720	1,360	1,550	95,300
August	1,430	1,030	1,220	75,000
September	1,030	385	814	48,400
The year	3,610	14	731	528,000
1917-18.				
October	117	58	102	6,270
November	105	63	77.2	4,590
December	277	66	151	9,280
January	69	49	63.6	3,910
February	50	49	49.7	2,760
March	60	50	53.1	3,260
April	552	66	190	11,300
May	1,410	746	1,240	76,200
June	1,610	326	1,380	82,100
July	1,360	210	1,200	73,800
August	1,330	15	235	14,400
September	502	27	132	7,860
The year	1,610	15	409	296,000

BIG WOOD RIVER BELOW NORTH GOODING CANAL, NEAR SHOSHONE, IDAHO.

LOCATION.—In sec. 15, T. 4 S., R. 18 E., 300 yards below headworks of North Gooding canal, 13 miles northeast of Shoshone, Lincoln County, and 14 miles below Magic dam.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—January 1, 1911, to September 30, 1918.

GAGE.—Vertical staff on right bank installed July 8, 1918, at a datum 6.00 feet higher than previous gages. Prior to that date a vertical staff gage on left bank directly opposite, was used until about May 14, 1917, when it was destroyed by high water. A temporary vertical staff gage was installed May 15, 1917, at same location but at a datum 7.51 feet higher and was used until July 9, 1917. Thereafter, until July 8, 1918, a new permanent staff gage was used; at same location and datum as gage used prior to about May 14, 1917. All gage readings made on the temporary staff gage were corrected to former datum. Gage read by employees of Idaho Irrigation Co.

DISCHARGE MEASUREMENTS.—Made by wading or from cable 100 feet below gage. Measuring conditions are unfavorable on account of rough cross-section and irregular velocities.

CHANNEL AND CONTROL.—Channel cut in lava rock. Stream bed rough. Control somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year ending September 30, 1917, 13.4 feet May 12–14 (discharge, 1,690 second-feet); minimum stage, 7.27 feet September 30 (discharge, 30 second-feet).

Maximum stage recorded during year ending September 30, 1918, 9.25 feet May 6 (discharge, 242 second-feet); stream reported dry August 8–14, 22–31, and September 1 and 2.

1911–1918: Maximum stage recorded, 15.0 feet May 18, 1911 (discharge, 3,180 second-feet); minimum discharge, no flow, February 9–14, 22, and March 5 and 6, 1911, October 19, 20 and 26, 1912, August 8–14, 22–31, and September 1 and 2, 1918.

ICE.—Observations discontinued during winter.

DIVERSIONS.—Station is below all diversions of Idaho Irrigation Co. North Gooding and Richfield canals divert between station and Magic dam.

REGULATION.—Flow past station is regulated by operation of gates at Magic dam and headgates of North Gooding and Richfield canals.

ACCURACY.—Stage-discharge relation practically permanent, but owing to changes in gage datum several rating curves were used. Standard rating curve used April 14, 1917, to July 7, 1918, well defined between 25 and 980 second-feet; was used direct April 14 to May 14, 1917; three parallel curves used for remainder of period, applicable May 15 to July 8 and July 9 to December 13, 1917, and March 23 to July 7, 1918. Curve used July 8 to September 30, 1918, fairly well defined below 200 second-feet. Gage read to hundredths once or twice daily except during periods noted in footnote to table of daily discharge. Daily discharge ascertained by applying daily or mean daily gage height to rating table except as indicated in footnote to table of daily discharge. Records fair except those for days on which headgates at dam were manipulated, which are subject to considerable error.

COOPERATION.—Gage-height record furnished by Idaho Irrigation Co. Discharge measurements furnished by Idaho Irrigation Co. and Idaho State engineer.

Discharge measurements of Big Wood River below North Gooding canal, near Shoshone, Idaho, during the years ending Sept. 30, 1917 and 1918.

Date.	Made by—	Gage height.	Discharge	Date	Made by—	Gage height.	Discharge.
1917.		*Ft.*	*Sec.-ft.*	1917.		*Ft.*	*Sec.-ft.*
May 4	W. N. McConnel [a]	7.87	50	Sept. 8	H. Armstrong	7.52	44.2
June 26	F. M. Atkinson [a]	11.25	735	16	Armstrong and Bate [b]	7.53	47.5
28	Armstrong and Crosby	10.20	422	25	S. H. Chapman	7.51	40.1
July 9	H. Armstrong [b]	8.28	116	1918.			
11	Atkinson and Chapman	8.34	122	Jan. 30	Armstrong and Bate	7.30	25.0
18	H. Armstrong	8.74	158	Mar. 23	Chapman and Wallis [a]	7.21	27.1
23	Armstrong and Denecke [b]	9.01	209	Apr. 6	S. H. Chapman	7.11	20.9
Aug. 1	F. M. Atkinson	8.63	157	17	do	7.33	30.1
2	H. Armstrong	8.48	130	25	H. Armstrong	7.72	64
6	Armstrong and Denecke	8.12	90	27	S. H. Chapman	8.04	79
8	do	7.90	70	May 10	do	8.99	195
17	do	7.67	51	21	do	8.68	162
17	S. H. Chapman [a]	7.69	60	July 3	Morrill [b]	8.65	155
17	do	7.68	55	8	S. H. Chapman	2.11	72
21	F. M. Atkinson	7.60	51	14	do	1.88	59
22	Armstrong and Denecke	7.52	38.9	18	S. S. Carroll [b]	1.86	59
24	S. H. Chapman	7.54	46.2	29	S. H. Chapman	1.93	58
30	H. Armstrong	7.56	49.4	Aug. 18	do	2.40	105

[a] Employee of Idaho State engineer. [b] Employee of Idaho Irrigation Co.

Daily discharge, in second-feet, of Big Wood River below North Gooding canal, near Shoshone, Idaho, for the years ending Sept. 30, 1917 and 1918.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Day.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.							1916–17.						
1	.....	43	259	334	153	47	16	140	475	697	226	59	45
2	.....	43	234	259	140	46	17	76	593	1,030	180	59	44
3	.....	43	259	1,120	134	47	18	67	561	1,530	180	49	45
4	.....	43	218	1,120	134	47	19	104	400	1,320	173	48	45
5	.....	48	502	1,220	95	46	20	140	334	1,420	210	48	45
6	.....	44	1,120	734	95	45	21	112	295	1,220	210	50	46
7	.....	122	1,030	160	95	45	22	85	295	939	210	47	45
8	.....	939	1,070	100	76	45	23	80	277	1,120	210	47	44
9	.....	1,170	1,120	116	67	45	24	76	355	983	218	48	45
10	.....	1,170	1,220	110	67	45	25	44	593	773	210	47	45
11	.....	1,530	1,530	116	67	45	26	37	626	773	180	47	44
12	.....	1,690	1,420	128	63	45	27	41	593	593	195	47	44
13	.....	1,690	1,030	160	63	45	28	37	593	400	195	48	47
14	355	1,690	813	188	63	45	29	37	259	334	180	47	45
15	248	475	697	226	63	46	30	40	475	626	180	47	30
							31	.....	475	.....	173	48	.....

Daily discharge, in second-feet, on Big Wood River below North Gooding canal, near Shoshone, Idaho, for the years ending Sept. 30, 1917 and 1918—Continued.

Day.	Oct.	Nov.	Dec.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.										
1	30	46	40		38	90	100	140	50	
2	19		37			122	95	160	49	
3	19		38			140	95	160	49	76
4	20	37	44			146	95	146	21	76
5	21	36	40		35	226	95	153	15	76
6	34	37	40		25	242	95	105	48	76
7	33	21	40		26	218	105	122	7.6	2.0
8	31	37	59		28	226	146	76		1.6
9	40	37	37		30	210	146	67		10
10	51	37	37		33	202	146	67		21
11	52	37	37		27	202	140	68		16
12	51	37	37		30	195	166	68		15
13	52	38	35		33	188	218	68		14
14	53	31			30	173	226	62		15
15	53	31			30	173	226	63	16	24
16	53	31			30	173	234	63	116	28
17	53	37			30	173	242	56	105	42
18	54	37			32	166	210	59	105	42
19	54	37			32	166	226	56	105	40
20	54	37			30	160	218	58	50	41
21	54	36			32	160	210	56	4.8	40
22	54	31			32	153	202	62		46
23	53	31		26	32	146	202	62		47
24	57	31			30	153	202	62		47
25	51	15			58	146	210	72		50
26	51	26			58	153	188	60		50
27	52	38			76	153	180	60		49
28	53	38			90	153	188	63		49
29	54	44			90	153	173	49		47
30	55	44			90	160	234	49		48
31	56					153		44		

NOTE.—Discharge interpolated on account of missing gage readings, Apr. 15, 19, 21, 23, Aug. 19, Oct. 26–29, Nov. 26, Dec. 1, 1917, and Sept. 26, 1918; estimated Nov. 1–3, 1917, Apr. 1–4 and Aug. 15, 1918, on basis of watermaster's report. Stream reported dry, Aug. 8–14, 22–31, and Sept. 1 and 2, 1918. No record obtained during periods for which no discharge is given. Braced figures show mean discharge for periods indicated.

Monthly discharge of Big Wood River below North Gooding canal, near Shoshone, Idaho, for the years ending Sept. 30, 1917 and 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
1917.				
April 14–30	455	37	101	3,410
May	1,690	43	579	35,600
June	1,530	218	876	52,100
July	1,220	100	297	18,300
August	153	47	69.7	4,290
September	47	30	44.8	2,670
The period				116,400
1917–18.				
October	57	19	45.7	2,810
November		15	35.6	2,120
December 1–13	59	35	40.1	1,030
April	90	25	40.7	2,420
May	242	90	170	10,500
June	242	95	174	10,400
July	160	44	79.2	4,870
August	116	0	23.9	1,470
September	76	0	36.3	2,160

BIG WOOD RIVER NEAR GOODING, IDAHO.

LOCATION.—In sec. 21, T. 6 S., R. 14 E, at Cleek's ranch, 3½ miles above bridge on upper road between Bliss and Hagerman, 5 miles above diversion dam for King Hill project, and 6 miles southwest of Gooding, Gooding County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—March 26, 1916, to September 30, 1918.

GAGE.—Vertical staff on right bank bolted to rock ledge; read by Mrs. I. P. Cleek.

DISCHARGE MEASUREMENTS.—Made by wading or from cable a short distance above gage.

CHANNEL AND CONTROL.—Bed composed of lava rock, boulders, and coarse gravel; practically permanent. Control formed by well-defined bed of lava; deposition of gravel occasionally causes slight shifts.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.84 feet March 21 (discharge, 290 second-feet); stream reported dry September 5–13.

1916–1918: Maximum stage recorded, 7.60 feet May 26, 1917 (discharge, 2,320 second-feet). Stream reported dry January 17–22, 1917, during ice period, and September 5–13, 1918.

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

DIVERSIONS.—Below all diversions of the Twin Falls North Side Land & Water Co. and above Big Malad Springs. Justice and Croco ditches (combined capacity, about 15 second-feet) divert 3 miles below gage; a few second-feet are occasionally wasted into river about 2 miles below gage.

REGULATION.—Flow regulated by diversions above station.

COOPERATION.—Field data furnished by Twin Falls North Side Land & Water Co.

Discharge measurements of Big Wood River near Gooding, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Mar. 29	S. H. Chapman[a]	2.03	142	May 13	Burdick and West[b]	1.46	54.7
Apr. 12	Baldwin and Burdick	1.96	126	July 26	William West	.92	12.8
25	S. H. Chapman	.90	13.6	Sept. 17	do	.12	[c].3

[a] Watermaster.
[b] Hydrographers, Twin Falls North Side Land & Water Co.
[c] Estimated.

Daily discharge, in second-feet, of Big Wood River near Gooding, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept
1	8.7	95	62	109	87	64	103	7.4	119	59	7.2	0.4
2	2.9	93	67	109	87	101	144	5.2	69	38	31	.4
3	30	90	60	116	84	109	195	7.2	22	23	24	.2
4	41	90	90	108	81	152	160	9.4	35	17	17	.2
5	39	89	67	97	80	160	144	25	22	11	17	.0
6	36	78	76	97	78	125	152	68	16	33	17	.0
7	34	69	80	117	75	101	108	90	10	30	9.4	.0
8	33	67	33	101	72	106	117	69	4.9	14	1.9	.0
9	32	63	186	122	66	109	100	78	4.2	6.0	1.6	.0
10	33	64	213	111	63	119	105	78	3.6	5.0	1.5	.0
11	37	64	195	64	62	116	111	78	3.4	5.5	1.6	.0
12	35	62	195	93	59	186	133	82	3.4	5.2	1.6	.0
13	35	66	186	90	54	279	116	52	3.5	5.2	1.7	.0
14	76	68	279	89	48	213	89	41	18	4.4	1.8	.2
15	84	69	222	87	44	152	72	27	26	4.0	1.8	.4
16	92	69	213	87	47	160	81	22	48	4.2	1.8	.6
17	100	78	204	87	48	160	103	27	57	4.5	1.6	.6
18	100	43	231	87	36	195	76	23	60	3.8	7.2	1.3
19	97	46	240	87	33	240	113	28	55	4.5	11	2.2
20	100	57	169	87	33	269	101	32	52	3.8	10	1.9
21	100	59	152	87	48	290	54	23	52	5.0	11	2.1
22	103	59	160	89	54	231	23	18	80	10	11	1.4
23	100	58	160	90	54	178	17	12	82	18	4.6	18
24	101	59	127	90	54	178	17	13	100	17	3.8	18
25	103	48	122	92	54	169	15	9.4	106	18	.9	18
26	95	46	116	92	55	169	14	12	108	14	.9	18
27	103	43	114	92	57	195	11	15	93	14	2.2	18
28	93	44	109	90	66	186	16	52	84	13	3.8	22
29	93	59	117	89	.....	144	13	80	76	9.4	2.2	20
30	87	62	109	87	.....	106	10	67	72	6.4	.6	20
31	91	.....	109	87	.....	124	.....	95	.....	6.2	.5	.....

NOTE.—Stage-discharge relation affected by ice Jan. 12 to Feb. 26; discharge estimated from daily gage heights, weather records, and observer's notes. Discharge interpolated Oct. 31, June 6, 7, Aug. 15, and Sept. 30.

Monthly discharge of Big Wood River near Gooding, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	103	2.9	68.2	4,190
November	95	43	65.2	3,880
December	279	33	144	8,850
January	122	64	94.5	5,810
February	87	33	60.0	3,330
March	290	64	164	10,100
April	195	10	83.8	4,990
May	95	5.2	40.2	2,470
June	119	3.4	49.5	2,950
July	59	3.8	13.3	818
August	31	.5	6.75	415
September	20	.0	5.46	325
The year	290	.0	66.5	48,100

BIG WOOD SLOUGH AT HAILEY, IDAHO.

LOCATION.—In sec. 9, T. 2 N., R. 18 E., at highway bridge one-eighth of a mile northeast of steel highway bridge across Big Wood River and one-eighth of a mile southwest of Hailey, Blaine County.

RECORDS AVAILABLE.—June 11, 1915, to September 30, 1918.

GAGE.—Vertical staff spiked to downstream side of highway bridge; installed April 4, 1917; read by employee of Idaho Irrigation Co. Prior to April 4, 1917, an inverted stadia board at same location was used; 2.0-foot mark on stadia board corresponds to 2.0-foot mark on present gage.

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

CHANNEL AND CONTROL.—One channel at all stages. Bed composed of sand and gravel. Banks covered with brush and subject to overflow. Control is top of a wood stave water pipe laid in bed of stream about 15 feet below gage.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year ending September 30, 1917, 2.62 feet May 7 (discharge, 244 second-feet); minimum stage, 3.25 feet (inverted gage) November 15 (discharge, 2.6 second-feet).

Maximum discharge recorded during year ending September 30, 1918, 197 second-feet August 15–17; minimum stage, 0.70 foot December 17 and February 1 (discharge, 2.0 second-feet). A lower discharge may have occurred during period of ice effect, February 2–5.

1915–1918: Maximum stage recorded, 2.62 feet May 7, 1917 (discharge, 244 second-feet); minimum discharge, 2.0 second-feet December 17, 1917, and February 1, 1918 (a lower discharge may have occurred during period of ice effect, February 2–5, 1918).

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

DIVERSIONS.—None.

REGULATION.—The amount of water passing gage is affected by load at power plant half a mile upstream, and there is considerable diurnal fluctuation. The main river is affected inversely by any such regulation, so that the accuracy of the summation of the two records is presumably affected only slightly by this factor.

ACCURACY.—Stage-discharge relation not permanent; affected by ice December 27, 29, and 30, 1916, January 13–18, and 22, 1917, and January 12–16, and February 2–5, 1918, and by débris on control May 28 to June 8, 1917. Curve used October 1, 1916, to August 8, 1917, well defined between 10 and 165 second-feet; was used direct except for period May 28 to June 8, 1917, for which the indirect method for shifting control was used. Curve used August 9, 1917, to February 1, 1918, fairly well defined between 10 and 170 second-feet. Curve used February 6 to September 30, 1918, well defined between 10 and 180 second-feet; was used direct except for period April 25 to July 21, 1918, for which the indirect method for shifting control was used. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table except for periods for which the shifting-control method was used; except for periods of ice effect for which it was ascertained by means of gage heights, weather records, and comparison with flow of main river; and except as indicated in footnote to tables of daily discharge. Records fair prior to April 1, 1918; thereafter good.

COOPERATION.—Gage-height record furnished by Idaho Irrigation Co. Discharge measurements furnished by Idaho Irrigation Co. and Idaho State engineer.

Big Wood Slough is a natural channel of Big Wood River that is utilized also as a tailrace for the Hailey power plant. The record from this station represents a portion of the natural flow of Big Wood River and that in conjunction with the record at the near-by station on the main river will show the entire flow of the river at this point. For record of station on the main river see page 105. For record of combined flow of Big Wood River and Big Wood Slough see pages 108 and 109.

Discharge measurements of Big Wood Slough at Hailey, Idaho, during the years ending Sept. 30, 1917 and 1918.

Date	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1917.		*Feet.*	*Sec-ft.*	1918.		*Feet.*	*Sec-ft.*
May 31	F. M. Atkinson [b]	(a)	138	Apr. 22	H. Armstrong	0.89	10.1
June 18	do	(a)	154	May 1	S. H. Chapman [b]	.94	9.8
27	Armstrong [c] and Crosby [c]	1.22	22.3	June 10	do	1.41	35.7
July 7	H. Armstrong	1.09	16.1	Aug. 3	do	2.10	173
16	do	.93	6.1	7	do	2.10	173
30	F. M. Atkinson	(a)	2.6	21	do	2.09	161
Aug. 14	do	(a)	112	Sept. 15	Mathews [c]	1.19	24.2
16	Armstrong and Denecke [c]	(a)	111	16	do	1.15	22.0
21	do	(a)	106				
27	F. M. Atkinson	(a)	49.6				
28	H. Armstrong	(a)	48.0				
Sept. 4	do	2.28	164				
14	do	2.36	165				

[a] Measurement referred to a temporary staff gage in tailrace of power plant.
[b] Employee of Idaho State engineer.
[c] Employee of Idaho Irrigation Co.

Daily discharge, in second-feet, of Big Wood Slough at Hailey, Idaho, for the years ending Sept. 30, 1917 and 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1916–17.												
1	14	20	2.9	174	135	146	66	60	146	19	5.5	170
2	14	20	2.9	174	165	137	78	194	156	18	5.5	154
3	14	20	3.0	194	165	137	70	204	156	12	5.5	162
4	14	20	3.0	174	165	165	63	204	156	18	6.0	154
5	14	21	3.0	174	165	165	76	204	146	17	6.0	154
6	14	20	40	174	165	165	78	244	146	12	8.5	154
7	15	20	31	174	165	165	78	244	165	14	12	154
8	15	20	25	174	165	165	80	124	165	26	15	147
9	15	25	24	174	165	165	80	124	174	14	61	147
10	15	27	137	165	165	165	107	165	174	14	84	154
11	15	24	165	165	165	146	107	165	128	18	71	154
12	18	19	110	174	165	128	108	184	128	18	56	154
13	17	15	5.7		165	137	110	184	128	21	96	162
14	17	8.9	3.8		165	156	110	146	146	15	96	170
15	17	2.6	3.8		165	165	110	165	146	8.9	96	162
16	17	3.0	4.4	130	165	146	98	184	146	6.7	95	154
17	17	3.0	190		165	137	78	194	128	5.5	102	162
18	20	21	184		165	137	86	27	146	6.0	117	147
19	20	4.4	184	146	165	137	126	22	146	5.5	110	162
20	20	4.4	165	184	146	146	93	23	124	4.9	102	162
21	20	3.2	165	165	165	107	126	21	128	4.9	102	154
22	20	2.9	165	150	165	84	128	21	117	4.9	88	162
23	20	2.9	174	146	165	98	146	23	93	4.9	102	177
24	20	2.9	184	146	165	102	165	21	146	4.9	102	170
25	20	2.9	184	174	184	102	184	20	128	4.9	106	162
26	21	2.9	184	174	146	81	60	21	124	4.9	111	162
27	21	2.9	170	165	165	102	74	23	22	5.5	116	162
28	21	2.9	165	165	128	72	59	174	19	5.5	117	162
29	21	2.9	150	165	.....	78	59	156	14	5.5	124	162
30	19	2.9		165	.....	78	60	156	21	5.5	170	162
31	19	.....	156	140	.....	78	.....	156	.....	5.5	170	.....

Daily discharge, in second-feet, of Big Wood Slough at Hailey, Idaho, for the years ending Sept. 30, 1917 and 1918—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.												
1	162	132	162	3.0	2.0	9.1	13	9.4	8.2	8.8	144	18
2	162	132	154	3.0		9.7	12	12	11	10	144	24
3	162	132	147	2.9	3.0	9.7	9.4	15	13	9.7	156	24
4	154	132	147	2.9		10	9.4	16	16	9.8	150	26
5	154	140	154	2.9		10	8.2	18	16	10	144	26
6	147	140	154	2.6	20	7.0	8.8	16	21	10	144	26
7	147	132	147	2.8	17	7.6	8.8	14	21	14	169	25
8	147	132	147	2.8	11	8.2	9.4	10	21	17	169	26
9	147	132	147	2.6	8.2	8.8	7.0	8.2	21	19	169	21
10	147	140	147	2.4	11	9.4	8.2	7.0	36	21	169	25
11	147	132	147	2.3	10	10	9.4	5.9	54	27	183	26
12	147	132	147		10	9.8	9.4	5.9	54	27	169	24
13	147	132	147		10	9.7	9.4	6.4	74	28	169	24
14	154	19	85	2.2	7.0	9.4	9.2	7.0	62	14	169	23
15	147	19	82		6.4	9.1	9.1	10	32	16	197	24
16	154	17	42		9.7	9.4	8.8	5.9	16	17	197	22
17	154	17	2.0	3.0	11	11	8.2	5.3	12	102	197	20
18	162	17	3.3	3.0	9.7	12	8.2	5.3	23	118	68	47
19	114	19	3.3	2.9	7.0	12	8.2	5.3	19	120	156	49
20	111	15	3.3	2.8	7.9	13	8.2	5.3	20	124	169	47
21	108	132	3.3	2.6	8.0	14	8.8	5.3	21	120	169	19
22	105	132	3.3	2.4	8.2	16	9.7	5.3	26	156	169	20
23	114	124	2.6	2.5	9.7	16	11	5.3	31	144	169	21
24	114	124	3.2	2.5	8.5	18	11	5.3	26	144	156	20
25	132	124	2.9	2.9	7.0	19	11	5.3	21	144	156	20
26	140	124	3.0	2.8	10	19	10	5.9	20	140	183	19
27	140	162	3.0	2.5	8.2	14	9.4	5.3	20	140	183	18
28	140	162	3.0	2.4	7.0	10	8.8	5.3	16	140	183	18
29	132	162	2.9	4.4	.....	8.2	8.5	5.3	11	140	183	17
30	140	162	3.0	2.6	.....	8.2	10	6.4	10	135	183	20
31	140	.....	2.9	2.3	.....	13	.....	7.6	.....	140	23	.....

NOTE.—Discharge interpolated on account of missing gage readings, Nov. 26 and Dec. 23, 1916, Nov. 25, Dec. 2 and 16, 1917, Jan 21, Feb. 21, Mar. 7–10, 12, 17, 20, 24, 27, Apr. 10, 14, 27, May 4, 21, 30, June 2, 3, 8, 20, 22, 26, 28, July 4, and Aug. 4, 1918. Discharge estimated on account of unreliable gage height, Dec. 17, 1916. Braced figures show mean discharge for periods indicated.

Monthly discharge of Big Wood Slough at Hailey, Idaho, for the years ending Sept. 30, 1917 and 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
1916–17.				
October	21	14	17.5	1,080
November	27	2.6	11.6	690
December	.....	2.9	101	6,210
January	.....	.....	160	9,840
February	184	128	162	9,000
March	165	72	129	7,930
April	184	59	95.4	5,680
May	244	20	124	7,620
June	174	14	125	7,440
July	26	4.9	10.7	658
August	170	5.5	79.3	4,880
September	177	147	159	9,460
The year	244	2.6	97.4	70,500
1917–18.				
October	162	105	141	8,670
November	162	15	109	6,490
December	162	2.0	71.0	4,370
January	.....	.....	2.67	164
February	20	.....	8.45	469
March	19	7.0	11.3	695
April	13	7.0	9.35	556
May	18	5.3	8.07	496
June	74	8.2	25.1	1,490
July	156	8.8	73.1	4,490
August	197	23	161	9,900
September	49	17	24.6	1,460
The year	197	.....	54.2	39,200

CAMAS CREEK NEAR BLAINE, IDAHO.

LOCATION.—In sec. 15, T. 1 S., R. 16 E., 500 feet below sheep bridge, a quarter of a mile north of Macon siding on Central Idaho branch of Oregon Short Line Railroad, 1½ miles below Malad Bridge of Central Idaho Railroad, 2¼ miles above backwater of Magic reservoir, and 4 miles southeast of Blaine, Blaine County. No tributaries or diversions between station and Magic reservoir.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 9, 1912, to September 30, 1918. Results of discharge measurements made in 1911 by Idaho Irrigation Co. are also available.

GAGE.—Gurley water-stage recorder on left bank; installed June 1, 1916, to replace Lallie water-stage recorder at same location which had been used prior to that date. Location and datum of gage unchanged since 1912. An employee of Idaho Irrigation Co. or of Idaho State engineer acts as observer.

DISCHARGE MEASUREMENTS.—Made from the sheep bridge or by wading.

CHANNEL AND CONTROL.—One channel at all stages. Bed of stream rocky but control somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year ending September 30, 1917, 5.00 feet at 4 p. m. June 1 (measured discharge, 872 second-feet); minimum stage from water-stage recorder 1.04 feet at midnight September 18–19 (discharge, 4.6 second-feet); probably not actual extremes.

Maximum stage recorded during year ending September 30, 1918, 4.70 feet at 3 p. m. April 3 (measured discharge, 736 second-feet); minimum stage from water-stage recorder, 0.92 foot August 3 and 4 (discharge, 2.7 second-feet); probably not actual extremes. High-water marks indicated that a stage of about 7.0 feet occurred several days previous to April 3.

1911–1918: Maximum stage recorded, 10.76 feet April 12, 1916 (measured discharge, 5,240 second-feet); minimum discharge, 2.5 second-feet September 2, 1915; probably not actual extremes.

ICE.—Observations discontinued during winter.

DIVERSIONS.—Many small diversions are made above station, but no data are available concerning them.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent; subject to change at high stages. Rating curve used October 1 to November 8, 1916, well defined between 5 and 450 second-feet. Standard curve used June 1, 1917, to September 30, 1918, fairly well defined between 3 and 900 second-feet; was used direct for periods June 26 to September 21, 1917, and April 23 to September 27, 1918; indirect method for shifting control used for intervening periods. Operation of water-stage recorder unsatisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspection of recorder graph, except for periods during which recorder was not operating, for which it was ascertained by estimation or interpolation, and except for periods for which the shifting-control method was used. Records fair.

COOPERATION.—Gage height furnished by Idaho Irrigation Co. Discharge measurements furnished by Idaho Irrigation Co. and Idaho State engineer.

Discharge measurements of Camas Creek near Blaine, Idaho, during the years ending Sept. 30, 1917 and 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1917.		*Feet.*	*Sec.-ft.*	1918.		*Feet.*	*Sec.-ft.*
June 1	Crosby [a] and Denecke [a].	5.00	872	Apr. 3	H. Armstrong.....	4.70	736
8	.....do.....	4.02	596	5	.....do.....	4.30	595
16	F. M. Atkinson [b]	3.41	402	12	.....do.....	4.27	598
19	Crosby and Denecke...	3.32	383	23	Chapman and Armstrong.....	2.90	260
26	Crosby and Armstrong.	2.75	220	May 2	S. H. Chapman [b].....	2.65	197
July 6	H. Armstrong [a].....	2.05	83	8	.....do.....	2.64	189
16	.....do.....	1.69	33.7	16	.....do.....	2.21	99
27	F. M. Atkinson.....	1.53	24.7	24	.....do.....	1.91	56
30	H. Armstrong.....	1.45	18.8	June 6	.....do.....	1.70	41.4
Aug. 3	F. M. Atkinson.....	1.38	16.8	30	.....do.....	1.48	20.9
7	Armstrong and Denecke	1.26	13.6	July 6	.....do.....	1.22	10.8
15	F. M. Atkinson.....	1.20	7.9	11	.....do.....	1.10	7.4
16	Armstrong and Denecke	1.18	10.6	17	.....do.....	1.14	7.0
21	H. Armstrong.....	1.20	9.3	26	.....do.....	.96	4.0
Sept. 5	.....do.....	1.14	8.3	Aug. 23	.....do.....	1.00	3.1
				Sept. 20	.....do.....	1.13	5.6

[a] Employee of Idaho Irrigation Co. [b] Employee of Idaho State engineer.

Daily discharge, in second-feet, of Camas Creek near Blaine, Idaho, for the years ending Sept. 30, 1917 and 1918.

Day.	Oct.	Nov.	June.	July.	Aug.	Sept.	Day.	Oct.	Nov.	June.	July.	Aug.	Sept.
1916-17.							1916-17.						
1.....	8.6	15	852	132	17	6.9	16.....	15	.....	407	36	8.4	6.6
2.....	9.6	15	792	114	17	6.6	17.....	15	.....	398	37	9.0	4.8
3.....	10	16	749	98	15	6.3	18.....	14	.....	389	37	11	4.8
4.....	11	15	712	91	13	6.0	19.....	15	.....	380	35	9.7	5.3
5.....	11	15	675	84	12	6.6	20.....	16	.....	369	32	9.7	6.0
6.....	11	16	639	77	12	6.3	21.....	15	.....	343	29	9.0	5.0
7.....	13	17	602	73	10	6.0	22.....	15	.....	319	27	8.4	.....
8.....	14	16	565	69	10	6.0	23.....	15	.....	288	26	8.1	.....
9.....	14	.....	565	65	11	5.8	24.....	15	.....	257	26	7.8	.....
10.....	14	.....	579	61	10	5.5	25.....	15	.....	232	26	7.5	.....
11.....	17	.....	565	56	9.7	5.5	26.....	15	.....	217	25	8.4	.....
12.....	16	.....	551	52	10	5.5	27.....	15	.....	195	24	8.7	.....
13.....	16	.....	510	48	9.4	5.6	28.....	14	.....	174	22	9.0	.....
14.....	15	.....	469	44	9.0	5.8	29.....	14	.....	165	20	9.0	.....
15.....	15	.....	438	40	9.0	6.3	30.....	14	.....	138	18	8.1	.....
							31.....	14	.....	.....	18	7.5	.....

Daily discharge, in second-feet, of Camas Creek near Blaine, Idaho, for the years ending Sept. 30, 1917 and 1918—Continued.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.							
1			195	58	18	2.8	3.8
2			195	54	16	2.8	4.0
3		734	195	48	14	2.7	4.2
4		670	190	43	13	2.7	4.4
5		607	195	40	11	2.8	4.6
6		537	202	37	9.0	2.8	4.8
7		523	200	34	7.8	2.8	5.0
8		456	193	33	6.6	2.9	5.2
9		415	190	35	6.6	2.9	5.4
10		428	176	35	6.3	2.8	5.6
11		680	160	35	6.0	3.3	5.8
12		607	142	33	6.1	3.6	6.0
13		579	118	27	6.2	3.6	6.0
14		510	113	27	6.4	3.6	8.4
15		469	108	27	6.6	3.6	12
16			102	34	6.8	3.6	11
17			100	37	6.9	3.6	8.7
18			92	35	6.6	3.6	8.1
19			87	33	6.0	3.6	7.5
20		360	77		5.5	3.6	6.9
21			67	40	4.6	3.6	6.3
22			64		4.8	3.6	6.0
23		252	60		4.6	3.6	6.0
24		247	57	67	4.6	3.5	6.1
25		240	48	57	3.9	3.5	6.2
26	456	232	46	52	3.2	3.4	6.3
27	663	224	44	40	3.2	3.3	6.3
28		212	54	31	3.2	3.3	
29		200	57	26	3.0	3.3	6.5
30		195	60	20	2.9	3.3	
31			61		2.9	3.6	

NOTE.—Discharge interpolated on account of lack of gage-height record, June 4–7, 15, 17, 18, July 4, 5, 7–15, 28, 29, Sept. 13, 1917, Apr. 4, May 1, 15, 22, 23, June 29, July 7, 12–16, 25, Aug. 14–22, 31, and Sept. 1–11, 18, 19, and 24–26, 1918; estimated Apr. 11, 16–22, June 20–23, and Sept. 28–30, 1918. No record obtained during periods for which no discharge is given. Braced figures show mean discharge for periods indicated.

Monthly discharge of Camas Creek near Blaine, Idaho, for the years ending Sept. 30, 1917 and 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
1916–17.				
October	17	8.6	13.9	855
November 1–8	17	15	15.6	248
June	852	138	451	26,800
July	132	18	49.7	3,060
August	17	7.5	10.1	621
September 1–21	6.9	4.8	5.87	244
1918.				
April 3–30	734	195	412	22,900
May	202	44	118	7,260
June	67	20	38.6	2,300
July	18	2.9	6.85	421
August	3.6	2.7	3.28	202
September	12	3.8	6.34	377
The period				33,500

LITTLE WOOD RIVER NEAR RICHFIELD, IDAHO.

LOCATION.—In sec. 30, T. 4 S., R. 20 E., half a mile above heading of Dietrich canal of Idaho Irrigation Co. and 1 mile east of railroad station at Richfield, Lincoln County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—January 1, 1911, to September 30, 1918.

GAGE.—Vertical staff on right bank; read by employees of Idaho Irrigation Co. Original gage was carried out by ice March 12, 1913, and present gage was installed at the same location and datum on March 27, 1913. Datum of gage lowered 1 foot September 5, 1918, but all gage readings made during the period September 5–30, 1918, were corrected to original datum.

DISCHARGE MEASUREMENTS.—Made from a suspension footbridge just below gage or by wading.

CHANNEL AND CONTROL.—Bed of stream composed of coarse gravel and small rocks; rough. Control probably permanent. Stage-discharge relation may be slightly affected during summer by light growth of aquatic plants.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year ending September 30, 1917, 4.45 feet June 1 (discharge, 601 second-feet); minimum stage, 2.23 feet July 16 and 17 (discharge, 54 second-feet).

Maximum stage recorded during year ending September 30, 1918, 3.58 feet April 12 (discharge, 316 second-feet); minimum stage, 1.92 feet June 19 (discharge, 22 second-feet).

1911–1918: Maximum stage recorded, 4.5 feet May 17 and 18, 1911 (discharge, 722 second-feet); minimum stage, 1.92 feet June 19, 1918 (discharge, 22 second-feet).

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

DIVERSIONS.—Small ranch diversions are made above station. Dietrich canal of Idaho Irrigation Co. diverts a short distance below.

REGULATION.—None.

ACCURACY.—Stage-sischarge relation changed during winter of 1917–18, when no records were obtained. Two rating curves used which are well defined below 450 second-feet, one applicable April 16 to October 17, 1917, and the other March 27 to September 30, 1918. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table and estimating or interpolating for periods of no record as noted in footnote to daily-discharge table. Records of daily discharge below 450 second-feet good; above that discharge and for periods of estimation and interpolation they are fair.

COOPERATION.—Gage-height record furnished by Idaho Irrigation Co. Discharge measurements furnished by Idaho Irrigation Co. and Idaho State engineer.

Discharge measurements of Little Wood River near Richfield, Idaho, during the years ending Sept. 30, 1917 and 1918.

Date	Made by—	Gage height.	Discharge.	Date	Made by—	Gage height.	Discharge.
1917.		*Ft.*	*Sec.-ft.*	1918.		*Ft.*	*Sec.-ft.*
Apr. 16	W. N. McConnel[a]	3.26	274	Mar. 27	H. Armstrong	3.30	263
May 2	do	3.79	418	Apr. 8	do	3.29	242
June 28	F. M. Atkinson[a]	2.92	175	13	do	3.58	300
July 10	H. Armstrong[b]	2.48	85	24	do	3.34	257
20	do	2.45	82	May 6	S. H. Chapman[a]	3.25	243
27	do	2.45	78	20	do	2.44	78
Aug. 1	do	2.36	69	June 1	do	2.08	40
1	Atkinson and Chapman	2.35	74	July 11	Carroll[b]	2.39	75
19	F. M. Atkinson	2.50	100	Aug. 9	Mathews[b]	2.42	80
20	H. Armstrong	2.52	97	24	S. H. Chapman	2.63	118
25	do	2.56	107	26	do	2.61	115
31	do	2.57	103				

[a] Employee of Idaho State engineer. [b] Employee of Idaho Irrigation Co.

Daily discharge, in second-feet, of Little Wood River near Richfield, Idaho, for the years ending Sept. 30, 1917 and 1918.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Date.	Apr.	May.	June.	July.	Aug	Sept.
1916–17.													
1	.....	400	601	142	71	111	16	263	541	277	54	80	146
2	.....	421	571	136	67	115	17	.....	601	277	54	80	146
3	.....	470	541	130	63	117	18	.....	601	277	56	90	146
4	.....		541	130	67	120	19	.....	571	291	70	97	154
5	.....	511	541	113	69	130	20	.....	541	320	83	97	157
6	.....	481	541	102	71	130	21	.....	541	291	80	97	157
7	.....	511	481	98	73	130	22	.....	541	263	80	100	157
8	.....	511	466	90	69	130	23	.....	541	249	82	104	157
9	.....	541	451	90	70	134	24	.....	541	236	80	111	157
10	.....	541	451	91	74	134	25	.....	571	209	90	106	159
11	.....	541	481	93	74	134	26	.....	601	209	91	111	159
12	.....	511	511	93	76	134	27	.....	571	196	83	111	157
13	.....	541	466	82	77	134	28	.....	571	174	80	102	157
14	.....	541	451	71	77	134	29	.....	601	157	76	102	159
15	.....	541	348	63	85	134	30	.....	601	150	76	111	168
							31	.....	601	.....	73	107	.....

Day.	Oct.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1917–18.								
1	168	.....		220	39	33	82	120
2	172	.....	250	230	40	37	80	121
3	172	.....		220	43	41	78	122
4	168	.....		230	43	40	77	123
5	165	.....	251	230	37	38	78	124
6	168	.....	230	240	36	37	79	125
7	168	.....	230	240	38	41	81	126
8	168	.....	240	230	41	43	82	127
9	170	.....	251	230	44	51	83	128
10	172	.....	262	230	47	58		129
11	172	.....	283	220	49	77		
12	172	.....	316	199	45	78		
13	172	.....	294	177	40	80		
14	172	.....	283	150	36	83		
15	172	.....	294	104	34	83		
16	168	.....	262	99	26	83	100	
17	168	.....	251	94	30	86		140
18	.....	.....	251	98	26	90		
19	.....	.....	240	90	22	96		
20	.....	.....	220	86	23	96		
21	.....	.....	230	72	26	103		
22	.....	.....	230	68	31	103		
23	.....	.....	240	57	33	98		
24	.....	.....	240	43	37	93	118	150
25	.....	.....	240	39	41	93	116	150
26	.....	.....	230	39	37	93	115	149
27	.....	251	240	41	37	88	115	148
28	.....	.....	240	41	39	88	116	148
29	.....	.....	230	36	37	88	117	148
30	.....	.....	220	36	32	86	118	
31	.....	.....	.....	34	.....	84	119	.....

NOTE.—Discharge estimated on account of missing gage heights, May 1, 3, and 4, 1917, Apr. 1–4, Aug. 10–23, and Sept. 11–23, 29, and 30, 1918; interpolated, May 19, 1917, July 4, 28, 30, 31, Aug. 1–3, 5–8, 25, 27–31, Sept. 1–4, 6–9, and 25–27, 1918. No record obtained during periods for which no discharge is given. Braced figures show mean discharge for periods indicated.

Monthly discharge of Little Wood River near Richfield, Idaho, for the years ending Sept. 30, 1917 and 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
1917.				
May	601	400	538	33,100
June	601	150	367	21,800
July	142	54	88.1	5,420
August	111	63	86.7	5,330
September	168	111	142	8,450
The period				74,200
1917-18.				
October 1-17	172	165	170	5,730
April	316	220	250	14,900
May	240	34	133	8,180
June	49	22	36.3	2,160
July	103	33	73.6	4,530
August	119	77	98.5	6,060
September	150	120	137	8,150

BRUNEAU RIVER NEAR ROWLAND, NEV.

LOCATION.—In sec. 29, T. 47 N., R. 56 E., at Hiram Salls's ranch, half a mile below Taylor Creek, 1½ miles above McDonald Creek and Rowland post office, Elko County, and 100 miles north of Elko, nearest railway point.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—May 19, 1913, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff gage fastened to left abutment of footbridge; read by Mrs. Hiram Salls.

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

CHANNEL AND CONTROL.—Bed composed of gravel and large boulders; fairly permanent. No well-defined control. Left bank subject to overflow at extremely high water.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 2.42 feet at 6 a. m. April 12 (discharge, 304 second-feet); minimum stage, 0.38 foot August 12 and 13 (discharge, 5 second-feet).

1913–1918: Maximum stage recorded, 7.0 feet May 14, 1917 (discharge, 1,440 second-feet); minimum stage recorded in 1918.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—A few small ditches divert water above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent during year, except as affected by ice. Rating curve well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Bruneau River near Rowland, Nev., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Dec. 5	L. W. Jordan	0.96	33.3
	do	1.03	37.6

Daily discharge, in second-feet, of Bruneau River near Rowland, Nev., for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1		23	42	33		37	276	231	128	23	7	5
2		23	39	33		45	253	238	124	23	7	6
3		23	33	30		42	209	258	124	20	7	6
4		23	33	33		45	203	271	124	19	6	6
5	18	24	33	33	30	47	201	281	124	18	6	6
6		25	31	33		54	188	283	130	15	6	6
7		26	31	37		42	180	267	136	15	6	6
8	18	27	32	37	30	44	198	255	141	14	6	7
9	18	27	32	37	30	38	227	274	147	14	6	9
10	18	27	33	23	32	59	281	244	147	15	6	10
11	18	27	33		37	68	297	222	149	14	5	10
12	18	27	33	28	35	76	301	198	143	13	5	10
13	19	29	33		34	68	292	184	139	13	5	9
14	20	29	33		34	56	281	173	126	13	5	9
15	20	28	33	32	39	51	251	167	118	13	6	12
16	20	27	33	33	44	56	220	165	105	13	7	13
17	20	27	33		39	84	198	157	89	13	7	12
18	20	26	33		42	91	178	151	88	12	7	12
19	20	26	33		47	102	169	147	128	10	8	10
20	22	26	33		44	107	171	165	100	10	8	10
21	23	26	33	31	44	128	194	171	207	9	8	10
22	23	26	33		46	157	220	155	151	9	7	
23	23	26	33		45	188	242	143	132	9	7	
24	23	26	32		39	209	244	143	138	9	6	
25	23	29	32	29	46	242	251	143	88	9	6	
26	23	30	32		45	253	227	139	62	9	5	10
27	23	30	32		43	281	207	136	50	8	5	
28	22	30	34	29	45	278	207	132	45	7	5	
29	22	33	33		.....	242	220	130	40	7	5	
30	23	37	33		.....	251	231	128	33	7	5	
31	23	.....	33		.....	288	.....	128	.....	7	5	.....

NOTE.—Braced figures show estimated mean discharge for periods indicated. Stage-discharge relation affected by ice during greater part of period from Jan. 11 to Feb. 7.

Monthly discharge of Bruneau River near Rowland, Nev., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	23	.....	20.3	1,250
November	37	23	27.1	1,610
December	42	31	33.2	2,040
January	37	.....	30.9	1,900
February	47	.....	37.5	2,080
March	288	37	120	7,380
April	301	169	227	13,500
May	283	128	190	11,700
June	207	33	115	6,840
July	23	7	12.6	775
August	8	5	6.1	375
September	13	5	9.1	542
The year	301	5	69.1	50,000

OWYHEE RIVER NEAR GOLD CREEK, NEV.

LOCATION.—In W. ½ sec. 24, T. 44 N., R. 54 E., an eighth of a mile below Wild Horse dam site, 9 miles west of Gold Creek, Elko County, and 65 miles north of Elko.

DRAINAGE AREA.—209 square miles (measured on map compiled by United States Indian Service).

RECORDS AVAILABLE.—March 26, 1916, to September 30, 1918.

GAGE.—Stevens continuous water-stage recorder on left bank; inspected by engineers of United States Geological Survey.

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

CHANNEL AND CONTROL.—Bed composed of rocks and loose sand. Control is rock riffle in each of two channels where stream is divided by small island about 500 feet below gage; subject to change by work of beavers. Left bank high and rocky; right bank is overflowed at extremely high stages; dense growth of willows along banks.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder; 4.06 feet at 10.30 a. m. April 11 (discharge, 260 second-feet); minimum discharge not determined because of backwater from beaver dams; probably less than 1 second-foot during part of August.

1916–1918: Maximum stage recorded, from water-stage recorder, 8.5 feet at 3 a. m. May 14, 1917 (discharge, from extension of rating curve, 1,380 second-feet). Minimum discharge during 1918.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Wild hay meadows above station irrigated during flood season.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed slightly by high water on May 29, affected by ice January 20 to March 24, and by backwater from beaver dams July 22 to September 30. Rating curves well defined below 450 second-feet. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph. Records good except for periods estimated, for which they are fair.

Discharge measurements of Owyhee River near Gold Creek, Nev., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Dec. 4	L. W. Jordan	1.74	10.1	June 12	J. W. Bones	1.70	14.1
Mar. 11	do	1.85	17.0	Sept. 4	do	[a] 2.24	1.2
Apr. 23	do	2.76	83				

[a] Stage-discharge relation affected by backwater from beaver dam 400 feet below gage.

Daily discharge, in second-feet, of Owyhee River near Gold Creek, Nev., for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	6	12	17	10			131	66	32	3		
2	6	11	15	9			108	65	27	3		1
3	6	12	13	9			76	67	24	2		
4	6	12	11	14			67	67	24	2		1
5	6	10	10	14			63	70	24	2		1
						12						
6	6	10	10	10			64	67	24	2		1
7	7	11	7	12			73	64	27	2		1
8	7	12	9	14			91	63	24	2		2
9	7	12	9	12			144	71	22	2		2
10	7	11	10	7			189	60	18	2		2
11	7	10	7	12		17	217	49	14	2		2
12	7	10	9	12			164	42	14	2		2
13	9	11	11	11			157	40	12	2		2
14	9	12	12	13			110	36	10	2		4
15	9	12	11	8	7		95	33	8	2		4
											1	
16	9	14	12	12			80	36	9	1		3
17	10	12	12	10			74	38	12	1		3
18	10	12	13	13		38	61	36	12	1		2
19	10	10	12	8			59	34	22	1		2
20	12	9	15				66	31	23	1		2
21	12	9	10				65	27	31	1		2
22	12	10	9				72	25	31			2
23	12	10	13				76	26	28			5
24	12	10	12				76	24	22			5
25	12	12	10			93	76	22	16			5
				8								
26	12	12	13			110	73	23	12	1		5
27	12	9	14			106	67	29	9			5
28	11	8	14			84	63	45	7			4
29	9	11	13		.....	102	59	46	5			4
30	8	15	11		.....	115	63	42	4			5
31	10	.....	9		.....	138	.....	46	.....			.....

NOTE.—Braced figures show mean discharge for periods indicated, when stage-discharge relation was affected by ice or beaver dams; estimated by comparison with discharge of Owyhee River near Owyhee.

Monthly discharge of Owyhee River near Gold Creek, Nev., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	12	6	8.97	552
November	15	8	11.0	655
December	17	7	11.4	701
January	14	.....	9.87	607
February	.....	.....	7.0	389
March	138	.....	44.5	2,740
April	217	59	92.6	5,510
May	71	22	44.8	2,750
June	32	4	18.2	1,080
July	3	.....	1.55	95
August	.....	.....	1.0	61
September	5	1	2.70	161
The year	217	.....	21.1	15,300

OWYHEE RIVER NEAR OWYHEE, NEV.

LOCATION.—In sec. 21, T. 46 N., R. 53 E., 40 feet above mouth of Jones Brook, half a mile above J. P. Jones ranch, 8 miles southeast of Owyhee, Elko County, and 14 miles above Nevada-Idaho State line; 5,550 feet above sea level.

DRAINAGE AREA.—380 square miles (measured on Forest Service maps).

RECORDS AVAILABLE.—November 29, 1913, to September 30, 1918.

GAGE.—Stevens continuous water-stage recorder on right bank; inspected by employee of United States Indian Service.

DISCHARGE MEASUREMENTS.—Made by wading or from cable 125 feet above gage.

CHANNEL AND CONTROL.—Bed consists of ledge rock and boulders filled in with sand and gravel; fairly permanent. One channel at all stages. Banks covered with brush; both subject to overflow. Control for low stages is riffle between gage and Jones Brook; permanent. For high stages rapids below brook may become control.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 4.66 feet at 1 a. m. April 12 (discharge, 406 second-feet); minimum stage, 1.26 feet at 5 a. m. September 7 (discharge less than 2 second-feet).

1914–1918: Maximum discharge, 1,750 second-feet on May 15, 1917; minimum discharge occurred in 1918.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—No important diversions above gage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined below 1,500 second-feet. Operation of water-stage recorder satisfactory except as noted in footnote to daily-discharge table. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspecting recorder graph. Records good for periods when recorder was in operation; for remainder of year, poor.

Discharge measurements of Owyhee River near Owyhee, Nev., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Mar. 14	L. W. Jordan	2.32	47.3	June 11	J. W. Bones	2.72	87
Apr. 24	do	3.59	207	Sept. 3	do	1.35	2.8

Daily discharge, in second-feet, of Owyhee River near Owyhee, Nev., for the year ending Sept. 30, 1918.

Day.	Oct.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	14		257	195	115	16		4
2	14		233	198	106	14		3
3	14		187	206	103	13		3
4	14		156	209	102			3
5	14		141	219	103			2
6	14		141	217	106			2
7	14	30	144	201	107			2
8	14		167	196	103	11		3
9	14		214	200	102			6
10	15		303	180	97			6
11	15		382	160	90			6
12	15		342	138	85			6
13	16		310	131	82			6
14	16	47	269	125	75	9	6	7
15	17	50	219	121	72			11
16	17	52	198	121	68			9
17		64	176	124	73			10
18		79	181	121	66			12
19		84	186	116	60			12
20		104	191	110	77			13
21		121	196	102	75	8		13
22		132	201	98	84			12
23		160	206	99	73			10
24	20	179	211	96	61			12
25		206	219	96	47			13
26		227	211	98	39			13
27		264	193	111	31	7	6	14
28		211	182	144	26		6	14
29		201	182	158	22	7	6	14
30		217	190	134	19		5	13
31		249	.....	130	.....		4	.....

NOTE.—Braced figures show mean discharge for periods indicated, when recorder was not in operation; estimated from discharge measurements, weather records, and comparison with flow of Owyhee River near Gold Creek.

Monthly discharge of Owyhee River near Owyhee, Nev., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	.....	.....	17.3	1,060
November	.....	.....	20	1,190
December	.....	.....	20	1,230
January	.....	.....	20	1,230
February	.....	.....	20	1,110
March	264	.....	98.0	6,030
April	382	141	213	12,700
May	219	93	147	9,040
June	115	19	75.6	4,500
July	.....	.....	9.45	581
August	.....	.....	5.90	363
September	14	2	8.47	504
The year	382	2	54.6	39,500

JACK CREEK NEAR TUSCARORA, NEV.

LOCATION.—In sec. 35, T. 42 N., R. 52 E., at R. M. Woodward's ranch, on Elko-Mountain City stage road, 8 miles above confluence with South Fork of Owyhee River, and 12 miles northeast of Tuscarora, Elko County.

DRAINAGE AREA.—31 square miles (measured on Forest Service maps).

RECORDS AVAILABLE.—May 15, 1913, to September 30, 1918.

GAGE.—Vertical staff on left bank about 500 feet below Woodward's house; read by R. M. Woodward. Datum raised 1.50 feet September 1, 1914.

DISCHARGE MEASUREMENTS.—Made by wading near gage.

CHANNEL AND CONTROL.—Bed composed of coarse gravel and small boulders; shifts during high water. No well-defined control. Banks low and lined with willows; may be overflowed to some extent during high water.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.70 feet at 6 p. m. June 13 (discharge, 124 second-feet); minimum stage recorded, 0.18 foot September 2 and 3 (discharge, 0.6 second-foot).

1913–1918: Maximum stage recorded, 3.6 feet at 6 p. m. May 14, 1917 (discharge, 465 second-feet); minimum stage occurred in 1918.

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

DIVERSIONS.—No important diversions above gage.

REGULATION.—None.

ACCURACY.—Stage-discharge relation changed during high water in May. Rating curve used October 1 to May 7 well defined. Curve used May 16 to September 30 fairly well defined. Gage read to hundredths once daily with occasional breaks of from 1 to 3 days when no reading was obtained. Daily discharge ascertained by applying daily gage height to rating table and interpolating for days when gage was not read. Records good.

COOPERATION.—Gage-height record furnished by R. M. Woodward.

Discharge measurements of Jack Creek near Tuscarora, Nev., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Mar. 13	L. W. Jordan	0.55	7.5	June 10	J. W. Bones	1.58	110
Apr. 24	do	1.16	60	Sept. 2	do	.18	.6

Daily discharge, in second-feet, of Jack Creek near Tuscarora, Nev., for the year endi Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sep
1	2	2	3	4	5	6	31	65	57	22	2	
2	2	2	3	4	5	6	29	70	56	20	2	
3	2	2	3	4	5	7	28	77	58	16	2	
4	2	2	3	4	5	7	24	86	60	14	2	
5	2	2	3	4	5	7	26	92	70	13	2	
6	2	2	3	4	5	7	28	98	79	11	2	
7	2	2	3	4	5	7	31	121	92	10	2	
8	2	2	3	4	5	7	37	114	97	9	2	
9	2	2	3	4	5	7	51	105	102	9	2	
10	2	2	3	4	6	7	55	90	107	9	2	
11	2	2	3	4	6	7	58	72	116	8	2	
12	2	2	3	4	6	7	60	59	116	8	2	
13	2	2	3	4	6	8	55	55	124	7	2	
14	2	2	3	4	6	10	42	52	110	6	2	
15	2	2	3	4	6	13	37	52	97	6	2	
16	2	2	3	4	6	13	33	53	84	5	2	
17	2	2	3	4	6	13	29	52	79	4	2	
18	2	2	3	4	6	14	28	52	72	3	2	
19	2	2	3	4	6	15	28	52	65	3	2	
20	2	3	3	4	6	16	31	53	60	2	2	
21	2	3	3	4	6	17	33	55	58	2	2	
22	2	3	3	4	6	24	42	56	54	2	2	
23	2	3	3	4	6	33	53	57	52	2	2	
24	2	3	3	5	6	35	60	58	50	2	2	
25	2	3	4	5	6	44	78	58	48	2	2	
26	2	3	4	5	6	48	60	58	44	2	2	
27	2	3	4	5	6	53	53	60	40	2	2	
28	2	3	4	5	6	32	51	72	35	2	2	
29	2	3	4	5	.....	35	58	62	28	2	1	
30	2	3	4	5	.....	35	60	59	25	2	1	
31	2	.....	4	5	.....	33	.....	58	.....	2	1	....

Monthly discharge of Jack Creek near Tuscarora, Nev., for the year ending Sept. 30, 19

Month.	Discharge in second-feet.			Run-off i acre-feet.
	Maximum.	Minimum.	Mean.	
October	2	2	2.00	
November	3	2	2.37	
December	4	3	3.23	
January	5	4	4.26	
February	6	5	5.68	
March	53	6	18.5	1,
April	78	24	43.0	2,
May	121	52	68.5	4,
June	124	25	71.2	4,
July	22	2	6.7	
August	2	1	1.9	
September	3	1	1.8	
The year	124	1	19.1	13,

JORDAN CREEK NEAR JORDAN VALLEY, OREG.

LOCATION.—In sec. 9, T. 30 S., R. 45 E., in canyon at lower end of Jordan Valle 9 miles below Jordan Valley post office, Malheur County. Cow Creek ent Jordan Creek 7 miles below station.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 28, 1911, to September 30, 1918.

GAGE.—Inclined staff on right bank an eighth of a mile below upper end of canyc read by Marcos Renteria.

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

CHANNEL AND CONTROL.—Bed consists of lava rock; probably permanent. Control affected by growth of moss during summer.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 8.96 feet at 5 p. m. March 27 (discharge, 1,700 second-feet); stream dry for greater part of August and September.

1911–1918: Maximum stage recorded, 12.3 feet April 26, 1917 (discharge, 3,620 second-feet); creek reported dry for periods of several weeks nearly every year.

ICE.—Stage-discharge relation affected by ice.

DIVERSIONS.—Practically entire summer flow of stream is used by many small diversions above gage. Flood water is also diverted into Antelope reservoir.

REGULATION.—None, except that due to diversions.

ACCURACY.—Stage-discharge relation permanent except as affected by ice. Rating curve well defined. Gage read to hundredths three times weekly except during winter, when it was read once weekly. Daily discharge ascertained by applying daily gage height to rating table and interpolating for days of no gage height. Records fair.

Discharge measurements of Jordan Creek near Jordan Valley, Oreg., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Dec. 9	H. J. Dean	3.71	56.2
May 31	G. C. Baldwin	4.85	203

Daily discharge, in second-feet, of Jordan Creek near Jordan Valley, Oreg., for the year Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	0.6	6.1	32	82	}	62	1,320	590	198	24	0.6	.....
2	.6	6.9	45	76	} 40	87	1,180	559	193	20	.4	.....
3	.7	6.9	45	69		113	960	590	184	16	.2	.....
4	.7	6.6	45	67	58	138	824	590	184	12	.0	.....
5	.8	6.4	45	65	70	131	689	655	184	11	.1	.....
6	.8	6.1	36	62	81	124	640	655	184	9.1	.1	.....
7	.9	6.0	27	58	93	88	590	607	188	9.1	.1	.....
8	.8	5.8	27	}	90	106	590	559	193	9.1	.1	.....
9	.8	6.6	43	}	88	124	590	590	184	9.1	.2	.....
10	.8	7.2	41	}	88	118	877	529	180	8.4	.2	.....
11	.8	7.5	44	}	88	124	1,270	442	176	8.3	.2	.....
12	.8	7.8	44	}	96	192	1,220	391	160	8.2	.2	.....
13	.8	16	44	}	105	260	1,130	340	152	8.1	.3	.....
14	.8	8.4	44	}	99	193	1,130	340	142	7.2	.2	.....
15	.9	9.1	44	}	94	160	960	328	131	6.8	.1	.....
16	1.1	8.4	44	} 40	88	200	837	364	118	6.4	.0	.....
17	1.2	8.4	44	}	85	240	724	340	99	6.0	.0	.....
18	1.3	11	44	}	81	302	590	293	88	5.6	.0	.....
19	1.5	10	45	}	78	364	559	276	71	4.2	.0	.....
20	1.6	9.1	47	}	63	442	559	260	66	3.7	.....	.....
21	1.8	9.0	49	}	71	516	590	250	60	3.6	.....	.....
22	2.0	8.8	51	}	80	590	724	240	320	3.4	.....	2.2
23	2.2	9.9	53	}	88	689	798	220	590	3.1	.....	3.0
24	3.0	11	58	}	76	837	798	211	240	2.8	.....	3.9
25	3.7	12	63	56	63	918	760	202	131	2.6	.....	4.7
26	3.7	11	68	56	68	1,090	724	193	88	2.3	.....	5.6
27	3.6	12	73	56	74	1,720	689	176	71	2.0	.....	6.4
28	3.5	14	78	56	68	1,470	590	176	51	1.5	.....	7.3
29	5.8	16	83	}	.....	1,220	590	211	38	1.3	.....	8.1
30	5.6	18	88	} 45	.....	1,090	590	220	26	1.1	.....	9.0
31	5.3	.....	93	}	.....	1,200	.....	202	.....	0.9	.....	.....

NOTE.—Braced figures show mean discharge for periods indicated, when stage-discharge relation was affected by ice; estimated from weather records and observer's notes. Probably zero discharge during most of period from Aug. 20 to Sept. 21.

Monthly discharge of Jordan Creek near Jordan Valley, Oreg., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	5.8	0.6	1.89	116
November	18	5.8	9.40	559
December	93	27	51.3	3,150
January	82	.....	49.0	3,010
February	105	.....	76.9	4,270
March	1,720	62	481	29,600
April	1,320	559	803	47,800
May	655	176	374	23,000
June	590	26	156	9,280
July	24	.9	7.00	430
August 1-19	.6	.0	.16	6.0
September 22-30	9.0	2.2	5.58	99.6

BOISE RIVER NEAR TWIN SPRINGS, IDAHO.

LOCATION.—About sec. 23, T. 4. N., R. 6 E. (unsurveyed), a quarter of a mile above Birch Creek, 1½ miles above flow line of Arrowrock reservoir, 4 miles below Twin Springs, Boise County, and 18 miles above Arrowrock.

DRAINAGE AREA.—830 square miles (measured on topographic maps)..

RECORDS AVAILABLE.—March 22, 1911, to September 30, 1918.

GAGE.—Friez water-stage recorder on right bank installed April 4, 1915, to replace vertical staff at same location and datum; inspected by Roy Call.

DISCHARGE MEASUREMENTS.—Made by wading or from cable 50 feet above gage.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; practically permanent. Control formed by well-defined gravel and boulder riffle. Banks not subject to overflow.

EXTREMES OF DISCHARGE.—Maximum stage from water-stage recorder, 7.10 feet at 4 a. m. June 14 (discharge, 7,990 second-feet); minimum stage, 1.96 feet at 2 a. m. November 20, 1917 (discharge, 232 second-feet.)

1911–1918: Maximum stage recorded, 7.82 feet at 3 a. m. May 15, 1917 (discharge, 9,430 second-feet); minimum stage recorded, 1.73 feet at 10.30 p. m. November 13, 1916 (discharge, 142 second-feet).

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

DIVERSIONS.—No important diversions above station and none between it and Dowling station below.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent. 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 and interpolating for days of no gage height. Records good.

Discharge measurements of Boise River near Twin Springs, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 18	H. J. Dean	2.11	319	Mar. 28	C. F. Elford	3.95	2,160
Mar. 24	C. F. Elford	3.55	1,770	June 6	R. B. Kilgore	5.63	4,720
25	.....do	3.75	1,930	July 24	.....do	2.56	626

Daily discharge, in second-feet, of Boise River near Twin Springs, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	340	334	934	1,280	369	467		3,810	2,940	1,670	524	351
2	334	334	600	1,090	516	501		4,350	2,860	1,580	592	340
3	328	334	388	1,000	546	538		4,800	3,200	1,490	531	328
4	328	340	351	982	524	576		5,270	3,900	1,400	516	322
5	322	334	407	886	524	553		5,650	4,530	1,310	501	317
6	322	334	407	802	509	494		5,080	5,270	1,220	486	317
7	322	334	351	820	538	524		4,620	5,270	1,140	471	305
8	322	328	328	749	501	584		4,530	5,840	1,080	456	334
9	322	328	363	706	453	524		3,900	6,410	1,090	441	460
10	322	322	357	487	480	528		3,360	6,790	1,110	426	401
11	322	322	328	623	553	531	2,360	3,020	6,990	1,030	420	363
12	322	322	340	706	584	535		2,770	6,990	972	401	346
13	328	322	413	647	584	539		2,860	7,590	915	394	346
14	334	311	474	623	553	542		3,110	7,190	953	394	426
15	328	311	407	608	501	546		3,360	6,220	906	446	516
16	322	317	382	600	509	561		3,360	5,460	839	553	420
17	317	300	394	576	546	600		3,020	5,080	802	501	382
18	305	294	600	600	487	714		2,690	4,890	776	509	363
19	322	268	689	516	453	962		2,450	4,800	749	460	351
20	328	263	706	460	413	1,180		2,290	4,530	731	453	346
21	328	284	615	460	487	1,250	2,370	2,220	4,620	681	474	346
22	322	328	600	480	516	1,300	2,770	2,220	4,080	664	487	340
23	322	322	1,190	546	538	1,380	3,200	2,370	4,530	631	453	388
24	322	334	1,410	546	509	1,640	3,280	2,530	3,720	623	426	446
25	334	357	1,040	623	440	1,920	3,360	2,690	3,200	655	413	394
26	346	322	953	576	480	2,020	3,110	2,690	2,770	615	401	382
27	334	278	1,990	509	453	2,120	2,770	2,690	2,370	608	394	369
28	328	334	3,280	553	426	2,220	2,860	2,450	2,140	561	382	363
29	300	388	3,020	553	.....		3,110	2,370	1,850	531	376	363
30	328	576	2,220	546	.....	2,350	3,540	2,610	1,760	509	376	401
31	340	.....	1,580	426	.....		.....	2,860	.....	509	363	.....

NOTE.—Braced figures show mean estimated discharge for periods indicated, when recorder was not in operation. Discharge interpolated Mar. 10–14, 26, 27, June 30 to July 5, Aug. 4–9.

Monthly discharge of Boise River near Twin Springs, Idaho, for the year ending Sept. 30, 1918.

[Drainage area, 830 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Inches.	Acre-feet.
October	346	300	326	0.393	0.45	20,000
November	576	263	329	.396	.44	19,600
December	3,280	328	875	1.05	1.21	53,800
January	1,280	426	664	.800	.92	40,800
February	584	369	500	.602	.63	27,800
March	.....	467	1,060	1.28	1.48	65,200
April	.....	.....	2,590	3.12	3.48	154,000
May	5,650	2,220	3,290	3.96	4.56	202,000
June	7,590	1,760	4,590	5.53	6.17	273,000
July	1,670	509	915	1.10	1.27	56,300
August	592	363	452	.545	.63	27,800
September	516	305	371	.447	.50	22,100
The year	7,590	263	1,330	1.60	21.74	962,000

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ARROWROCK RESERVOIR AT ARROWROCK, IDAHO.

LOCATION.—In E. ½ sec. 13, T. 3 N., R. 4 E., at Arrowrock, Boise County, 22 miles by road east from Boise.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 1, 1917, to September 30, 1918.

GAGE.—Graduations painted on center of upstream vertical face of concrete dam, in September, 1917; read by E. L. Ballard, superintendent of Arrowrock dam. Vertical staff in seven sections on south side of reservoir immediately above dam used after storage in reservoir was initiated, with exception of few months in 1916, when chain gage on dam was used. Uncertainty as to when changes in staffs by ice and frost action occurred make publication of actual observations prior to use of painted gage on dam face seem unwarranted.

EXTREMES OF CONTENTS.—Maximum stage recorded during year, 3,214.1 feet June 14 (contents, 285,800 acre-feet); minimum stage, 2,971.0 feet October 7–11 (contents, 239 acre-feet).

STORAGE.—Capacity of reservoir about 280,000 acre-feet as determined by latest capacity table; elevation of crest of spillway weir and top of movable crest, 3,205 feet and 3,211 feet, respectively. Record of storage or release each month used for determining discharge without storage for gaging station at Dowling below dam.

COOPERATION.—Record of gage height and table of storage capacity furnished by United States Reclamation Service.

Daily contents, in acre-feet, of Arrowrock reservoir at Arrowrock, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1...	2,740	13,690	19,130	95,020	109,800	111,600	218,000	249,500	274,100	272,300	166,400	71,120
2...	2,080	13,800	21,250	97,540	109,100	111,300	225,500	250,600	275,600	269,400	163,300	67,630
3...	1,480	14,140	22,320	99,070	108,100	111,300	231,000	253,400	276,800	266,800	160,200	63,900
4...	1,100	14,400	22,660	100,800	108,200	112,000	235,600	257,300	277,700	263,400	157,000	60,600
5...	770	14,520	22,930	102,300	108,400	114,300	238,000	263,900	279,800	260,400	153,800	57,600
6...	482	14,790	23,380	103,700	108,400	116,100	240,300	271,200	282,200	257,300	151,000	54,720
7...	239	14,830	24,180	104,700	108,400	117,900	242,400	274,400	283,100	254,500	147,700	52,020
8...	239	14,870	24,830	105,700	108,800	119,300	242,400	275,300	284,000	250,600	144,800	49,160
9...	239	14,910	25,810	106,400	108,400	121,900	243,200	275,300	284,900	247,000	141,800	46,950
10...	239	14,930	26,900	107,100	108,400	124,200	246,100	274,100	284,900	243,700	138,600	45,600
11...	239	14,950	27,890	106,900	108,400	126,400	247,500	272,000	285,200	240,800	135,300	43,750
12...	533	14,950	29,050	107,400	108,800	128,500	249,200	269,200	285,400	237,700	131,900	41,930
13...	1,080	15,020	30,390	108,100	109,100	131,000	250,900	266,500	285,600	234,100	128,600	40,150
14...	1,550	15,100	32,350	108,800	109,800	133,400	252,300	264,500	285,800	231,800	125,300	38,550
15...	1,970	15,140	34,810	109,100	110,000	135,600	252,800	263,400	285,100	227,800	121,800	37,240
16...	2,600	15,200	36,410	109,300	110,000	137,000	252,300	263,600	284,000	224,000	118,600	36,980
17...	3,500	15,260	37,870	109,600	110,100	138,000	250,900	263,100	283,200	220,600	115,300	35,930
18...	4,570	15,820	39,450	110,000	110,100	138,400	248,900	263,400	282,700	217,200	111,900	35,210
19...	5,400	16,030	41,880	110,300	110,800	140,000	247,500	264,800	282,500	213,500	108,800	34,100
20...	6,380	16,200	44,300	110,500	110,800	143,000	247,000	265,700	282,200	209,800	105,500	32,950
21...	7,370	16,260	46,800	110,100	110,800	147,000	247,500	266,200	281,900	206,000	102,300	31,730
22...	8,230	16,410	48,720	109,600	110,800	151,000	248,900	266,500	281,900	202,200	99,680	30,460
23...	9,100	16,540	49,930	109,100	110,800	155,200	251,700	267,100	281,900	198,100	97,200	29,400
24...	9,920	16,620	52,570	109,100	111,100	160,200	253,700	267,700	281,600	194,500	94,700	28,600
25...	10,780	16,710	56,640	109,300	111,300	165,700	254,000	269,200	280,700	190,800	92,110	27,890
26...	11,560	16,880	59,220	110,000	111,300	171,400	254,000	270,600	280,100	187,100	89,660	27,030
27...	12,230	16,920	62,470	110,300	111,500	179,700	252,800	271,800	279,500	183,200	86,900	26,190
28...	12,680	16,920	69,100	110,000	111,600	186,900	250,900	272,900	278,600	180,100	84,380	25,380
29...	13,070	17,060	79,300	110,000	.....	194,500	249,800	272,900	276,500	176,800	81,450	24,480
30...	13,180	17,770	86,750	110,000	.....	201,900	248,900	272,300	274,700	173,300	78,180	23,780
31...	13,390	.....	91,660	110,000	.....	209,500	.....	272,600	.....	169,800	74,780	.....

BOISE RIVER AT DOWLING'S RANCH, NEAR ARROWROCK, IDAHO.

LOCATION.—In sec. 15, T. 3 N., R. 4 E., at Dowling's ranch, Elmore County, three-quarters of a mile above Moore Creek, 2 miles below Highland power dam, and 4 miles below Arrowrock.

DRAINAGE AREA.—2,230 square miles (measured on topographic maps).

RECORDS AVAILABLE.—March 13, 1911, to September 30, 1918.

GAGE.—Friez water-stage recorder on left bank installed March 19, 1915, to replace an inclined staff set to same datum and at practically the same location; inspected by Al Davis and J. N. Davis.

DISCHARGE MEASUREMENTS.—Made from cable about 50 feet below gage.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; slightly shifting at intervals. Control formed by well-defined gravel and boulder riffle; shifts slightly.

EXTREMES OF DISCHARGE.—Maximum stage from water-stage recorder, 8.01 feet at 11 a. m. June 14 (discharge, 12, 200 second-feet); minimum stage occurred December 15 and 28 when stage was below gage owing to closing of gates at Arrowrock dam (estimated discharge, 20 second-feet).

1911–1918: Maximum stage recorded, 8.7 feet on June 13, 1911 (discharge, 15,100 second-feet); minimum discharge occurred December 15 and 28, 1917.

ICE.—Stage-discharge relation unaffected by ice.

DIVERSIONS.—No important diversions above station. New York canal of Boise project, United States Reclamation Service, diverts about 10 miles below and has maximum capacity of 2,500 second-feet. A number of smaller canals, total capacity of 2,500 second-feet, divert below New York canal.

REGULATION.—Since February 21, 1915, flow has been regulated by Arrowrock reservoir, 4 miles upstream, which has storage capacity of 280,000 acre-feet. Water is stored during winter and spring and released during irrigation season.

ACCURACY.—Stage-discharge relation practically permanent. Operation of water-stage recorder satisfactory. Daily discharge ascertained by applying to rating table mean daily gage height obtained by inspection of recorder graph. Records excellent.

COOPERATION.—Several discharge measurements furnished by United States Reclamation Service and Idaho State Engineer.

Discharge measurements of Boise River at Dowling's ranch, near Arrowrock, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 16	H. J. Dean	2.34	413	July 6	Steward and Tallman [b]	5.00	3,570
19	Steward [a] and Paul [a]	2.19	352	9	do	5.03	3,590
Mar. 9	G. C. Baldwin	1.75	172	26	R. B. Kilgore	4.71	3,030
29	C. F. Elford	3.07	929	Aug. 2	Steward and Tallman	4.50	2,630
May 4	do	6.08	6,080	Sept. 13	do	3.84	1,690
June 9	R. B. Kilgore	7.51	10,100				

[a] Engineers, U. S. Reclamation Service.

[b] Special deputy of State engineer.

Daily discharge, in second-feet, of Boise River at Dowling's ranch, near Arrowrock, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	1,000	647	621	968	1,190	1,100	942	5,980	4,270	4,160	2,630	2,400
2	1,000	654	608	1,030	1,210	1,100	1,580	5,980	4,160	3,950	2,630	2,400
3	942	660	621	1,030	1,140	1,100	1,900	6,110	4,850	3,950	2,550	2,320
4	884	660	621	1,040	1,130	322	1,900	6,110	5,340	3,850	2,550	2,170
5	876	673	621	1,040	1,140	227	1,900	6,110	6,390	3,740	2,550	2,030
6	892	687	491	1,040	1,150	227	1,900	6,950	7,980	3,540	2,400	2,030
7	751	708	480	1,040	1,150	238	2,470	7,680	8,290	3,640	2,320	1,960
8	716	716	362	1,040	1,150	235	2,890	8,130	9,070	3,740	2,320	1,960
9	716	716	344	1,070	1,150	181	2,890	8,130	10,100	3,640	2,320	1,900
10	708	716	318	1,070	1,160	184	4,060	7,530	11,100	3,540	2,400	1,900
11	647	716	265	1,030	1,160	188	4,850	7,380	11,400	3,440	2,400	1,830
12	513	723	213	1,040	1,140	195	4,970	7,240	11,400	3,440	2,400	1,770
13	530	723	188	1,040	1,080	198	4,970	7,240	11,800	3,350	2,400	1,700
14	547	723	129	1,050	1,080	202	4,970	7,240	11,800	3,250	2,470	1,640
15	513	716	20	1,060	1,080	202	4,970	6,530	10,700	3,350	2,470	1,510
16	423	716	112	1,060	1,080	977	4,970	6,110	9,070	3,350	2,550	1,370
17	293	716	188	1,060	1,080	1,110	4,970	5,340	8,130	3,250	2,550	1,260
18	314	74	177	1,070	1,080	1,150	4,500	4,390	7,680	3,160	2,550	1,310
19	331	744	88	1,080	1,080	908	3,850	3,950	7,530	3,160	2,470	1,380
20	344	513	74	1,090	1,080	737	3,850	3,950	7,090	3,160	2,400	1,380
21	357	577	76	1,130	1,080	744	3,850	3,950	6,810	3,160	2,240	1,360
22	366	608	553	1,130	1,090	766	3,950	3,950	6,810	3,160	2,100	1,360
23	380	701	843	1,140	1,090	774	4,620	3,950	6,810	3,070	2,100	1,310
24	362	701	868	1,140	1,100	797	5,720	3,950	6,530	3,070	2,030	1,260
25	371	701	235	1,140	1,100	812	5,980	3,950	5,460	3,070	2,030	1,250
26	418	716	542	1,140	1,100	835	5,980	3,950	4,730	2,980	2,030	1,240
27	496	716	667	1,140	1,100	859	5,980	4,160	4,390	2,890	2,030	1,220
28	553	716	20	1,140	1,100	884	5,980	4,160	4,060	2,720	2,100	1,200
29	571	723	74	1,150	.....	900	5,980	4,500	3,950	2,720	2,240	1,180
30	577	371	640	1,150	.....	908	5,980	4,500	3,850	2,800	2,240	1,160
31	608	.....	900	1,150	.....	925	.....	4,390	.....	2,720	2,400	.....

NOTE.—Discharge estimated Dec. 15 and 28; water surface below gage.

Monthly discharge of Boise River at Dowling's ranch, near Arrowrock, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	1,000	293	581	35,700
November	744	74	658	39,200
December	900	20	386	23,700
January	1,150	968	1,080	66,400
February	1,210	1,080	1,120	62,200
March	1,150	181	645	39,700
April	5,980	942	4,110	245,000
May	8,130	3,950	5,600	344,000
June	11,800	3,850	7,380	439,000
July	4,160	2,720	3,320	204,000
August	2,630	2,030	2,350	144,000
September	2,400	1,160	1,630	97,000
The year	11,800	20	2,400	1,740,000

COTTONWOOD CREEK NEAR ARROWROCK, IDAHO.

LOCATION.—In sec. 35, T. 4 N., R. 5 E., Boise County, 200 feet above bridge where Twin Springs-Arrowrock road crosses creek, a quarter of a mile north of south boundary of Boise National Forest, 1½ miles above mouth of creek, and 13 miles from Arrowrock by road.

DRAINAGE AREA.—23 square miles (measured on topographic maps).

RECORDS AVAILABLE.—March 7, 1914, to September 30, 1918, when station was discontinued.

GAGE.—Vertical staff in stilling well installed September 29, 1916, to replace vertical staff fastened to large cottonwood on left bank used previously; read by Mrs. Eldora Hedrick. From May 19 to July 4, 1916, readings were made on temporary vertical staff about 6 feet downstream. All gages referred to same datum.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders. Reinforced concrete control 15 feet below gage installed October 24, 1915.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.77 feet at 6 p. m. March 27 (discharge, 65 second-feet); minimum stage, 0.64 foot September 7 and 8 (discharge, 0.4 second-foot).

1914–1918: Maximum stage recorded, 2.30 feet at 4 p. m. April 26, 1917 (discharge, 166 second-feet); minimum stage, 0.64 foot September 7 and 8, 1918, and 0.03 foot (on original gage) August 12–15, 1915 (discharge, 0.4 second-foot).

ICE.—Records discontinued during winter.

DIVERSIONS.—No important diversions above gage. One small diversion at brush dam 250 feet below.

REGULATION.—No artificial regulation.

ACCURACY.—Stage-discharge relation permanent. Rating curve well defined. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Discharge measurements of Cottonwood Creek near Arrowrock, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 17	H. J. Dean	0.84	2.1	June 5	R. B. Kilgore	1.17	11.6
Mar. 24	C. F. Elford	1.62	47.7	July 24	....do	.77	1.3

Daily discharge, in second-feet, of Cottonwood Creek near Arrowrock, Idaho, for the year ending Sept. 30, 1918.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	8.0	51	30	9.5	2.9	1.3	0.6
2	9.5	48	36	10	2.7	2.5	.6
3	9.5	42	38	11	2.5	2.0	.6
4	11	37	35	11	2.4	1.3	.6
5	12	34	33	12	2.2	1.2	.5
6	13	31	31	9.9	2.2	1.2	.5
7	11	30	31	11	2.0	1.0	.4
8	11	29	35	9.5	1.8	1.0	19
9	11	39	31	9.5	1.8	.9	5.0
10	11	45	26	8.6	1.8	.9	3.4
11	12	43	24	8.3	1.5	.9	2.9
12	14	43	24	8.0	1.5	.9	3.9
13	13	47	24	7.4	1.5	.7	3.2
14	14	42	24	7.4	1.5	.8	3.0
15	14	36	22	7.0	1.5	1.0	2.9
16	14	33	21	6.7	1.5	1.2	2.5
17	15	31	19	6.1	1.5	1.3	2.2
18	30	31	19	5.8	1.5	1.2	1.8
19	44	31	18	5.5	1.5	1.0	1.7
20	43	31	17	5.5	1.4	1.0	1.5
21	45	31	16	7.0	1.3	1.0	1.5
22	44	31	15	6.1	1.3	1.0	1.5
23	45	31	15	5.5	1.2	1.0	3.2
24	48	31	14	5.5	1.2	1.1	2.9
25	48	32	14	5.5	1.2	1.1	2.2
26	55	34	14	5.5	1.3	1.1	1.7
27	63	31	16	5.3	1.3	1.0	1.5
28	62	31	14	5.0	1.2	.8	1.5
29	56	31	13	4.6	1.2	.7	1.5
30	53	31	13	3.0	1.2	.6	2.2
31	51	.....	12	.....	1.2	.6	.....

NOTE.—Discharge estimated June 2–4.

Monthly discharge of Cottonwood Creek near Arrowrock, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
March	63	8.0	28.7	1,760
April	51	29	35.6	2,120
May	38	12	22.4	1,380
June	12	3.0	7.42	442
July	2.9	1.2	1.64	101
August	2.5	.6	1.07	65.8
September	19	.4	2.55	152
The period	.....	.....	.....	6,020

SOUTH FORK OF BOISE RIVER NEAR LENOX, IDAHO.[1]

LOCATION.—In sec. 24, T. 2 N., R. 6 E., in canyon at R. S. Sandlin's ranch, 1 mile above mouth of Smith Creek, 4 miles above flow line of Arrowrock reservoir, 14 miles above mouth of South Fork, 18 miles above Arrowrock dam, and 7 miles south of Lenox post office, Elmore County.

DRAINAGE AREA.—1,090 square miles (measured on topographic maps).

RECORDS AVAILABLE.—March 24, 1911, to September 30, 1918.

GAGE.—Friez water-stage recorder on right bank in wooden shelter, referenced to inside and outside vertical staff gages; installed April 11, 1915, at same datum but about 25 feet below original inclined gage. Records from March 24, 1911, to April 10, 1915, refer to the inclined gage. R. S. Sandlin, observer.

DISCHARGE MEASUREMENTS.—Made from cable about 100 feet above gage, or by wading at a section about 150 feet below gage.

CHANNEL AND CONTROL.—Bed of stream consists of mud and gravel. Control of coarse gravel and rock; practically permanent. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage during year, from water-stage recorder, 7.33 feet at 11 a. m. June 13 (discharge, 5,040 second-feet); minimum stage, 2.28 feet for entire day September 3 (discharge, 293 second-feet).

1911–1918: Maximum stage recorded, 9.53 feet at 11 a. m. May 15, 1917 (discharge, 9,200 second-feet); minimum stage, 1.94 feet at 1 p. m. December 16, 1915 (discharge, 197 second-feet).

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

DIVERSIONS.—No important diversions above gage, and none below.

REGULATION.—No artificial regulation.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined. Operation of water-stage recorder fairly satisfactory. Daily discharge ascertained by applying to rating table mean gage height obtained by inspecting recorder graph and by interpolating for days of no gage height. Records fair during winter and excellent during remainder of year.

Discharge measurements of South Fork of Boise River near Lenox, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Mar. 26	C. F. Elford	4.59	1,510
June 7	R. B. Kilgore	6.46	4,060
July 25	.....do	3.10	596

[1] Formerly designated "South Fork of Boise River near Prairie, Idaho."

Daily discharge, in second-feet, of South Fork of Boise River near Lenox, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	353	363	734	788	350	425	2,370	2,590	2,110	1,090	449	308
2	350	363	609	723	410	418	2,210	2,760	2,210	1,020	490	299
3	346	363	418	667	429	445	1,830	3,010	2,320	992	469	293
4	340	370	327	672	429	453	1,660	3,540	2,700	931	437	296
5	337	370	388	647	445	441	1,450	3,990	3,010	902	410	296
6	333	367	410	586	445	392	1,370	3,840	3,540	872	395	296
7	330	367	388	581	422	416	1,340	3,540	3,690	815	392	299
8	330	363	360	577	399	441	1,370	3,400	3,840	776	385	308
9	333	363	381	537	370	465	1,660	3,140	4,140	844	374	662
10	330	363	392	380	374	445	2,210	2,760	4,300	844	367	511
11	330	363	377	407	407	453	2,320	2,530	4,470	776	356	441
12	330	367	374	586	449	485	2,370	2,370	4,470	728	350	410
13	330	370	449	550	465	490	2,480	2,370	4,810	687	346	388
14	333	370	498	519	441	453	2,380	2,530	4,640	707	343	407
15	333	367	477	506	418	433	2,280	2,590	4,140	771	360	515
16	333	374	418	502	426	453	2,180	2,480	3,400	697	388	473
17	330	367	414	490	445	485	2,080	2,260	3,140	647	414	418
18	330	353	449	498	437	528	1,980	2,110	2,950	619	409	395
19	330	340	485	490	399	623	1,880	1,970	2,880	591	405	385
20	346	333	498		346	718	1,780	1,880	2,640	581	400	374
21	343	333	481	480	392	810	2,020	1,880	2,700	554	395	367
22	343	374	445		410	872	2,320	1,920	2,590	541	390	363
23	346	377	609		457	992	2,530	1,970	2,760	528	386	367
24	343	367	734	469	449	1,190	2,640	2,060	2,320	511	381	403
25	340	370	643	511	395	1,370	2,700	2,160	2,020	577	367	426
26	350	367	628	400	400	1,570	2,530	2,160	1,780	554	353	407
27	356	340	760			1,880	2,210	2,160	1,610	523	337	392
28	343	333	1,090	407		1,830	2,110	2,060	1,430	506	327	381
29	330	437	1,160	433	.....	1,780	2,210	1,920	1,260	481	324	374
30	330	485	1,060	433	.....	1,920	2,420	1,880	1,160	461	321	395
31	370	.....	902	400	.....	2,210	.....	2,020	.....	449	314	.....

NOTE.—Braced figures show mean discharge for periods indicated; estimated from observer's notes and weather records. Discharge estimated or interpolated Oct. 28, Jan. 10, 31, Feb. 1, 2, Mar. 1, 7, 8, Apr. 14–19, June 27, 28, and Aug. 18–23.

Monthly discharge of South Fork of Boise River near Lenox, Idaho, for the year ending Sept. 30, 1918.

[Drainage area, 1,090 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Inches.	Acre-feet.
October	370	330	339	0.311	0.36	20,800
November	485	333	368	.338	.38	21,900
December	1,160	327	560	.514	.59	34,400
January	788	380	519	.476	.55	31,900
February	465	346	415	.381	.40	23,000
March	2,210	392	835	.766	.88	51,300
April	2,700	1,340	2,100	1.93	2.15	125,000
May	3,990	1,880	2,510	2.30	2.65	154,000
June	4,810	1,160	2,970	2.72	3.04	177,000
July	1,090	449	696	.639	.74	42,800
August	490	314	382	.350	.40	23,500
September	662	293	388	.356	.40	23,100
The year	4,810	293	1,010	.927	12.54	729,000

MOORE CREEK NEAR ARROWROCK, IDAHO.

LOCATION.—In sec. 21, T. 3 N., R. 4 E., Boise County, a quarter of a mile above highway bridge on Boise-Arrowrock road, half a mile above mouth, and 5 miles southwest of Arrowrock.

DRAINAGE AREA.—426 square miles (measured on topographic maps).

RECORDS AVAILABLE.—October 1, 1914, to September 30, 1918 (discharge measurements only, prior to December 1, 1915).

GAGE.—Graduations to feet and tenths chiseled on face of rock ledge on left bank of stream and marked with white paint; read by A. P. Webb.

DISCHARGE MEASUREMENTS.—Made by wading near gage or from highway bridge a quarter of a mile below.

CHANNEL AND CONTROL.—Bed consists of boulders and sand. Control shifts frequently owing to deposition of sand in low stages and cutting out in high stages. Stream usually carries much sand and silt as a result of placer operations in Idaho Basin. One channel at all stages.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 5.40 feet at 8.30 a. m. March 27 (discharge, 2,170 second-feet); minimum stage recorded, 0.78 foot September 5–7 (discharge, 29 second-feet).

1915–1918: Maximum stage, 6.3 feet April 11, 1916 (discharge, 3,140 second-feet); minimum stage recorded, 0.67 foot August 30, 1915 (measured discharge, 17.8 second-feet).

ICE.—Stage-discharge relation only slightly affected by ice, owing to hot springs just above station.

DIVERSIONS.—No important diversions above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation not permanent; bed of stream changes constantly between narrow limits. Two well-defined rating curves used, one from October 1 to March 20 and the other for remainder of year. Gage read to half-tenths once daily during high water and to hundredths during low water. Daily discharge ascertained by applying daily gage height to rating table. Records good.

COOPERATION.—Several discharge measurements made by employees of United States Reclamation Service.

Discharge measurements of Moore Creek near Arrowrock, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 20	H. J. Dean	1.17	52.9	July 6	Tallman and Wheeler [a]	1.50	113
Mar. 9	Baldwin and Steward [a]	2.45	277	9	Steward and Tallman [b]	1.48	105
23	C. F. Elford	4.45	1,270	27	R. B. Kilgore	1.09	56.9
30	....do	4.78	1,520	Aug. 2	Tallman and Steward	.98	51.3
June 8	R. B. Kilgore	3.05	466	Sept. 13	Steward and Tallman	1.08	47.0

[a] Engineer, U. S. Reclamation Service. [b] Special deputy of State engineer.

Daily discharge, in second-feet, of Moore Creek near Arrowrock, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	54	73	266	580	101	223	1,580	700	412	150	45	30
2	54	69	203	536	203	223	1,400	700	396	168	45	30
3	54	69	149	488	223	244	1,150	874	412	142	52	30
4	54	80	132	440	244	244	1,080	1,010	445	126	42	30
5	54	80	132	392	244	244	939	1,080	445	118	38	29
6	54	83	124	338	244	244	1,080	1,080	480	110	38	29
7	54	84	108	364	244	255	939	1,010	538	102	36	29
8	54	84	101	338	223	266	939	1,010	499	95	34	64
9	49	84	116	313	223	278	939	874	538	102	34	81
10	49	83	116	223	203	278	1,400	754	538	110	34	62
11	49	84	101	184	244	301	1,310	650	538	102	34	57
12	49	84	116	203	266	364	1,230	700	445	88	34	52
13	49	84	203	244	289	378	1,230	700	480	81	34	52
14	54	84	423	244	266	313	1,150	700	445	81	32	81
15	54	84	266	244	244	338	1,080	700	396	81	38	110
16	54	84	203	266	244	338	939	650	366	74	47	81
17	54	87	203	244	266	378	874	626	352	68	52	68
18	54	87	378	266	244	495	812	581	312	68	68	68
19	54	87	313	266	234	1,000	812	559	300	68	57	62
20	54	73	364	213	203	1,150	812	559	277	62	62	62
21	54	70	289	203	234	1,230	812	538	266	57	57	57
22	60	68	255	184	244	1,230	874	480	244	57	57	57
23	60	76	423	223	266	1,230	874	445	255	54	57	74
24	60	94	737	223	266	1,400	874	428	255	52	57	126
25	66	98	423	289	234	1,480	874	445	255	52	52	88
26	69	98	458	313	223	1,670	812	445	214	57	47	81
27	69	87	1,310	313	234	2,170	754	480	177	55	47	74
28	73	101	1,480	289	234	1,960	700	480	168	52	40	74
29	73	132	1,230	266	.....	1,760	700	445	168	52	34	74
30	60	166	929	255	.....	1,580	700	412	159	47	32	81
31	73	.....	680	234	.....	1,670	.....	412	.....	45	30	.....

NOTE.—Discharge interpolated Jan. 3 and 4.

Monthly discharge of Moore Creek near Arrowrock, Idaho, for the year ending Sept. 30, 1918.

[Drainage area, 426 square miles.]

Month.	Discharge in second-feet.				Run-off.	
	Maximum.	Minimum.	Mean.	Per square mile.	Inches.	Acre-feet.
October	73	49	57.2	0.134	0.15	3,520
November	166	68	87.2	.205	.23	5,190
December	1,480	101	395	.927	1.07	24,300
January	580	184	296	.695	.80	18,200
February	289	101	235	.552	.57	13,100
March	2,170	223	804	1.89	2.18	49,400
April	1,580	700	989	2.32	2.59	58,800
May	1,080	412	662	1.55	1.79	40,700
June	538	159	359	.843	.94	21,400
July	168	45	83.1	.195	.22	5,110
August	68	30	44.1	.104	.12	2,710
September	126	29	63.1	.148	.17	3,750
The year	2,170	29	340	.798	10.83	246,000

MALHEUR RIVER NEAR NAMORF, OREG.

LOCATION.—In sec. 2, T. 21 S., R. 40 E., at F. J. Froman's ranch, 1 mile south of east portal of tunnel No. 1 on Oregon & Eastern Railroad, 3 miles west of Namorf flag station, and 15 miles west of Harper post office, Malheur County. North Fork of Malheur River enters near Juntura, 20 miles above.

DRAINAGE AREA.—2,560 square miles (measured on General Land Office map).

RECORDS AVAILABLE.—May 24, 1913, to September 30, 1918.

GAGE.—Inclined staff on right bank, 300 feet above Froman's house; read by F. J. Froman. Datum raised 1.53 feet August 17, 1918.

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

CHANNEL AND CONTROL.—Bed composed of small boulders and gravel; practically permanent. Control 400 feet downstream; permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 4.6 feet at 3 p. m. March 20 (discharge, 1,410 second-feet); minimum stage recorded, 2.25 feet August 5 to 8 (discharge, 20 second-feet).

1913–1918: Maximum stage, 10.7 feet February 6, 1916 (discharge indeterminate on account of ice jam); maximum stage recorded during open water, 9.1 feet during night of February 7, 1916 (discharge, 8,450 second-feet). Minimum discharge, 15 second-feet August 8 to 10, 1914 (gage height, 2.40 feet). Highest stage in recent years 11.3 feet, March 1, 1910, determined by leveling to high-water marks pointed out by F. J. Froman June 4, 1918 (discharge estimated from extension of rating curve, 12,600 second-feet). Floods of March 7 and 9, 1894, are said to have been about 0.3 foot higher.

ICE.—Stage-discharge relation only slightly affected by ice during year.

DIVERSIONS.—Many small diversions from river and tributaries above gage, largest being near Drewsey and from North Fork near Beulah.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent, except as affected by change of datum August 17. Rating curve well defined. Gage read to quarter-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Malheur River near Namorf, Oreg., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
June 3	F. F. Henshaw	2.81	103	Aug. 14	R. C. Briggs	2.29	22.5
4	do	2.84	116	17	do	2.33	24.2

Daily discharge, in second-feet, of Malheur River near Namorf, Oreg., for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	68	103	165	237	150	165	833	251	129	56	23	32
2	78	103	172	214	100	172	786	237	119	52	23	30
3	78	109	180	193	150	193	786	223	109	47	22	34
4	74	109	180	193	170	206	543	223	109	44	22	34
5	74	109	172	193	193	237	476	251	109	42	20	32
6	74	103	165	193	237	214	476	251	103	42	20	32
7	74	103	142	206	269	206	476	284	98	38	20	32
8	74	119	165	237	307	142	476	298	98	34	20	32
9	78	129	165	223	223	214	476	284	98	32	23	41
10	78	135	165	165	359	214	476	269	98	359	23	46
11	78	135	152	193	193	223	476	269	98	103	23	46
12	78	129	165	180	206	214	510	251	98	59	25	51
13	78	129	165	214	214	223	543	237	103	56	26	55
14	78	135	165	206	193	237	476	223	98	38	23	58
15	78	135	165	206	193	214	476	223	98	32	26	78
16	78	135	165	206	172	206	446	214	83	32	26	97
17	78	135	165	206	206	307	415	223	78	32	26	78
18	78	142	172	214	172	348	415	237	83	28	28	86
19	78	135	165	206	193	980	415	223	74	28	32	91
20	78	135	165	180	165	1,240	317	206	68	25	36	86
21	83	135	172	142	180	1,140	284	206	63	25	43	78
22	83	129	172	152	172	786	284	193	59	23	46	82
23	98	135	180	152	172	742	284	180	63	23	43	91
24	103	135	180	180	180	698	284	172	74	23	41	266
25	103	142	193	193	214	658	298	165	74	23	36	203
26	103	142	206	206	135	698	298	154	63	23	36	194
27	103	142	214	193	172	786	298	154	56	23	34	139
28	103	152	214	165	193	980	274	154	56	23	33	102
29	103	165	214	193	.....	786	260	142	56	23	33	120
30	103	172	237	193	.....	833	251	135	56	22	32	162
31	103	.....	260	190	.....	786	.....	129	.....	22	32	.....

NOTE.—Stage-discharge relation affected by ice Jan. 31 to Feb. 4; discharge estimated.

Monthly discharge of Malheur River near Namorf, Oreg., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	103	68	84.5	5,200
November	172	103	131	7,800
December	260	142	179	11,000
January	237	142	194	11,900
February	359	100	196	10,900
March	1,240	165	485	29,800
April	833	251	437	26,000
May	298	129	215	13,200
June	129	56	85.7	5,100
July	359	22	46.2	2,840
August	46	20	28.9	1,780
September	266	30	83.6	4,970
The year	1,240	20	180	130,000

SOUTH FORK OF BURNT RIVER AT HARDMAN RANCH, NEAR UNITY, OREG.

LOCATION.—In NW. ¼ sec. 27, T. 13 S., R. 36 E., at ranch of J. R. Hardman, 8 miles southwest of Unity, Baker County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—April 13, 1916, to September 30, 1918.

GAGE.—Vertical staff on upstream end of right abutment of private wagon bridge; read by O. M. Hardman.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Control at broad gravel riffle; slightly shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded during year, 1.3 feet April 1 and 2 (discharge, 45 second-feet); minimum stage recorded, 0.61 foot September 15–19 (discharge, 11 second-feet—including Fleetwood ditch, 13 second-feet).

1916–1918: Maximum stage recorded, 1.7 feet May 15, 1917 (discharge, 83 second-feet); minimum stage occurred in 1918.

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

DIVERSIONS.—Eldorado ditch diverts water from most of the tributaries of South Fork above station and carries it over Beam Creek divide into Willow Creek where it is used for irrigation. This ditch carries water during the spring until May 1. Fleetwood ditch diverts water past gage during irrigation season (see p. 152).

REGULATION.—None.

ACCURACY.—Stage-discharge relation somewhat shifting. Well-defined rating curve used except Oct. 1–8 and June 1 to July 15 when indirect method for shifting control was used. Gage read to quarter-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table except for above periods. Records good.

Discharge measurements of South Fork of Burnt River at Hardman ranch, near Unity, Oreg., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Nov. 24	F. F. Henshaw	0.95	21.5	May 29	F. F. Henshaw	0.86	21.4
Mar. 29	C. L. Batchelder	1.22	38.8	Aug. 22	R. C. Briggs	.77	15.7
29	do	1.23	39.3				

Daily discharge, in second-feet, of South Fork of Burnt River at Hardman ranch, near Unity, Oreg., for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	20	22	24	24	24	25	45	36	21	18	14	13
2	20	22	22	24	24	25	45	36	21	18	14	13
3	20	22	22	24	24	25	43	36	21	18	14	13
4	20	22	22	24	24	25	40	37	21	18	14	13
5	22	22	22	24	24	25	37	37	21	18	14	12
6	22	22	22	24	24	25	36	37	21	18	15	12
7	22	22	22	22	24	25	34	37	20	17	15	12
8	22	22	22	22	24	25	34	37	20	14	16	12
9	22	22	22	22	24	25	34	36	20	14	16	12
10	22	22	22	22	24	25	34	36	20	15	16	12
11	24	22	22	22	24	25	34	36	19	15	16	12
12	24	22	22	22	24	25	34	36	19	15	16	12
13	24	22	24	22	24	26	34	36	19	14	16	12
14	24	22	24	22	24	26	31	36	19	14	16	12
15	22	22	24	22	24	26	31	36	19	14	16	11
16	22	22	24	22	24	26	31	36	19	16	16	11
17	22	22	24	22	24	26	33	36	19	16	18	11
18	22	22	24	22	24	26	31	36	19	18	16	11
19	22	22	24	22	24	28	30	25	19	18	17	11
20	22	22	24	22	24	28	30	25	19	18	18	13
21	22	22	24	22	24	28	28	25	19	18	18	13
22	22	22	24	22	24	30	28	25	19	18	15	13
23	22	22	24	22	24	30	27	22	19	16	15	13
24	22	22	24	22	24	34	27	22	18	17	14	12
25	22	22	24	22	25	37	27	22	18	15	14	12
26	22	22	24	22	25	37	27	22	17	15	16	12
27	22	22	24	24	25	36	27	22	17	15	16	12
28	22	22	24	24	25	36	27	22	17	15	14	12
29	22	22	24	24	.....	40	27	22	17	15	13	12
30	22	24	24	24	.....	43	27	22	18	14	13	12
31	22	.....	24	24	.....	43	.....	21	.....	14	13	.....

Monthly discharge of South Fork of Burnt River at Hardman ranch, near Unity, Oreg., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	24	20	22.0	1,350
November	24	22	22.1	1,320
December	24	22	23.3	1,430
January	24	22	22.7	1,400
February	25	24	24.1	1,340
March	43	25	29.2	1,800
April	45	27	32.4	1,930
May	37	21	30.6	1,880
June	21	17	19.2	1,140
July	18	14	16.1	990
August	18	13	15.3	941
September	13	11	12.1	720
The year	45	11	22.4	16,200

Combined monthly discharge of South Fork of Burnt River and Fleetwood ditch at Hardman ranch, near Unity, Oreg., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	24	20	22.0	1,350
November	24	22	22.1	1,320
December	24	22	23.3	1,430
January	24	22	22.7	1,400
February	25	24	24.1	1,340
March	43	25	29.2	1,800
April	45	31	34.6	2,060
May	47	29	40.0	2,460
June	28	24	26.1	1,550
July	25	18	21.5	1,320
August	24	15	20.5	1,260
September	15	13	13.8	821
The year	47	13	25.0	18,100

FLEETWOOD DITCH NEAR UNITY, OREG.

LOCATION.—In NW. ¼ sec. 27, T. 13 S., R. 36 E., opposite gage on South Fork of Burnt River.

RECORDS AVAILABLE.—April 1 to September 30, 1918.

GAGE.—Vertical staff driven in ditch bank; location changed May 29.

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

CHANNEL AND CONTROL.—Control somewhat shifting owing to small size of ditch and loose earth banks.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 1.4 feet May 1–3, 5, 6, 9–14, and 18 (discharge, 10 second-feet); minimum discharge, 0.38 foot April 6–13 (discharge, estimated 0.1 second-foot).

ICE.—No record during ice period.

ACCURACY.—Stage-discharge relation changed May 29 by relocation of gage. Rating curve used to May 29, poorly defined; for June 1 to September 30, fairly well defined. Gage read to quarter-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

Fleetwood (or Lancaster) ditch diverts water from South Fork of Burnt River in NW. ¼ sec. 27, a few hundred yards above river gage and irrigates about 600 acres of land near Unity.

Discharge measurements of Fleetwood ditch near Unity, Oreg., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.		Discharge.	Date.	Made by—	Gage height.		Discharge.
		Old gage.	New gage.				Old gage.	New gage.	
		Feet.	*Feet.*	*Sec.-ft.*			*Feet.*	*Feet.*	*Sec.-ft.*
Mar. 29	C. L. Batchelder...	0.50	0.02	0.35	Aug. 22	R. C. Briggs.....	.....	0.70	6.4
May 29	F. F. Henshaw....	1.29	.74	7.9	25	.....do.....	.....	.56	3.2

Daily discharge, in second-feet, of Fleetwood ditch near Unity, Oreg., for the year ending Sept. 30, 1918.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Day.	Apr.	May.	June.	July.	Aug.	Sept.
1.....	0.4	10	7.2	7.2	4.0	1.9	16.....	1.2	10	7.2	5.5	6.5	2.2
2.....	.4	10	7.2	7.2	4.5	2.1	17.....	1.4	10	7.2	5.5	6.5	2.2
3.....	.4	10	7.2	7.2	4.5	2.1	18.....	1.2	10	6.5	5.0	6.5	2.2
4.....	.4	8	7.2	7.2	4.5	2.1	19.....	.8	8	6.5	5.0	6.0	2.2
5.....	.4	10	7.2	7.2	4.5	2.3	20.....	.8	8	6.5	5.0	6.0	.8
6.....	.1	10	6.5	6.5	5.0	2.3	21.....	4.5	8	6.5	4.0	6.5	.8
7.....	.1	9	6.5	6.5	5.0	2.3	22.....	4.5	8	6.5	4.5	6.5	.8
8.....	.1	8	6.5	6.5	6.0	2.3	23.....	6.0	9	6.5	4.5	6.5	.8
9.....	.1	10	7.2	6.5	6.0	2.3	24.....	6.0	10	6.5	5.0	6.5	.8
10.....	.1	10	7.2	6.0	6.0	2.3	25.....	6.0	10	6.5	5.0	6.0	.8
11.....	.1	10	7.2	5.5	6.0	2.2	26.....	6.0	9	6.5	4.5	3.3	.8
12.....	.1	10	7.2	5.5	6.0	2.2	27.....	6.0	9	6.5	4.5	3.3	.7
13.....	.1	10	7.2	5.5	6.5	2.2	28.....	6.0	10	7.2	4.5	3.0	.7
14.....	1.2	10	7.2	5.0	6.5	2.2	29.....	6.0	9	7.2	4.5	2.6	.7
15.....	1.2	10	7.2	5.0	6.5	2.3	30.....	4.5	8	7.2	4.5	2.6	.7
							31.....	.....	8	.....	4.0	2.1	.....

Monthly discharge of Fleetwood ditch near Unity, Oreg., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
April	6.0	0.1	2.20	131
May	10	8	9.3	572
June	7.2	6.5	6.90	411
July	7.2	4.0	5.48	337
August	6.5	2.1	5.22	321
September	2.3	.7	1.68	100
The period				1,870

GRANDE RONDE RIVER AT LA GRANDE, OREG.

LOCATION.—In SW. ¼ sec. 31, T. 2, S., R. 38 E., a quarter of a mile above bridge on river road, half a mile northwest of La Grande, Union County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—February 16 to September 30, 1918.

GAGE.—Inclined staff on right bank; read by K. L. Myrick.

DISCHARGE MEASUREMENTS.—Made from Orodell Bridge below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel. Control is formed by remains of an old dam; fairly permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 7.28 feet March 26 (discharge, 2,540 second-feet); minimum stage recorded, 2.32 feet September 4 and 5 (discharge, 16 second-feet).

ICE.—No record during ice period.

DIVERSIONS.—None above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined. Gage read to hundredths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

COOPERATION.—Field data furnished by Grande Ronde drainage district.

Discharge measurements of Grande Ronde River at La Grande, Oreg., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Feb. 17	Rhea Luper [a]	4.33	471	Apr. 19	Rhea Luper	4.85	766
Mar. 19	do	5.75	1,280	Aug. 30	R. C. Briggs	2.37	20.8
30	do	6.74	2,060				

[a] Engineer for Grande Ronde drainage district.

Daily discharge, in second-feet, of Grande Ronde River at La Grande, Oreg., for the year ending Sept. 30, 1918.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1		290	1,960	940	290	81	44	19
2		395	1,640	940	275	74	31	18
3		360	1,200	1,000	245	69	33	18
4		290	1,200	1,130	260	66	31	16
5		308	1,060	1,060	260	64	29	16
6		325	880	880	275	61	28	17
7		360	940	820	275	56	25	18
8		342	880	760	260	54	31	18
9		325	1,340	660	260	56	32	18
10		308	1,560	560	275	61	29	23
11		260	1,560	515	245	60	27	29
12		325	1,480	515	360	66	23	23
13		415	1,340	515	245	56	23	29
14		395	1,270	515	205	50	22	50
15		415	1,060	515	180	59	22	56
16	515	515	940	515	158	76	25	51
17	475	710	880	515	180	59	33	37
18	515	1,270	760	560	137	50	37	33
19	395	1,270	710	435	128	41	45	30
20	360	1,340	610	475	118	33	61	28
21	230	1,270	710	360	118	44	55	28
22	378	1,640	880	342	109	37	49	28
23	395	1,880	1,000	342	192	35	43	29
24	325	2,120	1,340	308	180	97	37	29
25	260	2,540	1,060	308	118	84	33	31
26	360	2,540	940	290	109	69	32	28
27	325	2,120	820	325	100	59	28	27
28	230	1,800	820	308	97	54	23	28
29		1,800	820	308	92	51	22	30
30		2,120	880	308	87	44	21	33
31		2,040		308		37	20	

NOTE.—Discharge interpolated Aug. 31, Sept. 1, 2, 19, 23, and 29.

Monthly discharge of Grande Ronde River at La Grande, Oreg., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
February 16–28	515	230	366	9,440
March	2,540	260	1,040	64,000
April	1,960	610	1,080	64,300
May	1,130	290	559	34,400
June	360	87	194	11,500
July	97	33	58.2	3,580
August	61	20	32.1	1,970
September	56	16	27.9	1,660
The period				191,000

GRANDE RONDE RIVER AT ELGIN, OREG.

LOCATION.—In NW. ¼ sec. 14, T. 1 N., R. 39 E., at county bridge a quarter of a mile east of railroad station at Elgin, Union County, at lower end of Grande Ronde Valley, just below mouth of Phillips Creek.

DRAINAGE AREA.—1,350 square miles.

RECORDS AVAILABLE.—November 18, 1903, to August 15, 1912; March 27 to September 21, 1918.

GAGE.—Chain gage on downstream side of bridge near east abutment; read by J. W. Bickford. Present gage not referred to datum of earlier gage.

DISCHARGE MEASUREMENT.—Made from highway bridge a quarter of a mile above gage or by wading.

CHANNEL AND CONTROL.—Bed composed of heavy gravel and small boulders; fairly permanent. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage during year, 7.5 feet prior to March 28, determined from high-water marks (discharge, 5,370 second-feet); minimum stage recorded, probably close to actual minimum, 2.27 feet August 30 (discharge, 75 second-feet).

1903–1912 and 1918: Maximum stage recorded 8.1 feet March 22, 1910 (discharge, 9,220 second-feet); minimum discharge, 15 second-feet, August 29, 1905 (gage height, 1.3 feet). The flood of 1917 reached a stage of 10.3 feet (discharge estimated from extension of rating curve, 10,500 second-feet).

ICE.—No record during ice period.

DIVERSIONS.—Considerable area irrigated in Grande Ronde Valley above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation permanent during season. Rating curve fairly well defined. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

COOPERATION.—Part of field data furnished by Grande Ronde drainage district.

Discharge measurements of Grande Ronde River at Elgin, Oreg., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Feb. 13	Henshaw and Luper		1,660	Apr. 22	Rhea Luper	5.03	1,810
Mar. 28	Rhea Luper[a]	6.87	4,330	Aug. 31	R. C. Briggs	2.27	75
Apr. 6	....do	5.54	2,520				

[a] Engineer, Grande Ronde drainage district.

Daily discharge, in second-feet, of Grande Ronde River at Elgin, Oreg., for the year ending Sept. 30, 1918.

Day.	Mar.	Apr.	May.	June.	Sept.	Day.	Mar.	Apr.	May.	June.	Sept.
1			2,050	680	80	16		2,540	1,320		80
2			2,050	610	80	17		2,170	1,230		80
3			2,170	610	80	18		2,170	1,230		80
4		2,930	2,170	610	80	19		2,050	1,230		80
5		2,540	2,290	610	80	20		1,930	1,140		80
6		2,540	2,290	610	80	21		1,820	1,060		80
7		2,170	2,290	610	80	22		1,820	980		
8		2,050	2,170	610	80	23		1,930	820		
9		2,410	2,170	680	80	24		2,050	820		
10		2,540	1,930	680	80	25		2,050	750		
11		2,670	1,710	680	80	26		2,050	750		
12		2,800	1,600	750	80	27	4,550	2,050	750		
13		2,800	1,600	820	80	28	4,390	2,050	750		
14		2,800	1,500		80	29		2,050	750		
15		2,670	1,410		80	30		2,050	680		
						31			680		

NOTE.—No record obtained during periods for which no discharge is given.

Monthly discharge of Grande Ronde River at Elgin, Oreg., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
April 4–30	2,930	1,820	2,290	123,000
May	2,290	680	1,430	87,900
June 1–13	820	610	658	17,000
September 1–21	80	80	80.0	3,330

LADD CREEK NEAR HOT LAKE, OREG.

LOCATION.—In NW. ¼ sec. 12, T. 4 S., R. 38 E., 3 miles southwest of Hot Lake, Union County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—February 20 to May 25, 1918, when station was discontinued.

GAGE.—Vertical staff on highway bridge, 600 feet above house of William Banton, gage reader.

DISCHARGE MEASUREMENTS.—Made from wagon bridge a short distance below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; fairly permanent. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 2.10 feet March 18 (discharge, 192 second-feet). No record of low water.

ICE.—None during period of record.

DIVERSIONS.—None above station.

REGULATION.—None.

ACCURACY.—Stage-discharge relation practically permanent. Rating curve well defined below 120 second-feet. Gage read to quarter-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

COOPERATION.—Field data furnished by Grande Ronde drainage district.

Discharge measurements of Ladd Creek near Hot Lake, Oreg., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Feb. 20	Rhea Luper[a]	1.16	6.8	Apr. 21	Rhea Luper	1.37	36.2
Mar. 29	do	1.72	96	Aug. 30	R. C. Briggs	.43	1.4
Apr. 10	Luper and Lewis	1.63	78				

[a] Engineer, Grande Ronde drainage district.

Daily discharge, in second-feet, of Ladd Creek near Hot Lake, Oreg., for the year ending Sept. 30, 1918.

Day.	Feb.	Mar.	Apr.	May.	Day.	Feb.	Mar.	Apr.	May.
1		10	114	29	16		103	58	7
2		7	103	27	17		114	54	7
3		11	82	24	18		192	54	7
4		12	92	24	19		114	58	7
5		8	92	22	20	19	92	63	7
6		7	63	20	21	20	126	58	7
7		7	54	19	22	12	138	54	6
8		8	63	17	23	10	126	43	6
9		8	72	15	24	10	164	43	5
10		10	96	14	25	10	178	40	5
11		40	92	12	26	8	164	40	
12		29	72	11	27	10	138	38	
13		27	63	10	28	8	126	34	
14		29	63	8	29		114	31	
15		54	63	8	30		138	29	
					31		126		

Monthly discharge of Ladd Creek near Hot Lake, Oreg., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
February 20–28	20	8	11.9	212
March	192	7	78.1	4,800
April	114	29	62.7	3,730
May 1–25	29	5	13.0	645
The period				9,390

CATHERINE CREEK NEAR UNION, OREG.

LOCATION.—In SW. ¼ sec. 34, T. 4 S., R. 40 E., 5 miles southeast of Union, Union County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—February 21 to September 30, 1918; May 15, 1906, to May 18, 1907, at a station in sec. 3, T. 5 S., R. 40 E; July 20, 1911, to December 31, 1912, and March 20 to September 14, 1915, at a station in SW. ¼ sec. 1, T. 5 S., R. 40 E; practically same discharge at all three stations.

GAGE.—Vertical staff on right bank, opposite barn of E. H. Miles, observer.

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

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; fairly permanent. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 5.5 feet May 4 (discharge, 960 second-feet); minimum stage recorded, 2.05 feet, September 23–29 (discharge, 25 second-feet).

1906–7, 1911–12, 1915, and 1918: Maximum discharge recorded, 1,120 second-feet May 17, 1907 (gage height on first gage, 4.60 feet); minimum discharge (obtained as result of measurement January 13, 1913) 19.5 second-feet.

ICE.—No record during ice period.

DIVERSION.—Station above practically all irrigation.

REGULATION.—None.

ACCURACY.—Stage-discharge relation apparently permanent. Rating curve fairly well defined. Gage read to half-tenths once daily at low stages, and to tenths at high stages. Daily discharge ascertained by applying daily gage height to rating table. Records good.

Discharge measurements of Catherine Creek near Union, Oreg., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Mar. 29	Rhea Luper[a]	3.70	273	May 12	Rhea Luper	3.90	328
Apr. 10	do	4.22	434	Aug. 29	R. C. Briggs	2.10	28.3
21	do	3.67	264				

[a] Engineer, Grande Ronde drainage district.

Daily discharge, in second-feet, of Catherine Creek near Union, Oreg., for the year ending Sept. 30, 1918.

Day.	Feb.	Mar.	Apr.	May.	June.	Aug.	Sept.	Day.	Feb.	Mar.	Apr.	May.	June.	Aug.	Sept.
1	.....	60	395	580	218	.....	28	16	.....	76	275	365	.....	.....	28
2	.....	65	365	740	245	.....	28	17	.....	82	245	335	.....	.....	32
3	.....	70	335	825	305	.....	28	18	.....	82	195	218	.....	.....	32
4	.....	70	305	960	335	.....	28	19	.....	122	195	218	.....	.....	32
5	.....	76	245	870	305	.....	28	20	.....	155	245	195	.....	.....	35
6	.....	82	138	700	395	.....	28	21	65	138	335	174	.....	.....	35
7	.....	94	155	540	430	.....	28	22	65	138	365	245	.....	.....	28
8	.....	82	174	500	500	.....	32	23	76	155	395	218	.....	.....	25
9	.....	82	305	500	540	.....	32	24	65	232	430	195	.....	.....	25
10	.....	70	580	365	660	.....	28	25	76	365	540	218	.....	.....	25
11	.....	70	500	305	700	.....	28	26	65	465	430	195	.....	.....	25
12	.....	76	540	335	620	.....	28	27	65	365	365	174	.....	.....	25
13	.....	70	540	365	580	.....	28	28	70	335	365	138	.....	.....	25
14	.....	70	412	395	465	.....	28	29	.....	275	395	122	.....	28	25
15	.....	70	335	430	335	.....	28	30	.....	365	540	218	.....	28	28
								31	.....	365	.....	335	.....	28	.....

NOTE.—No record obtained during periods for which no discharge is given.

Monthly discharge of Catherine Creek near Union, Oreg., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
February 21–28	76	65	68.4	1,090
March	465	60	156	9,590
April	580	138	355	21,100
May	960	122	386	23,700
June 1–15	700	218	442	13,200
September	35	25	28.4	1,690

LITTLE CREEK NEAR UNION, OREG.

LOCATION.—In NW. ¼ sec. 22, T. 4 S., R. 40 E., 4 miles east of Union, Union County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—February 21 to May 31, 1918; April 11 to September 14, 1915, at a station in sec. 14, about 1½ miles upstream.

GAGE.—Vertical staff on right bank; read by C. N. Cross.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed composed of gravel; fairly permanent. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 4.8 feet May 2, 4, and 5 (discharge, 109 second-feet); no record of minimum discharge.

ICE.—No records during ice period.

DIVERSIONS.—Water is diverted for irrigating several small tracts above station.

REGULATION.—None.

ACCURACY.—Stage-discharge apparently changed from April 13 to 15. Two fairly well defined rating curves used. Gage read to half-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good except for the highest stages for which they are fair.

COOPERATION.—Field data furnished by Grande Ronde drainage district.

Discharge measurements of Little Creek near Union, Oreg., during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Feb. 21	Rhea Luper [a]	3.95	25.3	Apr. 21	Rhea Luper [a]	4.14	46
Mar. 29	do	4.32	56	Aug. 29	R. C. Briggs	[b] 3.46	2.2
Apr. 10	do	4.34	54				

[a] Engineer, Grande Ronde drainage district.
[b] Stage-discharge relation affected by backwater from dam.

Daily discharge, in second-feet, of Little Creek near Union, Oreg., for the year ending Sept. 30, 1918.

Day.	Feb.	Mar.	Apr.	May.	Day.	Feb.	Mar.	Apr.	May.
1		22	60	77	16		22	58	77
2		29	56	109	17		36	51	72
3		22	52	98	18		44	51	67
4		22	52	109	19		52	51	58
5		36	48	109	20		52	51	58
6		32	36	98	21	26	52	47	51
7		32	36	98	22	29	56	43	51
8		17	36	98	23	44	52	58	51
9		22	69	87	24	26	60	67	51
10		20	52	77	25	22	60	67	51
11		22	60	67	26	17	69	67	51
12		22	60	77	27	17	79	58	51
13		20	67	87	28	20	60	67	51
14		22	69	87	29		60	67	51
15		22	62	82	30		52	77	67
					31		60		67

Monthly discharge of Little Creek near Union, Oreg., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
February 21–28	44	17	25.1	398
March	79	17	39.6	2,430
April	77	36	56.5	3,360
May	109	51	73.7	4,530
The period				10,700

MILL CREEK NEAR COVE, OREG.

LOCATION.—In NW. ¼ sec. 25, T. 3 S., R. 40 E., just below power plant of Eastern Oregon Light & Power Co. near Cove, Union County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—February 22 to May 26, 1918, when station was discontinued.

GAGE.—Vertical staff on left bank; read by Robert Arent.

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

CHANNEL AND CONTROL.—Bed composed of gravel and boulders; probably permanent. No well-defined control.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 2.80 feet May 4 (discharge, 75 second-feet); no record of minimum discharge.

ICE.—None.

DIVERSIONS.—One small diversion for irrigation above station; pipe line of power plant diverts water but returns it above station.

REGULATION.—Operation of power plant may have caused some fluctuation in February and March.

ACCURACY.—Stage-discharge relation apparently permanent. Rating curve fairly well defined. Gage read to half-tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records good.

COOPERATION.—Field data furnished by Grande Ronde drainage district.

Discharge measurements of Mill Creek near Cove, Oreg., during the year ending Sept. 30, 1918.

[Made by Rhea Luper.] [a]

Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*
Feb. 22	1.95	9.5
Mar. 29	2.32	28.9
Apr. 19	2.33	33.0

[a] Engineer, Grande Ronde drainage district.

Daily discharge, in second-feet, of Mill Creek near Cove, Oreg., for the year ending Sept. 30, 1918.

Day.	Feb.	Mar.	Apr.	May.	Day.	Feb.	Mar.	Apr.	May.
1		14	45	54	16		14	37	54
2		14	41	54	17		14	39	50
3		9.5	33	64	18		16	29	50
4		14	33	75	19		22	33	41
5		11	29	64	20		22	37	37
6		5	26	64	21		22	37	33
7		11	33	64	22	9.5	26	45	37
8		11	33	59	23	11	26	45	37
9		14	45	64	24	8	29	45	33
10		8	45	54	25	14	45	45	33
11		19	45	59	26	11	45	45	29
12		16	45	54	27	11	37	41	
13		14	50	59	28	14	37	45	
14		14	41	54	29		33	45	
15		15	41	54	30		37	50	
					31		41		

Monthly discharge of Mill Creek near Cove, Oreg., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
February 22–28	14	8.0	11.2	155
March	45	5.0	21.1	1,300
April	50	26	40.1	2,390
May 1–26	75	29	51.3	2,650
The period				6,500

STATE DITCH NEAR ALICEL, OREG.

LOCATION.—In NW. ¼ sec. 16, T. 2 S., R. 39 E., 3 miles southeast of Alicel, Union County, 1 mile above point where State ditch empties again into old channel of Grande Ronde River.

RECORDS AVAILABLE.—March 21 to May 22, 1918, when station was discontinued.

GAGE.—Chain gage on highway bridge; read by Enoch Johnson.

DISCHARGE MEASUREMENTS.—Made from bridge.

CHANNEL AND CONTROL.—Excavated channel has been widened and deepened by flowing water, to solid gravel bottom; somewhat shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 11.1 feet March 26 (discharge, 3,010 second-feet); no record of minimum discharge.

ICE.—None.

ACCURACY.—Stage-discharge relation shifting. Well-defined rating curve used March 21–28; indirect method for shifting control March 29 to April 3; poorly defined curve April 4–30; discharge for May not computed. Gage read to tenths once daily. Daily discharge ascertained by applying daily gage height to rating table. Records fair.

COOPERATION.—Field data furnished by Grande Ronde drainage district.

State ditch is a channel excavated across a bend of Grande Ronde River and, at present, carries most of the flow of the river.

Discharge measurements of State ditch near Alicel, Oreg., during the year ending Sept. 30, 1918.

[Made by Rhea Luper.][a]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Feb. 19	4.03	394	Mar. 27	10.56	2,720
Mar. 21	8.10	1,530	Apr. 5	8.36	1,170

[a] Engineer, Grande Ronde drainage district.

Daily discharge, in second-feet, of State ditch near Alicel, Oreg., for the year ending Sept. 30, 1918.

Day.	Mar.	Apr.	Day.	Mar.	Apr.	Day.	Mar.	Apr.
1		2,230	11		1,280	21	1,500	600
2		1,790	12		1,320	22	1,750	620
3		1,500	13		1,360	23	2,130	670
4		1,180	14		1,110	24	2,530	750
5		1,160	15		920	25	2,780	810
6		980	16		1,070	26	3,010	830
7		860	17		980	27	2,840	810
8		780	18		810	28	2,380	720
9		920	19		700	29	2,360	700
10		1,100	20		620	30	2,330	700
						31	2,380	

Monthly discharge of State ditch near Alicel, Oreg., for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
March 21-31	3,010	1,500	2,360	51,500
April	2,230	600	996	59,300

PALOUSE RIVER NEAR POTLATCH, IDAHO.

LOCATION.—About sec. 3, T. 41 N., R. 5 W., a quarter of a mile above Kennedy Ford, three-quarters of a mile below Deep Creek, and 3½ miles below Potlatch, Latah County.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—October 24, 1914, to September 30, 1918.

GAGE.—Stevens continuous water-stage recorder on right bank; inspected by F. S. Vowell and C. D. Morris.

DISCHARGE MEASUREMENTS.—Made from bridge three-quarters of a mile below gage or by wading.

CHANNEL AND CONTROL.—Bed composed of boulders and solid rock; practically permanent. No well-defined control. At extremely high stages water flows around gage on right bank.

EXTREMES OF DISCHARGE.—Maximum stage during year from water-stage recorder, 10.80 feet at 10 p. m. March 26 (discharge, 2,780 second-feet); minimum stage recorded, 0.12 foot at 2 a. m. September 18 (discharge, 1.5 second-feet).

1914–1918: Maximum stage recorded, 13.98 feet at 9.15 a. m. March 21, 1916 (discharge, 5,090 second-feet); minimum stage recorded, 0.02 foot at 3 a. m. December 21, 1914 (discharge, about 1 second-foot).

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

DIVERSIONS.—None.

REGULATION.—Flow affected by regulation of Potlatch Lumber Co.'s reservoir 5 miles above station.

ACCURACY.—Stage-discharge relation for medium stages changed March 26 during high water; no change for extreme low and high stages. Rating curves well defined. Operation of water-stage recorder unsatisfactory at times as noted in footnote to table of daily discharge. Daily discharge for the greater part of the year ascertained by use of discharge integrator; for the period of high water in December and January by averaging results obtained by applying to rating table the mean gage heights for period of few hours each, determined from recorder graph by inspection, and for extremely low water during June to September by applying to rating table the mean daily gage height determined by inspecting recorder graph. Records good except for periods estimated, for which they are fair.

Discharge measurements of Palouse River near Potlatch, Idaho, during the year ending Sept. 30, 1918.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
Oct. 9	G. L. Parker	0.60	15.2	May 11	R. B. Kilgore	1.74	116
Feb. 11	T. R. Newell	4.85	784	11	do	1.54	90
18	do	3.34	430	June 27	L. D. Carson	.92	36.6
Mar. 24	do	8.23	1,700	27	do	.73	23.7

Daily discharge, in second-feet, of Palouse River near Potlatch, Idaho, for the year ending Sept. 30, 1918.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	12	10	14	900	390	190	1,130	215	75	13	11	10
2	13	11	17	1,060		206	970	210	76	23	11	6.5
3	13	12	20	741	435	302	774	181	67	20	11	6.7
4	14	14	18	810	373	364	649	169	69	23	13	
5	9.5	6	22	1,240	532	334	598	170	64	15	6.7	
6	9.4	12	15	1,240	1,430	292	548	169	55	21	9.1	
7	15	8.5	25	1,250	2,070	261	420	168	38	17	9.5	
8	10	11	19	1,510	1,480	214	402	162	36	15	11	
9	7.7	12		1,140	926	230	538	156	40	17	8.7	
10	9.2	9.6		825	771	291	758	122	42	15	12	
11	7.2	16		647	825	316	981	99	45	13		6.0
12	8.6	4	60	500	887	425	736	95	39	22		
13	8.9	9.8		478	680	658	762	98	42	11		
14	9.3	11			663	530	705	95	44	17		
15	7.2	9.6			534	502	624	81	36	7.3		
16	9.1	10		450	473	550	478	70	39	9.8		
17	9.8	9.4	101		332	838	462	77	31	12		
18	9.6	9.8	320		383	1,430	432	165	33	9.8	9.5	4.1
19	8.2	10	642		375	1,590	383	176	31	7.7		4.5
20	9.1	8.7	640	416	257	1,310	325	114	33	10		5.1
21	11	9.4	370		207	1,050	323	116	28	9.1		2.9
22	8.2	8.4	211		219	1,140	420	114	29	11		8.4
23	7.1	9.6	269		317	1,510	411	116	32	8.0		4.1
24	20	11	357	530	272	1,690	406	112	28	10		4.8
25	4.8	11	194		206	1,800	386	93	27	10		5.6
26	6.1	9.1	242		186	2,460	321	76	27	14	8	4.5
27	8.3	9.2	854	673	210	2,520	283	75	29	9.8	10	7
28	13	9.6	1,260	607	209	1,850	284	80	22	9.5	7	4.8
29	7.1	13	1,940	594	.....	1,320	234	75	26	10	9.8	6.7
30	8.5	11	2,260	371	.....	1,140	217	79	32	10	6.2	11
31	13	.....	1,250	370	.....	1,160	.....	74	.....	11	9.5	.....

NOTE.—Braced figures show mean discharge for periods indicated; estimated from weather records.

Monthly discharge of Palouse River near Potlatch, Idaho, for the year ending Sept. 30, 1918.

Month.	Discharge in second-feet.			Run-off in acre-feet.
	Maximum.	Minimum.	Mean.	
October	20	4.8	9.90	609
November	16	4.0	10.2	607
December	2,260	14	372	22,900
January	1,510	.....	686	42,200
February	2,070	186	573	31,800
March	2,520	190	918	56,400
April	1,130	217	532	31,700
May	215	70	123	7,560
June	76	22	40.5	2,410
July	23	7.3	13.3	818
August	13	6.2	9.55	587
September	11	2.9	6.02	358
The year	2,520	2.9	273	198,000

MISCELLANEOUS MEASUREMENTS.

Discharge measurements of streams in the Snake River basin at points other than regular gaging stations, made during the year ending September 30, 1918, are listed in the following table:

Miscellaneous discharge measurements in Snake River drainage basin during the year ending Sept. 30, 1918.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
Oct. 6	Spring Creek	Snake River	NW. ¼ sec. 9, T. 44 N., R. 114 W., at Wolff's ranch, 3½ miles south of Elk post office, Wyo.		5.0
June 14	do	do	do		39.0
24	do	do	do		13.4
July 18	do	do	do		11.6
25	do	do	do		13.0
Aug. 11	do	do	do		10.0
26	do	do	do		8.7
Sept. 12	do	do	do		10.7
25	do	do	do		9.8
Oct. 6	do	do	NE. ¼ sec. 24, T. 44 N., R. 115 W., near mouth, 1½ miles southeast of Cunningham's ranch, and 8 miles southwest of Elk, Wyo.		2.6
June 24	do	do	do		12.9
July 17	do	do	do		17.4
25	do	do	do		9.0
Aug. 11	do	do	do		12.2
26	do	do	do		8.8
Sept. 13	do	do	do		10.4
26	do	do	do		6.0
June 14	Ditch Creek	do	Sec. 30, T. 43 N., R. 115 W., half a mile above mouth and 2 miles west of Grovont, Wyo.		341
23	do	do	do		104
July 17	do	do	do		3.0
25	do	do	do		1.1
Oct. 7	Reserve Creek	do	Sec. 3, T. 42 N., R. 116 W., half a mile above mouth and 2½ miles north of Teton post office, Wyo.		a4.0
June 8	do	do	do		2.4
July 2	do	do	do		a.1
26	do	do	do		1.8
Aug. 12	do	do	do		2.7
29	do	do	do		2.4
Sept. 9	do	do	do		2.6
23	do	do	do		2.5
June 8	Stewart Creek	do	NW. ¼ sec. 3, T. 42 N., R. 116 W., half a mile above mouth and 2 miles north of Teton post office, Wyo.		36.8
July 2	do	do	do		18.4
26	do	do	do		6.8
Aug. 12	do	do	do		.2
June 15	Deland ditch	do	Sec. 10, T. 42 N., R. 116 W., half a mile above mouth and 5½ miles north of Zenith post office, Wyo.	2.01	37.6
23	do	do	do	1.40	19.9
July 10	do	do	do	1.14	11.7
27	do	do	do	1.53	21.3
Aug. 13	do	do	do	1.49	15.8
21	do	do	do	.85	4.7
28	do	do	do	1.24	5.7
Sept. 13	do	do	do	1.23	5.2

a Estimated.

Miscellaneous discharge measurements in Snake River drainage basin during the year ending Sept. 30, 1918—Continued.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
June 15	Owl ditch	Snake River	NE. ¼ sec. 21, T. 42 N., R. 116 W., 4 miles north of Zenith post office, Wyo.		13.6
23	do	do	do		11.3
July 10	do	do	do		7.6
27	do	do	do		10.0
Aug. 13	do	do	do		5.3
28	do	do	do		1.5
Sept. 13	do	do	do		3.4
June 22	Spring Creek	do	SW. ¼ sec. 21, T. 42 N., R. 116 W., 3 miles north of Zenith post office, Wyo.		5.4
July 10	do	do	do		3.7
27	do	do	do		3.9
Aug. 13	do	do	do		3.5
28	do	do	do		1.8
July 6	Ely Creek	do	About sec. 24, T. 41 N., R. 116 W., 400 feet above mouth and 4 miles west of Jackson, Wyo.		15.1
Aug. 2	do	do	do		12.4
19	do	do	do		10.9
Sept. 3	do	do	do		10.5
16	do	do	do		9.8
29	do	do	do		5.7
July 6	Blue Crane Creek	do	Sec. 13, T. 40 N., R. 117 W., 2 miles west of Cheney post office, Wyo.	1.95	10.6
Aug. 2	do	do	do	1.87	5.9
19	do	do	do	1.94	9.3
Sept. 18	do	do	do	1.84	5.0
June 18	Game Creek	do	SE. ¼ sec. 26, T. 40 N., R. 116 W., 1 mile above mouth and 2 miles southeast of Cheney post office, Wyo.		7.2
July 7	do	do	do		4.6
Aug. 3	do	do	do	4.54	3.4
20	do	do	do		3.5
Sept. 5	do	do	do	4.49	2.3
19	do	do	do	4.45	1.9
July 20	Porcupine Creek	do	NW. ¼ NE. ¼ sec. 11, T. 39 N., R. 116 W., 5 miles southeast of Cheney post office, Wyo.	4.08	1.4
Aug. 31	do	do	do	3.91	.9
July 20	Martin Creek and Spring Canyon.	do	About sec. 26, T. 38 N., R. 116 W., 13 miles south of Cheney and 15 miles east of Alpine, Idaho.	1.99	5.3
Oct. 1	do	do	Near mouth, 21 miles south of Cheney, Wyo.		3.9
June 15	Table Creek	do	700 feet above mouth. Table Creek enters Snake River 13 miles above mouth of Snake River canyon near Alpine, Idaho.	.98	2.5
July 10	do	do	do	.85	.9
June 20	Pine Bar Creek	do	Near mouth of creek. Pine Bar Creek enters Snake River on left 14 miles below mouth of Hoback River.	1.97	16.6
July 19	do	do	do	1.74	4.1
27	do	do	do	1.72	3.0
Aug. 30	do	do	do	1.60	1.5
Sept. 9	do	do	do	1.62	1.5
July 10	Trail Creek	do	Near mouth of creek and 12 miles above mouth of Snake River canyon near Alpine, Idaho.	1.55	.9
10	Station Creek	do	Mouth of creek. Station Creek enters Snake River on right 11 miles above Snake River canyon near Alpine, Idaho.	1.90	.8

Miscellaneous discharge measurements in Snake River drainage basin during the year ending Sept. 30, 1918—Continued.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
July 15	Red Creek	Snake River	Short distance above mouth. Red Creek enters Snake River on right 5 miles above mouth of Snake River canyon near Alpine, Idaho.	1.40	4.4
22	do	do	do	1.30	3.3
31	do	do	do	1.22	1.5
15	Cottonwood Creek	do	¼ mile above mouth. Cottonwood Creek enters Snake River on right 4 miles above mouth of Snake River canyon near Alpine, Idaho.	.75	a 3.0
22	do	do	do	1.60	3.6
31	do	do	do	1.47	1.0
June 6	Trout Creek	Salt River	Near mouth. Trout Creek enters Salt River about half a mile above its mouth.	.....	25.6
July 2	do	do	do	1.88	7.1
11	do	do	do	1.88	7.4
25	do	do	do	1.79	4.9
Aug. 3	do	do	do	1.72	3.9
11	do	do	do	1.68	3.3
Sept. 6	do	do	do	1.60	2.3
June 26	Williams Creek	Snake River	3 miles west of Alpine, Idaho, on south side of Snake River.	.....	2.8
July 11	do	do	do	.....	1.8
23	do	do	do	.....	1.6
June 4	Alpine Hot Springs	Indian Creek	Near mouth, 5 miles west of Alpine, Idaho.	.....	8.0
Aug. 23	do	do	do	.....	3.5
Sept. 7	do	do	do	.....	3.0
21	do	do	do	.....	2.3
July 25	Hansen Springs	Snake River	Near mouth of creek, 3 miles northwest of Blowout, Idaho.	.....	4.2
Aug. 9	do	do	do	.....	6.1
22	do	do	do	.....	4.7
Sept. 7	do	do	do	.....	3.4
21	do	do	do	.....	2.6
June 26	Summitt Creek	do	About sec. 18, T. 2 S., R. 45 E., 1 mile below Blowout, Idaho.	.....	2.8
6	Little Elk Creek	do	About sec. 23, T. 1 S., R. 46 E., a short distance above mouth and 5½ miles northwest of Blowout. Idaho.	.....	6.3
July 8	Upper Spring Creek	Rainy Creek	Short distance above mouth, near Swan Valley, Idaho.	.....	3.3
24	do	do	do	.....	3.0
Aug. 8	do	do	do	.....	2.7
21	do	do	do	.....	2.9
Sept. 20	do	do	do	.....	2.7
July 9	Lower Spring Creek	do	do	.....	8.6
24	do	do	do	.....	8.7
Aug. 8	do	do	do	.....	10.2
21	do	do	do	.....	10.2
Sept. 20	do	do	do	.....	7.1
June 8	Pritchard Creek	Snake River	¾ mile west of Snake River ranger station and 5 miles west of Swan Valley, Idaho.	1.27	7.6
Aug. 11	do	do	do	.89	2.0
June 8	Granite Creek	do	Near mouth, 6 miles east of Antelope post office, Idaho.	1.10	2.2
24	do	do	do	1.04	1.7
11	Black Canyon Creek	do	½ mile above mouth and 8 miles below Swan Valley, Idaho.	1.68	23.0
July 7	do	do	do	1.28	6.2
23	do	do	do	1.18	4.1
Aug. 7	do	do	do	1.09	3.2
20	do	do	do	1.04	2.4
Sept. 4	do	do	do	1.00	1.5
18	do	do	do	.99	1.3

a Estimated

Miscellaneous discharge measurements in Snake River drainage basin during the year ending Sept. 30, 1918—Continued.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
				Feet.	*Sec.-ft.*
July 7	Indian Rock Springs..	Snake River.....	North side of Snake River, ¼ mile above Burns Creek and 16 miles above Heise, Idaho.	.....	37.2
23	.....do.....	.....do.....	.....do.....	.....	37.9
Aug. 7	.....do.....	.....do.....	.....do.....	.....	40.0
Sept. 4	.....do.....	.....do.....	.....do.....	.....	34.8
18	.....do.....	.....do.....	.....do.....	.....	33.0
June 11	.....do.....	.....do.....	T. 3 N., R. 42 E., 500 yards above mouth and 11 miles southeast of Heise, Idaho.	3.50	111
July 7	.....do.....	.....do.....	.....do.....	2.62	23.9
23	.....do.....	.....do.....	.....do.....	2.52	18.8
Aug. 7	.....do.....	.....do.....	.....do.....	2.47	17.3
20	.....do.....	.....do.....	.....do.....	2.44	14.4
Sept. 4	.....do.....	.....do.....	.....do.....	2.43	13.4
18	.....do.....	.....do.....	.....do.....	2.48	11.3
June 10	Mud Creek.....	.....do.....	3 miles west of mouth of Burns Creek, 12 miles east of Heise, Idaho.	.....	2.9
8	Antelope Creek.....	.....do.....	⅛ mile below road and 2 miles west of Antelope post office, Idaho.	.99	2.0
Mar. 26	Smith Creek.....	South Fork of Boise River.	About sec 7, T. 2. N., R 7 E., at bridge a short distance above mouth, 4 miles west of Lenox, Elmore Co., Idaho.	3.02	196
27	Long Gulch Creek.....	.....do.....	Sec. 2, T. 2 N., R. 6 E., ¼ mile above mouth and 8 miles northwest of Lenox, Elmore County, Idaho.	1.60	32.9
Jan. 2	Grande Ronde River...	Snake River.....	Hilgard, Oreg.....	.....	1,260
Feb. 19	.....do.....	.....do.....	Near Imbler, Oreg.....	3.40	788
Mar. 27	.....do.....	.....do.....	.....do.....	9.02	3,540
Apr. 6	.....do.....	.....do.....	.....do.....	.....	1,840
Feb. 18	.....do.....	.....do.....	NW. ¼ sec. 13, T. 1 S., R. 39 E., 4 miles south of Elgin, Oreg.	7.7	1,130
Apr. 5	.....do.....	....do.....	.....do.....	10.36	2,390
Mar. 28	Indian Creek.....	Grande Ronde River..	Near mouth, Elgin, Oreg....	.....	124
28	Clarks Creek.....	.....do.....	.....do.....	.....	111
28	Phillips Creek.....	.....do.....	.....do.....	.....	172

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