UNITED STATES DEPARTMENT OF THE INTERIOR
HAROLD L. ICKES, Secretary
GEOLOGICAL SURVEY
W. C. MENDENHALL, Director

Water-Supply Paper 752

SURFACE WATER SUPPLY of the UNITED STATES 1933

PART 12
NORTH PACIFIC SLOPE BASINS
A. PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASINS

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Prepared in cooperation with the States of
IDAHO, MONTANA, AND WASHINGTON

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1935

For sale by the Superintendent of Documents, Washington, D. C. - - Price 15 cents (Paper covers)

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ILLUSTRATION

SURFACE WATER SUPPLY OF PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN, 1933

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, 1933.

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. Since the fiscal year ending June 30, 1895, successive appropriation bills passed by Congress have carried the following items:

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, 1895–1934

1895	$12, 500. 00	1911–17	$150, 000. 00	1928	$147, 000. 00
1896	24, 500. 00	1918	175, 000. 00	1929	270, 500. 00
1897–99	50, 000. 00	1919	148, 244. 10	1930	275, 000. 00
1900	70, 000. 00	1920	175, 000. 00	1931	565, 000. 00
1901–2	100, 000. 00	1921–23	180, 000. 00	1932	711, 000. 00
1903–6	200, 000. 00	1924–25	170, 000. 00	1933	600, 000. 00
1907	150, 000. 00	1926	165, 000. 00	1934	[1] 540, 000. 00
1908–10	100, 000. 00	1927	151, 000. 00		

In the execution of the work many private and State organizations have cooperated, either by furnishing data or by assisting in collecting data. Acknowledgments for cooperation of the first kind are made in connection with the description of each station affected; cooperation of the second kind is acknowledged on page 10.

Measurements of stream flow have been made at about 6,680 points in the United States and also at many points in Alaska and the

[1] Only $340,000 available for expenditure.

Hawaiian Islands. In July 1932, 2,800 gaging stations were being maintained by the Geological Survey and the cooperating organizations. Many miscellaneous discharge measurements were made at other points. In connection with this work, data were also collected in regard to precipitation, evaporation, storage reservoirs, river profiles, and water power in many sections of the country and will be made available in water-supply papers from time to time.

DEFINITION OF TERMS

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

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

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

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

EXPLANATION OF DATA

The data presented in this report cover the year beginning October 1, 1932, and ending September 30, 1933. At the beginning of Janu-

ary in most parts of the United States much of the precipitation in the preceding 3 months is stored in the form of snow or ice, or in ponds, lakes, and swamps, or as underground water, 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

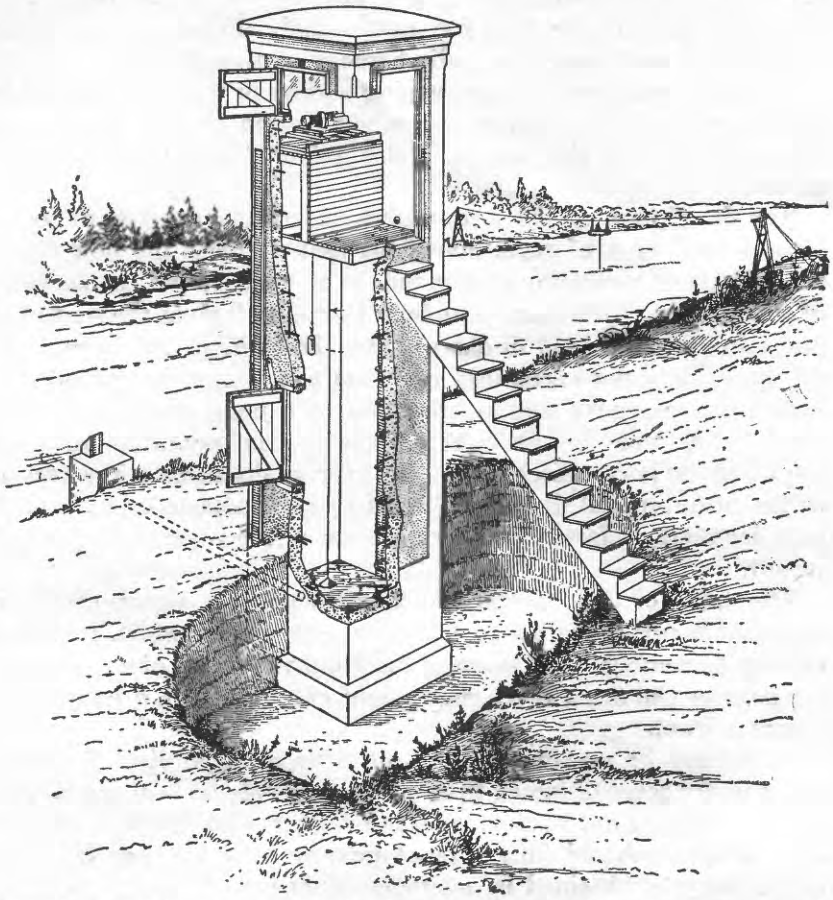

FIGURE 1.—Typical river-measurement station, showing concrete well and house for water-stage recorder and staff gages, cable, and car.

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 by the general methods outlined in standard textbooks on the measurement of river discharge. A typical gaging station, equipped with water-stage recorder and measuring cable and car, is shown in figure 1.

Rating tables giving the discharge for any stage are prepared from the discharge measurements. The application of the daily gage height to these rating tables gives the daily discharge from which the monthly and yearly mean discharge is computed.

The data presented for each gaging station in the area covered by this report comprise a description of the station, a table showing the daily discharge of the stream, and a table of monthly and yearly discharge and run-off.

The description of the station gives information in regard to the location and type of gage, diversions that decrease the flow at the gage, artificial regulation from pondage or storage, and the accuracy of the records. Information under "Discharge" gives the maximum and minimum recorded discharges and the average discharge. The maximum does not necessarily represent the crest discharge unless a water-stage recorder was in operation or a nonrecording gage was read at the time of the crest. Likewise, the minimum may not represent the lowest discharge. The average discharge is the average of the mean annual discharges for the years indicated. It is given only for stations for which there are ten or more complete years of record.

The table of daily discharge gives, in general, the discharge in second-feet corresponding to the daily gage height, which may be a once-daily reading or the mean of twice-daily readings of a nonrecording gage or the mean daily gage height obtained from a water-stage recorder graph.

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 discharge for intervals of the day or by using the discharge integrator, an instrument for obtaining mean daily discharge from a continuous gage-height graph and containing as an essential element the rating curve of the station.

In the table of monthly discharge the column headed "Maximum" gives the maximum daily discharge and not the discharge when the water surface was at crest height. Likewise, in the column headed "Minimum" the quantity given is the minimum daily discharge. The column headed "Mean" is the average flow in cubic feet per second during the month. On this average flow are based computations recorded in the remaining columns, which are defined on page 2.

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, measurements of flow, and interpretation of records.

The station description gives a statement in regard to the general accuracy of the records. "Excellent" indicates that in general the daily records are accurate within 5 percent; "good", within 10 percent; "fair", within 15 percent; and "poor", within 20 percent or more.

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

The table of monthly discharge gives a general idea of the flow at the station. The table of daily discharge allows 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.

Many gaging stations on streams in the irrigated areas of the United States are situated above most of the diversions from those streams, and the discharge recorded does not show the water supply available for further development, as prior appropriations below the stations must first be satisfied.

PUBLICATIONS

Investigation of water resources by the United States Geological Survey has consisted in large part of measurements of the volume of flow of streams and studies of the conditions affecting that flow, but it has comprised also investigation of such closely allied subjects as irrigation, water storage, water powers, underground waters, and quality of waters. Most of the results of these investigations have been published in the series of water-supply papers, but some have appeared in the bulletins, professional papers, monographs, and annual reports.

The results of stream-flow measurements are now published annually in 12 parts, each part covering an area whose boundaries coincide with natural drainage features as indicated below:

Part 1. North Atlantic slope basins (St. John River to York River).
2. South Atlantic slope and eastern Gulf of Mexico basins (James River to Mississippi River).
3. Ohio River Basin.
4. St. Lawrence River Basin.
5. Hudson Bay and Upper Mississippi River Basins.
6. Missouri River Basin.
7. Lower Mississippi River Basin.
8. Western Gulf of Mexico basins.
9. Colorado River Basin.
10. The Great Basin.
11. Pacific slope basins in California.
12. North Pacific slope basins, in three parts:
A, Pacific slope basins in Washington and upper Columbia River Basin.
B, Snake River Basin.
C, Pacific slope basins in Oregon and lower Columbia River Basin.

Water-supply papers and other publications of the United States Geological Survey containing data in regard to the water resources of the United States may be obtained or consulted as indicated below:

1. Copies may be purchased at nominal cost from the Superintendent of Documents, Government Printing Office, Washington, D. C., who will, on application, furnish lists giving prices.

2. Sets of the reports may be consulted in the libraries of the principal cities in the United States.

3. Sets are available for consultation in the local offices of the water-resources branch of the Geological Survey, as follows:

Augusta, Maine, State House.
Boston, Mass., 495 Post Office Building.
Hartford, Conn., 203 Federal Building.
Albany, N. Y., 526 Federal Building.
Trenton, N. J., 228 Federal Building.
Harrisburg, Pa., 490 Education Building.
Charlottesville, Va., University of Virginia.
South Charleston, W. Va., Naval Ordnance Plant.
Asheville, N. C., 220 Post Office Building.
Columbia, S. C., 801 National Loan & Exchange Bank Building.
Ocala, Fla., Post Office Building.
Montgomery, Ala., Post Office Building.
Chattanooga, Tenn., 217 Post Office Building.
Columbus, Ohio, Engineering Experiment Station, Ohio State University.
Indianapolis, Ind., 319 Federal Building.
Urbana, Ill., 302 University New Agricultural Building.
Madison, Wis., 337N State Capitol.
St. Paul, Minn., 632 State Office Building.
Iowa City, Iowa, 402 Hydraulic Laboratory, University of Iowa.
St. Louis, Mo., Customhouse, Eighth and Olive Streets.

Rolla, Mo., Missouri Geological Survey Building, Missouri School of Mines and Metallurgy.
Topeka, Kans., 305 Federal Building.
Fort Smith, Ark., Post Office Building.
Austin, Tex., State Highway Building.
Santa Fe, N. Mex., State Capitol.
Tucson, Ariz., 210 Post Office Building.
Denver, Colo., 403 Post Office Building.
Salt Lake City, Utah, 303 Federal Building.
Idaho Falls, Idaho, 228 Federal Building.
Boise, Idaho, 429 Federal Building.
Helena, Mont., 421 Federal Building.
Tacoma, Wash., 406 Federal Building.
Portland, Oreg., 606 Post Office Building.
San Francisco, Calif., 303 Customhouse.
Los Angeles, Calif., 510 Eighth and Figueroa Building.
Honolulu, Hawaii, 225 Federal Building.

A list of the Geological Survey publications may be obtained by applying to the Director, United States Geological Survey, Washington, D. C.

Stream-flow records have been obtained at about 6,680 points in the United States, and the data obtained have been published in the reports tabulated as follows:

Stream-flow data in reports of the United States Geological Survey

[A=Annual Report; B=Bulletin; W=Water-Supply Paper]

Report	Character of data	Year
10th A, pt. 2	Descriptive information only	
11th A, pt. 2	Monthly discharge and descriptive information	1884 to Sept. 1890.
12th A, pt. 2	do	1884 to June 30, 1891.
13th A, pt. 3	Mean discharge in second-feet	1884 to Dec. 31, 1892.
14th A, pt. 2	Monthly discharge (long-time records, 1871 to 1893)	1888 to Dec. 31, 1893.
B 131	Descriptions, measurements, gage heights, and ratings	1893–94.
16th A, pt. 2	Descriptive information only	
B 140	Descriptions, measurements, gage heights, ratings, and monthly discharge (also many data covering earlier years).	1895.
W 11	Gage heights (also gage heights for earlier years)	1896.
18th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also similar data for some earlier years).	1895–96.
W 15	Descriptions, measurements, and gage heights, eastern United States, eastern Mississippi River, and Missouri River above junction with Kansas River.	1897.
W 16	Descriptions, measurements, and gage heights, western Mississippi River below junction of Missouri and Platte Rivers, and western United States.	1897.
19th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also some long-time records).	1897.
W 27	Measurements, ratings, and gage heights, eastern United States, eastern Mississippi River, and Missouri River.	1898
W 28	Measurements, ratings, and gage heights, Arkansas River and western United States.	1898
20th A, pt. 4	Monthly discharge (also for many earlier years)	1898
W 35 to 39	Descriptions, measurements, gage heights, and ratings	1899
21st A, pt. 4	Monthly discharge	1899
W 47 to 52	Descriptions, measurements, gage heights, and ratings	1900
22d A, pt. 4	Monthly discharge	1900
W 65, 66	Descriptions, measurements, gage heights, and ratings	1901.
W 75	Monthly discharge	1901.
W 82 to 85	Complete data	1902.
W 97 to 100	do	1903.
W 124 to 135	do	1904.
W 165 to 178	do	1905
W 201 to 214	do	1906
W 241 to 252	do	1907–8.
W 261 to 272	do	1909

Stream-flow data in reports of the United States Geological Survey—Continued

Report	Character of data	Year
W 281 to 292	Complete data	1910.
W 301 to 312	do	1911.
W 321 to 332	do	1912.
W 351 to 362	do	1913.
W 381 to 394	do	1914.
W 401 to 414	do	1915.
W 431 to 444	do	1916.
W 451 to 464	do	1917.
W 471 to 484	do	1918.
W 501 to 514	do	1919-20.
W 521 to 534	do	1921.
W 541 to 554	do	1922.
W 561 to 574	do	1923.
W 581 to 594	do	1924.
W 601 to 614	do	1925.
W 621 to 634	do	1926.
W 641 to 654	do	1927.
W 661 to 674	do	1928.
W 681 to 694	do	1929.
W 696 to 709	do	1930.
W 711 to 724	do	1931.
W 726 to 739	do	1932.
W 741 to 754	do	1933.

The records at most of the stations discussed in these reports extend over a series of years. Miscellaneous measurements at many points other than regular gaging stations have been made each year and are published under "Miscellaneous discharge measurements" at the end of each report in the same relative order as the regular gaging stations. An index of the reports containing records obtained prior to 1904 has been published in Water-Supply Paper 119.

The following table gives, by years and drainage basins, the numbers of the papers on surface water supply published from 1899 to 1932. The data for any particular station will, as a rule, be found in the reports covering the years during which the station was maintained. For example, data from 1910 to 1920 for any station in the area covered by part 3 are published in Water-Supply Papers 283, 303, 323, 353, 383, 403, 433, 453, 473, and 503, which contain records for the Ohio River Basin for those years.

Numbers of water-supply papers containing results of stream measurements, 1899–1933

[For basins included see p. 6]

Year	1	2	3	4	5	6	7	8	9	10	11	12-A	12-B	12-C
1899 [a]	35	[b] 35, 36	36	36	36	[c] 36, 37	37	37	[d] 37, 38	38, [e] 39	38, [f] 39	38	38	[g] 38
1900 [g]	47, [h] 48	48	48, [i] 49	49	49	49, [i] 50	50	50	50	51	51	51	51	51
1901	65, 75	65, 75	65, 75	65, 75	[k] 65, 66, 75	66, 75	[k] 65, 66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75
1902	82	[b] 82, 83	83	[l] 82, 83	[k] 83, 85	84	[k] 83, 84	84	85	85	85	85	85	85
1903	97	[b] 97, 98	98	97	[k] 98, 99, [m] 100	99	[k] 98, 99	99	100	100	100	100	100	100
1904	[n] 124, [o] 125, [p] 126	[p] 126, 127	128	129	[k] 128, 130	130, [q] 131	[k] 128, 131	132	133	133, [r] 134	134	135	135	135
1905	[n] 165, [o] 166, [p] 167	[p] 167, 168	169	170	171	172	[k] 169, 173	174	175, [s] 177	176, [r] 177	177	178	178	[t] 177, 178
1906	[n] 201, [o] 202, [p] 203	[p] 203, 204	205	206	207	208	[k] 205, 209	210	211, [s] 213	211, [r] 213	213	214	214	214
1907–8	241	242	243	244	245	246	247	248	249	250, [r] 251	251	252	252	252
1909	261	262	263	264	265	266	267	268	269	270, [r] 271	271	272	272	272
1910	281	282	283	284	285	286	287	288	289	290	291	292	292	292
1911	301	302	303	304	305	306	307	308	309	310	311	312	312	312
1912	321	322	323	324	325	326	327	328	329	330	331	332-A	332-B	332-C
1913	351	352	353	354	355	356	357	358	359	360	361	362-A	362-B	362-C
1914	381	382	383	384	385	386	387	388	389	390	391	392	393	394
1915	401	402	403	404	405	406	407	408	409	410	411	412	413	414
1916	431	432	433	434	435	436	437	438	439	440	441	442	443	444
1917	451	452	453	454	455	456	457	458	459	460	461	462	463	464
1918	471	472	473	474	475	476	477	478	479	480	481	482	483	484
1919–20	501	502	503	504	505	506	507	508	509	510	511	512	513	514
1921	521	522	523	524	525	526	527	528	529	530	531	532	533	534
1922	541	542	543	544	545	546	547	548	549	550	551	552	553	554
1923	561	562	563	564	565	566	567	568	569	570	571	572	573	574
1924	581	582	583	584	585	586	587	588	589	590	591	592	593	594
1925	601	602	603	604	605	606	607	608	609	610	611	612	613	614
1926	621	622	623	624	625	626	627	628	629	630	631	632	633	634
1927	641	642	643	644	645	646	647	648	649	650	651	652	653	654
1928	661	662	663	664	665	666	667	668	669	670	671	672	673	674
1929	681	682	683	684	685	686	687	688	689	690	691	692	693	694
1930	696	697	698	699	700	701	702	703	704	705	706	707	708	709
1931	711	712	713	714	715	716	717	718	719	720	721	722	723	724
1932	726	727	728	729	730	731	732	733	734	735	736	737	738	739
1933	741	742	743	744	745	746	747	748	749	750	751	752	753	754

[a] Rating tables and index to Water-Supply Papers 35–39 contained in Water-Supply Paper 39. Tables of monthly discharge for 1899 in 21st Annual Report, part 4.
[b] James River only.
[c] Gallatin River.
[d] Green and Gunnison Rivers and Colorado River above Gunnison River.
[e] Mohave River only.
[f] Kings and Kern Rivers and south Pacific slope basins.
[g] Rating tables and index to Water-Supply Papers 47–52 and data on precipitation, wells, and irrigation in California and Utah contained in Water-Supply Paper 52. Tables of monthly discharge for 1900 in 22d Annual Report, part 4.
[h] Wissahickon and Schuylkill Rivers to James River.
[i] Scioto River.
[j] Loup and Platte Rivers near Columbus, Nebr., and all tributaries below junction with Platte River.
[k] Tributaries of Mississippi River from east.
[l] Lake Ontario and tributaries to St. Lawrence River proper.
[m] Hudson Bay only.
[n] New England rivers only.
[o] Hudson River to Delaware River, inclusive.
[p] Susquehanna River to Yadkin River, inclusive.
[q] Platte and Kansas Rivers.
[r] The Great Basin in California, except Truckee and Carson River Basins.
[s] Below junction with Gila River.
[t] Rogue, Umpqua, and Siletz Rivers only.

COOPERATION

The work was done under cooperative agreements with the several States as follows: In Idaho with the Department of Reclamation, R. W. Faris, commissioner; in Montana with the office of the State engineer, J. S. James; in Washington with the Department of Conservation and Development, E. J. Barnes, succeeded by F. F. Banker, director, and C. J. Bartholet, supervisor of hydraulics, Division of Water Resources; with the cities of Aberdeen, Seattle, and Tacoma; with King and Pierce Counties, through the Intercounty River Improvement Commission; and with Skagit County and Wenatchee Reclamation District.

Acknowledgment of financial assistance in collecting records published herein is due also to the United States Department of State, United States Bureau of Reclamation, United States Forest Service, United States Indian Service, and United States Weather Bureau.

Full cooperation exists between this organization and the Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada. On waters adjacent to the international boundary certain stations are maintained jointly by the United States and Canada under the terms of the Boundary Waters Treaty of 1909, and others are maintained under a subsequent agreement between the two Governments. The records from all these stations are obtained in such a manner as to be equally acceptable and available in either country. These stations are herein designated "international gaging stations."

Assistance in collecting the records was also rendered by the following municipalities, corporations, and individuals: In Idaho by the city of Sandpoint, and Washington Water Power Co.; in Montana by the Rocky Mountain Power Co.; in Washington by the Chelan Copper Mining Co., Chelan Electric Co., Grays Harbor Railway & Light Co., Hugh L. Cooper Co., the Northwestern Power & Light Co., Washington Electric Co., West Coast Power Co., the Puget Sound Power & Light Co., Sanderson-Porter, the Washington Water Power Co., and the Western Washington Electric Light & Power Co.

DIVISION OF WORK

The data for stations in the several States were collected and prepared for publication as follows: In Idaho (except Clark Fork at Priest River) and on Clark Fork near Heron, Mont., Fathead River near Trail Creek, Mont., and Kootenai River near Rexford, Mont., by T. R. Newell, district engineer, assisted by F. C. Christopherson, F. C. Craig, J. A. Allis, P. C. Benedict, L. R. Sawyer, W. I. Travis, Miss E. H. Haugse, Miss Doris C. Randall, Miss Neta Winsor, H. W. Johns, and Richard Hearne; in Montana, except those noted

above, by W. A. Lamb, district engineer, assisted by A. H. Tuttle, C. S. Heidel, Edward Post, E. H. Bekkedahl, H. C. Smith, and Mrs. G. Thompson; in Washington and for Clark Fork at Priest River, Idaho, by G. L. Parker, district engineer, assisted by D. J. F. Calkins, R. B. Kilgore, G. M. Thayer, H. C. Woster, Frank Stermitz, J. P. Bonner, B. M. Tanner, L. I. Meyer, R. J. Swanson, A. P. Martinson, J. W. Allen, R. F. Bullard, L. F. Maca, B. M. Thomas, M. Pierce, E. V. Hansen, and L. E. Kelley.

Records were reviewed and manuscript assembled by David S. Jenkins.

94267—35——2

GAGING-STATION RECORDS

BASINS BETWEEN COLUMBIA RIVER AND PUGET SOUND

NASELLE RIVER BASIN

NASELLE RIVER NEAR NASELLE, WASH.

LOCATION.—Staff gage in SW¼ sec. 1, T. 10 N., R. 9 W., 1½ miles above Salmon Creek and 3¼ miles east of Naselle.

DRAINAGE AREA.—66 square miles.

RECORDS AVAILABLE.—May 1929 to September 1933.

DISCHARGE.—Maximum during year, about 5,700 second-feet Nov. 13, Dec. 2 (gage height, 11.1 feet); minimum, 28 second-feet Oct. 10, 11; minimum gage height, 1.74 feet Sept. 13.

1929–33: Maximum, that of Nov. 13, Dec. 2, 1932; minimum, 22 second-feet Oct. 6, 7, 1929; minimum gage height, that of Sept. 13, 1933.

REMARKS.—Records excellent except those of discharge above 2,000 second-feet, which are fair. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	905	1,540	1,420	805	1,120	1,180	196	222	111	48	38
2	35	1,780	5,280	2,140	660	1,240	1,060	209	209	114	49	37
3	34	1,300	2,480	1,600	540	1,180	660	209	184	92	56	36
4	34	1,120	1,300	1,860	482	955	540	263	184	90	59	35
5	32	3,080	905	1,860	426	905	482	356	172	86	53	43
6	32	2,140	660	1,860	426	1,480	426	373	172	81	51	73
7	30	1,360	540	2,780	373	1,860	408	620	209	78	49	54
8	29	1,480	444	3,800	340	1,240	356	660	705	76	47	42
9	29	1,180	390	2,700	308	905	324	540	501	76	45	39
10	29	805	340	1,860	293	1,010	293	463	373	73	44	37
11	46	660	324	1,240	293	1,920	293	408	324	71	43	37
12	73	905	293	855	324	2,280	293	340	293	68	43	36
13	54	4,760	263	705	308	1,540	278	308	249	65	43	34
14	110	2,280	235	660	293	1,060	263	308	235	64	41	38
15	209	1,780	222	540	293	905	249	340	209	63	41	57
16	149	2,630	222	463	278	905	263	356	196	63	39	92
17	138	2,700	209	426	293	805	235	356	184	62	38	113
18	134	1,660	293	390	340	705	222	356	172	59	39	118
19	118	1,120	2,280	340	463	705	209	324	160	58	39	130
20	105	855	1,480	308	580	805	196	308	149	56	38	249
21	130	905	1,480	293	1,720	755	196	293	149	55	37	463
22	235	705	1,360	293	3,160	620	196	308	134	53	37	620
23	235	620	1,920	340	2,000	540	184	356	126	52	37	540
24	235	540	1,480	408	1,300	540	184	463	136	51	37	580
25	235	463	1,660	356	1,720	540	172	426	132	50	36	408
26	235	426	3,000	373	3,320	501	160	390	120	50	36	356
27	222	390	1,860	501	1,860	540	149	356	109	50	35	340
28	222	373	1,540	501	1,180	805	149	308	107	48	35	373
29	235	540	1,480	580	-------	1,300	149	293	105	60	35	540
30	209	705	1,180	540	-------	1,860	149	263	102	56	40	390
31	540	-------	1,240	620	-------	1,860	-------	235	-------	50	40	------

Month	Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October	540	29	135	2.05	2.36	8,300
November	4,760	373	1,340	20.3	22.65	79,700
December	5,280	209	1,220	18.5	21.33	75,000
January	3,800	293	1,050	15.9	18.33	64,600
February	3,320	278	871	13.2	13.75	48,400
March	2,280	501	1,080	16.4	18.91	66,400
April	1,180	149	331	5.02	5.60	19,700
May	660	196	354	5.36	6.18	21,800
June	705	102	211	3.20	3.57	12,600
July	114	48	67.1	1.02	1.18	4,130
August	59	35	42.3	.641	.74	2,600
September	620	34	198	3.00	3.35	11,800
The year	5,280	29	573	8.68	117.95	415,000

NORTH RIVER BASIN

NORTH RIVER NEAR RAYMOND, WASH.

LOCATION.—Water-stage recorder in sec. 6, T. 15 N., R. 9 W., 1¼ miles above Salmon Creek and 10 miles northwest of Raymond.

RECORDS AVAILABLE.—August 1927 to September 1933.

DISCHARGE.—Maximum during year, 7,240 second-feet Jan. 9; minimum, 53 second-feet Aug. 26 (gage height, 0.61 foot).

1927–33: Maximum, 11,000 second-feet Feb. 27, 1932; minimum, 3 second-feet Sept. 25, 26, 1930 (gage height, −0.11 foot), caused by regulation.

REMARKS.—Records excellent. Discharge estimated Oct. 16–22, 26–31, Dec. 8. Splash dam 800 feet above gage operated at irregular intervals. Many discharge measurements furnished by the Western Washington Electric Light & Power Co.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69	1,640	3,400	3,450	2,420	2,930	2,930	341	408	205	101	74
2	68	2,470	6,070	5,290	2,270	3,020	2,000	387	380	221	96	69
3	68	2,620	6,320	5,420	1,880	3,200	1,540	426	357	221	100	63
4	66	1,750	5,770	4,640	1,540	2,840	1,290	463	331	197	104	60
5	66	2,180	2,750	4,900	1,340	2,270	1,080	483	313	177	108	70
6	65	3,650	1,850	5,160	742	2,660	920	490	313	197	111	93
7	66	3,430	1,220	5,680	1,470	3,200	837	542	322	158	107	84
8	65	2,720	2,000	6,460	689	3,020	819	538	714	153	103	81
9	65	2,720	2,150	6,850	1,130	2,270	709	506	1,090	149	94	76
10	65	1,930	1,800	5,940	730	1,940	654	490	804	146	87	68
11	64	1,390	1,510	4,260	716	2,340	612	452	585	144	84	62
12	65	1,730	1,290	2,970	723	3,110	600	422	514	140	81	59
13	67	4,560	1,210	2,250	654	3,020	565	397	510	135	78	59
14	77	5,620	1,090	2,010	595	2,420	518	259	433	132	76	80
15	105	5,380	1,380	2,010	595	1,940	510	180	390	128	74	107
16	280	5,020	950	1,590	600	1,700	518	1,470	357	122	72	172
17		5,620	915	1,410	618	1,540	530	1,070	334	117	68	181
18		4,660	958	1,290	709	1,380	510	590	310	115	68	201
19		3,220	2,870	1,120	846	1,240	467	1,360	298	114	69	191
20		2,320	3,920	940	1,100	1,320	437	392	281	114	67	251
21		2,070	3,370	920	1,770	1,340	422	215	268	110	67	430
22		2,220	3,150	990	3,650	1,210	401	896	255	107	65	730
23	114	1,750	3,700	1,080	4,700	1,120	387	920	247	105	63	818
24	190	1,110	3,700	1,420	3,740	1,080	370	948	245	104	62	1,160
25	649	1,130	3,700	1,760	2,840	1,000	380	994	252	103	59	1,170
26	570	1,030	4,900	1,700	3,380	910	373	526	252	100	56	701
27		904	5,030	2,000	3,470	873	353	600	233	96	54	514
28		818	3,990	2,420	3,020	1,100	337	550	216	93	54	685
29		967	3,510	2,420	-------	1,880	325	510	205	103	54	910
30		1,660	3,150	2,340	-------	3,200	322	475	199	103	59	794
31		------	2,790	2,270	-------	3,830	-------	444	-------	107	63	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	----------	64	238	14,600
November	5,620	818	2,610	155,000
December	6,320	915	2,920	180,000
January	6,850	920	3,000	184,000
February	4,700	595	1,710	95,000
March	3,830	873	2,090	129,000
April	2,930	322	724	43,100
May	1,470	180	591	36,300
June	1,090	199	381	22,700
July	221	93	135	8,300
August	111	54	77.5	4,770
September	1,170	59	334	19,900
The year	6,850	54	1,230	893,000

CHEHALIS RIVER BASIN

CHEHALIS RIVER NEAR GRAND MOUND, WASH.

LOCATION.—Staff gage in NW¼ sec. 23, T. 15 N., R. 3 W., at Meadow, 1½ miles southwest of Grand Mound.

DRAINAGE AREA.—928 square miles.

RECORDS AVAILABLE.—October 1928 to September 1933.

DISCHARGE.—Maximum during year, 22,600 second-feet Dec. 3 (gage height, 11.55 feet); minimum, 212 second-feet Aug. 27 (gage height, −0.22 foot).

1928–33: Maximum, that of Dec. 3, 1932; minimum discharge, 147 second-feet Aug. 29, 1930; minimum gage height, that of Aug. 27, 1933.

REMARKS.—Records good. Cities of Chehalis and Centralia divert about 15 second-feet from Newaukum River, a tributary, for municipal use. No noticeable regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	248	1,660	11,100	8,070	5,320	7,650	7,650	1,490	1,270	660	300	315
2	248	3,520	17,900	14,200	4,630	8,490	5,500	1,980	1,160	700	300	315
3	248	4,940	22,600	13,600	3,810	9,150	4,630	1,730	1,110	660	325	270
4	248	3,860	17,400	12,000	3,200	7,650	3,970	1,850	1,060	620	355	244
5	248	5,490	11,600	12,900	2,920	6,440	3,350	1,980	1,010	585	515	252
6	248	12,000	7,650	15,800	2,780	5,680	2,920	1,850	1,010	550	585	305
7	248	8,490	5,500	14,900	2,500	10,500	2,780	1,850	960	550	408	366
8	248	8,280	3,970	18,700	2,370	8,930	2,640	2,110	1,320	515	372	330
9	265	6,840	3,200	20,700	1,850	6,840	2,370	2,110	3,200	515	320	290
10	265	4,400	2,920	18,400	1,610	6,250	2,110	1,850	2,370	480	310	300
11	265	3,190	2,240	14,900	1,850	8,490	1,980	1,730	1,730	480	290	260
12	265	2,580	2,110	8,490	1,980	13,100	1,980	1,550	1,550	450	280	260
13	320	13,800	1,980	7,440	1,850	12,900	1,850	1,440	1,440	450	275	270
14	365	12,500	1,730	6,250	1,610	9,590	1,730	1,440	1,270	414	265	280
15	950	17,700	1,610	5,320	1,610	7,040	1,730	1,610	1,160	402	256	384
16	1,050	16,900	1,730	4,630	1,980	6,640	1,980	1,850	1,060	390	252	408
17	1,060	15,300	1,610	3,810	1,850	7,040	1,980	1,850	1,010	384	244	480
18	640	12,700	1,730	3,500	2,110	6,440	1,730	1,850	915	384	244	450
19	510	8,930	9,810	3,060	2,370	5,500	1,610	1,730	870	372	244	450
20	450	6,250	13,100	2,780	2,780	5,680	1,550	1,730	825	372	260	480
21	420	6,060	14,200	2,640	5,140	5,680	1,550	1,610	780	360	240	780
22	900	7,440	11,600	2,640	10,200	4,970	1,610	1,490	740	345	236	1,380
23	1,110	5,680	16,000	2,780	13,600	4,130	1,610	1,730	740	340	228	1,730
24	855	4,460	16,000	3,060	10,200	3,810	1,610	1,610	740	335	232	1,850
25	680	3,650	14,000	3,650	7,240	3,500	1,550	1,730	740	330	220	1,380
26	640	3,350	14,600	3,350	8,280	3,200	1,490	2,370	780	315	224	960
27	720	2,920	15,300	5,320	8,490	3,060	1,440	2,110	700	310	212	960
28	720	2,780	13,100	5,870	8,280	3,810	1,490	1,730	660	310	220	870
29	640	3,650	10,000	6,250	------	6,060	1,490	1,610	660	310	252	1,600
30	680	7,860	8,930	5,870	------	6,440	1,440	1,490	660	320	300	1,200
31	720	------	8,490	5,320	------	10,200	------	1,380	------	320	372	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,110	248	532	0.573	0.66	32,700
November	21,500	1,660	7,540	8.12	9.06	449,000
December	22,600	1,610	9,150	9.86	11.37	563,000
January	20,700	2,640	8,260	8.90	10.26	508,000
February	13,600	1,610	4,370	4.71	4.90	243,000
March	13,100	3,060	6,930	7.47	8.61	426,000
April	7,650	1,440	2,380	2.56	2.86	142,000
May	2,370	1,380	1,760	1.90	2.19	108,000
June	3,200	660	1,120	1.21	1.35	66,600
July	700	310	436	.470	.54	26,800
August	585	212	295	.318	.37	18,100
September	1,850	244	650	.700	.78	38,700
The year	22,600	212	3,620	3.90	52.95	2,620,000

SATSOP RIVER NEAR SATSOP, WASH.

LOCATION.—Staff gage in sec. 36, T. 18 N., R. 7 W., 1 mile west of Satsop.
DRAINAGE AREA.—315 square miles.
RECORDS AVAILABLE.—March 1929 to September 1933.
DISCHARGE.—Maximum during year, 14,200 second-feet Jan. 8; maximum gage height, 11.06 feet Jan. 7, 8; minimum, 242 second-feet Oct. 2–10, Sept. 12; minimum gage height, 1.53 feet Sept. 12.

1929–33: Maximum, about 27,000 second-feet Feb. 26, 1932 (gage height, 15.8 feet); minimum, 203 second-feet Sept. 21, 22, 1930.

REMARKS.—Records good. Discharge estimated Jan. 31. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	260	2,690	6,300	5,090	2,410	4,060	4,320	1,650	1,120	615	372	262
2	242	4,720	8,560	5,420	2,440	4,060	3,410	1,980	1,070	648	330	262
3	242	3,070	6,150	4,720	2,090	4,450	3,160	1,870	1,030	555	372	258
4	242	2,450	3,330	4,580	1,870	3,930	2,800	1,980	985	555	350	254
5	242	5,850	3,070	8,390	1,760	3,800	2,560	2,320	945	528	350	290
6	242	5,000	2,690	7,090	1,760	5,750	2,320	1,980	985	500	330	372
7	242	3,070	2,220	13,900	1,650	6,360	2,200	2,200	945	500	330	290
8	242	3,600	1,890	13,200	1,550	4,710	2,090	2,200	1,350	500	330	270
9	242	2,690	1,690	12,500	1,350	3,930	1,760	1,870	1,300	500	310	258
10	242	2,110	1,490	7,800	1,300	3,670	1,650	1,760	1,160	472	310	254
11	280	1,790	1,390	5,750	1,300	5,450	1,650	1,550	1,070	500	310	254
12	300	3,330	1,300	4,580	1,300	7,480	1,550	1,550	1,030	472	290	242
13	280	11,600	1,120	3,800	1,120	5,450	1,450	1,350	985	445	290	254
14	610	6,150	1,040	3,930	1,070	4,320	1,450	1,450	905	445	270	270
15	690	7,410	960	3,410	1,160	3,670	1,550	1,450	865	420	270	290
16	1,000	7,410	960	2,920	1,070	4,320	1,550	1,350	825	420	270	310
17	690	5,700	922	2,680	1,070	3,540	1,450	1,550	825	420	270	372
18	635	4,300	1,040	2,560	1,160	3,160	1,350	1,550	788	420	270	372
19	535	3,600	8,390	2,320	1,300	2,920	1,250	1,450	750	420	270	372
20	485	2,940	7,250	2,090	1,650	3,930	1,250	1,350	715	395	270	528
21	535	3,200	6,450	1,980	4,060	3,280	1,350	1,350	715	395	270	905
22	635	2,690	6,300	1,980	7,320	2,920	1,550	1,300	680	395	266	2,440
23	610	2,330	6,770	1,980	5,300	2,560	1,450	1,550	680	395	266	2,320
24	560	2,110	5,700	2,200	4,190	2,440	1,450	1,760	715	372	266	1,870
25	535	1,890	5,700	1,980	4,060	2,440	1,350	1,760	680	372	270	1,200
26	535	1,690	8,560	1,980	12,000	2,320	1,300	1,760	648	350	266	1,030
27	485	1,490	6,000	2,200	6,200	2,320	1,350	1,550	615	350	262	1,030
28	485	1,390	5,560	2,090	5,000	3,280	1,550	1,450	585	350	270	3,800
29	510	2,000	4,720	2,320	-------	4,190	1,350	1,350	585	330	262	2,200
30	585	2,810	3,740	2,200	-------	7,640	1,250	1,300	555	350	266	1,450
31	2,810	-------	3,600	2,320	-------	5,750	-------	1,200	-------	395	262	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	2,810	242	523	1.66	1.91	32,200
November	11,600	1,390	3,700	11.7	13.05	220,000
December	8,560	922	4,030	12 8	14.76	248,000
January	13,900	1,980	4,510	14.3	16.49	277,000
February	12,000	1,070	2,800	8.89	9.26	156,000
March	7,640	2,320	4,130	13.1	15.10	254,000
April	4,320	1,250	1,820	5.78	6.45	108,000
May	2,320	1,200	1,640	5.21	6.01	101,000
June	1,350	555	870	2.76	3.08	51,800
July	648	330	445	1.41	1.63	27,400
August	372	262	293	.930	1.07	18,000
September	3,800	242	809	2.57	2.87	48,100
The year	13,900	242	2,130	6.76	91.68	1,540,000

WYNOOCHEE RIVER AT OXBOW, NEAR ABERDEEN, WASH.

LOCATION.—Water-stage recorder in sec. 12, T. 21 N., R. 8 W., 1 mile below Oxbow and 24 miles northeast of Aberdeen.
DRAINAGE AREA.—65 square miles.
RECORDS AVAILABLE.—May 1925 to September 1933.
DISCHARGE.—Maximum during year, 9,230 second-feet Nov. 12 (gage height, 21.1 feet); minimum, 113 second-feet Oct. 10 (gage height, 2.50 feet).
1925–33: Maximum, 12,900 second-feet Feb. 26, 1932 (gage height, 25.2 feet); minimum, 76 second-feet Sept. 23, 1930 (gage height, 2.0 feet).
REMARKS.—Records excellent. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	122	2,140	3,060	1,240	548	885	1,390	1,220	735	660	306	144
2	120	2,030	3,930	1,210	535	835	1,180	1,330	710	685	297	144
3	119	1,370	2,080	1,030	510	885	1,240	1,090	760	585	306	139
4	116	1,470	1,420	1,600	498	760	1,150	1,180	835	535	288	139
5	115	3,450	1,150	3,400	498	760	1,030	1,240	760	560	271	213
6	115	2,180	970	2,660	485	1,360	1,000	1,120	760	610	255	248
7	115	1,340	835	4,440	472	1,510	910	1,240	785	635	255	170
8	114	1,430	735	4,440	460	1,120	835	1,180	1,060	622	248	154
9	114	1,070	685	5,350	435	910	760	1,030	910	522	248	149
10	113	864	622	3,000	411	860	710	910	760	498	240	149
11	130	760	572	1,890	411	1,610	685	860	710	498	233	144
12	124	3,980	535	1,450	399	2,800	685	885	835	510	226	139
13	136	4,550	498	1,210	376	1,770	635	835	1,060	535	220	139
14	821	2,290	460	1,210	364	1,360	685	810	1,060	598	220	149
15	1,260	2,960	435	1,030	376	1,210	735	835	1,000	635	213	165
16	716	2,860	435	885	354	1,600	710	810	885	585	206	280
17	473	2,090	411	810	354	1,330	660	835	760	498	200	233
18	376	1,510	510	760	364	1,180	660	860	685	460	194	200
19	320	1,360	2,150	710	387	1,150	610	785	660	448	188	255
20	320	1,120	2,000	660	522	1,630	635	760	622	399	182	939
21	338	1,180	1,590	622	760	1,330	735	710	635	387	176	1,720
22	395	1,030	1,680	610	1,180	1,090	810	735	598	376	176	2,050
23	366	885	1,690	585	860	940	835	910	572	376	170	1,420
24	329	785	1,480	572	685	885	810	1,030	735	387	165	1,060
25	320	735	1,590	560	1,800	860	760	1,180	835	387	165	710
26	303	685	2,720	598	3,420	810	735	1,270	710	364	160	660
27	312	635	1,850	598	1,620	835	835	1,060	635	343	154	622
28	303	760	1,480	585	1,120	1,390	1,000	910	660	324	154	1,940
29	366	1,510	1,240	585	------	1,480	885	970	610	354	154	1,210
30	365	1,480	1,060	560	------	2,400	785	940	572	334	154	835
31	1,410	------	1,090	560	------	1,950	------	810	------	315	149	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,410	113	343	21,120
November	4,550	635	1,684	100,200
December	3,930	411	1,321	81,250
January	5,350	560	1,465	90,090
February	3,420	354	722	40,070
March	2,800	760	1,274	78,340
April	1,390	610	836	49,780
May	1,330	710	979	60,180
June	1,060	572	764	45,450
July	685	315	485	29,800
August	306	149	212	13,040
September	2,050	139	551	32,760
The year	5,350	113	887	642,100

HUMPTULIPS RIVER BASIN

HUMPTULIPS RIVER NEAR HUMPTULIPS, WASH.

LOCATION.—Water-stage recorder in NE¼ sec. 17, T. 20 N., R. 10 W., at highway bridge 1 mile southeast of Humptulips.
DRAINAGE AREA.—125 square miles.
RECORDS AVAILABLE.—May to September 1933.
DISCHARGE.—Maximum during period May to September 1933, 3,690 second-feet Sept. 28 (gage height, 4.94 feet); minimum, 162 second-feet Sept. 4 (gage height, 1.61 feet).
REMARKS.—Records fair. Discharge estimated May 1–16. No diversions or regulation.

Discharge, in second-feet, 1933

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1		926	542	235	168	16	1,150	820	379	199	442
2		850	656	235	165	17	1,100	722	349	195	492
3	1,600	840	520	245	165	18	1.240	648	330	192	354
4		860	460	259	162	19	1,170	606	334	199	390
5		810	440	241	205	20	1,160	572	312	189	984
6		780	440	235	312	21	1,060	542	300	186	1,750
7		820	453	228	238	22	1,060	528	291	186	2,980
8	1,550	1,390	440	221	208	23	1,300	505	284	183	2,180
9		1,260	406	218	189	24	1,410	614	284	180	1,860
10		970	384	215	183	25	1,520	780	284	180	1,370
11		840	406	215	177	26	1,640	640	273	174	948
12		830	390	211	174	27	1,460	550	255	174	915
13	1,150	970	379	208	168	28	1,290	520	245	171	2,200
14		970	379	205	183	29	1,230	498	273	171	1,890
15		926	384	202	238	30	1,190	472	269	183	1,290
						31	1,060	-------	248	180	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
May	----------	1,060	1,340	10.7	12.34	82,400
June	1,390	472	769	6.15	6.86	45,800
July	656	245	367	2.94	3.39	22,600
August	259	171	204	1.63	1.88	12,500
September	2,980	162	766	6.13	6.84	45,600
The period	----------	----------	----------	----------	----------	209,000

QUINAULT RIVER BASIN

QUINAULT RIVER AT QUINAULT LAKE, WASH.

LOCATION.—Water-stage recorder in sec. 25, T. 23 N., R. 10 W., at outlet of Quinault Lake, 4 miles southwest of Quinault.

DRAINAGE AREA.—264 square miles.

RECORDS AVAILABLE.—October 1911 to December 1922; July to November 1924; September 1925 to November 1932; May to September 1933.

DISCHARGE.—Maximum during period May to September 1933, 5,390 second-feet June 15 (gage height, 5.06 feet); minimum, 709 second-feet Sept. 13, 14 (gage height, 1.57 feet).

1911–22, 1924–32, 1933: Maximum, 37,000 second-feet Dec. 12, 1921 (gage height, 16.3 feet); minimum, 285 second-feet Sept. 20, 1924 (gage height, 0.74 foot). Average, 18 years (1911–22, 1925–32), 2,660 second-feet.

REMARKS.—Records good except those for May 1–17, 19–23, Sept. 22–30, which were estimated. No diversions above station. Slight regulation caused by natural storage in lake.

Discharge, in second-feet, 1933

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1		3,260	3,480	2,350	867	16	2,600	5,200	4 280	1,790	1,070
2		3,040	3,710	2,280	838	17	2,600	4,640	4 030	1,730	1,200
3	3,200	3,040	3,630	2,280	796	18	2,620	4,110	3 710	1,680	1,220
4		3,260	3,400	2,220	776	19		3,710	3 560	1,560	1,360
5		3,330	3,260	2,090	796	20		3,400	3 330	1,460	2,080
6		3,330	3,330	2,030	924	21	2,300	3,260	3 110	1,360	3,360
7		3,400	3,560	1,970	940	22		3,180	3 040	1,240	
8		3,710	3,790	1,970	900	23		3,110	2.970	1,180	2,100
9	2,700	3,790	3,630	2,030	845	24	2,830	3,260	3 040	1,160	
10		3,480	3,400	2,030	810	25	3,180	3,790	3 110	1,150	
11		3,260	3,260	1,970	783	26	4,200	3,950	3 110	1,100	
12		3,330	3,260	1,910	751	27	4,370	3,790	2,970	1,060	
13	2,600	4,110	3,400	1,910	720	28	3,950	3,710	2,690	1,030	2,000
14		4,820	3,710	1,850	739	29	3,790	3,630	2.620	1,000	
15		5,200	4,110	1,790	845	30	3,870	3,480	2.620	958	
						31	3,630		2,480	924	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
May	4,370		2,960	11.2	12.91	182,000
June	5,200	3,040	3,690	14.0	15.62	220,000
July	4,280	2,480	3,340	12.7	14.64	205,000
August	2,350	924	1,650	6.25	7.21	101,000
September		720	1,370	5.19	5.79	81,500
The period						790,000

QUEETS RIVER BASIN

QUEETS RIVER NEAR CLEARWATER, WASH.

LOCATION.—Water-stage recorder in SW¼ sec. 36, T. 24 N., R. 13 W., on Quinault Indian Reservation, 4 miles southwest of Clearwater. Zero of gage is 18.5 feet above mean sea level.

DRAINAGE AREA.—454 square miles.

RECORDS AVAILABLE.—September 1930 to September 1933.

DISCHARGE.—Maximum during year, 47,200 second-feet Nov. 12 (gage height, 14.3 feet); minimum, 542 second-feet Oct. 11 (gage height, 0.42 foot).

1930–33: Maximum, about 70,000 second-feet Feb. 26, 1932 (gage height, 18.3 feet); minimum, 420 second-feet Aug. 23–24, 1931; minimum gage height that of Oct. 11, 1932.

REMARKS.—Records excellent. Discharge estimated July 22–31. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	646	10,400	22,400	9,820	3,140	5,480	6,350	4,350	2,820	2,590	1,410	890
2	639	10,400	35,000	8,840	2,660	5,480	5,060	4,600	2,660	3,060	1,440	866
3	653	7,940	14,300	7,010	2,420	5,480	4,850	3,660	2,820	2,350	1,500	850
4	653	7,010	8,940	11,200	2,200	4,430	4,230	3,840	2,980	2,120	1,520	834
5	625	12,800	6,790	20,100	2,280	5,060	3,750	4,740	2,740	2,120	1,370	1,050
6	611	10,500	5,480	14,600	2,200	12,300	3,480	4,130	2,820	2,280	1,310	1,460
7	590	6,790	4,540	30,100	2,050	9,600	3,480	4,740	2,980	2,420	1,350	1,090
8	572	7,010	3,750	26,400	1,910	6,350	3,140	3,940	4,680	2,420	1,390	944
9	554	5,160	3,220	28,300	1,640	5,060	2,820	3,480	3,750	1,980	1,410	850
10	548	4,130	2,980	15,100	1,610	4,640	2,500	3,060	2,980	1,980	1,380	794
11	803	3,570	2,660	9,470	1,580	9,060	2,580	2,900	2,740	2,050	1,320	746
12	899	24,400	2,420	7,010	1,500	14,300	2,420	3,060	3,140	2,200	1,360	709
13	702	25,100	2,280	5,690	1,400	8,430	2,200	2,900	3,940	2,200	1,320	674
14	3,710	14,000	2,120	6,570	1,370	6,350	2,280	2,900	3,840	2,500	1,300	1,070
15	5,690	16,600	1,980	5,270	1,390	5,270	2,500	3,400	3,660	2,600	1,300	1,910
16	3,840	20,900	1,980	4,330	1,360	7,470	2,420	3,060	3,220	2,500	1,300	2,660
17	2,660	16,700	1,840	3,750	1,490	5,690	2,200	3,140	2,820	2,120	1,300	1,870
18	1,980	10,200	2,110	3,400	1,770	4,960	2,050	3,400	2,580	2,050	1,260	1,760
19	1,560	8,940	10,400	3,060	2,420	4,920	1,910	2,980	2,420	2,120	1,190	2,940
20	1,600	7,240	9,470	2,900	5,390	8,180	1,980	2,820	2,280	1,840	1,160	11,500
21	2,050	6,790	8,430	2,820	8,430	6,130	2,350	2,740	2,350	1,770	1,130	12,000
22	2,350	5,910	12,500	3,140	11,900	5,060	2,660	2,740	2,200		1,100	11,200
23	2,580	4,960	11,200	3,570	7,240	4,330	2,660	3,570	2,120		1,070	7,940
24	2,120	4,130	10,600	4,850	6,820	3,940	2,580	3,840	2,980	1,900	1,050	5,690
25	2,630	3,660	11,700	3,660	24,600	3,840	2,500	4,490	3,480		1,020	4,030
26	3,400	3,400	18,100	3,140	22,800	3,660	2,350	5,910	2,820		1,010	3,840
27	3,720	3,420	10,900	3,570	9,150	3,400	2,660	4,430	2,500		989	3,940
28	3,220	5,060	8,430	3,140	6,570	7,820	3,220	3,840	2,500		971	10,800
29	3,480	7,980	7,700	3,570	-------	8,580	2,980	3,840	2,280	1,600	953	7,240
30	3,040	7,010	5,910	3,140	-------	13,400	2,740	3,750	2,200		935	5,060
31	13,500	-------	6,350	3,060	-------	9,240	-------	3,220	-------		917	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	13,500	548	2,310	5.09	5.87	142,000
November	25,100	3,400	9,400	20.7	23.09	559,000
December	35,000	1,840	8,270	18.2	20.98	508,000
January	30,100	2,820	8,410	18.5	21.33	517,000
February	24,600	1,360	4,970	10.9	11.35	276,000
March	14,300	3,400	6,710	14.8	17.06	413,000
April	6,350	1,910	2,960	6.52	7.27	176,000
May	5,910	2,740	3,660	8.06	9.29	225,000
June	4,680	2,120	2,910	6.41	7.15	173,000
July	3,060	-------	2,090	4.60	5.30	129,000
August	1,520	917	1,230	2.71	3.12	75,600
September	12,000	674	3,570	7.86	8.77	212,000
The year	35,000	548	4,710	10.4	140.58	3,410,000

HOH RIVER BASIN

HOH RIVER NEAR SPRUCE, WASH.

LOCATION.—Water-stage recorder in sec. 34, T. 27 N., R. 11 W., 2¼ miles below Spruce and 5 miles below South Fork.

DRAINAGE AREA.—193 square miles.

RECORDS AVAILABLE.—August 1926 to September 1933.

DISCHARGE.—Maximum during year, 17,600 second-feet Nov. 12 (gage height, 13.36 feet); minimum, 545 second-feet Oct. 9 (gage height, 1.59 feet).

1926–33: Maximum, 22,800 second-feet Feb. 26, 1932 (gage height, 15.4 feet); minimum, 247 second-feet Nov. 14, 15, 1929 (gage height, 1.49 feet).

REMARKS.—Records good. No diversions or artificial regulation. Stream subject to large diurnal fluctuation caused by melting of glaciers.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	736	3,820	7,000	2,580	970	1,760	2,260	1,920	1,840	2,600	1,760	1,060
2	808	4,100	12,000	2,440	948	1,580	2,000	1,960	1,760	2,990	1,760	970
3	886	3,190	6,550	2,120	927	1,550	2,120	1,720	2,000	2,440	1,920	927
4	808	2,890	4,790	2,800	906	1,390	1,920	1,720	2,260	2,040	1,840	992
5	808	5,100	3,750	5,800	927	1,550	1,760	1,760	2,080	2,040	1,660	1,220
6	736	4,080	2,990	4,790	906	2,810	1,660	1,580	2,220	2,260	1,690	1,370
7	652	2,890	2,620	7,830	866	2,710	1,620	1,550	2,260	2,530	1,760	1,040
8	589	2,990	2,260	8,020	827	2,120	1,450	1,420	2,620	2,620	1,880	970
9	560	2,350	2,040	9,320	771	1,760	1,300	1,330	2,440	2,220	1,920	1,060
10	560	1,960	1,880	5,890	754	1,660	1,220	1,300	2,000	2,120	1,840	1,080
11	724	1,760	1,720	4,130	754	2,560	1,220	1,330	1,920	2,120	1,800	992
12	771	9,600	1,620	3,190	736	4,010	1,150	1,550	2,460	2,440	1,840	886
13	740	10,300	1,520	2,710	719	2,890	1,100	1,580	3,290	2,440	1,800	846
14	2,830	5,810	1,420	2,710	702	2,260	1,150	1,620	3,400	2,890	1,800	1,420
15	3,700	6,610	1,330	2,260	702	2,040	1,220	1,690	3,290	2,990	1,840	1,840
16	2,080	7,440	1,330	2,040	686	2,350	1,180	1,580	2,890	2,990	1,960	1,840
17	1,420	7,260	1,250	1,800	702	2,040	1,100	1,550	2,440	2,440	1,960	1,510
18	1,130	5,070	1,330	1,660	702	1,800	1,060	1,550	2,220	2,350	1,800	1,330
19	970	4,650	3,690	1,520	736	1,820	1,040	1,450	2,120	2,440	1,660	1,680
20	1,140	3,510	3,400	1,450	955	2,620	1,060	1,390	2,000	2,170	1,390	4,530
21	1,300	3,400	2,990	1,360	1,360	2,220	1,250	1,390	2,040	2,080	1,220	4,660
22	1,330	2,890	4,130	1,330	2,060	1,880	1,450	1,420	1,920	2,040	1,220	5,020
23	1,130	2,530	4,130	1,250	1,660	1,660	1,450	1,620	1,880	2,120	1,360	3,510
24	1,020	2,260	3,400	1,390	1,420	1,520	1,420	1,760	2,710	2,260	1,420	2,620
25	1,290	2,000	3,560	1,220	3,230	1,450	1,420	2,560	3,190	2,350	1,330	2,040
26	1,580	2,120	5,070	1,150	5,560	1,360	1,360	3,190	2,800	2,220	1,250	2,010
27	1,810	2,440	3,750	1,150	2,890	1,330	1,620	2,530	2,440	1,980	1,250	2,080
28	1,420	3,630	2,990	1,080	2,170	2,090	2,080	2,220	2,440	1,720	1,360	5,170
29	1,250	4,930	2,710	1,060	-------	2,260	1,960	2,440	2,350	2,140	1,180	3,870
30	1,150	3,630	2,350	1,020	-------	3,210	1,800	2,530	2,350	2,080	1,130	2,710
31	2,710	-------	2,350	1,020	-------	2,890	-------	2,170	-------	1,760	1,100	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	3,700	560	1,250	6.48	7.47	76,900
November	10,300	1,760	4,170	21.6	24.10	248,000
December	12,000	1,250	3,290	17.0	19.60	202,000
January	9,320	1,020	2,840	14.7	16.95	175,000
February	5,560	686	1,310	6.79	7.07	72,800
March	4,010	1,330	2,100	10.9	12.57	129,000
April	2,260	1,040	1,480	7.67	8.56	88,100
May	3,190	1,300	1,790	9.27	10.69	110,000
June	3,400	1,760	2,390	12.4	13.83	142,000
July	2,990	1,720	2,320	12.0	13.83	143,000
August	1,960	1,100	1,600	8.29	9.56	98,400
September	5,170	846	2,040	10.6	11.83	121,000
The year	12,000	560	2,220	11.5	156.06	1,610,000

ELWHA RIVER BASIN

ELWHA RIVER AT McDONALD BRIDGE, NEAR PORT ANGELES, WASH.

LOCATION.—Water-stage recorder in NE¼NW¼ sec. 33, T. 30 N., R. 7 W., at McDonald Bridge, 8 miles southwest of Port Angeles. Zero of gage is 206.29 feet above mean sea level.

DRAINAGE AREA.—262 square miles.

RECORDS AVAILABLE.—October 1897 to December 1901; October 1918 to September 1933.

DISCHARGE.—Maximum during year, 9,640 second-feet Nov. 12 (gage height, 7.3 feet); minimum, 26 second-feet Oct. 3, caused by regulation.

1897–1901, 1918–33: Maximum, 23,800 second-feet Nov. 27, 1901 (gage height, 10.6 feet); minimum, 8 second-feet Oct. 9, 1927 (gage height, —0.07 foot), caused by regulation. Average, 19 years (1897–1901, 1918–33), 1,460 second-feet.

REMARKS.—Records good. Discharge Mar. 11–16 estimated from records of power plant load and estimated inflow. Flow regulated by operation of Glines Canyon Reservoir. Flow that is diverted through power house is returned to river above gage. Many discharge measurements furnished by Northwestern Power & Light Co.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,140	1,330	3,370	1,460	758	1,070	96	1,680	2,150	3,240	1,990	1,150
2	556	1,980	5,640	1,400	756	908	321	1,600	2,090	3,480	1,940	890
3	29	1,890	3,910	1,330	666	951	1,240	1,780	2,360	3,020	1,940	111
4	144	870	2,900	1,400	1,660	968	1,350	1,530	2,910	2,680	1,840	112
5	450	2,300	2,500	1,950	1,770	988	1,180	1,550	2,790	2,660	1,710	1,010
6	552	2,460	2,270	2,140	126	1,030	1,340	1,410	2,950	2,840	1,860	1,520
7	536	1,840	2,070	3,510	450	1,030	1,320	1,410	2,800	3,100	1,760	1,300
8	622	1,890	1,740	4,000	700	1,070	1,300	1,360	2,950	3,450	1,910	1,280
9	318	1,860	1,740	4,840	536	548	1,140	1,570	2,370	3,050	1,860	1,270
10	28	1,950	1,560	3,410	540	648	1,090	1,730	2,390	2,740	1,820	1,260
11	27	1,810	1,560	2,560	540	980	1,370	1,570	2,310	2,760	1,770	826
12	183	4,430	1,520	2,280	612	1,480	1,440	1,750	2,700	2,970	1,820	176
13	438	5,820	1,550	1,820	584	1,370	980	1,520	4,010	2,960	1,610	592
14	264	2,210	1,520	2,350	252	1,330	58	683	4,330	3,480	1,600	522
15	2,170	3,470	1,470	2,910	471	1,150	54	1,710	4,310	3,620	1,670	176
16	1,010	4,520	1,530	2,020	762	1,270	58	1,590	3,880	3,470	1,680	541
17	1,400	3,820	1,540	1,440	972	1,520	58	1,570	3,620	3,250	1,710	338
18	1,350	3,010	1,530	592	1,010	1,470	574	1,480	3,090	2,750	1,570	598
19	1,180	2,820	1,780	498	1,020	1,210	996	1,540	2,890	2,880	1,570	711
20	1,240	2,280	1,890	1,950	1,010	510	960	1,640	2,860	2,570	1,210	1,580
21	1,130	2,160	1,620	1,400	1,120	944	990	1,660	2,800	2,520	1,260	1,860
22	1,210	2,090	1,980	1,850	968	1,420	1,230	1,670	2,680	2,520	1,440	2,130
23	944	1,650	2,170	1,520	1,070	1,050	1,660	1,440	2,630	2,540	1,600	1,490
24	37	1,500	1,540	444	456	1,130	1,580	1,310	2,970	2,660	1,570	1,150
25	30	1,560	1,160	602	154	1,050	1,580	1,920	3,360	2,750	1,420	980
26	84	1,530	2,310	318	354	1,040	1,500	2,590	3,290	2,600	982	890
27	324	1,860	1,880	326	944	974	1,520	2,340	3,000	2,280	90	1,160
28	826	2,530	816	605	1,290	1,170	1,500	1,950	3,150	2,030	678	2,860
29	1,280	3,640	768	655	-------	1,420	1,320	2,640	3,150	2,390	1,110	1,670
30	1,190	2,910	949	620	-------	1,580	1,680	2,780	3,170	2,240	1,100	1,290
31	1,180	-------	1,140	554	-------	718	-------	2,400	-------	1,960	1,190	-------

Discharge of Elwha River at McDonald Bridge, near Port Angeles, Wash., 1932–33—Continued

Month	Observed				Gain or loss in storage in Glines Canyon Reservoir (acre-feet)	Corrected for storage			
	Discharge in second-feet			Run-off in acre-feet		Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October	2,170	27	706	43,400	+590	44,000	716	2.73	3.15
November	5,820	870	2,470	147,000	+2,100	149,000	2,500	9.54	10.64
December	5,640	768	1,930	119,000	+610	120,000	1,950	7.44	8.58
January	4,840	318	1,700	105,000	−180	105,000	1,710	6.53	7.53
February	1,770	126	770	42,800	0	42,800	771	2.94	3.06
March	1,580	510	1,100	67,600	−3,040	64,600	1,050	4.01	4.62
April	1,680	54	1,050	62,500	+3,040	65,500	1,100	4.20	4.69
May	2,780	683	1,720	106,000	−170	106,000	1,720	6.56	7.56
June	4,330	2,090	3,000	179,000	+170	179,000	3,010	11.5	12.83
July	3,620	1,960	2,820	173,000	+90	173,000	2,810	10.7	12.34
August	1,990	90	1,530	94,100	−1,360	92,700	1,510	5.76	6.64
September	2,860	111	1,050	62,500	+1,360	63,900	1,070	4.08	4.55
The year	5,820	27	1,660	1,200,000	+3,210	1,210,000	1,660	6.34	86.19

PUGET SOUND BASINS

DOSEWALLIPS RIVER BASIN

DOSEWALLIPS RIVER NEAR BRINNON, WASH.

LOCATION.—Water-stage recorder in SW¼ sec. 24, T. 26 N., R. 3 W., half a mile above Corrigenda ranger station and 5½ miles northwest of Brinnon.

DRAINAGE AREA.—109 square miles.

RECORDS AVAILABLE.—October 1930 to September 1933.

DISCHARGE.—Maximum during year, 4,050 second-feet Nov. 13 (gage height, 6.30 feet); minimum, 106 second-feet Oct. 9, 10 (gage height, 1.95 feet).

1930–33: Maximum, 4,790 second-feet Jan. 23, 1931, Feb. 26, 1932 (gage height, 6.7 feet); minimum, 88 second-feet Oct. 16, 1930 (gage height, 1.77 feet).

REMARKS.—Records excellent except those for Dec. 11–15, 18–20, 22–31, Jan. 1–3, 5–8, Feb. 10–13, which were estimated. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	125	353	791		169	208	289	758	734	1,300	656	258
2	136	464	1,050	220	164	222	275	710	740	1,390	656	246
3	140	272	798		162	225	332	595	942	1,120	644	240
4	128	246	622	228	160	206	336	531	1,160	998	606	246
5	127	566	531		162	206	324	480	1,130	1,050	595	331
6	123	491	458	690	157	225	321	484	1,120	1,160	612	311
7	115	328	402		155	246	303	585	1,030	1,390	590	252
8	110	306	348		146	231	282	503	966	1,390	617	237
9	108	272	336	974	134	217	258	458	882	1,160	622	240
10	107	237	321	639		222	243	432	784	1,060	590	243
11	118	222		531	135	344	234	444	784	1,120	565	228
12	125	1,280		440		489	225	536	1,150	1,250	560	211
13	116	2,180	280	393		381	222	617	1,880	1,300	531	203
14	341	826		372	138	314	246	662	2,060	1,440	531	234
15	456	756		340	136	365	268	644	2,000	1,490	522	243
16	272	910	243	310	134	466	261	590	1,700	1,390	536	246
17	184	1,250	237	292	134	376	249	550	1,340	1,160	522	222
18	150	861		278	130	314	240	526	1,140	1,070	494	206
19	136	680	310	258	128	289	237	494	1,110	1,010	458	211
20	148	560		246	132	303	261	489	1,100	926	402	439
21	185	507	321	234	132	282	324	480	1,110	896	356	498
22	200	436		234	144	258	414	484	1,030	882	344	488
23	160	402		220	142	240	476	471	974	896	360	376
24	142	372	340	220	138	231	517	507	1,140	934	376	306
25	148	352		206	164	231	531	883	1,390	958	348	265
26	169	406		200	348	228	517	1,100	1,300	903	324	272
27	162	471		195	258	234	639	833	1,250	791	321	314
28	144	644		192	225	268	833	764	1,300	680	340	933
29	134	1,360	280	200	-------	278	764	1,010	1,300	833	303	554
30	127	942		182	-------	321	644	1,100	1,160	740	289	389
31	162	-------		177	-------	328	-------	868	-------	656	275	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	456	107	161	1.48	1.71	9,900
November	2,180	222	630	5.78	6.45	37,500
December	1,050	----------	383	3.51	4.05	23,600
January	974	177	354	3.25	3.75	21,800
February	348	128	158	1.45	1.51	8,780
March	489	206	280	2.57	2.96	17,200
April	833	222	369	3.39	3.78	22,000
May	1,100	432	632	5.80	6.69	38,900
June	2,060	734	1,190	10.9	12.16	70,800
July	1,490	656	1,080	9.91	11.42	66,400
August	656	275	482	4.42	5.10	29,600
September	933	203	315	2.89	3.22	18,700
The year	2,180	107	504	4.62	62.80	365,000

SKOKOMISH RIVER BASIN

NORTH FORK OF SKOKOMISH RIVER BELOW STAIRCASE RAPIDS, NEAR HOODSPORT, WASH.

LOCATION.—Water-stage recorder in SW¼ sec. 3, T. 23 N., R. 5 W., 2 miles above Dry Creek and 10½ miles northwest of Hoodsport.

DRAINAGE AREA.—60 square miles.

RECORDS AVAILABLE.—July 1924 to September 1933.

DISCHARGE.—Maximum during year, 4,940 second-feet Nov. 12 (gage height, 6.90 feet); minimum, 41 second-feet Oct. 11 (gage height, 1.37 feet).

1924–33: Maximum, 8,830 second-feet Jan. 22, 1931 (gage height, 8.67 feet); minimum, 16 second-feet Sept. 23, 1930 (gage height, 1.12 feet).

REMARKS.—Records good. Discharge estimated Dec. 10–13. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	58	1,160	1,540	303	175	255	414	1,040	674	995	465	152
2	57	931	2,230	280	166	240	380	995	704	995	456	149
3	57	546	1,250	264	156	231	435	740	925	860	435	147
4	56	593	890	313	154	214	431	626	1,060	800	410	145
5	52	1,950	698	700	158	212	406	562	995	860	395	279
6	51	1,090	562	677	154	330	398	575	960	995	395	243
7	46	638	487	1,300	149	384	380	746	925	1,140	398	193
8	45	650	431	1,520	143	323	344	644	960	1,060	406	178
9	44	478	406	1,760	141	283	313	557	830	860	406	175
10	42	406		1,060	143	267	286	501	716	830	380	168
11	56	362	350	710	143	366	274	535	734	800	376	158
12	54	2,070		530	143	656	261	680	1,100	925	372	145
13	78	2,100		461	143	461	258	734	1,480	995	358	138
14	670	1,060	299	452	141	387	293	734	1,570	1,140	354	148
15	677	1,230	290	410	138	366	327	674	1,440	1,170	344	167
16	347	1,480	283	372	132	562	316	584	1,200	1,060	337	220
17	214	1,360	267	351	120	456	296	557	995	890	313	162
18	166	924	277	334	118	398	280	552	890	860	293	164
19	141	770	433	310	112	369	277	501	860	758	270	228
20	136	590	447	293	122	435	313	487	860	680	240	782
21	171	584	395	277	138	402	391	478	860	680	223	1,250
22	190	492	410	267	200	358	483	497	830	674	220	1,120
23	154	443	406	255	185	320	562	552	800	686	220	800
24	136	410	369	249	166	293	596	704	1,080	716	220	574
25	134	395	371	231	280	277	614	1,030	1,170	728	206	439
26	128	402	608	226	685	277	574	1,060	1,030	656	193	461
27	136	431	465	214	387	306	755	830	995	546	185	456
28	122	1,010	395	201	303	431	925	770	1,030	478	188	1,230
29	134	1,950	348	203	------	447	770	995	960	540	170	529
30	124	1,290	316	188	------	546	650	960	890	478	168	385
31	328	------	306	183	------	506	------	770	------	461	161	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	677	42	155	2.58	2.97	9,530
November	2,100	362	926	15.4	17.18	55,100
December	2,230	267	535	8.92	10.28	32,900
January	1,760	183	480	8.00	9.22	29,500
February	685	112	186	3.10	3.23	10,300
March	656	212	366	6.10	7.03	22,500
April	925	258	433	7.22	8.06	25,800
May	1,060	478	699	11.6	13.37	43,000
June	1,570	674	984	16.4	18.30	58,600
July	1,170	461	817	13.6	15.68	50,200
August	465	161	308	5.13	5.91	18,900
September	1,250	138	380	6.33	7.06	22,600
The year	2,230	42	524	8.73	118.29	379,000

SOUTH FORK OF SKOKOMISH RIVER NEAR POTLATCH, WASH.

LOCATION.—Water-stage recorder in NW¼ sec. 22, T. 22 N., R. 5 W., at head of canyon 2 miles below Brown Creek and 7½ miles west of Potlatch.

DRAINAGE AREA.—68 square miles.

RECORDS AVAILABLE.—October 1923 to September 1932 (discontinued).

DISCHARGE.—Maximum during year, about 11,500 second-feet about Feb. 26 (gage height, 15.1 feet from high-water marks); minimum, 71 second-feet Sept. 30 (gage height, 1.05 feet).

1923–32: Maximum, that of Feb. 26, 1932; minimum, 38 second-feet Sept. 15, 1926; minimum gage height, 1.01 feet Sept. 3, 4, 1931.

REMARKS.—Records good except those estimated, Feb. 13 to June 1, which are fair. No diversions or regulation.

Discharge, in second-feet, 1931–32

Day	Oct.	Nov.	Dec.	Jan.	Feb.	June	July	Aug.	Sept.
1	467	748	296	800	346	400	274	171	114
2	308	662	505	700	333	414	274	163	108
3	245	520	681	606	308	443	308	158	105
4	518	458	570	553	308	428	264	154	103
5	618	428	488	536	296	386	245	150	100
6	414	1,440	458	800	285	359	227	148	96
7	308	1,160	781	720	274	359	218	143	94
8	254	840	760	624	274	359	218	145	94
9	218	800	588	869	285	400	210	196	91
10	200	700	504	960	346	473	316	210	90
11	182	624	428	1,620	386	504	374	195	87
12	169	960	386	2,460	333	520	274	179	86
13	158	3,320	359	1,260		536	245	166	85
14	148	1,420	320	940		520	227	156	82
15	140	960	296	780		473	274	150	81
16	135	800	296	681		400	359	148	80
17	129	760	1,380	588		359	285	142	78
18	124	720	3,450	852		333	254	138	77
19	119	1,380	6,060	2,040		320	236	146	102
20	118	995	2,800	1,260		346	218	148	115
21	168	760	1,570	982	1,500	428	210	143	91
22	653	624	1,230	840		414	207	140	85
23	1,050	536	1,050	720		359	200	135	81
24	1,480	473	1,280	624		320	193	129	78
25	1,390	443	1,280	570		308	200	126	77
26	960	400	1,050	536		308	188	124	76
27	1,160	359	1,180	504		308	177	121	75
28	1,260	333	1,030	458		308	180	117	73
29	940	308	840	428		308	210	114	73
30	740	296	720	400		285	196	112	72
31	606		700	372			179	114	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,480	118	496	7.29	8.40	30,500
November	3,320	296	808	11.9	13.28	48,100
December	6,060	296	1,080	15.9	18.33	66,400
January	2,460	372	841	12.4	14.30	51,700
February			1,010	14.9	16.07	58,100
March			1,150	16.9	19.48	70,700
April			1,000	14.7	16.40	59,500
May			500	7.35	8.47	30,700
June	536	285	389	5.72	6.38	23,100
July	374	177	240	3.53	4.07	14,800
August	210	112	148	2.18	2.51	9,100
September	115	72	88.3	1.30	1.45	5,250
The year		72	644	9.47	129.14	468,000

SOUTH FORK OF SKOKOMISH RIVER NEAR UNION, WASH.

LOCATION.—Water-stage recorder in NE¼ sec. 2, T. 21 N., R. 5 W., 5 miles above Vance Creek and 8 miles west of Union.

DRAINAGE AREA.—81 square miles.

RECORDS AVAILABLE.—August 1931 to September 1933.

DISCHARGE.—Maximum during period August 1931 to September 1932, about 13,000 second-feet Feb. 26 (gage height, 9.27 feet); minimum, 90 second-feet Sept. 29, 30, 1932; minimum gage height occurred in October, not determined.

Maximum during year ending Sept. 30, 1933, 6,740 second-feet Nov. 13 (gage height, 8.16 feet); minimum, 71 second-feet Oct. 11 (gage height, 4.40 feet).

1931–33: Maximum, that of Feb. 26, 1932; minimum, that of Oct. 11, 1932; minimum gage height not determined.

REMARKS.—Records good except those estimated, which are fair. No diversions or regulation. Some discharge measurements furnished by City of Tacoma.

Discharge, in second-feet, 1931–33

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1931			1931			1931		
1		94	11	120	125	21	101	186
2		94	12	108	122	22	99	167
3	130	94	13	106	118	23	98	156
4		94	14	106	114	24	96	150
5		119	15	103	114	25	99	146
6		219	16	103	108	26	101	136
7		278	17	103	108	27	99	143
8	120	182	18	103	382	28	99	153
9		153	19	103	278	29	96	472
10		133	20	101	219	30	94	841
						31	94	

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1931–32												
1	529		360	985	404	1,380	1,480	800	449	300	190	130
2	377		542	841	382	1,140	1,340	790	429	300	182	126
3		650	752	726	372	992	1,210	739	456	327	177	123
4			636	660	366	1,060	1,370	700	449	294	169	120
5			557	743	350	2,630	1,560	672	408	267	169	116
6	450		544	922	339	1,750	1,230	653	382	252	165	116
7			1,000	778	339	1,250	1,160	662	376	237	161	112
8		1,100	931	752	355	1,050	1,170	644	382	232	165	112
9	273		709	1,220	480	932	1,030	644	395	227	208	109
10	245		598	1,060	487	920	956	653	471	316	232	109
11	231			3,420		843	956	599	517	382	213	106
12	216			1,980		800	1,030	574	540	305	200	106
13	202	1,600		1,270	450	780	1,020	574	540	267	182	102
14			600	1,020		992	1,080	549	532	252	173	102
15				859		1,040	956	502	494	278	169	99
16	170			743		944	980	486	422	382	161	99
17				734		1,740	1,180	502	376	310	153	99
18		1,100	4,520	2,600	320	2,070	1,430	540	364	278	149	99
19			6,840	1,920		1,730	2,260	616	339	257	153	126
20			2,420	1,350		1,250	1,460	780	358	247	161	137
21			1,530	1,100		1,040	1,120	635	436	237	153	112
22	950		1,320	931	900	980	956	566	436	227	149	106
23		650	1,300	814		1,080	832	608	376	222	141	99
24			1,760	718		2,310	780	549	345	213	137	99
25			1,460	684	4,080	2,090	739	494	327	218	137	96
26			1,310	636	9,260	1,440	790	449	327	208	137	96
27			1,450	584	6,040	1,210	909	422	327	195	137	93
28		400	1,200	530	3,120	1,750	865	422	327	195	134	93
29	1,100		967	493	1,880	1,370	770	456	322	227	134	90
30		360	859	462		1,250	770	479	316	218	130	90
31			940	439		1,300		464		200	134	

Discharge, in second-feet, of South Fork of Skokomish River near Union, Wash., 1931–33—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1932–33												
1	90	1,960	2,550	814	362	814	1,240	1,470	697	562	260	126
2	90	1,840	2,760	751	338	778	1,030	1,510	670	587	255	123
3	86	1,170	1,690	715	332	778	1,090	1,150	742	513	250	120
4	86	1,230	1,190	970	320	697	1,070	1,060	824	484	240	120
5	83	3,610	950	2,360	320	679	960	1,060	787	473	225	178
6	80	2,240	814	2,100	309	1,040	910	1,000	742	518	220	250
7	80	1,210	724	2,860	304	1,320	881	1,270	742	553	215	170
8	77	1,210	643	3,210	292	1,000	805	1,180	881	544	210	146
9	74	920	580	4,120	282	843	742	1,020	814	467	210	134
10	74	729	535	2,580	276	796	679	900	697	436	206	126
11	80	616	484	1,590	276	1,350	643	852	643	420	202	123
12	83	2,040	450	1,230	265	2,410	616	910	751	443	197	120
13	83	4,000	422	1,040	260	1,560	598	872	950	458	192	120
14	412	1,990	394	1,000	255	1,190	643	843	970	492	188	123
15	910	2,170	380	920	250	1,040	724	814	920	518	188	126
16	514	2,280	368	834	240	1,560	697	769	834	492	184	192
17	327	1,590	350	760	245	1,260	634	760	742	459	179	179
18	257	1,190	415	715	235	1,060	607	769	688	394	170	166
19	213	990	1,450	634	235	980	580	733	652	387	170	192
20	190	862	1,640	607	265	1,260	625	697	616	368	166	484
21	195	872	1,310	553	368	1,100	760	679	616	356	162	1,020
22	227	824	1,240	544	729	920	900	697	589	344	158	1,720
23	218	742	1,270	510	724	814	930	814	553	338	154	1,240
24	200	679	1,110	492	598	760	900	881	643	344	150	1,010
25	182	616	1,040	450	1,000	715	881	1,020	742	344	146	715
26	173	571	1,890	443	3,090	715	843	1,070	661	332	142	598
27	169	544	1,350	429	1,450	778	950	890	607	305	138	562
28	165	634	1,090	415	1,020	1,220	1,110	814	616	287	138	1,380
29	186	1,420	920	401	-------	1,330	980	881	571	304	138	1,040
30	190	1,540	805	374	-------	1,860	872	872	535	282	134	769
31	679	-------	787	368	-------	1,670	-------	778	-------	265	134	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1931						
August	-------	94	109	1.35	1.56	6,700
September	841	94	190	2.35	2.62	11,300
The period	-------	-------	-------	-------	-------	18,000
1931–32						
October	-------	-------	584	7.21	8.31	35,900
November	-------	360	915	11.3	12.61	54,400
December	6,840	360	1,250	15.4	17.75	76,900
January	3,420	439	1,030	12.7	14.64	63,300
February	9,260	-------	1,230	15.2	16.39	70,800
March	2,630	780	1,330	16.4	18.91	81,800
April	2,260	739	1,110	13.7	15.29	66,000
May	800	422	588	7.26	8.37	36,200
June	540	316	407	5.02	5.60	24,200
July	382	195	260	3.21	3.70	16,000
August	232	130	163	2.01	2.32	10,000
September	137	90	107	1.32	1.47	6,370
The year	9,260	90	747	9.22	125.36	542,000
1932–33						
October	910	74	209	2.58	2.97	12,900
November	4,000	544	1,410	17.4	19.41	83,900
December	2,760	350	1,020	12.6	14.53	62,700
January	4,120	368	1,120	13.8	15.91	68,900
February	3,090	235	523	6.46	6.73	29,000
March	2,410	679	1,110	13.7	15.79	68,200
April	1,240	580	830	10.2	11.38	49,400
May	1,510	679	937	11.6	13.37	57,600
June	970	535	716	8.84	9.86	42,600
July	589	265	421	5.20	6.00	25,900
August	260	134	185	2.28	2.63	11,400
September	1,720	120	446	5.51	6.15	26,500
The year	4,120	74	744	9.19	124.73	539,000

NISQUALLY RIVER BASIN

NISQUALLY RIVER NEAR ALDER, WASH.

LOCATION.—Water-stage recorder in SW¼ sec. 23, T. 15 N., R. 4 E., 2½ miles southeast of Alder.

DRAINAGE AREA.—250 square miles.

RECORDS AVAILABLE.—August 1931 to September 1933.

DISCHARGE.—Maximum during year, 12,600 second-feet Nov. 13 (gage height, 9.32 feet); minimum, 271 second-feet Oct. 9 (gage height, 1.76 feet).

1931–33: Maximum, 14,600 second-feet Feb. 26, 1932 (gage height, 9.75 feet); minimum, that of Oct. 9, 1932.

REMARKS.—Records excellent except those estimated Oct. 8, 20, 21, Nov. 11, 12, Feb. 10–13, Mar. 17, which are good. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	449	1,080	2,600	1,550	645	946	1,370	1,700	2,020	1,550	968	515
2	482	2,180	5,880	1,550	605	1,000	1,240	1,750	1,850	1,700	968	530
3	535	1,800	5,230	1,320	580	1,080	1,320	1,650	2,120	1,600	960	570
4	496	1,460	3,320	1,560	565	932	1,370	1,630	2,440	1,460	946	600
5	478	2,920	2,580	3,030	600	855	1,280	1,550	2,440	1,460	1,330	605
6	455	4,220	2,020	3,630	630	1,540	1,240	1,420	2,250	1,550	1,040	640
7	361	2,580	1,700	4,130	565	2,580	1,160	1,370	2,070	1,600	925	520
8	323	3,170	1,370	7,530	525	1,850	1,080	1,240	3,390	1,700	968	450
9	285	2,720	1,240	6,180	421	1,460	984	1,160	4,570	1,500	960	450
10	297	2,020	1,200	4,340		1,460	911	1,080	3,080	1,370	946	473
11	341	1,700	1,030	3,010	470	2,180	925	1,040	2,440	1,320	939	486
12	505	3,500	1,000	2,380		3,160	918	1,160	2,650	1,550	932	486
13	414	9,740	918	1,960		2,650	841	1,200	3,750	1,550	904	464
14	761	6,320	841	1,800	464	2,130	848	1,370	4,200	1,650	904	612
15	748	4,660	778	1,550	473	1,800	890	1,420	4,110	1,850	890	680
16	625	6,400	754	1,370	464	1,800	904	1,420	3,490	1,900	968	748
17	540	8,000	712	1,240	455	1,650	869	1,320	2,790	1,550	911	595
18	442	5,160	808	1,160	455	1,500	820	1,320	2,250	1,420	827	570
19	378	3,580	2,270	1,040	450	1,460	802	1,280	1,960	1,370	841	530
20	360	2,720	2,130	968	468	1,700	820	1,280	1,800	1,280	718	565
21	500	2,940	1,850	918	650	1,600	883	1,280	1,800	1,160	645	728
22	675	2,650	1,720	869	1,070	1,420	1,020	1,280	1,750	1,160	645	1,380
23	600	2,190	2,020	820	984	1,280	1,240	1,420	1,750	1,160	700	1,280
24	530	1,850	1,650	814	760	1,160	1,420	1,700	1,700	1,240	724	1,160
25	645	1,550	1,500	766	735	1,040	1,460	2,550	1,900	1,240	706	939
26	939	1,370	2,250	742	1,410	968	1,420	3,080	2,020	1,200	684	876
27	883	1,320	2,020	862	1,160	946	1,550	2,510	1,900	1,160	706	932
28	736	1,240	1,700	748	992	1,030	1,900	2,130	1,850	1,010	784	1,160
29	718	2,400	1,650	700	-------	1,160	2,070	2,310	1,750	1,160	635	1,320
30	706	2,440	1,460	675	-------	1,540	1,900	2,720	1,650	1,240	665	1,080
31	808	-------	1,500	665	-------	1,650	-------	2,380	-------	1,000	595	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	939	285	549	2.20	2.54	33,800
November	9,740	1,080	3,200	12.8	14.28	190,000
December	5,880	712	1,860	7.44	8.58	114,000
January	7,530	665	1,930	7.72	8.90	119,000
February	1,410	421	643	2.57	2.68	35,700
March	3,160	855	1,530	6.12	7.06	94,100
April	2,070	802	1,180	4.72	5.27	70,200
May	3,080	1,040	1,640	6.56	7.56	101,000
June	4,570	1,650	2,460	9.84	10.98	146,000
July	1,900	1,000	1,410	5.64	6.50	86,700
August	1,330	595	849	3.40	3.92	52,200
September	1,380	450	731	2.92	3.26	43,500
The year	9,740	285	1,500	6.00	81.53	1,090,000

LITTLE NISQUALLY RIVER NEAR ALDER, WASH.

LOCATION.—Water-stage recorder in NW¼ sec. 16, T. 15 N., R. 4 E., 1,500 feet above mouth, 3,000 feet from diversion dam of Tacoma's municipal power plant, and 1½ miles southwest of Alder.

DRAINAGE AREA.—28.5 square miles.

RECORDS AVAILABLE.—August 1920 to September 1933.

DISCHARGE.—Maximum during year, 1,470 second-feet Nov. 13 (gage height, 5.10 feet); minimum, 5.7 second-feet Oct. 9 (gage height, 0.76 foot).

1920–33: Maximum, 2,310 second-feet Feb. 26, 1932 (gage height, 6.6 feet); minimum, 0.9 second-foot July 17, 1926 (gage height, 0.58 foot). Average, 13 years (1920–33), 119 second-feet.

REMARKS.—Records fair. Discharge estimated Dec. 10–15, 17, 18, 20–22, Feb. 9–17. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.6	158	590	196	52	148	282	224	157	67	19	12
2	6.6	367	870	187	49	182	226	237	141	71	19	11
3	6.6	234	582	150	46	191	239	229	173	67	20	10
4	6.2	194	339	249	46	150	229	229	187	62	26	9.2
5	6.2	605	231	697	49	126	201	216	173	57	45	13
6	6.2	524	178	739	52	375	180	187	157	57	30	33
7	6.2	273	141	761	49	610	164	166	148	58	25	22
8	6.2	276	115	1,000	46	364	141	159	474	58	21	17
9	5.7	208	105	802		250	124	150	550	53	20	15
10	6.2	152		550		234	111	141	319	48	19	14
11	6.6	118		349		518	109	135	231	45	18	14
12	8.4	161	80	247		848	103	150	242	40	17	12
13	9.2	1,100		196	45	570	97	152	295	40	16	12
14	40	642		175		388	101	157	279	40	15	17
15	32	557		152		295	118	171	242	40	13	21
16	28	610	57	132		318	122	178	198	44	13	38
17	26	399	50	115		318	111	171	159	39	12	34
18	22	270	60	105	36	279	101	162	132	34	12	32
19	19	206	690	93	36	244	93	152	115	30	12	29
20	16	159		85	39	286	95	146	107	30	12	39
21	20	268	370	80	70	270	118	143	105	29	11	65
22	59	267		74	194	224	164	150	103	28	11	242
23	47	204	391	68	162	189	204	178	97	26	10	206
24	38	159	286	67	113	159	206	221	97	25	10	175
25	33	126	234	62	101	141	196	360	124	24	9.2	128
26	29	105	459	63	254	124	182	384	122	22	8.4	103
27	26	89	384	74	214	130	204	262	103	21	8.4	91
28	25	92	282	63	173	168	253	206	95	20	8.4	109
29	37	568	226	58	-------	218	250	231	85	20	8.4	130
30	42	530	189	54	-------	352	226	247	74	20	22	113
31	80	-------	184	55	-------	399	-------	204	-------	19	15	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	80	5.7	22.8	0.800	0.92	1,400
November	1,100	89	321	11.3	12.61	19,100
December	870	50	266	9.33	10.76	16,400
January	1,000	54	248	8.70	10.03	15,200
February	254	36	78.1	2.74	2.85	4,340
March	848	124	293	10.3	11.87	18,000
April	282	93	165	5.79	6.46	9,820
May	384	135	197	6.91	7.97	12,100
June	550	74	183	6.42	7.16	10,900
July	71	19	40.6	1.42	1.64	2,500
August	45	8.4	16.3	.572	.66	1,000
September	242	9.2	58.9	2.07	2.31	3,500
The year	1,100	5.7	158	5.54	75.24	114,000

PUYALLUP RIVER BASIN

PUYALLUP RIVER NEAR ORTING, WASH.

LOCATION.—Water-stage recorder in SW¼ sec. 17, T. 18 N., R. 5 E., 4 miles south of Orting.

DRAINAGE AREA.—154 square miles.

RECORDS AVAILABLE.—September 1931 to September 1933.

DISCHARGE.—Maximum during year, 11,800 second-feet Nov. 13 (gage height, 11.3 feet); minimum, 138 second-feet Oct. 9 (gage height, 2.2[illegible] feet).

1931–33: Maximum, that of Nov. 13, 1932; minimum, 125 second-feet Oct. 3, 1931.

REMARKS.—Records fair. Discharge estimated June 28 to Aug. 9. Water diverted for Electron plant of Puget Sound Power & Light Co. returned to river above gage. Slight regulation, owing to pondage in connection with Electron power plant.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	311	1,110	1,110	731	373	487	589	760	741			385
2	398	1,690	3,410	785	343	531	554	835	703			349
3	458	1,180	2,880	700	319	560	637	810	845			398
4	418	905	1,740	791	309	487	619	788	1,020			438
5	384	1,580	1,420	1,780	319	462	577	765	945	1,550	1,000	477
6	356	1,920	1,130	1,640	354	862	548	720	878			580
7	272	1,210	1,020	2,870	309	1,100	520	675	826			343
8	232	1,830	875	5,000	296	793	477	652	1,470			199
9	202	1,480	740	3,050	229	643	448	652	1,800			205
10	198	1,050	680	2,070	257	619	411	630	1,270		673	270
11	279	850	640	1,500	283	794	443	630	1,020		691	279
12	477	2,260	620	1,210	303	1,050	453	652	1,220		691	228
13	367	7,670	600	1,020	254	910	407	652	1,790		691	182
14	742	3,610	580	945	251	774	415	698	2,140		697	530
15	652	2,680	560	794	261	679	438	720	2,140		703	601
16	500	3,820	540	728	273	655	429	720	1,890	1,300	786	577
17	462	4,100	500	661	270	655	420	698	1,500		754	433
18	360	2,540	482	619	270	607	393	742	1,210		673	411
19	282	1,840	1,010	577	273	566	385	720	1,050		685	298
20	292	1,390	500	531	283	754	389	698	945		571	358
21	402	1,470	830	509	397	685	407	698	980		482	417
22	728	1,250	771	477	583	601	487	698	945		498	732
23	532	1,100	995	462	542	542	577	698	980		560	607
24	466	995	852	448	443	509	607	814	1,050		577	509
25	722	920	785	429	424	472	625	1,110	1,290		583	509
26	542	875	1,220	415	637	443	595	1,370	1,250	900	536	542
27	424	875	1,070	443	548	443	667	1,020	1,090		542	560
28	695	808	898	420	498	477	878	838			583	789
29	650	1,200	912	398	-------	504	945	980	1,700		487	583
30	582	1,160	838	385	-------	617	845	1,130			531	393
31	936	-------	785	377	-------	679	-------	910	-------		462	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	936	198	462	3.00	3.46	28,400
November	7,670	808	1,850	12.0	13.39	110,000
December	3,410	482	1,000	6.49	7.48	61,500
January	5,000	377	1,060	6.88	7.93	65,200
February	637	229	354	2.30	2.40	19,700
March	1,100	443	644	4.18	4.82	39,600
April	945	385	540	3.51	3.92	32,100
May	1,370	630	790	5.13	5.91	48,600
June	2,140	703	1,270	8.25	9.20	75,600
July	----------	----------	1,240	8.05	9.28	76,200
August	----------	462	724	4.70	5.42	44,500
September	789	182	439	2.85	3.18	26,100
The year	7,670	182	866	5.62	76.39	628,000

PUYALLUP RIVER AT PUYALLUP, WASH.

LOCATION.—Water-stage recorder in NE¼ sec. 20, T. 20 N., R. 4 E., 1 mile northwest of Puyallup.
DRAINAGE AREA.—914 square miles.
RECORDS AVAILABLE.—May 1914 to September 1933.
DISCHARGE.—Maximum during year, 37,800 second-feet Nov. 13 (gage height, 17.1 feet); minimum, 975 second-feet Oct. 2, 9–11, Feb. 13; possibly less for short intervals Oct. 2, 9–11, when water was below intake.

1914–33: Maximum, 40,500 second-feet Dec. 18, 1917 (gage height, 34.15 feet on gage 1¼ miles upstream and at different datum); minimum probably below 350 second-feet Nov. 24, 28, Dec. 1, 3–5, 1929 (result of regulation). Average, 19 years (1914–33), 3,200 second-feet.

REMARKS.—Records good. All diversions returned to river above gage. Large part of flow of White River, a tributary, regulated by Lake Tapps Reservoir. Some pondage on upper Puyallup and other tributaries.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,680	4,100	4,880	3,950	2,720	2,600	3,340	4,250	4,720	5,050	2,840	1,800
2	1,280	5,050	8,960	4,560	2,420	2,900	2,960	4,100	4,250	5,600	2,900	1,680
3	1,850	4,400	11,900	4,400	2,120	2,780	3,810	4,250	4,720	5,600	2,900	1,740
4	1,900	3,530	7,560	4,250	1,850	2,420	4,250	4,400	5,800	4,720	2,960	1,530
5	1,960	4,100	6,870	7,100	1,580	1,630	3,740	4,560	6,000	4,880	4,100	1,850
6	1,960	8,020	5,410	7,560	2,070	2,900	3,400	4,400	5,600	5,050	3,740	2,020
7	1,960	5,410	4,560	8,960	2,020	5,230	3,140	3,270	5,410	5,230	3,340	1,740
8	1,800	6,650	3,950	24,000	1,900	3,810	2,840	3,340	6,870	5,600	2,960	1,680
9	1,280	7,790	3,530	19,000	1,680	3,080	2,300	3,140	10,600	4,880	2,960	1,680
10	1,800	5,050	3,400	11,600	1,960	3,140	2,720	3,020	7,100	4,720	2,780	1,630
11	2,020	3,810	2,900	8,250	1,630	3,530	2,420	3,080	6,000	4,400	2,600	1,800
12	2,120	6,000	3,140	6,650	1,380	4,250	2,660	3,200	6,650	4,560	2,420	1,850
13	2,240	28,000	2,720	5,410	1,580	4,400	2,240	3,340	8,960	4,720	2,120	1,900
14	2,540	21,100	2,540	4,720	1,630	3,810	2,240	3,600	9,680	5,410	2,660	2,120
15	2,660	12,200	2,480	3,950	1,680	3,340	2,180	3,950	10,200	6,000	2,480	2,540
16	2,240	16,900	2,780	3,740	1,680	3,140	2,600	4,100	8,960	6,210	2,600	2,300
17	2,480	21,100	2,480	3,340	1,800	3,080	2,960	3,810	7,560	5,230	2,600	1,740
18	2,360	15,400	2,300	3,080	1,740	2,840	2,540	4,100	6,000	4,720	2,420	1,960
19	2,240	10,200	3,810	2,780	1,330	2,780	2,300	3,950	5,050	4,100	2,300	1,850
20	2,070	7,330	4,250	2,840	1,740	4,100	2,180	3,950	4,560	3,950	2,480	1,850
21	2,300	7,330	4,100	2,600	2,120	3,950	2,240	3,810	4,560	3,600	2,020	1,850
22	3,020	6,210	3,740	2,600	2,600	3,600	2,960	3,810	4,400	3,200	1,850	2,180
23	2,420	4,880	4,560	2,600	2,840	3,200	3,670	3,950	4,720	2,960	1,800	2,540
24	2,420	3,810	4,560	2,480	2,300	2,900	4,250	4,100	4,720	3,530	1,960	2,300
25	2,600	3,740	3,200	2,420	2,120	2,660	2,600	5,800	5,800	3,810	2,020	2,480
26	3,600	4,100	4,560	2,420	2,600	2,540	4,100	8,250	5,800	3,740	2,360	2,420
27	3,400	3,600	5,410	2,720	2,780	2,780	5,410	6,650	5,600	3,670	2,300	2,540
28	3,020	3,950	4,720	2,540	2,720	2,780	6,870	5,410	5,800	3,340	2,840	2,660
29	2,660	4,400	4,720	1,850	-------	2,900	7,100	5,410	5,600	3,400	2,720	3,740
30	2,360	5,410	4,880	2,240	-------	3,270	4,720	6,210	5,230	3,740	1,900	3,530
31	2,900	-------	5,230	2,420	-------	3,950	-------	5,800	-------	3,200	1,900	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	3,600	1,280	2,290	----------	----------	141,000
November	28,000	3,530	8,120	----------	----------	483,000
December	11,900	2,300	4,520	----------	----------	278,000
January	24,000	1,850	5,390	----------	----------	331,000
February	2,840	1,330	2,020	----------	----------	112,000
March	5,230	1,630	3,240	----------	----------	199,000
April	7,100	2,180	3,360	----------	----------	200,000
May	8,250	3,020	4,360	----------	----------	268,000
June	10,600	4,250	6,230	----------	----------	371,000
July	6,210	2,960	4,480	----------	----------	275,000
August	4,100	1,800	2,580	----------	----------	159,000
September	3,740	1,530	2,120	----------	----------	126,000
The year	28,000	1,280	4,060	4.44	60.27	2,940,000

NOTE.—Monthly discharge in second-feet per square mile and run-off in inches not computed owing to regulation. Yearly figures closely represent natural flow.

CARBON RIVER NEAR FAIRFAX, WASH.

LOCATION.—Water-stage recorder in SW¼ sec. 22, T. 18 N., R. 6 E., 1¼ miles northwest of Fairfax.

DRAINAGE AREA.—82 square miles.

RECORDS AVAILABLE.—March 1929 to September 1933; November 1910 to July 1912 at station 1¼ miles upstream.

DISCHARGE.—Maximum during year, 5,370 second-feet Nov. 13 (gage height, 8.5 feet); minimum, 88 second-feet Oct. 10; minimum gage height, 1.73 feet Feb. 9.

1910–12, 1929–33: Maximum discharge, that of Nov. 13, 1932; minimum, 40 second-feet (estimated) Jan. 20, 1930 (stage-discharge relation affected by ice).

REMARKS.—Records good except those for Dec. 10–18, 20–25, Jan. 2, 3, 15–18, which were estimated. Water diverted for use in lumber industry but returned to river above gage.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	136	835	566	392	161	182	273	526	610	730	482	237
2	150	835	2,140	390	150	182	273	520	616	910	498	212
3	172	650	1,370	320	142	186	366	509	820	790	487	204
4	156	594	1,000	566	142	174	384	509	880	682	492	207
5	150	868	850	940	163	174	350	465	850	706	742	231
6	153	805	688	850	156	410	323	397	820	754	592	293
7	126	757	562	1,820	144	520	304	350	820	790	509	223
8	106	1,250	420	2,350	136	374	280	323	1,340	790	498	196
9	92	900	402	1,460	111	319	257	312	1,160	712	476	194
10	91	709		970	112	300	234	304	850	658	445	204
11	112	622	290	706	112	358	237	315	748	700	440	207
12	258	2,330		562	114	450	220	354	970	790	435	189
13	319	3,400		476	114	406	207	374	1,270	820	425	179
14	520	1,580		455	115	346	215	415	1,300	880	425	342
15	589	1,860			119	308	228	450	1,200	940	415	482
16	490	2,530	180	320	121	308	218	430	1,060	910	460	415
17	438	2,220			126	293	204	420	910	760	476	312
18	328	1,380			128	276	194	450	790	712	440	326
19	258	1,130	410	254	129	287	192	420	700	688	455	273
20	294	910		243	133	402	196	415	652	646	346	260
21	414	970		228	179	350	218	410	694	574	286	257
22	584	820	360	212	231	304	263	430	688	550	267	366
23	481	676		204	194	273	346	445	700	580	273	362
24	401	556		199	168	248	388	640	748	646	293	338
25	699	470		184	179	234	406	1,030	910	634	290	300
26	868	430	700	182	248	220	379	1,030	880	610	267	304
27	769	415	586	189	209	223	465	790	820	550	263	370
28	594	392	470	170	194	231	736	735	790	460	283	670
29	530	604	514	163	-------	223	760	910	742	668	254	646
30	442	532	450	156	-------	316	616	970	682	622	308	465
31	775	-------	415	177	-------	312	-------	760	-------	487	273	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	868	91	371	4.52	5.21	22,800
November	3,400	392	1,070	13.0	14.50	63,700
December	2,140	----------	512	6.24	7.19	31,500
January	2,350	156	519	6.33	7.30	31,900
February	248	111	151	1.84	1.92	8,390
March	520	174	296	3.61	4.16	18,200
April	760	192	324	3.95	4.41	19,300
May	1,030	304	529	6.45	7.44	32,500
June	1,340	610	867	10.6	11.83	51,600
July	940	460	702	8.56	9.87	43,200
August	742	254	406	4.95	5.71	25,000
September	670	179	309	3.77	4.21	18,400
The year	3,400	91	506	6.17	83.75	366,000

WHITE RIVER AT GREENWATER, WASH.

LOCATION.—Water-stage recorder in SE¼ sec. 10, T. 19 N., R. 9 E., three-quarters of a mile southeast of Greenwater and above mouth of Greenwater River.

DRAINAGE AREA.—216 square miles.

RECORDS AVAILABLE.—March 1929 to September 1933; September 1911 to May 1912 fragmentary, for a station 2 miles above, published as White River near Enumclaw, Wash.

DISCHARGE.—Maximum during year, 5,700 second-feet Nov. 13, 17 (gage height, 6.9 feet); minimum, 224 second-feet Feb. 9 (gage height, 2.55 feet).

1911–12, 1929–33: Maximum, 7,110 second-feet Feb. 26, 1932 (gage height, 7.73 feet); minimum, probably less than 150 second-feet sometime during January 1930.

REMARKS.—Records good except those above 4,000 second-feet, which are poor, and those for Dec. 8 to Jan. 16, which were estimated. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	340	602	1,300		340	317	476	1,280	1,710	1,950	1,250	599
2	384	805	2,360		332	317	500	1,250	1,590	2,230	1,250	590
3	384	629	2,380	1,000	324	317	750	1,200	1,880	2,090	1,250	582
4	340	585	1,950		320	305	760	1,170	2,230	1,880	1,220	590
5	332	1,120	1,710		332	305	660	1,090	2,300	1,880	1,250	643
6	328	1,130	1,370		320	418	625	1,010	2,300	2,020	1,160	730
7	308	826	1,110		308	566	582	930	2,160	2,000	1,140	566
8	294	1,560		2,150	300	482	529	850	2,600	2,230	1,190	529
9	285	1,270			262	446	482	810	2,830	2,000	1,190	551
10	285	932	650		316	430	458	790	2,300	1,880	1,160	551
11	379	765			332	470	470	810	1,950	1,880	1,150	551
12	449	1,770			336	558	458	930	2,160	2,020	1,120	515
13	406	4,510			308	536	446	1,010	3,150	2,160	1,080	500
14	610	2,680		700	328	507	482	1,110	3,950	2,380	1,040	651
15	520	2,520			316	494	515	1,120	3,950	2,600	1,050	590
16	384	3,870			304	529	515	1,090	3,630	2,600	1,100	551
17	351	5,190		577	300	522	488	1,060	2,910	2,300	1,090	507
18	316	3,550		560	304	500	476	1,050	2,450	2,020	1,040	522
19	297	2,600		520	304	494	476	1,010	2,160	1,880	990	476
20	294	2,020	500	491	300	558	507	1,030	2,020	1,750	860	482
21	324	1,950		469	320	536	599	1,040	2,020	1,660	760	470
22	362	1,720		443	340	494	770	1,050	1,950	1,580	750	558
23	336	1,470		425	328	470	980	1,040	1,880	1,500	770	522
24	312	1,260		419	305	446	1,110	1,120	1,880	1,700	800	488
25	356	1,100		390	305	440	1,140	1,630	2,020	1,680	790	446
26	419	1,030		378	358	425	1,070	2,160	2,300	1,670	740	440
27	373	1,050		378	333	430	1,270	1,820	2,520	1,500	770	446
28	332	965	1,050	362	325	458	1,710	1,630	2,450	1,410	790	727
29	346	1,530		368	-------	458	1,720	1,880	2,160	1,470	690	740
30	324	1,470		362	-------	482	1,450	2,230	1,950	1,410	651	558
31	513	-------		362	-------	494	-------	2,020	-------	1,270	608	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	610	285	364	1.69	1.95	22,400
November	5,190	585	1,750	8.10	9.04	104,000
December	2,380	----------	915	4.24	4.89	56,300
January	----------	362	853	3.95	4.55	52,400
February	358	262	318	1.47	1.53	17,700
March	566	305	458	2.12	2.44	28,200
April	1,720	446	749	3.47	3.87	44,600
May	2,230	790	1,230	5.69	6.56	75,600
June	3,950	1,590	2,380	11.0	12.27	142,000
July	2,600	1,270	1,900	8.80	10.14	117,000
August	1,250	608	990	4.58	5.28	60,900
September	740	440	556	2.57	2.87	33,100
The year	5,190	262	1,040	4.81	65.39	754,000

WHITE RIVER NEAR BUCKLEY, WASH.

LOCATION.—Water-stage recorder in SE¼NE¼ sec. 9, T. 19 N., R. 7 E., 5 miles east of Buckley.

DRAINAGE AREA.—400 square miles.

RECORDS AVAILABLE.—October 1928 to November 1933 (discontinued).

DISCHARGE.—Maximum during period October 1932 to November 1933, 16,500 second-feet Nov. 13, 1932 (gage height, 17.2 feet); minimum, 244 second-feet Oct. 10, 1932 (gage height, 2.47 feet).

1928–33: Maximum, about 17,000 second-feet Feb. 26, 1932 (gage height, 17.5 feet); minimum, 213 second-feet Nov. 21, 1929 (gage height, 1.78 feet); discharge may have been less during period Jan. 15–30, 1930, when stage-discharge relation was affected by ice.

REMARKS.—Records excellent except those above 4,000 second-feet, which are fair, and those for Dec. 10–21, Feb. 10–14, which were estimated because of ice. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1932-33												
1	490	1,830	1,860	1,400	770	735	1,300	2,350	2,830	2,830	1,560	850
2	536	2,150	5,910	1,350	718	701	1,260	2,350	2,580	3,100	1,560	812
3	551	1,700	5,140	1,220	701	701	1,680	2,350	3,100	2,920	1,560	793
4	505	1,400	3,390	1,900	701	684	1,780	2,420	3,830	2,580	1,560	812
5	475	2,870	3,190	3,220	752	667	1,580	2,210	3,940	2,580	1,750	850
6	475	3,310	2,460	3,020	735	1,040	1,530	1,980	3,830	2,740	1,520	1,030
7	418	2,090	2,060	5,470	667	1,680	1,440	1,780	3,610	2,830	1,480	812
8	405	3,930	1,680	12,300	650	1,400	1,300	1,630	5,640	3,010	1,480	738
9	379	3,180	1,480	7,400	600	1,180	1,220	1,530	6,690	2,660	1,480	738
10	367	2,160		4,360		1,100	1,140	1,480	4,770	2,500	1,430	756
11	418	1,730		2,880		1,300	1,100	1,580	3,610	2,350	1,390	756
12	600	4,710	1,200	2,220	560	1,630	1,140	1,730	3,830	2,580	1,350	702
13	551	14,100		1,930		1,630	1,100	1,830	5,900	2,660	1,310	684
14	882	7,910		1,780		1,480	1,060	1,930	7,530	3,010	1,310	970
15	920	6,240		1,580	600	1,350	1,100	2,030	7,810	3,390	1,270	990
16	806	9,960		1,440	600	1,400	1,140	1,980	6,970	3,610	1,350	890
17	806	12,800		1,300	583	1,350	1,100	1,930	5,510	3,010	1,310	793
18	667	8,120		1,220	567	1,260	1,060	1,930	4,290	2,620	1,270	890
19	567	5,380	1,100	1,180	567	1,220	1,020	1,880	3,610	2,410	1,230	774
20	520	3,830		1,140	567	1,480	1,060	1,880	3,190	2,280	1,110	774
21	650	3,830		1,060	600	1,480	1,220	1,880	3,100	2,100	1,010	756
22	1,020	3,190	1,100	1,020	667	1,300	1,480	1,880	3,010	2,000	990	990
23	901	2,580	1,180	980	787	1,220	1,830	1,930	3,010	2,000	1,010	1,010
24	806	2,150	1,100	940	701	1,140	1,980	2,040	2,920	2,100	1,030	1,030
25	1,020	1,880	1,060	901	667	1,060	2,030	3,060	3,290	2,100	1,030	910
26	1,350	1,730	1,880	882	806	1,060	1,880	4,410	3,390	2,050	970	870
27	1,140	1,680	1,730	882	824	1,020	2,220	3,500	3,290	1,950	990	910
28	920	1,530	1,480	824	770	1,060	3,290	3,010	3,290	1,750	1,030	1,250
29	960	2,090	1,700	806	------	1,100	3,390	3,500	3,100	1,850	930	1,430
30	920	2,090	1,680	787	------	1,180	2,750	4,170	2,830	1,800	970	1,150
31	1,570	------	1,530	806	------	1,400	------	3,610	------	1,560	890	------

Day	Oct.	Nov.	Day	Oct.	Nov.	Day	Oct.	Nov.
1933			1933			1933		
1	1,010	1,950	11	632	1,390	21	1,350	1,560
2	930	5,460	12	615	1,310	22	4,150	1,850
3	890	10,900	13	598	1,230	23	5,820	1,750
4	831	5,790	14	615	1,150	24	3,400	1,610
5	793	3,460	15	566	1,110	25	2,520	1,520
6	774	2,520	16	684	1,230	26	2,000	1,390
7	793	2,100	17	774	1,110	27	2,110	1,390
8	756	1,850	18	1,210	1,030	28	3,220	1,270
9	684	1,660	19	1,760	1,070	29	4,190	1,190
10	666	1,520	20	2,040	1,070	30	2,980	1,150
						31	2,280	------

Discharge, in second-feet, of White River near Buckley, Wash., 1932–33—Continued

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1932-33						
October	1,570	367	729	1.82	2.10	44,800
November	14,100	1,400	4,070	10.2	11.38	242,000
December	5,910	1,060	1,790	4.48	5.16	110,000
January	12,300	787	2,200	5.50	6.34	135,000
February	824		657	1.64	1.71	36,500
March	1,680	667	1,190	2.98	3.44	73,200
April	3,390	1,020	1,570	3.92	4.37	93,400
May	4,410	1,480	2,320	5.80	6.69	143,000
June	7,810	2,580	4,140	10.4	11.60	246,000
July	3,610	1,560	2,480	6.20	7.15	152,000
August	1,750	890	1,260	3.15	3.63	77,500
September	1,430	684	891	2.23	2.49	53,000
The year	14,100	367	1,940	4.85	66.06	1,410,000
1933						
October	5,820	566	1,670	4.18	4.82	103,000
November	10,900	1,030	2,120	5.30	5.91	126,000
The period						229,000

GREENWATER RIVER AT GREENWATER, WASH.

LOCATION.—Water-stage recorder in NW¼NW¼ sec. 11, T. 19 N., R. 9 E., 1 mile above mouth and 1 mile east of Greenwater.

DRAINAGE AREA.—75 square miles.

RECORDS AVAILABLE.—September 1911 to August 1912, fragmentary; May 1929 to September 1933.

DISCHARGE.—Maximum during year, 2,200 second-feet Nov. 16 (gage height, 6.40 feet); minimum, 30 second-feet Oct. 7–11 (gage height, 1.59 feet).

1911–12, 1929–33: Maximum (estimated), 2,800 second-feet Nov. 19, 1911 (gage height, 5.0 feet, former datum); minimum, probably less than 25 second-feet sometime Jan. 15–25, 1930.

REMARKS.—Records good except those for Dec. 9–14, Feb. 9–15, which were estimated because of ice. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	170	259	196	114	90	161	500	635	473	131	73
2	32	211	632	185	110	86	168	495	585	464	126	69
3	31	167	720	165	107	88	273	475	635	451	122	68
4	31	138	575	209	105	84	287	470	720	430	122	67
5	31	246	525	354	105	84	259	440	745	417	152	67
6	31	363	450	404	102	114	249	392	745	413	126	78
7	31	258	396	578	98	172	227	358	720	409	117	72
8	30	522	339	1,380	85	156	201	324	795	413	111	69
9	30	511		1,040		139	180	302	960	400	106	66
10	30	363		695		127	165	294	822	375	103	64
11	31	268	230	505	75	127	170	309	720	354	100	63
12	34	476		392		139	165	347	720	346	98	62
13	34	1,510		331		145	158	371	905	342	95	60
14	47	1,080		309		145	172	396	1,070	342	92	68
15	56	805	190	269		147	188	400	1,130	342	90	72
16	51	1,280	182	243	80	161	185	396	1,080	334	89	67
17	52	1,840	170	221	79	165	170	383	942	314	88	62
18	45	1,160	165	207	79	161	158	375	780	292	86	66
19	40	905	170	196	79	156	154	358	680	274	86	63
20	38	720	165	182	78	178	168	362	609	250	86	60
21	40	670	156	172	82	185	212	383	564	227	85	59
22	56	605	150	163	90	168	273	383	555	211	83	71
23	60	520	152	156	90	152	362	387	542	197	80	78
24	57	436	145	150	85	141	414	414	524	186	78	80
25	70	375	145	143	86	135	418	585	533	178	75	72
26	107	331	235	135	93	133	383	770	533	168	72	68
27	92	305	240	133	93	133	470	695	538	161	71	68
28	78	276	210	127	91	147	645	640	533	154	71	72
29	80	280	230	123	-------	152	670	695	516	156	82	79
30	78	269	234	119	-------	161	570	770	490	146	72	78
31	154	-------	215	121	-------	168	-------	720	-------	135	79	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	154	30	51.9	0.692	0.80	3,190
November	1,840	138	569	7.59	8.47	33,900
December	720	145	272	3.63	4.18	16,700
January	1,380	119	310	4.13	4.76	19,100
February	114	----------	87.7	1.17	1.22	4,870
March	185	84	140	1.87	2.16	8,610
April	670	154	276	3.68	4.11	16,400
May	770	294	458	6.11	7.04	28,200
June	1,130	490	711	9.48	10.58	42,300
July	473	135	302	4.03	4.65	18,600
August	152	71	95.9	1.28	1.48	5,900
September	80	59	68.7	.916	1.02	4,090
The year	1,840	30	279	3.72	50.47	202,000

DUWAMISH RIVER BASIN

GREEN RIVER NEAR PALMER, WASH.

LOCATION.—Water-stage recorder in SW¼NW¼ sec. 20, T. 21 N., R. 8 E., 1½ miles above intake of Tacoma water-supply system and 4 miles southeast of Palmer.

DRAINAGE AREA.—231 square miles.

RECORDS AVAILABLE.—October 1931 to September 1933.

DISCHARGE.—Maximum during year ending Sept. 30, 1932, 23,000 second-feet Feb. 26 (gage height, 17.65 feet); minimum, 154 second-feet Sept. 18 (gage height, 4.21 feet).

Maximum during year ending Sept. 30, 1933, 17,800 second-feet Nov. 13 (gage height, 16.54 feet); minimum, 100 second-feet Sept. 4 (gage height, 4.00 feet).

1931–33: Maximum, that of Feb. 26, 1932; minimum, that of Sept. 4, 1933.

REMARKS.—Records good October and November 1931, excellent thereafter. Discharge estimated Oct. 1–9, 11, 18, 25, 28–31, Nov. 1, 7–17, 1931, Mar. 5–23, 1933. No diversions or regulation above station.

Discharge, in second-feet, 1931–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1931–32												
1	224	1,100	574	611	528	2,890	3,500	2,110	1,560	549	237	322
2	217	952	574	574	506	2,400	3,500	2,110	1,510	528	234	284
3	210	817	539	574	506	1,910	2,930	1,970	1,460	772	230	264
4	300	729	505	740	506	2,020	2,390	1,910	1,460	682	222	245
5	518	649	539	907	464	8,780	2,110	1,790	1,400	593	218	237
6	377	611	505	1,300	444	6,420	1,790	1,730	1,240	528	215	222
7	300	1,490	574	1,190	528	3,660	1,620	1,730	1,140	485	207	211
8	256	1,290	574	1,120	549	2,560	1,510	1,730	1,090	444	207	218
9	237	1,200	539	2,890	593	2,040	1,400	1,790	1,190	423	207	203
10	211	1,240	539	2,650	637	1,730	1,400	2,180	1,400	506	207	192
11	216	1,160	505	10,700	549	1,460	1,620	2,040	1,560	444	218	188
12	221	965	472	6,300	485	1,300	1,910	1,910	1,620	402	241	184
13	211	2,040	472	3,340	444	1,190	2,250	1,850	1,620	402	222	177
14	202	2,950	441	2,320	402	1,300	2,930	1,790	1,560	464	211	173
15	202	1,990	411	1,790	382	1,300	2,550	1,560	1,460	444	211	165
16	202	1,600	411	1,510	362	1,300	2,250	1,400	1,190	402	199	165
17	184	1,420	1,290	1,350	342	2,610	2,180	1,400	998	382	192	158
18	184	1,400	3,390	1,400	362	4,970	2,390	1,510	907	362	184	154
19	184	1,730	2,730	1,240	362	5,520	2,730	1,560	907	342	192	229
20	184	1,730	2,640	1,140	539	4,100	2,470	1,680	862	342	245	322
21	211	1,400	2,180	1,040	832	2,900	2,110	1,620	862	322	211	253
22	301	1,190	1,730	952	862	2,250	1,850	1,560	907	302	215	222
23	472	1,040	1,400	862	772	2,110	1,620	1,560	862	302	203	203
24	505	952	1,240	817	1,130	3,230	1,510	1,460	772	284	188	203
25	505	907	1,090	772	3,010	3,760	1,400	1,350	727	284	180	199
26	729	862	952	727	16,700	2,750	1,560	1,190	682	284	177	192
27	862	772	862	682	10,100	2,250	1,790	1,040	637	253	177	180
28	4,720	688	817	637	6,690	2,900	1,790	1,040	637	249	184	169
29	3,590	649	729	637	4,160	3,040	1,730	1,140	593	249	253	165
30	2,050	611	649	593	-------	3,150	1,850	1,560	571	237	397	161
31	1,450	-------	649	549	-------	3,500	-------	1,680	-------	230	382	-------

Discharge, in second-feet, of Green River near Palmer, Wash., 1931–33—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1932-33												
1	161	2,470	1,350	1,460	549	727	1,460	2,040	1,910	1,190	284	129
2	158	3,040	6,820	1,400	528	637	1,350	2,180	1,790	1,190	264	108
3	154	2,440	5,630	1,240	485	637	1,850	2,110	2,040	1,090	256	102
4	147	1,970	3,620	3,000	485	593	1,910	2,180	2,320	1,040	264	100
5	147	3,420	3,380	5,320	506	562	1,680	2,040	2,250	998	506	104
6	150	4,520	2,550	4,520	506	1,890	1,620	1,850	2,180	998	382	118
7	150	2,900	2,110	6,270	464	1,600	1,460	1,620	2,110	998	303	110
8	144	3,220	1,730	13,400	423	1,330	1,240	1,460	3,420	998	284	102
9	141	3,380	1,510	8,000	342	1,080	1,140	1,400	4.460	907	253	114
10	141	2,480	1,350	4,960	402	960	1,040	1,400	3,000	862	234	112
11	141	1,910	1,190	3,330	423	1,040	1,140	1,510	2,320	772	218	110
12	161	4,900	1,090	2,470	423	1,240	1,190	1,790	2,390	772	207	106
13	158	15,200	998	2,040	382	1,650	1,140	1,790	3,150	772	192	106
14	249	7,530	907	1,850	382	1,470	1.240	1.850	3,500	772	180	226
15	362	5,110	862	1,620	362	1,470	1,300	1,790	3,260	772	150	506
16	444	8,480	817	1.400	342	1,470	1,240	1,730	2.730	772	144	444
17	593	8,960	772	1,240	342	1,470	1,140	1.680	2,250	682	144	342
18	444	5,620	772	1,140	342	1,470	1,040	1,680	1,850	637	144	322
19	362	4,100	817	1,090	362	1,200	998	1,620	1,620	571	147	284
20	322	3,040	817	998	362	1,380	1,140	1,620	1,510	528	147	284
21	444	3,040	817	952	593	1,840	1.400	1,680	1,460	485	129	284
22	682	2,730	772	907	1,050	1,560	1,680	1,620	1,460	444	118	617
23	817	2,250	817	817	998	1,300	1,970	1,730	1,400	423	118	772
24	817	1,910	862	772	817	1,140	2,180	1,850	1,350	402	118	862
25	1,030	1,680	862	727	727	1,040	2,110	2,540	1,510	402	118	682
26	1,910	1,460	1,940	727	952	1,090	1,910	3,260	1,510	362	118	682
27	1,730	1,300	1,850	682	862	1,140	2,250	2,640	1,460	342	118	772
28	1,350	1,190	1,560	637	772	1,240	2,930	2,250	1,400	322	118	1.040
29	1,300	1,300	1,790	593	-------	1,240	2,830	2,470	1,300	423	141	1,190
30	1,190	1,240	1,790	593	-------	1,600	2,320	2,730	1,190	362	150	998
31	1,860	-------	1,560	593	-------	1,730	-------	2,320	-------	303	147	-------

Month	Maximum	Minimum	Mean	Per square mile	Ruu-off	
					Inches	Acre-feet
1931-32						
October	4,720	184	653	2.83	3.26	40,200
November	2,950	611	1,200	5.19	5.79	71,400
December	3,390	411	985	4.26	4.91	60,600
January	10,700	549	1,670	7.23	8.34	103,000
February	16,700	342	1,850	8.01	8.64	106,000
March	8,780	1,190	2,950	12.8	14.76	181,000
April	3,500	1,400	2,090	9.05	10.10	124,000
May	2,180	1,040	1,640	7.10	8.19	101,000
June	1,620	571	1,110	4.81	5.37	66,000
July	772	230	403	1.74	2.01	24,800
August	397	177	221	.957	1.10	13,600
September	322	154	209	.905	1.01	12,400
The year	16,700	154	1,250	5.41	73.48	904,000
1932-33						
October	1,910	141	576	2.49	2.87	35,400
November	15,200	1,190	3,760	16.3	18.19	224,000
December	6,820	772	1.730	7.49	8.64	106,000
January	13,400	593	2,410	10.4	11.99	148,000
February	1,050	342	542	2.35	2.45	30,100
March	1,890	562	1,250	5.41	6.24	76,900
April	2,930	998	1,600	6.93	7.73	95,200
May	3,260	1,400	1,950	8.44	9.73	120,000
June	4,460	1,190	2,140	9.26	10.33	127,000
July	1,190	303	696	3.01	3.47	42,800
August	506	118	197	.853	.98	12,100
September	1,190	100	391	1.69	1.89	23,300
The year	15,200	100	1,440	6.23	84.51	1,040,000

LAKE WASHINGTON BASIN

CEDAR RIVER AT CEDAR FALLS, WASH.

LOCATION.—Water-stage recorder in sec. 4, T. 22 N., R. 8 E., three-quarters of a mile below Seattle municipal power plant at Cedar Falls.

DRAINAGE AREA.—83 square miles.

RECORDS AVAILABLE.—April 1914 to September 1933.

DISCHARGE.—Maximum during year, 3,050 second-feet Nov. 17 (gage height, 8.7 feet); minimum, 44 second-feet Oct. 25 (gage height, 4.46 feet).

1914–33: Maximum, 6,290 second-feet Dec. 19, 1917 (gage height, 11.4 feet); no flow Nov. 25, 1917, Aug. 18, 1923. Average, 19 years (1914–33), 302 second-feet.

REMARKS.—Records excellent except those for Oct. 11–18, which were estimated. All diversions returned to river above station. Flow partly regulated in Cedar Lake Reservoir for power-plant operation. Some discharge measurements furnished by city of Seattle.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	86	144	364	213	162	172	228	264	354	520	246	120
2	91	160	1,140	183	164	150	226	262	352	510	266	118
3	89	142	1,800	230	196	188	230	274	396	508	197	139
4	87	150	1,720	235	152	363	232	284	457	484	202	110
5	96	169	1,520	344	182	384	238	264	530	454	186	114
6	92	157	1,280	600	173	425	258	258	598	451	142	124
7	90	156	1,030	916	206	376	226	254	648	428	192	111
8	89	154	824	2,220	238	366	224	254	886	466	200	109
9	137	150	709	2,730	276	383	238	248	1,250	448	202	114
10	143	153	506	2,500	248	374	210	244	1,270	395	188	104
11		161	410	2,040	236	358	230	270	1,180	366	191	117
12		333	395	1,530	199	258	210	258	1,070	354	166	114
13		1,950	346	1,210	255	250	208	270	1,170	317	208	114
14		2,100	282	980	276	240	217	266	1,300	316	195	115
15	140	2,280	240	770	281	258	204	256	1,390	298	194	140
16		2,440	213	648	258	258	212	294	1,420	310	198	106
17		2,880	204	532	285	271	216	272	1,330	332	190	108
18		2,860	204	479	226	248	248	272	1,210	324	180	105
19	173	2,410	225	369	218	228	250	254	1,030	350	172	106
20	149	1,910	217	334	174	247	229	278	840	300	128	108
21	173	1,660	211	244	166	218	238	264	765	298	180	100
22	203	1,380	240	222	169	233	228	270	682	264	146	112
23	183	1,180	218	228	193	254	216	248	646	254	132	116
24	322	905	182	294	176	274	260	252	606	267	115	110
25	122	642	182	229	167	228	252	240	576	278	116	118
26	89	600	170	227	248	228	238	262	603	208	122	115
27	140	504	200	192	172	234	236	258	638	232	220	146
28	166	376	193	192	194	250	236	262	570	249	129	130
29	136	345	192	237	------	232	225	240	557	236	134	128
30	128	334	180	211	------	238	242	222	540	168	137	115
31	146	------	190	196	------	230	------	276	------	232	121	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	322	86	137			8,420
November	2,880	142	960			57,100
December	1,800	170	509			31,300
January	2,730	183	695			42,700
February	285	152	210			11,700
March	425	150	271			16,700
April	260	204	230			13,700
May	294	222	261			16,000
June	1,420	352	829			49,300
July	520	168	342			21,000
August	266	115	174			10,700
September	146	100	116			6,900
The year	2,880	86	395	4.76	64.62	286,000

CEDAR RIVER NEAR LANDSBERG, WASH.

LOCATION.—Water-stage recorder in sec. 17, T. 22 N., R. 7 E., 1¾ miles above intake of Seattle water-supply system at Landsberg.

DRAINAGE AREA.—136 square miles.

RECORDS AVAILABLE.—April 1914 to September 1933.

DISCHARGE.—Maximum during year, 4,300 second-feet Jan. 8 (gage height, 5.5 feet); minimum, 258 second-feet Oct. 13 (gage height, 1.08 feet).

1914–33: Maximum, 7,500 second-feet Dec. 29, 1917 (gage height, 13.55 feet); minimum, 162 second-feet Oct. 15, 1914. Discharge may have been lower some time Oct. 15–26, 1925. Average, 19 years (1914–33), 666 second-feet.

REMARKS.—Records excellent except those for Oct. 20–30, Nov. 24–30, Apr. 26–30, May 1, 4–7, June 25–30, July 1, 23–31, Aug. 4–7, which were estimated. All diversions, except Rock Creek, returned to river above station. Owing to danger of pollution, Rock Creek entering naturally just above gage has been diverted to a point below municipal water-supply intake. No correction made for amount of this diversion. Flow partly controlled by storage and release of water at Cedar Lake Reservoir.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	302	464	883	778	588	589	741	a 690	763	950	563	392
2	294	654	2,120	764	576	580	734	728	766	940	572	384
3	296	594	2,830	784	608	620	741	744	810	920	523	410
4	291	537	2,600	1,010	556	745	734		882	888		372
5	297	775	2,350	1,310	570	834	737	a 710	972	856	640	388
6	293	800	2,020	1,490	577	934	752		1,060	844		400
7	281	612	1,710	2,010	587	943	714		1,110	817		382
8	288	585	1,430	3,770	613	882	696	685	1,420	812	497	369
9	303	569	1,310	4,030	652	871	706	668	1,790	858	498	380
10	328	518	1,100	3,420	624	876	668	652	1,790	769	486	365
11	331	506	977	2,810	609	923	686	669	1,700	730	487	377
12	314	896	932	2,340	586	899	665	658	1,510	712	460	376
13	279	3,240	873	1,950	630	866	644	666	1,600	668	503	373
14	315	3,510	799	1,680	656	808	662	678	1,780	662	486	399
15	314	2,990	734	1,430	652	814	650	670	1,790	646	475	516
16	326	3,150	674	1,290	618	838	648	720	1,630	654	486	444
17	386	3,900	637	1,160	650	820	649	688	1,420	672	474	412
18	352	3,640	654	1,080	586	769	662	697	1,280	670	463	401
19	352	2,920	722	940	590	732	664	672	1,200	694	452	390
20		2,430	717	877	548	806	653	702	1,140	640	418	406
21		2,180	700	774	552	742	643	684	1,110	634	462	402
22	a 440	1,920	720	737	611	725	656	680	1,060	610	438	474
23		1,700	705	714	630	756	650	676	1,040		409	489
24			673	792	592	750	680	692	1,060		392	496
25			661	694	570	704	678	679			394	462
26			716	680	744	704		727		590	383	457
27		a 860	737	655	627	712		702	a 1,100		512	494
28	a 480		702	614	615	718	a 740	695			403	538
29			758	663		725		674			407	550
30			739	641		768		641			421	497
31	440		741	621		775		686			397	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October		279	368			22,600
November	3,900	464	1,500			89,300
December	2,830	637	1,090			67,000
January	4,030	614	1,370			84,200
February	744	548	608			33,800
March	943	580	782			48,100
April			694			41,300
May		641	689			42,400
June	1,790	763	1,240			73,800
July	950		708			43,500
August		383	485			29,800
September	a50	365	426			25,300
The year	4,030	279	831	6.11	82.94	601,000

a Estimated.

NOTE.—Monthly discharge in second-feet per square mile and run-off in inches not computed owing to egulation. Yearly figures closely represent natural flow.

SNOHOMISH RIVER BASIN

SOUTH FORK OF SKYKOMISH RIVER NEAR INDEX, WASH.

LOCATION.—Staff gage in NE¼ sec. 29, T. 27 N., R. 10 E., 300 feet above Sunset Falls, 2 miles above North Fork, and 2 miles southeast of Index.

DRAINAGE AREA.—355 square miles.

RECORDS AVAILABLE.—October 1902 to September 1905; April 1911 to September 1933.

DISCHARGE.—Maximum during year, about 42,000 second-feet Nov. 13 (gage height, about 20.0 feet, from highwater marks); minimum, 327 second-feet Oct. 10 (gage height, 0.90 foot).

1902–5, 1911–33: Maximum, about 57,000 second-feet Dec. 18 1917 (gage height, 22.6 feet); minimum, 214 second-feet Oct. 15–21, 23, 1925. Average, 25 years (1902–5, 1911–33), 2,340 second-feet.

REMARKS.—Records good except those estimated because of ice, Feb. 9–14. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	400	3,350	8,240	1,510	640	1,230	2,050	3,470	4,700	5,060	2,500	730
2	400	4,310	27,200	1,510	600	885	2,500	3,670	4,700	6,010	2,410	730
3	400	3,980	9,450	1,440	560	995	2,770	3,470	6,310	5,450	2,320	685
4	400	3,150	5,180	2,410	560	730	2,680	3,370	7,860	5,310	2,870	640
5	375	6,680	5,450	5,060	560	780	2,410	3,170	6,970	5,450	3,470	685
6	375	6,350	4,220	4,700	600	1,580	2,410	2,870	6,310	6,160	2,870	885
7	375	4,090	2,970	9,660	520	2,500	2,140	2,680	5,870	6,160	2,590	730
8	350	3,350	2,590	11,400	452	1,890	1,890	2,500	9,870	6,630	2,320	640
9	350	3,550	2,230	10,100		1,650	1,730	2,500	6,970	5,310	2,140	600
10	327	2,950	1,970	6,010		1,440	1,580	2,590	5,590	4,820	2,140	600
11	350	3,450	1,730	4,000	400	1,970	1,730	3,070	4,820	4,700	1,970	600
12	375	15,000	1,650	3,170		2,410	1,650	4,000	7,140	4,940	1,890	600
13	375	35,900	1,650	2,770		2,140	1,580	3,780	10,900	5,060	1,810	600
14	535	13,200	1,510	2,590		1,970	1,730	4,000	12,300	5,730	1,730	1,230
15	2,650	8,430	1,440	2,230	421	1,890	1,890	3,780	12,300	6,470	1,730	2,590
16	2,220	19,800	1,440	1,890	452	2,050	1,730	3,470	10,300	6,160	1,650	2,870
17	1,710	25,200	1,370	1,730	421	1,970	1,650	3,470	7,680	5,310	1,650	2,410
18	1,250	12,900	1,370	1,580	392	1,810	1,580	3,570	6,010	4,700	1,580	1,810
19	1,010	12,300	1,440	1,510	421	2,050	1,730	3,370	5,730	4,340	1,510	1,510
20	895	10,300	1,510	1,440	452	2,500	1,810	3,270	5,450	3,890	1,370	1,580
21	3,150	8,240	1,440	1,370	940	2,140	2,320	3,670	5,730	3,470	1,230	1,890
22	3,450	4,940	1,510	1,230	2,140	1,810	2,970	3,570	5,590	3,570	1,170	4,000
23	2,750	3,670	1,580	1,110	1,440	1,580	3,670	3,890	5,310	3,670	995	3,570
24	2,220	2,970	1,510	995	885	1,440	4,000	4,340	5,450	3,890	940	2,970
25	2,850	2,770	1,510	940	1,230	1,300	3,890	6,800	6,630	3,780	885	2,320
26	4,670	2,500	3,170	830	2,500	1,110	3,670	9,660	6,470	3,470	830	2,590
27	4,930	2,590	2,500	730	1,810	1,170	4,700	5,730	6,160	3,170	780	3,570
28	3,250	2,230	1,970	685	1,440	1,580	5,730	5,060	6,310	2,770	780	6,000
29	2,560	4,700	1,810	640	------	1,810	5,060	6,160	5,310	4,220	730	5,450
30	2,140	4,460	1,580	685	------	2,410	4,110	7,140	5,060	2,870	830	3,780
31	3,550	------	1,510	640	------	2,500	------	5,590	------	2,590	780	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	4,930	327	1,634	4.60	5.30	100,400
November	35,900	2,230	7,910	22.3	24.88	470,700
December	27,200	1,370	3,377	9.51	10.96	207,700
January	11,400	640	2,792	7.86	9.06	171,700
February	2,500	------	780	2.20	2.29	43,310
March	2,500	730	1,719	4.84	5.58	105,700
April	5,730	1,580	2,645	7.45	8.31	157,400
May	9,660	2,500	4,119	11.6	13.37	253,200
June	12,300	4,700	6,860	19.3	21.53	408,200
July	6,630	2,590	4,682	13.2	15.22	287,900
August	3,470	730	1,693	4.77	5.50	104,100
September	6,000	600	1,962	5.53	6.17	116,800
The year	35,900	327	3,352	9.44	128.17	2,427,000

SKYKOMISH RIVER NEAR GOLD BAR, WASH.

LOCATION.—Water-stage recorder in SW¼ sec. 9, T. 27 N., R. 9 E., 2 miles southeast of Gold Bar. Zero of gage is 210.01 feet above mean sea level.
DRAINAGE AREA.—535 square miles.
RECORDS AVAILABLE.—September 1928 to September 1933.
DISCHARGE.—Maximum during year, 66,100 second-feet Nov. 13 (gage height, 19.5 feet); minimum, 695 second-feet Oct. 10 (gage height, 3.01 feet).
1928–33: Maximum, 74,400 second-feet Feb. 26, 1932 (gage height, 20.7 feet); minimum, 392 second-feet Oct. 2, 3, 1929.
REMARKS.—Records excellent except those estimated, July 15–20, Sept. 8, which are good. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	821	5,860	11,700	2,400	1,230	1,950	3,370	5,520	7,200	8,800	4,500	1,480
2	814	8,480	37,400	2,400	1,140	1,780	3,000	5,520	7,200	10,200	4,410	1,370
3	807	6,750	18,400	2,170	1,090	1,880	3,820	5,120	9,940	9,070	4,160	1,250
4	782	5,520	10,600	3,300	1,060	1,680	4,060	4,920	11,600	8,530	3,900	1,210
5	770	10,500	8,760	7,100	1,100	1,560	3,670	4,820	10,600	9,240	6,100	1,200
6	758	11,900	6,530	7,260	1,070	2,230	3,600	4,420	10,300	9,900	4,580	1,640
7	740	7,200	5,120	14,200	1,000	3,900	3,370	4,060	9,630	10,800	4,240	1,530
8	730	6,320	4,150	18,500	959	3,070	3,000	3,820	13,400	11,100	4,240	1,360
9	710	6,320	3,740	16,900	835	2,540	2,700	3,740	12,300	9,240	3,980	1,200
10	705	4,820	3,370	10,400	968	2,320	2,470	3,820	8,480	8,530	3,730	1,170
11	705	3,980	3,070	6,320	968	2,470	2,620	4,420	7,690	7,720	3,560	1,140
12	710	25,300	2,840	4,720	926	3,740	2,620	5,920	9,940	8,800	3,390	1,090
13	740	51,600	2,620	3,900	870	3,670	2,400	5,920	16,900	9,340	3,230	1,070
14	1,340	19,600	2,400	3,900	886	3,220	2,540	6,120	18,900	10,200	3,230	1,710
15	4,160	12,300	2,240	3,440	878	3,070	2,840	5,920	19,100	12,000	3,070	3,790
16	4,130	28,500	2,100	3,000	870	3,220	2,770	5,520	16,700	11,000	3,070	4,960
17	3,140	36,400	1,950	2,700	863	3,140	2,620	5,320	12,500	9,500	2,910	3,200
18	2,400	20,000	1,870	2,470	863	2,770	2,470	5,520	10,200	8,100	2,750	2,990
19	1,750	14,900	2,100	2,240	910	2,700	2,400	5,120	9,620	7,400	2,590	2,670
20	1,680	10,600	2,170	2,100	1,060	3,440	2,620	5,120	9,070	6,500	2,280	2,590
21	4,310	9,630	2,170	2,020	1,540	3,370	3,440	5,720	9,620	5,860	2,000	3,370
22	6,120	8,480	2,240	1,850	2,840	2,920	4,420	5,520	9,340	5,860	1,870	7,020
23	4,720	6,530	2,470	1,740	2,620	2,540	5,520	5,920	9,070	6,220	1,810	6,100
24	3,670	5,520	2,400	1,680	1,880	2,240	5,920	6,530	9,070	6,950	1,810	5,120
25	4,190	4,620	2,620	1,570	1,950	2,020	6,120	10,500	10,500	6,950	1,750	4,070
26	7,200	4,150	4,270	1,490	3,760	1,950	5,720	13,800	11,100	6,460	1,640	3,980
27	7,440	4,150	3,900	1,480	3,070	2,020	6,970	9,330	10,500	5,640	1,580	5,640
28	5,720	4,150	3,220	1,370	2,400	2,320	9,040	7,950	10,800	4,750	1,580	11,500
29	4,420	6,680	2,920	1,330	-------	2,770	7,950	9,630	9,070	5,900	1,530	9,340
30	3,670	7,200	2,700	1,350	-------	3,220	6,320	10,900	8,530	5,220	1,580	6,220
31	4,930	-------	2,470	1,330	-------	3,980	-------	8,760	-------	4,500	1,580	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	7,440	705	2,735	5.11	5.89	168,200
November	51,600	3,980	11,930	22.3	24.88	710,000
December	37,400	1,870	5,307	9.92	11.44	326,300
January	18,500	1,330	4,407	8.24	9.50	271,000
February	3,760	835	1,414	2.64	2.75	78,560
March	3,980	1,560	2,700	5.05	5.82	166,000
April	9,040	2,400	4,013	7.50	8.37	238,800
May	13,800	3,740	6,297	11.8	13.60	387,200
June	19,100	7,200	10,960	20.5	22.87	652,300
July	12,000	4,500	8,080	15.1	17.41	496,800
August	6,100	1,530	2,989	5.59	6.44	183,800
September	11,500	1,070	3,366	6.29	7.02	200,300
The year	51,600	705	5,358	10.0	135.99	3,879,000

BECKLER RIVER NEAR SKYKOMISH, WASH.

LOCATION.—Water-stage recorder in SW¼ sec. 18, T. 26 N., R. 12 E., 4 miles northeast of Skykomish.

DRAINAGE AREA.—95 square miles.

RECORDS AVAILABLE.—September 1929 to August 1933 (discontinued).

DISCHARGE.—Maximum during period October 1932 to August 1933, 10,900 second-feet Nov. 13 (gage height, 9.6 feet); minimum, 69 second-feet Oct. 9, 10 (gage height, 2.33 feet).

1929–33: Maximum, that of Nov. 13, 1932; minimum probably occurred during period Jan. 9–29, 1930, when stage-discharge relation was affected by ice.

REMARKS.—Records below 4,000 second-feet good except those for Dec. 8–16, Feb. 19–28, June 2–14, 16–30, July 1, 3–14, 16–28, Aug. 5–31, which were estimated. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
1	74	657	1,700	280	162	200	405	973	1,440	1,300	644
2	78	917	5,440	268	141	197	395	917		1,530	617
3	78	777	2,780	257	130	207	494	882			604
4	76	700	1,730	350	141	203	494	854	1,700		553
5	76	1,340	1,340	702	147	197	466	826		1,500	
6	76	1,480	1,060	721	147	264	466	763			700
7	76	980	882	1,430	147	391	435	707			
8	74	938		1,730	141	320	400	658			
9	69	861		1,780	141	292	382	630	1,800		
10	69	721		1,260	138	268	359	624			
11	71	624		784	138	272	363	679		1,300	490
12	78	3,610	450	610	135	395	368	910			
13	84	8,150		505	135	391	350	931	2,700		
14	182	2,930		500	138	363	350	980			
15	422	1,930		440	135	359	363	966	3,240	1,680	
16	354	3,740		400	127	368	354	931			420
17	272	5,120	359	363	107	372	346	903			
18	210	2,960	346	329	107	354	325	903	1,800	1,300	
19	178	2,360	346	308		346	316	875			
20	174	1,730	341	276		410	350	861			
21	508	1,530	325	264	200	395	430	910			
22	591	1,260	312	242		359	553	917			280
23	440	1,040	304	231		341	686	945		960	
24	363	882	292	217		312	784	1,020			
25	488	770	296	203		300	826	1,540			
26	742	707	440	197	260	304	819	2,040	1,500		
27	756	686	395	194		312	988	1,580		800	
28	610	679	346	181		329	1,180	1,390			
29	523	1,040	320	171		359	1,140	1,580		1,060	200
30	445	1,060	300	168		400	1,100	1,830		742	
31	559		284	168		445		1,580		658	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	756	69	284	2.99	3.45	17,500
November	8,150	624	1,740	18.3	20.42	104,000
December	5,440	284	774	8.15	9.40	47,600
January	1,780	168	501	5.27	6.08	30,800
February			170	1.79	1.86	9,440
March	445	197	323	3.40	3.92	19,900
April	1,180	316	543	5.72	6.38	32,300
May	2,040	624	1,040	10.9	12.57	64,000
June			1,810	19.1	21.31	108,000
July		658	1,210	12.7	14.64	74,400
August			431	4.54	5.23	26,500
The period						534,000

NORTH FORK OF SKYKOMISH RIVER AT INDEX, WASH.

LOCATION.—Chain gage in SE¼ sec. 17, T. 27 N., R. 10 E., on highway bridge at Index, 1¾ miles above mouth.

DRAINAGE AREA.—149 square miles.

RECORDS AVAILABLE.—August 1910 to September 1922; February 1929 to September 1933.

DISCHARGE.—Maximum during year, 15,900 second-feet Nov. 13 (gage height, 8.80 feet); minimum, not determined, occurred in February, during period of ice effect.

1910–22, 1929–33: Maximum, about 21,000 second-feet Feb. 26, 1932 (gage height, 10.5 feet); minimum, 78 second-feet Sept. 25, 1930. Average, 16 years (1910–22, 1929–33), 1,200 second-feet.

REMARKS.—Records good except those of discharge above 5,000 second-feet and those estimated because of ice Feb. 9–15. Discharge estimated Nov. 2, 5, 12, 13, 16, 17, 29, Dec. 18, Feb. 9–15, 20, May 30, Sept. 28. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	236	2,300	4,400	527	342	486	810	1,760	2,340	3,010	1,500	380
2	236	3,330	12,900	544	342	454	762	1,760	2,430	3,450	1,500	370
3	224	2,300	4,400	510	316	470	1,030	1,670	3,230	3,230	1,400	370
4	212	1,800	2,820	750	290	422	1,050	1,480	3,680	3,010	1,310	370
5	208	3,760	2,430	2,140	322	408	922	1,480	3,450	3,010	2,460	360
6	208	3,760	1,860	1,760	322	624	950	1,380	3,450	3,450	1,500	630
7	204	2,400	1,380	4,150	310	950	852	1,220	3,020	3,680	1,400	450
8	200	2,200	998	4,400	290	671	750	1,080	4,900	3,680	1,310	410
9	194	2,000	880	4,900		671	642	1,080	3,680	3,450	1,220	360
10	188	1,430	798	2,820	110	570	595	1,080	2,620	2,790	1,220	380
11	194	1,170	726	1,960		604	714	1,380	2,620	2,680	1,100	342
12	197	9,220	652	1,380		1,030	624	2,140	3,230	3,010	1,050	333
13	212	14,100	470	1,030		852	578	2,050	5,160	3,010	1,050	315
14	641	4,900	561	866	190	774	671	2,050	5,420	3,450	965	878
15	3,120	3,680	518	838		690	738	1,860	5,680	4,150	1,080	2,350
16	1,340	8,470	510	786	266	786	726	1,860	5,420	3,910	1,010	2,020
17	1,010	10,800	478	738	266	762	633	1,670	4,400	3,450	922	1,030
18	653	5,420	400	604	266	702	604	1,760	3,450	2,790	849	1,400
19	505	3,910	486	570	272	652	570	1,760	3,230	2,570	794	892
20	471	3,450	510	536	351	982	702	1,670	3,230	2,240	666	1,130
21	2,700	3,450	510	510	430	824	1,030	1,960	3,450	2,240	548	1,800
22	2,200	3,020	570	478	690	714	1,480	1,860	3,230	2,240	526	3,010
23	1,710	1,960	552	462	595	614	1,760	1,960	3,230	2,680	515	2,570
24	1,170	1,580	544	438	462	552	1,860	2,340	3,230	2,460	515	1,910
25	1,520	1,380	561	422	486	510	1,960	3,910	3,450	2,460	471	1,500
26	2,910	1,220	1,250	408	1,110	486	1,860	4,150	3,680	2,350	430	2,020
27	3,540	1,220	852	408	738	561	2,340	3,020	3,680	2,130	430	2,460
28	1,800	1,250	680	392	544	595	2,820	2,620	3,680	1,500	460	5,680
29	1,520	2,050	642	378	-------	652	2,430	3,450	3,450	2,790	420	3,450
30	1,170	2,340	578	362	-------	1,030	1,960	3,650	3,010	1,700	450	2,460
31	1,900	-------	552	378	-------	1,110	-------	3,020	-------	1,400	410	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	3,540	188	1,051	7.05	8.13	64,650
November	14,100	1,170	3,662	24.6	27.45	217,900
December	12,900	400	1,467	9.85	11.36	90,180
January	4,900	362	1,176	7.89	9.10	72,290
February	1,110	----------	358	2.40	2.50	19,870
March	1,110	408	684	4.59	5.29	42,070
April	2,820	570	1,147	7.70	8.59	68,280
May	4,150	1,080	2,069	13.9	16.03	127,200
June	5,680	2,340	3,624	24.3	27.11	215,700
July	4,150	1,400	2,838	19.0	21.90	174,500
August	2,460	410	951	6.38	7.36	58,470
September	5,680	315	1,388	9.32	10.40	82,570
The year	14,100	----------	1,704	11.4	155.22	1,234,000

TROUBLESOME CREEK NEAR INDEX, WASH.

LOCATION.—Water-stage recorder in NE¼ sec. 21, T. 28 N., R. 11 E. (unsurveyed), a quarter of a mile above mouth and 9 miles northeast of Index.

DRAINAGE AREA.—10.4 square miles.

RECORDS AVAILABLE.—July 1929 to September 1933.

DISCHARGE.—Maximum during year ending Sept. 30, 1932, 2,220 second-feet Feb. 26 (gage height, 7.54 feet); minimum, 14 second-feet Feb. 19 (gage height, 1.48 feet).

Maximum during year ending Sept. 30, 1933, 1,620 second-feet Nov. 13 (gage height, 5.80 feet); minimum, 18 second-feet Oct. 12; minimum gage height, 0.95 foot Feb. 19.

1929–33: Maximum, that of Feb. 26, 1932; minimum, 11 second-feet Jan. 30, 1930; minimum gage height, that of Feb. 19, 1933.

REMARKS.—Records good except those estimated Dec. 12–14, 23–29, 1932, and Jan. 24–29, 1933, which are fair. No diversions or regulation.

Discharge, in second-feet, 1931–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1931-32												
1	83	192	26	29	22	180	177	188	124	155	89	53
2	69	265	25	26	21	129	169	171	116	142	90	54
3	56	146	24	24	20	99	145	155	110	270	94	49
4	69	101	22	23	18	81	116	142	118	362	101	46
5	193	83	22	26	18	151	104	129	110	218	108	44
6	122	187	21	32	17	166	90	120	94	155	108	47
7	84	285	21	32	18	112	79	136	89	145	106	58
8	66	174	22	32	18	77	70	140	99	145	102	69
9	55	136	23	52	22	60	66	163	155	147	89	66
10	48	108	22	63	25	48	69	209	240	269	79	55
11	44	83	22	580	27	41	84	180	286	236	74	55
12	38	88	20	321	27	35	118	180	319	169	74	50
13	33	299	20	164	25	33	168	197	326	145	66	46
14	30	215	18	112	23	34	231	166	319	150	61	42
15	27	134	18	87	22	41	186	129	306	150	68	47
16	26	96	18	70	18	44	150	108	193	152	77	45
17	25	81	26	61	17	113	145	116	138	145	80	44
18	23	72	138	65	16	341	177	142	129	124	74	42
19	21	89	256	70	14	351	194	155	118	106	68	48
20	20	83	226	64	16	211	169	194	140	102	68	65
21	20	69	138	56	16	147	129	155	197	120	64	59
22	26	60	99	50	18	112	99	136	225	140	64	53
23	35	53	79	44	20	92	83	133	197	140	64	47
24	46	48	69	39	34	161	76	120	163	133	68	42
25	54	44	63	35	355	218	80	102	145	133	73	41
26	64	39	54	32	1,700	155	101	89	152	120	76	38
27	82	34	47	32	914	104	136	81	163	110	79	36
28	174	31	42	30	516	129	131	81	169	118	76	35
29	174	29	36	28	270	138	118	102	188	104	70	37
30	142	26	32	26	-------	142	142	126	174	92	64	38
31	126	-------	31	25	-------	152	-------	129	-------	89	55	-------

Discharge, in second-feet, of Troublesome Creek, near Index, Wash., 1931–33—Contd.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1932–33												
1	39	197	390	40	28	42	80	133	183	22[illegible]	161	61
2	39	263	803	42	27	38	60	129	183	25[illegible]	164	57
3	40	247	473	40	27	35	88	124	259	22[illegible]	156	52
4	40	215	309	70	26	33	105	120	309	20[illegible]	156	52
5	38	301	226	228	26	32	89	115	280	218	208	54
6	35	326	156	319	26	34	85	102	259	25[illegible]	178	77
7	32	222	109	367	25	44	75	90	259	28[illegible]	166	72
8	28	171	82	430	25	48	64	84	371	30[illegible]	166	59
9	26	160	65	467	25	42	54	80	324	245	166	53
10	23	120	59	378	25	38	48	75	228	215	161	53
11	20	97	53	253	24	38	47	87	199	196	156	51
12	18	662	}	138	25	48	44	124	281	215	156	48
13	19	1,140	40	94	24	60	42	133	449	252	158	46
14	41	505	}	84	23	56	44	138	508	316	156	69
15	168	387	37	72	23	52	52	133	508	375	158	190
16	155	676	35	62	23	54	53	124	441	390	161	221
17	112	874	33	54	22	61	49	122	307	323	158	169
18	87	536	32	45	22	52	45	120	228	262	153	158
19	72	404	33	41	23	48	43	115	212	225	148	131
20	63	278	36	38	24	57	49	111	202	215	122	126
21	148	256	36	37	25	64	84	120	221	192	94	151
22	212	232	36	35	41	53	136	120	208	186	84	273
23	152	169	}	34	37	48	158	122	199	190	87	305
24	114	124	}	33	34	42	169	143	205	225	92	273
25	114	102	}	33	35	39	164	312	262	232	90	180
26	186	87	50	32	60	37	153	416	291	218	87	161
27	228	85	}	31	65	36	189	284	270	190	84	189
28	177	90	}	30	48	38	256	221	276	168	94	457
29	140	148	}	30	------	47	221	262	235	183	87	400
30	112	183	45	29	------	69	158	301	221	186	75	249
31	148	------	41	28	------	120	------	228	------	164	69	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1931–32						
October	193	20	66.9	6.43	7.41	4,110
November	299	26	112	10.8	12.05	6,660
December	256	18	54.2	5.21	6.01	3,330
January	580	23	75.2	7.23	8.34	4,620
February	1,700	14	146	14.0	15.10	8,400
March	351	33	126	12.1	13.95	7,750
April	231	66	127	12.2	13.61	7,560
May	209	81	141	13.6	15.68	8,670
June	326	89	177	17.0	18.97	10,500
July	362	89	154	14.8	17.06	9,470
August	108	55	78.4	7.54	8.69	4,820
September	69	35	48.4	4.65	5.19	2,880
The year	1,700	14	109	10.5	142.06	78,800
1932–33						
October	228	18	91.2	8.77	10.11	5,610
November	1,140	85	309	29.7	33.14	18,400
December	803	32	115	11.1	12.80	7,070
January	467	28	117	11.2	12.91	7,190
February	65	22	29.9	2.88	3.00	1,660
March	120	32	48.5	4.66	5.37	2,980
April	256	42	96.8	9.31	10.39	5,760
May	416	75	154	14.8	17.06	9,470
June	508	183	279	26.8	29.90	16,600
July	390	164	237	22.8	26.29	14,600
August	208	69	134	12.9	14.87	8,240
September	457	46	148	14.2	15.84	8,810
The year	1,140	18	147	14.1	191.68	106,000

WALLACE RIVER AT GOLD BAR, WASH.

LOCATION.—Staff gage in NE¼ sec. 6, T. 27 N., R. 9 E., at highway bridge at Gold Bar.

DRAINAGE AREA.—18.7 square miles.

RECORDS AVAILABLE.—December 1928 to September 1933 (discontinued).

DISCHARGE.—Maximum during year ending Sept. 30, 1932, 2,590 second-feet Feb. 26 (gage height, 8.25 feet); minimum, 23 second-feet Sept. 18; minimum gage height, 0.97 foot Feb. 19.

Maximum during year ending Sept. 30, 1933, 2,560 second-feet Dec. 2 (gage height, 8.00 feet); minimum, 17 second-feet Oct. 11 (gage height, 1.20 feet).

1928–33: Maximum, that of Feb. 26, 1932; minimum, 9.6 second-feet Aug. 27, Sept. 3–5, 1930 (gage height, 0.32 foot).

REMARKS.—Records fair. No diversions above station. Results of many discharge measurements furnished by Puget Sound Power & Light Co.

Discharge, in second-feet, 1931–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1931-32												
1	86	311	62	84	50	148	542	296	218	120	56	76
2	71	258	65	81	47	108	376	249	203	104	48	45
3	66	145	63	74	46	71	360	249	188	424	43	35
4	298	118	56	84	45	67	264	218	203	392	38	32
5	506	118	59	118	42	1,730	249	234	171	203	37	30
6	198	118	63	176	45	542	188	218	146	143	36	29
7	136	198	73	136	53	328	159	234	130	137	34	29
8	110	165	74	118	59	249	143	218	182	132	31	28
9	88	165	65	392	63	185	127	312	296	122	30	32
10	79	136	70	233	60	148	137	280	344	441	32	29
11	83	127	65	1,350	56	122	171	234	376	280	80	27
12	65	127	60	365	50	104	264	264	408	171	74	29
13	57	942	57	186	47	93	296	264	408	137	48	27
14	60	298	53	136	45	168	424	218	408	171	40	26
15	56	186	52	110	42	188	264	159	280	162	38	24
16	47	165	49	98	40	165	249	162	179	143	37	24
17	44	155	392	98	38	943	234	203	171	108	36	25
18	47	145	566	271	36	1,860	441	249	165	91	32	24
19	41	233	659	165	35	981	508	264	168	80	31	408
20	60	221	338	136	39	474	312	296	203	76	53	203
21	49	145	221	118	62	312	234	249	249	82	48	113
22	176	136	155	102	81	203	203	234	218	87	45	74
23	136	107	145	91	59	185	171	234	174	76	40	58
24	155	98	136	83	81	264	165	171	159	73	38	50
25	198	100	127	81	536	312	154	132	148	85	35	46
26	209	88	118	74	2,450	218	249	113	159	63	33	38
27	221	84	110	71	1,460	182	280	118	188	56	32	34
28	536	76	102	66	577	474	249	148	188	53	33	30
29	392	68	105	62	280	344	218	203	182	45	36	29
30	165	66	90	57	------	392	264	296	143	40	39	28
31	186	------	86	53	------	376	------	234	------	40	38	------

Discharge, in second-feet, of Wallace River at Gold Bar, Wash., 1931–33—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1932–33												
1	26	508	910	72	57	79	157	182	193	299	53	31
2	25	612	1,950	65	54	72	133	225	219	275	52	30
3	24	424	480	62	52	79	187	187	311	241	48	30
4	23	296	463	72	49	69	167	182	299	227	49	31
5	21	905	497	342	54	66	150	182	275	244	110	33
6	21	612	287	208	52	135	147	157	281	219	56	82
7	20	360	172	1,500	49	230	145	138	308	258	54	57
8	19	360	130	1,900	46	157	116	138	655	208	52	47
9	18	296	114	950	46	133	101	128	364	203	50	43
10	18	234	97	446	46	110	101	152	241	167	47	41
11	18	188	87	290	45	135	93	193	275	167	47	41
12	22	2,320	82	219	43	250	93	222	463	187	45	40
13	24	1,780	75	195	42	119	85	200	566	200	45	40
14	91	829	75	193	41	150	97	193	514	230	43	93
15	441	647	71	157	43	140	110	198	463	247	43	208
16	146	1,870	69	133	43	157	97	182	413	174	41	182
17	137	1,900	66	119	43	145	89	182	255	157	40	162
18	83	970	66	105	43	128	82	190	225	130	36	187
19	63	674	105	91	43	116	80	177	227	123	35	110
20	53	383	89	85	52	177	101	182	252	110	34	157
21	249	387	93	82	64	154	157	198	225	101	30	348
22	474	323	82	75	97	128	182	187	203	97	28	446
23	312	241	107	71	89	112	216	225	200	110	27	317
24	188	208	107	71	65	93	222	364	233	119	25	275
25	577	182	107	66	61	87	203	532	345	110	24	200
26	647	177	329	62	170	82	187	430	281	97	23	247
27	577	177	152	61	110	79	272	278	275	89	22	244
28	328	167	101	59	89	101	314	275	241	79	23	619
29	264	170	110	56	-------	114	264	329	206	85	24	302
30	203	247	93	56	-------	193	193	311	211	59	32	182
31	647	-------	80	59	-------	193	-------	238	-------	55	46	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1931–32						
October	536	41	149	7.97	9.19	9,160
November	942	66	177	9.47	10.57	10,500
December	659	49	140	7.49	8.64	8,610
January	1,350	53	170	9.09	10.48	10,500
February	2,450	35	225	12.0	12.94	12,900
March	1,860	67	385	20.6	23.75	23,700
April	542	127	263	14.1	15.73	15,600
May	312	113	224	12.0	13.83	13,800
June	408	130	222	11.9	13.28	13,200
July	441	40	140	7.49	8.64	8,610
August	80	30	41.0	2.19	2.52	2,520
September	408	24	56.1	3.00	3.35	3,340
The year	2,450	24	183	9.79	132.92	132,000
1932–33						
October	647	18	186	9.95	11.47	11,400
November	2,320	167	615	32.9	36.71	36,600
December	1,950	66	234	12.5	14.41	14,400
January	1,900	56	256	13.7	15.79	15,700
February	170	41	60.3	3.22	4.35	3,350
March	250	66	128	6.84	7.89	7,870
April	314	80	151	8.07	9.00	8,980
May	532	128	224	12.0	13.83	13,800
June	655	193	307	16.4	18.30	18,300
July	299	55	163	8.72	10.05	10,000
August	110	22	41.4	2.21	2.55	2,550
September	619	30	161	8.61	9.61	9,580
The year	2,320	18	211	11.3	152.96	153,000

OLNEY CREEK NEAR STARTUP, WASH.

LOCATION.—Water-stage recorder in SE¼ sec. 12, T. 28 N., R. 8 E., 1½ miles above Stickney Bridge and 5 miles northeast of Startup.

DRAINAGE AREA.—10 square miles.

RECORDS AVAILABLE.—October 1922 to October 1926; February 1929 to November 1933 (discontinued).

DISCHARGE.—Maximum during period October 1932 to November 1933, 2,100 second-feet Nov. 16, 1932 (gage height, 6.98 feet); minimum, 12 second-feet Aug. 26 (gage height, 0.61 foot).

1922–26, 1929–33: Maximum, 2,400 second-feet Feb. 26, 1932 (gage height, 7.50 feet); minimum, 3.8 second-feet Oct. 16, 1925; minimum gage height, that of Aug. 26, 1933.

REMARKS.—Records good except those estimated Jan. 29 to Feb. 17, May 13, 14, Nov. 12–30, which are fair. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
1	18	339	558	82	22	46	133	110	88	160	28	40	72	86
2	18	359	1,260	75	22	45	110	183	111	133	25	26	60	778
3	16	254	273	66	22	53	131	144	142	95	27	22	51	350
4	16	175	269	186	21	45	104	131	128	88	33	19	42	158
5	15	579	193	376	21	42	86	142	126	95	75	22	37	104
6	15	367	124	256	21	198	81	111	154	98	35	124	33	76
7	14	172	92	863	20	247	73	98	173	102	27	43	30	61
8	14	214	69	878	20	129	63	92	359	86	26	30	27	52
9	14	149	57	486	19	91	58	96	230	69	22	26	26	45
10	14	105	50	235	19	78	53	96	148	62	21	24	24	40
11	14	85	45	139	19	125	74	119	148	69	20	22	22	36
12	17	850	41	99	18	249	71	139	207	80	20	21	21	
13	20	886	36	82	18	158	59	145	230	81	19	21	22	
14	52	378	33	86	18	117	70	150	217	89	18	196	26	
15	183	367	30	66	17	104	81	137	195	96	17	191	22	
16	88	1,200	30	56	17	144	69	124	154	56	16	162	246	25
17	88	1,110	28	50	16	121	59	116	116	64	16	118	112	
18	59	352	31	45	16	98	54	122	100	54	15	137	233	
19	42	269	104	41	20	99	51	110	100	60	19	82	183	
20	47	175	70	37	40	193	65	104	100	51	17	111	159	
21	265	209	75	36	53	129	96	105	100	47	15	188	92	
22	342	152	98	34	110	95	124	106	89	45	15	300	276	
23	220	110	111	31	76	73	126	128	86	48	14	280	320	
24	130	86	92	30	47	62	121	185	105	48	13	223	160	
25	395	75	108	28	73	56	111	273	172	45	13	133	139	
26	461	69	354	26	144	53	104	226	126	40	12	128	89	90
27	340	65	171	26	80	55	146	137	106	32	13	112	174	
28	162	58	116	24	57	88	171	131	100	28	13	182	252	
29	144	93	154	24	------	111	139	158	95	81	13	135	191	
30	106	144	119	23	------	192	111	146	91	36	88	100	189	
31	452	------	93	23	------	198	------	106	------	31	123	------	110	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1932–33						
October	461	14	122	12.2	14.07	7,500
November	1,200	58	315	31.5	35.14	18,700
December	1,260	28	158	15.8	18.22	9,720
January	878	23	145	14.5	16.72	8,920
February	144	16	37.4	3.74	3.90	2,080
March	249	42	113	11.3	13.03	6,950
April	171	51	93.1	9.31	10.39	5,540
May	273	92	135	13.5	15.56	8,300
June	359	86	143	14.3	15.95	8,510
July	160	28	70.0	7.00	8.07	4,300
August	123	12	26.7	2.67	3.08	1,640
September	300	19	107	10.7	11.94	6,370
The year	1,260	12	122	12.2	166.07	88,500
1933						
October	320	21	111	11.1	12.80	6,820
November	778	----------	97.0	9.70	10.82	5,770
The period	----------	----------	----------	----------	----------	12,600

MAY CREEK NEAR GOLD BAR, WASH.

LOCATION.—Staff gage in sec. 2, T. 27 N., R. 9 E., three-quarters of a mile below Lake Isabel and 3½ miles east of Gold Bar.

DRAINAGE AREA.—4.3 square miles.

RECORDS AVAILABLE.—September 1928 to September 1933.

DISCHARGE.—Maximum during year ending Sept. 30, 1932, 219 second-feet Feb. 27 (gage height, 3.20 feet); minimum, 5.0 second-feet Sept. 16, 18 (gage height, 0.16 foot).

Maximum during year ending Sept. 30, 1933, 475 second-feet Dec. 2 (gage height, 4.92 feet); minimum, 5.0 second-feet Oct. 9, 10 (gage height, 0.16 foot).

1928–33: Maximum, that of Dec. 2, 1932; minimum, 1.1 second-feet Sept. 5, 6, 1930.

REMARKS.—Records fair October 1931 to February 1932; good March 1932 to September 1933 below 100 second-feet, fair above. No diversions or regulation. Gage-height record and many discharge measurements furnished by Washington Electric Co.

Discharge, in second-feet, 1931–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1931-32												
1	16	50	14	16	13	128	72	46	68	60	e20	10
2	16	50	13	14	12	94	72	50	e66	e55	18	8.4
3	16	50	12	13	11	e65	76	56	64	60	17	7.8
4	15	44	13	e14	11	68	68	64	64	128	16	7.1
5	26	41	14	16	10	108	68	64	60	90	16	6.5
6	38	38	13	22	9.8	99	46	64	54	76	16	e6.2
7	36	44	14	25	11	90	43	60	46	64	e14	6.0
8	29	44	13	18	11	72	38	60	e40	e57	13	6.0
9	28	41	12	35	e11	56	e38	64	53	50	12	5.9
10	28	37	13	e35	11	40	37	81	72	64	12	5.8
11	20	32	e12	70	11	38	35	86	90	68	16	5.6
12	18	31	11	80	12	36	37	81	108	60	18	e6.0
13	17	32	10	70	11	33	48	72	128	52	e16	5.2
14	16	60	9.4	53	11	31	64	68	128	e48	13	5.1
15	15	56	7.8	44	e10	30	60	64	138	44	12	5.1
16	14	47	6.8	e38	9.4	28	50	64	94	40	11	5.0
17	12	41	32	32	8.2	40	43	56	76	40	10	5.1
18	12	35	66	41	7.4	168	60	60	68	39	8.9	e5.0
19	11	33	74	41	6.8	188	90	64	64	37	e8.0	5.6
20	10	37	80	36	7.8	138	76	64	e60	e35	8.9	13
21	9.7	32	70	32	e9.0	104	68	81	64	33	10	16
22	12	30	56	e30	8.6	e88	48	64	64	32	11	15
23	18	27	e48	28	9.0	72	e43	68	68	30	9.1	14
24	20	25	41	21	11	64	38	60	64	29	8.6	e13
25	23	24	34	20	18	64	35	54	64	28	e8.1	12
26	37	21	30	19	101	51	34	52	e64	e28	7.6	11
27	55	19	26	18	219	42	39	e49	64	27	7.3	9.8
28	67	17	24	17	199	56	47	46	64	26	7.3	8.4
29	63	16	e21	16	148	60	46	44	64	24	7.3	7.6
30	60	14	18	14	-------	60	45	50	64	20	7.1	e7.0
31	56	-------	18	14	-------	56	-------	68	-------	18	e7.0	-------

e Estimated.

Discharge, in second-feet, of May Creek near Gold Bar, Wash., 1931–32—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1932-33												
1	6.8	81	82	22	12	14	23	53	77	65	33	e12
2	6.6	94	475	20	12	13	22	58	67	77	e32	11
3	6.0	99	270	19	e12	13	22	50	72	75	30	10
4	5.8	94	172	e20	11	12	e20	e46	84	72	28	9.9
5	5.6	108	172	22	9.9	e10	19	43	72	70	37	9.6
6	e5.4	123	110	47	9.6	12	18	41	67	70	33	e15
7	5.1	108	86	90	9.0	18	23	36	70	72	33	14
8	5.1	99	80	172	8.1	22	20	33	110	75	e30	12
9	5.0	90	42	e186	e8.0	19	18	31	137	e70	28	11
10	5.0	72	37	123	7.9	15	e18	e30	116	66	26	10
11	5.1	e55	e32	90	7.7	e20	18	29	84	60	24	9.6
12	e5.2	76	26	65	7.7	26	18	33	84	58	22	8.7
13	5.3	300	20	56	7.5	23	17	43	110	63	21	e8.5
14	5.6	232	17	53	7.3	22	17	40	144	67	e20	8.7
15	7.1	188	16	39	e7.0	21	16	49	144	e72	19	11
16	9.4	210	14	e34	7.7	22	e16	e46	137	76	18	28
17	16	348	e14	28	7.5	e20	16	44	110	71	17	33
18	e17	340	13	23	7.5	18	16	41	96	67	16	39
19	18	312	22	20	7.3	16	16	40	90	63	15	e40
20	16	256	21	19	7.3	24	17	39	71	52	14	40
21	20	228	19	19	e11	20	20	44	e70	e50	e13	40
22	60	172	19	e18	14	18	e26	e46	70	47	12	50
23	64	144	e25	17	12	e16	32	49	67	46	11	53
24	e55	123	19	16	11	14	39	60	62	45	10	56
25	60	73	19	15	10	13	45	90	65	46	9.3	55
26	99	54	45	15	19	13	47	123	87	45	8.7	53
27	108	41	41	14	e18	14	49	103	84	e41	8.1	54
28	104	37	33	e14	16	15	62	90	80	37	7.7	59
29	90	44	e29	13	-------	e16	63	86	75	37	7.5	90
30	e80	73	25	12	-------	17	58	90	67	37	7.7	75
31	90	-------	23	12	-------	23	-------	84	-------	35	12	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1931-32						
October	67	9.7	26.2	6.09	7.02	1,610
November	60	14	35.6	8.28	9.24	2,120
December	80	6.8	26.6	6.19	7.14	1,640
January	80	13	30.4	7.07	8.15	1,870
February	219	6.8	32.0	7.44	8.02	1,840
March	188	28	73.1	17.0	19.60	4,490
April	90	34	52.1	12.1	13.50	3,100
May	86	44	62.1	14.4	16.60	3,820
June	138	40	72.8	16.9	18.86	4,330
July	128	18	47.2	11.0	12.68	2,900
August	20	7.0	11.8	2.74	3.16	726
September	16	5.0	8.14	1.89	2.11	484
The year	219	5.0	39.9	9.28	126.08	28,900
1932-33						
October	108	5.0	32.0	7.44	8.58	1,970
November	348	37	142	33.0	36.82	8,450
December	475	13	65.1	15.1	17.41	4,000
January	186	12	42.4	9.86	11.37	2,610
February	19	7.0	10.2	2.37	2.47	566
March	26	10	17.4	4.05	4.67	1,070
April	63	16	27.0	6.28	7.01	1,610
May	123	29	54.5	12.7	14.64	3,350
June	144	62	89.0	20.7	23.09	5,300
July	77	35	58.9	13.7	15.79	3,620
August	37	7.5	19.5	4.53	5.22	1,200
September	90	8.5	30.9	7.19	8.02	1,840
The year	475	5.0	49.2	11.4	155.09	35,600

e Estimated.

SNOQUALMIE RIVER NEAR TOLT, WASH.

LOCATION.—Cable gage in sec. 9, T. 25 N., R. 7 E., at highway bridge 1 mile northwest of Tolt.

DRAINAGE AREA.—605 square miles.

RECORDS AVAILABLE.—February 1929 to September 1933.

DISCHARGE.—Maximum during year, 45,400 second-feet Nov. 13 (gage height, 14.54 feet); maximum stage (result of backwater), 16.97 feet Nov. 13; minimum discharge, 560 second-feet Oct. 8.

1929–33: Maximum, about 51,000 second-feet Feb. 26, 1932; minimum, 357 second-feet Sept. 11, 1930 (gage height, 0.34 foot).

REMARKS.—Records good. Discharge estimated Oct. 3, 4. Low-water flow diverted for power purposes at Snoqualmie Falls but returned to river above gage. Some regulation of flow caused by operation of power plant.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	760	7,350	11,800	4,800	2,620	3,270	4,250	5,090	5,390	4,800	1,960	940
2	760	13,000	25,000	4,520	2,520	3,270	4,520	5,690	5,690	5,390	1,880	890
3	725	9,620	24,100	4,250	2,230	3,500	4,800	5,090	6,620	5,690	2,420	710
4	690	9,300	14,400	7,260	1,960	3,270	4,800	5,390	8,230	4,800	3,270	670
5	655	13,700	9,940	13,300	1,960	2,830	4,250	5,390	7,900	4,800	3,500	595
6	690	21,400	7,900	11,800	2,050	3,050	3,990	4,520	7,580	5,390	2,420	1,240
7	622	9,300	6,310	20,500	1,880	8,230	3,740	3,990	7,580	5,690	1,960	1,240
8	560	10,300	5,090	26,800	1,800	5,390	3,270	3,740	12,900	6,000	1,800	890
9	590	7,110	4,520	22,800	1,430	4,520	3,050	3,740	13,600	5,390	1,640	750
10	622	6,430	3,990	15,500	1,360	4,250	2,720	3,740	7,580	4,250	1,430	710
11	622	5,600	3,270	10,700	1,570	4,800	2,720	3,990	6,310	3,740	1,430	632
12	590	25,900	3,050	8,230	1,500	7,580	3,050	4,520	8,230	4,520	1,360	595
13	622	36,000	2,830	6,620	1,500	6,940	3,270	5,090	12,100	4,520	1,360	750
14	910	25,400	2,520	5,690	1,570	5,690	2,720	5,090	13,300	5,090	1,300	3,050
15	2,610	15,200	2,420	5,390	1,500	5,390	3,050	5,390	12,500	5,690	1,240	5,090
16	3,870	17,900	2,320	4,520	1,430	4,800	3,050	5,090	10,700	5,690	1,170	5,690
17	3,680	31,400	4,520	3,990	1,360	4,250	2,830	4,800	8,230	5,090	1,110	3,270
18	2,950	24,600	2,050	3,740	1,430	3,990	2,520	5,090	6,940	3,740	1,110	2,720
19	2,290	15,500	4,250	3,270	1,500	4,250	2,420	4,800	5,690	3,270	1,050	2,420
20	1,860	11,000	4,250	3,270	1,570	5,390	2,520	4,800	5,390	2,830	1,050	2,140
21	4,630	10,300	4,250	3,050	2,140	5,090	3,270	5,090	6,310	2,720	995	2,830
22	6,650	9,940	4,800	2,620	4,250	3,990	4,250	5,090	5,690	2,620	995	7,900
23	4,440	8,230	4,800	2,520	4,800	3,500	4,800	5,690	5,390	2,520	890	6,000
24	3,870	6,310	4,520	2,720	3,270	3,270	5,390	6,620	5,390	2,620	840	5,690
25	4,060	5,090	4,800	2,520	3,050	2,830	5,390	9,940	6,940	2,830	795	3,990
26	11,600	4,520	8,900	2,420	5,690	2,720	4,520	12,100	6,940	2,620	795	3,500
27	9,300	4,250	6,620	2,320	4,800	2,720	5,690	7,900	6,310	1,880	795	3,270
28	7,840	4,250	5,690	2,420	3,990	3,050	7,580	6,620	6,310	2,620	795	9,240
29	6,000	7,260	6,000	2,620	-------	3,740	6,940	7,900	5,390	2,830	840	8,230
30	5,010	7,900	5,690	2,830	-------	4,250	6,310	8,560	5,090	2,320	890	5,090
31	5,400	-------	5,390	2,720	-------	5,390	-------	6,940	-------	2,050	1,050	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	11,600	560	3,080	5.09	5.87	189,000
November	36,000	4,250	12,800	21.2	23.65	762,000
December	25,000	2,050	6,640	11.0	12.68	408,000
January	26,800	2,320	6,960	11.5	13.26	428,000
February	5,690	1,360	2,380	3.93	4.09	132,000
March	8,230	2,720	4,360	7.21	8.31	268,000
April	7,580	2,420	4,060	6.71	7.49	242,000
May	12,100	3,740	5,730	9.47	10.92	352,000
June	13,600	5,090	7,740	12.8	14.28	461,000
July	6,000	1,880	4,000	6.61	7.62	246,000
August	3,500	795	1,420	2.35	2.71	87,300
September	9,240	595	3,020	4.99	5.57	180,000
The year	36,000	560	5,190	8.58	116.45	3,760,000

NORTH FORK OF SNOQUALMIE RIVER NEAR SNOQUALMIE FALLS, WASH.

LOCATION.—Water-stage recorder in SW¼ sec. 30, T. 25 N., R. 9 E., 1 mile above Calligan Creek and 8 miles northeast of Snoqualmie Falls.

DRAINAGE AREA.—65 square miles.

RECORDS AVAILABLE.—August 1929 to September 1933.

DISCHARGE.—Maximum during year, about 6,700 second-feet Nov. 17 (gage height, 14.6 feet, from recorded range of stage); minimum, not determined, occurred during period Oct. 1–27.

1929–33: Maximum, 8,020 second-feet Feb. 26, 1932 (gage height, 17.5 feet); minimum, 30 second-feet Sept. 17–19, 1929 (gage height, 1.91 feet).

REMARKS.—Records excellent except those of discharge above 3,000 second-feet, which are good, and those estimated Oct. 1–27, Nov. 11 to Dec. 1, Dec. 11–17, Feb. 9–18, July 3 to Aug. 5. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		1,460	1,200	460	209	270	477	636	768	901	350	162
2		1,780	4,870	428	194	259	428	768	909	1,260	330	136
3	100	1,180	2,020	398	184	275	673	692	1,360	960	300	123
4		962	1,410	829	179	252	618	768	1,310	790	290	113
5		2,280	1,200	1,840	188	242	512	748	1,210	870	580	113
6		1,660	787	1,250	179	589	494	600	1,160	910	384	248
7		1,040	618	3,490	170	944	444	546	1,180	930	340	194
8	90	1,140	494	4,750	163	564	384	512	2,050	940	317	160
9		1,060	428	2,710		428	356	512	1,540	750	286	143
10		712	398	1,580		384	325	564	986	690	261	133
11				965	150	477	356	673	938	640	246	126
12				710		1,000	370	848	1,450	720	235	119
13	150	2,100		600		691	338	729	1,930	750	219	116
14			320	600		546	384	710	1,870	800	213	419
15				512		477	428	748	1,750	850	203	939
16				444	140	529	398	729	1,460	820	194	1,060
17				398		494	356	692	1,060	690	183	529
18		2,300	300	370		428	327	748	827	620	172	529
19	330		420	343	156	413	307	710	848	570	179	413
20			398	327	188	654	370	692	768	540	181	413
21			384	312	203	546	512	748	870	490	172	604
22			384	293	279	428	673	729	787	470	151	1,330
23		970	477	282	284	370	787	870	768	480	143	904
24			428	270	231	338	807	1,080	827	520	137	820
25	760		413	259	236	310	768	1,810	1,040	510	131	600
26			1,270	248	477	295	654	1,720	1,010	470	124	692
27			842	248	398	293	948	1,080	915	420	118	1,100
28	986	720	618	235	307	356	1,160	962	938	330	116	1,550
29	822		618	223	-------	428	938	1,310	787	560	117	1,140
30	646		582	219	-------	520	729	1,310	768	500	147	702
31	1,500	-------	494	219	-------	618	-------	938	-------	380	192	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,500	----------	393	6.05	6.98	24,200
November	----------	----------	1,460	22.5	25.10	86,900
December	4,870	----------	751	11.6	13.37	46,200
January	4,750	219	833	12.8	14.76	51,200
February	477	----------	203	3.12	3.25	11,300
March	1,000	242	465	7.15	8.24	28,600
April	1,160	307	544	8.37	9.34	32,400
May	1,810	512	845	13.0	14.99	52,000
June	2,050	768	1,140	17.5	19.52	67,800
July	1,260	330	682	10.5	12.11	41,900
August	580	116	226	3.48	4.01	13,900
September	1,550	113	521	8.02	8.95	31,000
The year	----------	----------	673	10.4	140.62	487,000

NORTH FORK OF SNOQUALMIE RIVER NEAR NORTH BEND, WASH.

LOCATION.—Water-stage recorder in NE¼ sec. 26, T. 24 N., R. 8 E., 2 miles above mouth and 3½ miles northeast of North Bend.

DRAINAGE AREA.—105 square miles.

RECORDS AVAILABLE.—July 1907 to September 1926; February 1929 to September 1933.

DISCHARGE.—Maximum during year, 9,250 second-feet Nov. 17 (gage height, 9.9 feet); minimum, not determined, occurred during period Oct. 8–24.

1907–26, 1929–33: Maximum, 11,100 second-feet Nov. 18, 1911 (gage height, 14.5 feet from high-water mark); water above gage Nov. 18, 19, 23, 24, 29, 30, 1909; stage and discharge may have exceeded those of 1911. Minimum, 54 second-feet Aug. 31, Sept. 1, 1930. Average, 23 years (1907–26, 1929–33), 688 second-feet.

REMARKS.—Records good. Discharge estimated Oct. 8–24, Dec. 11–17, Feb. 10–13. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	138	2,020	2,360	716	316	432	710	919	1,100	1,140	458	184
2	129	2,730	6,380	682	289	406	650	1,060	1,210	1,430	432	151
3	125	1,910	2,800	612	272	432	894	985	1,700	1,100	390	136
4	119	1,520	1,820	901	260	395	872	1,050	1,760	912	375	127
5	112	2,920	1,600	1,990	268	370	767	1,040	1,650	1,010	827	125
6	108	2,460	1,110	1,680	256	591	744	878	1,600	1,060	612	311
7	106	1,580	891	4,040	242	1,290	688	815	1,600	1,090	490	256
8		1,580	756	5,930	229	853	612	767	2,620	1,110	442	203
9		1,640	666	3,980	190	699	553	756	2,200	898	395	180
10		1,200	623	2,380		617	511	785	1,480	821	345	160
11	100	990		1,600	190	702	527	891	1,330	767	312	151
12		4,400		1,150		1,270	564	1,090	1,920	865	285	144
13		6,200		961		1,050	506	977	2,560	905	260	136
14		2,910		919	197	846	537	969	2,560	961	249	386
15		2,250	560	827	200	761	623	1,040	2,380	1,040	229	1,190
16	580	4,780		738	206	797	596	1,010	2,040	1,000	219	1,480
17		6,880		666	197	785	537	961	1,480	840	206	856
18		3,520	580	617	200	704	495	1,040	1,170	767	184	809
19		2,380	600	574	203	660	463	977	1,150	704	192	688
20		1,870	564	537	236	883	511	961	1,020	660	197	644
21	1,250	1,820	543	511	252	821	672	1,020	1,160	617	192	818
22		1,650	548	479	355	704	846	993	1,020	590	167	1,690
23		1,230	655	453	375	623	977	1,150	1,010	600	156	1,210
24		1,000	590	437	307	564	1,020	1,360	1,070	660	149	1,140
25	1,990	885	574	406	307	522	1,000	2,200	1,320	644	140	885
26	3,030	809	1,350	385	657	495	878	2,320	1,320	601	129	931
27	2,670	791	1,070	385	612	479	1,160	1,540	1,200	532	123	1,430
28	2,170	767	853	360	495	553	1,480	1,380	1,210	421	119	1,900
29	1,640	1,350	872	340	-------	596	1,260	1,760	1,020	715	123	1,540
30	1,320	1,330	840	331	-------	733	1,030	1,760	1,020	654	172	993
31	2,040	-------	767	331	-------	859	-------	1,330	-------	490	216	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	3,030	----------	840	8.00	9.22	51,600
November	6,880	767	2,250	21.4	23.88	134,000
December	6,380	543	1,080	10.3	11.87	66,400
January	5,930	331	1,160	11.0	12.68	71,300
February	657	----------	281	2.68	2.79	15,600
March	1,290	370	693	6.60	7.61	42,600
April	1,480	463	756	7.20	8.03	45,000
May	2,320	756	1,150	11.0	12.68	70,700
June	2,620	1,010	1,530	14.6	16.29	91,000
July	1,430	421	827	7.88	9.08	50,800
August	827	119	283	2.70	3.11	17,400
September	1,900	125	695	6.62	7.39	41,400
The year	6,880	----------	963	9.17	12.63	698,000

SOUTH FORK OF SNOQUALMIE RIVER AT NORTH BEND, WASH

LOCATION.—Water-stage recorder in SE¼ sec. 9, T. 23 N., R. 8 E., half a mile south of North Bend and 3½ miles above mouth.

DRAINAGE AREA.—84 square miles.

RECORDS AVAILABLE.—July 1907 to September 1926; February 1929 to September 1933.

DISCHARGE.—Maximum during year, 7,100 second-feet Nov. 13 (gage height, 10.90 feet); minimum, 103 second-feet Oct. 11 (gage height, 1.56 feet).

1907–26, 1929–33: Water over gage Nov. 3, 4, 19, 23, 29, 1909 (gage height and discharge not determined); minimum discharge, 63 second-feet Oct. 22, 1925 (gage height, 1.14 feet). Average, 23 years (1907–26, 1929–33), 531 second-feet.

REMARKS.—Records good except those estimated, May 20–28, Aug. 31 to Sept. 21, which are poor. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	122	1,150	1,190	710	414	443	560	860	960	835	305	
2	119	1,600	4,870	735	395	414	520	935	960	1,050	305	
3	117	1,300	2,720	685	381	418	645	910	1,260	885	287	160
4	113	1,020	1,680	1,050	371	388	710	885	1,410	810	290	
5	109	1,800	1,560	1,800	374	374	645	860	1,320	835	414	
6	109	1,860	1,260	1,680	368	460	640	785	1,230	860	368	
7	111	1,200	1,080	2,250	348	735	610	710	1,200	885	320	
8	109	1,180	910	4,310	336	585	550	660	1,930	910	302	200
9	107	1,200	835	3,100	305	510	496	630	1,920	760	287	
10	107	925	785	1,980	317	487	460	625	1,260	685	270	
11	107	765	710	1,470	323	545	478	660	1,110	605	250	
12	111	2,180	685	1,200	320	710	496	835	1,350	685	247	
13	113	5,980	635	1,020	314	735	464	860	1,920	735	239	250
14	181	2,420	600	990	314	645	487	885	2,040	735	233	
15	325	1,620	565	885	311	610	525	860	1,920	785	228	
16	530	2,970	540	810	308	640	515	810	1,680	785	225	
17	458	4,800	515	760	308	625	478	785	1,350	655	220	
18	346	2,510	505	710	311	570	456	810	1,050	575	211	440
19	278	1,680	580	660	320	550	435	810	1,020	515	209	
20	248	1,380	600	635	339	685	478		935	482	203	
21	367	1,320	585	610	392	650	575		990	439	196	
22	630	1,320	590	575	520	580	685	870	935	414	185	725
23	630	1,050	605	550	505	525	835		910	418	180	725
24	530	885	605	530	430	478	885		910	430	175	702
25	640	785	615	505	422	456	910		1,080	418	168	572
26	1,350	710	960	478	630	447	810	1,300	1,080	392	160	532
27	1,150	650	885	478	550	451	990		1,020	361	155	792
28	1,050	615	760	451	478	496	1,290		990	332	155	1,020
29	738	810	785	426	------	545	1,230	1,200	860	384	162	1,090
30	652	960	760	418	------	600	990	1,470	810	384	201	770
31	866	------	710	430	------	655	------	1,200	------	326	240	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,350	107	402	4.79	5.52	24,700
November	5,980	615	1,620	19.3	21.53	96,400
December	4,870	505	990	11.8	13.60	60,900
January	4,310	418	1,060	12.6	14.53	65,200
February	630	305	382	4.55	4.74	21,200
March	735	374	549	6.54	7.54	33,800
April	1,290	435	662	7.88	8.79	39,400
May	----------	625	922	11.0	12.68	56,700
June	2,040	810	1,250	14.9	16.62	74,400
July	1,050	326	625	7.44	8.58	38,400
August	414	155	238	2.83	3.26	14,600
September	1,090	----------	421	5.01	5.59	25,100
The year	5,980	107	761	9.06	122.98	551,000

STILLAGUAMISH RIVER BASIN

SOUTH FORK OF STILLAGUAMISH RIVER NEAR GRANITE FALLS, WASH.

LOCATION.—Water-stage recorder in SW¼NW¼ sec. 8, T. 30 N., R. 7 E., 2 miles northeast of Granite Falls.

DRAINAGE AREA.—119 square miles.

RECORDS AVAILABLE.—July 1928 to September 1933.

DISCHARGE.—Maximum during year, 19,900 second-feet Nov. 13 (gage height, 16.37 feet); minimum, 130 second-feet Oct. 11 (gage height, 3.47 feet).

1928–33: Maximum, about 26,700 second-feet Feb. 26, 1932 (gage height, 19.7 feet, from graph based on gage readings); minimum, 66 second-feet Sept. 4, 1930 (gage height, 3.05 feet).

REMARKS.—Records excellent except those for extremely high stages, which are good. Discharge estimated Dec. 12. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	175	2,900	6,190	938	362	723	1,310	1,270	1,400	1,790	653	255
2	168	4,580	11,300	885	340	677	1,060	1,670	1,490	1,910	653	213
3	163	2,900	3,440	737	311	878	1,360	1,440	2,020	1,490	618	190
4	158	1,830	2,020	1,280	302	702	1,270	1,490	2,120	1,310	559	178
5	154	6,400	1,720	4,100	340	591	1,110	1,540	1,910	1,360	884	181
6	148	4,310	1,270	2,770	332	2,110	1,070	1,270	2,020	1,490	659	566
7	146	2,070	975	6,300	302	2,550	968	1,150	2,020	1,580	602	343
8	139	2,140	780	7,440	267	1,400	840	1,060	4,830	1,580	618	245
9	137	2,010	702	6,500	255	1,010	744	1,020	3,430	1,270	602	206
10	131	1,350	647	3,790	267	855	671	1,050	1,910	1,190	575	197
11	135	1,060	559	1,760	275	1,270	795	1,270	1,670	1,060	559	193
12	146	7,300	510	1,310	259	2,980	788	1,620	2,240	1,190	538	178
13	168	11,800	459	1,070	241	1,720	677	1,440	3,160	1,310	513	166
14	577	4,400	425	1,150	234	1,310	758	1,400	3,230	1,490	513	659
15	1,450	3,730	402	938	237	1,110	870	1,580	2,950	1,620	503	1,070
16	1,720	8,560	416	795	237	1,270	810	1,440	2,420	1,580	488	1,720
17	1,260	8,130	393	695	237	1,190	716	1,360	1,760	1,270	464	1,160
18	814	3,500	421	630	241	982	683	1,440	1,490	1,110	430	1,440
19	551	2,740	1,840	570	278	990	659	1,310	1,490	998	407	1,520
20	485	1,960	1,360	533	523	2,320	780	1,270	1,440	915	362	1,210
21	1,950	2,570	1,270	518	885	1,540	1,110	1,360	1,580	855	298	2,180
22	3,490	2,000	1,580	488	1,560	1,110	1,440	1,270	1,400	840	271	4,150
23	1,780	1,400	1,800	468	1,070	900	1,580	1,400	1,360	870	271	3,230
24	1,140	1,150	1,270	473	677	765	1,580	1,800	1,440	990	290	2,020
25	1,690	982	1,270	444	698	683	1,540	2,780	1,810	990	267	1,270
26	2,980	915	2,380	412	2,700	641	1,400	3,180	1,860	930	252	1,190
27	2,820	922	1,360	464	1,360	647	1,810	2,120	1,580	802	230	1,490
28	1,640	1,010	1,050	421	900	1,010	2,240	1,810	1,670	618	237	3,410
29	1,300	2,410	1,050	384	-------	1,360	1,860	2,070	1,400	1,000	227	2,060
30	1,060	2,800	945	366	-------	1,820	1,440	2,120	1,310	810	237	1,270
31	2,760	-------	885	371	-------	1,920	-------	1,670	-------	653	294	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	3,490	131	1,010	8.49	9.79	62,100
November	11,800	915	3,330	28.0	31.24	198,000
December	11,300	393	1,640	13.8	15.91	101,000
January	7,440	366	1,580	13.3	15.33	97,200
February	2,700	234	560	4.71	4.90	31,100
March	2,980	591	1,260	10.6	12.22	77,500
April	2,240	659	1,130	9.50	10.60	67,200
May	3,180	1,020	1,570	13.2	15.22	96,500
June	4,830	1,310	2,010	16.9	18.86	120,000
July	1,910	618	1,190	10.0	11.53	73,200
August	884	227	454	3.82	4.40	27,900
September	4,150	166	1,140	9.58	10.69	67,800
The year	11,800	131	1,410	11.8	160.69	1,020,000

SOUTH FORK OF STILLAGUAMISH RIVER NEAR ARLINGTON, WASH.

LOCATION.—Staff gage in NW¼ sec. 7, T. 31 N., R. 6 E., 1½ miles east of Arlington.

DRAINAGE AREA.—254 square miles.

RECORDS AVAILABLE.—December 1928 to September 1933.

DISCHARGE.—Maximum during year, 32,600 second-feet Nov. 13 (gage height, 13.90 feet); minimum, 159 second-feet Oct. 11; minimum gage height, 2.28 feet Sept. 13.

1928–33: Maximum, about 35,000 second-feet Feb. 26, 1932 (gage height, 14.40 feet); minimum, 108 second-feet Sept. 6, 1930 (gage height, 2.08 feet).

REMARKS.—Records good. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1	244	1,910	6,980	2,060	1,020	1,670	2,890	2,060	2,210	1,790	970	373
2	236	7,440	23,700	2,210	970	2,370	2,060	2,710	2,210	3 650	970	310
3	231	4,230	8,020	1,790	830	2,370	2,540	2,540	3,260	2.370	970	290
4	218	2,790	4,050	1,790	790	1,790	2,060	3,070	3,650	1.920	790	255
5	208	6,980	3,450	6,230	750	1,550	1,920	2,890	3,070	2.060	1,220	255
6	195	7,440	2,890	6,230	830	3,450	1,790	2,210	2,710	2.370	1,020	330
7	186	3,650	2,540	11,500	750	7,500	1,670	1,920	3,450	2.370	875	565
8	177	2,630	1,790	11,800	670	3,650	1,550	1,790	8,020	2.540	920	373
9	182	3,290	1,550	12,000	565	2,370	1,330	1,790	5,990	1.790	920	310
10	168	2,050	1,440	6,480	470	1,920	1,280	1,790	3,650	1.790	875	290
11	159	1,580	1,440	4,470	600	1,920	1,170	2,060	2,710	1.440	830	290
12	186	5,260	1,330	2,890	565	2,060	1,440	2,710	3,450	1.670	790	272
13	236	27,400	1,220	2,210	500	5,540	1,280	2,370	5,320	1.920	750	255
14	267	7,210	1,170	2,370	500	2,540	1,280	2,210	5,540	2.060	750	272
15	1,100	5,260	1,120	2,210	565	2,060	1,440	2,370	5,100	2.370	710	1,790
16	1,640	11,500	1,070	1,920	565	2,060	1,440	2,540	4,260	2.540	710	2,710
17	1,580	16,800	970	1,440	565	2,370	1,330	2,210	2,890	1.790	670	1,790
18	1,200	8,410	1,120	1,330	600	1,920	1,280	2,370	2,210	1.550	600	1,790
19	750	4,840	5,100	1,330	635	1,790	1,220	2,210	2,210	1.330	530	1,790
20	580	3,840	4,050	1,280	1,330	4,680	1,170	2,060	2,060	1.330	530	1,330
21	990	4,840	2,710	1,330	1,920	3,260	1,280	2,210	2,370	1.280	420	2,710
22	4,840	3,650	2,210	1,220	2,370	2,210	2,210	2,060	2,060	1.220	373	6,480
23	2,630	2,630	4,470	1,020	2,890	1,790	2,540	2,060	2,060	1.220	373	3,850
24	4,630	2,050	2,890	1,020	1,920	1,550	2,710	2,370	1,920	1.440	373	2,890
25	5,260	1,200	3,070	1,070	1,440	1,440	2,540	4,050	2,370	1.440	373	2,060
26	5,260	1,770	6,480	970	6,480	1,280	2,060	6,730	3,450	1.330	352	1,440
27	3,290	1,260	3,260	1,020	3,650	1,280	2,710	4,260	2,370	1.220	330	1,920
28	2,950	2,190	2,540	1,070	2,060	1,550	3,650	3,260	2,540	920	310	1,790
29	1,910	2,950	2,370	970	-------	1,790	3,070	3,650	2,060	875	310	2,890
30	1,640	4,840	2,210	970	-------	2,060	2,370	3,650	1,920	1.280	330	1,790
31	1,580	-------	2,060	920	-------	4,680	-------	2,890	-------	970	352	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	5,260	159	1,443	5.68	6.55	88,710
November	27,400	1,200	5,396	21.2	23.65	321,100
December	23,700	970	3,525	13.9	16.03	216,700
January	12,000	920	3,068	12.1	13.95	188,700
February	6,480	470	1,314	5.17	5.38	72,990
March	7,500	1,280	2,531	9.96	11.48	155,600
April	3,650	1,170	1,909	7.52	8.39	113,600
May	6,730	1,790	2,680	10.6	12.22	164,800
June	8,020	1,920	3,236	12.7	14.17	192,600
July	3,650	875	1,737	6.84	7.89	106,800
August	1,220	310	655	2.58	2.97	40,260
September	6,480	255	1,449	5.70	6.36	86,200
The year	27,400	159	2,415	9.51	129.04	1,748,000

NORTH FORK OF STILLAGUAMISH RIVER NEAR ARLINGTON, WASH.

LOCATION.—Water-stage recorder in SE¼NW¼ sec. 16, T. 32 N., R. 6 E., 6 miles above mouth and 6 miles northeast of Arlington.

DRAINAGE AREA.—282 square miles.

RECORDS AVAILABLE.—July 1928 to September 1933.

DISCHARGE.—Maximum during year, 24,600 second-feet Nov. 13 (gage height, 12.1 feet); minimum, 182 second-feet Oct. 11; minimum gage height, 1.80 feet Sept. 13.

1928–33: Maximum, 27,700 second-feet Feb. 26, 1932 (gage height, 12.7 feet); minimum, 156 second-feet Sept. 1, 1931 (gage height, 1.64 feet).

REMARKS.—Records excellent except those for Feb. 10–12, which were estimated because of ice. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	238	3,040	9,490	1,880	978	1,940	2,450	2,170	2,300	2,340	888	368
2	235	6,300	19,500	1,840	910	1,860	2,080	2,450	2,300	2,740	888	342
3	232	4,170	7,240	1,610	865	2,300	2,740	2,400	2,950	2,220	842	328
4	226	3,080	4,610	1,840	842	1,900	2,500	2,950	3,160	1,940	798	319
5	217	5,320	3,800	4,610	910	1,660	2,170	2,680	2,740	1,990	1,050	328
6	212	5,970	2,770	4,680	910	3,110	1,990	2,260	2,740	2,120	910	532
7	201	3,280	2,200	8,300	820	5,570	1,860	1,990	2,880	2,170	820	464
8	193	3,080	1,760	10,600	752	3,280	1,700	1,820	4,900	2,220	775	359
9	188	3,000	1,580	10,600	708	2,450	1,540	1,740	4,900	1,820	775	336
10	185	2,260	1,400	5,840		2,120	1,440	1,740	3,160	1,740	730	325
11	190	1,840	1,240	3,780	690	2,420	1,480	1,990	2,620	1,540	708	319
12	212	8,820	1,150	2,950		4,050	1,480	2,450	3,190	1,700	685	309
13	214	17,200	1,090	3,960	685	3,300	1,350	2,300	4,240	1,780	662	301
14	777	7,880	1,000	2,620	685	2,740	1,410	2,220	4,430	1,940	662	538
15	1,580	7,410	923	2,300	685	2,400	1,480	2,400	4,050	2,170	640	1,380
16	1,440	13,000	923	1,990	685	2,680	1,410	2,560	3,540	2,120	640	2,100
17	1,300	14,200	872	1,740	685	2,500	1,320	2,300	2,880	1,700	620	1,160
18	950	6,990	898	1,540	730	2,170	1,260	2,300	2,350	1,510	600	1,040
19	682	4,940	2,920	1,440	910	2,040	1,200	2,170	2,300	1,380	560	978
20	718	3,600	2,500	1,350	1,380	3,620	1,290	2,040	2,220	1,260	520	1,070
21	1,920	3,920	2,370	1,290	2,000	3,020	1,660	2,220	2,300	1,180	478	1,880
22	3,980	3,840	2,220	1,230	2,910	2,350	2,170	2,300	2,170	1,150	443	3,240
23	2,310	2,700	2,920	1,200	2,310	1,990	2,350	2,300	2,040	1,120	429	3,380
24	1,640	2,260	2,630	1,200	1,740	1,780	2,350	2,350	2,220	1,230	432	2,500
25	2,780	1,960	2,700	1,150	1,820	1,580	2,400	3,400	2,620	1,230	415	1,610
26	4,170	1,880	4,160	1,080	3,580	1,480	2,220	5,940	2,680	1,180	396	1,550
27	3,780	1,800	2,840	1,150	3,250	1,480	2,620	3,890	2,300	1,080	374	1,960
28	2,650	1,880	2,310	1,100	2,300	2,080	3,230	3,020	2,400	910	371	3,290
29	1,840	3,600	2,200	1,020	-------	2,560	2,950	3,160	2,080	1,260	368	4,770
30	1,500	5,610	1,880	1,020	-------	2,950	2,450	3,300	1,990	1,100	386	2,280
31	3,360	-------	1,920	1,000	-------	3,300	-------	2,740	-------	910	396	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	4,170	185	1,290	4.57	5.27	79,300
November	17,200	1,800	5,160	18.3	20.42	307,000
December	19,500	872	3,100	11.0	12.68	191,000
January	10,600	1,000	2,840	10.1	11.64	175,000
February	3,580	----------	1,290	4.57	4.76	71,600
March	5,570	1,480	2,540	9.01	10.39	156,000
April	3,230	1,200	1,950	6.91	7.71	116,000
May	5,940	1,740	2,570	9.11	10.50	158,000
June	4,900	1,990	2,890	10.2	11.38	172,000
July	2,740	910	1,640	5.82	6.71	101,000
August	1,050	368	621	2.20	2.54	38,200
September	4,770	301	1,310	4.65	5.19	78,000
The year	19,500	185	2,270	8.05	109.19	1,640,000

SKAGIT RIVER BASIN

SKAGIT RIVER NEAR NEWHALEM, WASH.

LOCATION.—Water-stage recorder in sec. 30, T. 38 N., R. 14 E., 1¼ miles above Ruby Creek and 11 miles northeast of Newhalem, Whatcom County.

DRAINAGE AREA.—765 square miles, of which 390 square miles is in Canada.

RECORDS AVAILABLE.—March 1930 to September 1933.

DISCHARGE.—Maximum during year, 17,300 second-feet June 16 (gage height, 13.1 feet); minimum, 594 second-feet Oct. 10 (gage height, 3.99 feet).

1930–33: Maximum, 25,700 second-feet Feb. 27, 1932 (gage height, 15.9 feet); minimum, 366 second-feet Dec. 5, 1929 (result of discharge measurement).

REMARKS.—Records excellent except those for Feb. 10, 14, 15, Apr. 2–7, which were estimated. No regulation or diversions above station. Results of several discharge measurements furnished by city of Seattle.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	800	1,700	5,110	1,160	926	940	1,380	6,070	7,270	8,360	3,520	1,600
2	835	2,020	6,870	1,120	905	905		5,490	6,870	8,800	3,520	1,460
3	856	1,910	6,870	1,080	884	884		4,930	7,700	8,360	3,450	1,420
4	800	1,750	5,680	1,080	870	856		4,590	9,700	7,920	3,520	1,420
5	772	1,910	4,930	1,240	856	842	2,000	4,260	10,200	7,700	3,950	1,420
6	744	2,080	4,100	1,420	835	870		4,100	10,200	8,140	3,660	1,700
7	691	1,860	3,520	1,560	807	975		3,800	9,240	8,580	3,520	1,600
8	658	1,750	3,040	1,700	772	975	1,910	3,660	8,580	9,240	3,520	1,420
9	620	1,650	2,780	2,180	751	940	1,800	3,520	7,480	8,800	3,450	1,420
10	600	1,560	2,580	2,300	786	940	1,700	3,520	6,470	8,140	3,380	1,460
11	606	1,460	2,400	2,020	758	940	1,700	3,800	5,870	7,270	3,240	1,420
12	600	2,860	2,300	1,860	737	1,010	1,600	4,590	6,270	7,070	3,170	1,280
13	632	9,700	2,180	1,700	717	1,040	1,560	5,300	9,470	7,480	3,310	1,240
14	1,220	7,070	2,080	1,700	715	1,040	1,600	5,680	13,800	8,360	3,310	1,510
15	1,700	5,110	1,960	1,600	710	1,040	1,750	5,490	16,700	9,020	3,240	1,600
16	1,510	4,420	1,860	1,510	710	1,080	1,800	4,930	16,700	9,700	3,240	1,600
17	1,200	6,080	1,750	1,420	704	1,120	1,750	4,760	14,300	8,800	3,240	1,510
18	1,040	8,140	1,700	1,330	698	1,120	1,700	4,420	11,600	7,700	3,240	1,460
19	940	7,700	1,650	1,280	684	1,160	1,700	4,260	9,930	6,870	3,100	1,330
20	991	7,070	1,650	1,240	684	1,240	1,800	4,100	9,470	6,470	2,780	1,510
21	1,720	5,870	1,560	1,200	698	1,280	2,130	4,260	9,240	5,490	2,350	1,600
22	2,080	4,760	1,460	1,160	717	1,240	2,710	4,590	9,020	5,300	2,180	1,800
23	1,700	4,100	1,460	1,120	710	1,240	3,380	4,590	8,800	5,300	2,240	1,650
24	1,460	3,660	1,380	1,120	678	1,200	3,950	4,590	8,360	5,490	2,240	1,460
25	1,420	3,380	1,330	1,080	710	1,160	4,590	4,930	9,020	5,680	2,020	1,330
26	1,890	3,310	1,280	1,040	1,040	1,160	5,110	7,070	9,240	5,490	1,910	1,330
27	2,460	3,450	1,280	1,040	1,080	1,160	6,070	7,070	8,800	5,110	1,860	1,700
28	2,240	3,660	1,240	1,010	975	1,160	7,270	6,470	9,020	4,420	1,910	3,190
29	2,020	4,260	1,200	975	------	1,200	7,480	7,270	9,020	4,420	1,960	3,800
30	1,800	5,300	1,160	975	------	1,280	6,870	9,020	8,800	4,100	1,860	2,900
31	1,700	------	1,120	940	------	1,380	------	8,580	------	3,660	1,700	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	2,460	600	1,240	1.62	1.87	76,200
November	9,700	1,460	3,980	5.20	5.80	237,000
December	6,870	1,120	2,560	3.35	3.86	157,000
January	2,300	940	1,360	1.78	2.05	83,600
February	1,080	678	790	1.03	1.07	43,900
March	1,380	842	1,080	1.41	1.63	66,400
April	7,480	1,380	2,840	3.71	4.14	169,000
May	9,020	3,520	5,150	6.73	7.76	317,000
June	16,700	5,870	9,570	12.5	13.95	569,000
July	9,700	3,660	7,010	9.16	10.56	431,000
August	3,950	1,700	2,890	3.78	4.36	178,000
September	3,800	1,240	1,670	2.18	2.43	99,400
The year	16,700	600	3,350	4.38	59.48	2,430,000

SKAGIT RIVER AT NEWHALEM, WASH.

LOCATION.—Water-stage recorder in SE¼ sec. 21, T. 37 N., R. 12 E., at city of Seattle power plant, a quarter of a mile above Newhalem Creek, at Newhalem. Zero of gage is 400 feet above mean sea level.

DRAINAGE AREA.—1,160 square miles, of which 390 miles is in Canada.

RECORDS AVAILABLE.—December 1908 to May 1914; October 1920 to September 1933.

DISCHARGE.—Maximum during year, 28,200 second-feet June 15 (gage height, 90.15 feet); minimum, 328 second-feet Jan. 24 (gage height, 79.31 feet), caused by regulation.

1908–14, 1920–33: Maximum, 60,000 second-feet Dec. 12, 1921 (gage height, 94.2 feet); minimum, less than 90 second-feet Jan. 27, Aug. 25, 1930, caused by regulation. Average, 18 years (1908–13, 1920–33), 4,370 second-feet.

REMARKS.—Records excellent. Discharge estimated Jan. 23. Water diverted 3 miles above station returned to river at the Seattle power plant, just above station. Entire low-water flow may be carried through plant. Flow partly controlled by storage of water at tunnel intake and above Diablo Dam. Results of several discharge measurements furnished by city of Seattle.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,950	2,240	7,950	1,690	2,100	3,220	1,590	8,900	11,000	12,900	5,950	3,180
2	1,520	2,270	11,600	1,770	2,100	3,050	1,340	7,800	10,500	14,300	6,290	2,810
3	1,970	3,180	10,400	2,090	1,970	2,160	1,820	7,060	11,800	13,200	5,860	2,020
4	1,950	2,850	8,220	2,080	1,941	1,470	1,730	6,350	14,600	12,300	6,200	1,860
5	1,970	2,630	6,580	2,230	1,640	969	1,700	6,160	15,400	12,400	7,480	2,900
6	1,980	3,340	5,900	2,250	2,040	1,400	1,690	5,860	15,400	12,700	7,200	3,340
7	1,940	2,810	4,960	2,260	2,040	1,480	1,810	5,620	14,000	13,500	6,120	2,880
8	1,880	2,860	4,360	1,850	1,890	1,430	1,640	4,860	12,800	14,600	6,260	2,720
9	1,370	2,580	3,720	3,760	1,810	1,350	1,240	2,180	11,300	13,800	6,340	2,620
10	1,890	2,260	3,750	3,090	1,870	1,430	1,690	3,340	9,480	13,100	6,370	2,430
11	1,930	2,200	3,660	3,110	1,790	1,400	1,690	6,900	8,240	11,400	6,180	2,920
12	1,940	8,580	3,540	2,740	1,520	1,370	1,670	7,300	9,020	11,800	6,280	2,820
13	1,950	19,800	3,110	2,670	1,840	1,880	1,650	7,720	15,300	12,700	4,210	2,660
14	2,020	11,800	2,220	2,560	1,780	1,880	1,700	8,280	23,100	15,200	6,360	2,780
15	2,160	7,680	2,540	2,280	1,760	1,680	2,030	8,000	26,500	15,200	6,270	3,360
16	1,620	7,700	2,490	2,100	1,750	1,640	1,980	7,360	25,700	16,600	6,320	3,310
17	1,930	12,000	2,550	1,990	1,730	1,680	2,010	7,270	21,500	14,600	6,300	2,800
18	1,920	13,800	2,200	1,950	1,720	1,610	2,000	6,640	17,500	12,300	6,570	3,060
19	1,910	12,300	2,580	1,960	1,460	1,320	2,040	6,250	15,000	11,200	6,020	2,580
20	2,140	10,300	2,420	1,980	2,070	1,810	2,030	6,090	14,300	10,400	5,030	2,350
21	2,230	8,170	2,260	1,980	2,160	1,850	2,240	6,190	14,400	8,920	3,940	2,320
22	2,030	6,780	2,310	1,650	2,160	1,690	2,420	6,480	14,000	8,420	3,900	2,950
23	1,590	4,960	2,290	2,000	2,260	1,660	2,540	6,590	12,900	9,100	4,210	2,770
24	1,880	4,150	2,290	1,980	2,240	1,590	2,640	6,580	11,400	9,940	4,600	2,230
25	2,150	4,840	1,890	2,010	2,190	2,070	4,900	7,290	14,200	10,600	4,020	2,390
26	2,340	4,970	1,900	2,080	2,090	1,500	7,440	11,000	15,100	9,700	3,400	2,460
27	2,570	5,250	2,250	2,110	2,300	1,720	8,880	10,900	13,900	8,620	2,950	3,280
28	2,480	5,520	2,280	1,950	2,240	1,720	10,800	9,820	13,900	7,320	3,940	6,880
29	2,060	6,520	2,200	1,580	-------	1,650	11,200	10,500	13,800	7,450	3,920	6,960
30	1,660	7,930	2,210	1,990	-------	1,700	10,300	13,700	13,500	6,860	3,820	4,940
31	2,090	-------	2,170	2,120	-------	1,680	-------	13,200	-------	6,180	3,430	------

Discharge, in second-feet, of Skagit River at Newhalem, Wash., 1932–33—Con.

Month	Observed				Gain or loss in storage of Diablo Reservoir (acre-feet)	Corrected for storage			
	Discharge in second-feet			Run-off in acre-feet		Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October	2,570	1,370	1,970	121,000	+13,600	135,000	2,200	1.90	2.19
November	19,800	2,200	6,410	381,000	+5,010	386,000	6,490	5.59	6.24
December	11,600	1,890	3,830	236,000	−3,480	233,000	3,790	3.27	3.77
January	3,760	1,580	2,190	135,000	−7,320	128,000	2,080	1.79	2.06
February	2,300	1,460	1,940	108,000	−49,700	58,300	1,050	.905	.94
March	3,220	969	1,710	105,000	−7,530	97,500	1,590	1.37	1.58
April	11,200	1,240	3,280	195,000	+57,000	252,000	4,240	3.66	4.08
May	13,700	2,180	7,479	461,000	+5,880	467,000	7,600	6.55	7.55
June	26,500	8,240	14,700	875,000	+1,140	876,000	14,700	12.7	14.17
July	16,600	6,180	11,500	707,000	+2,630	710,000	11,500	9.91	11.42
August	7,480	2,950	5,350	329,000	0	329,000	5,350	4.61	5.32
September	6,960	1,860	3,090	184,000	+1,310	185,000	3,110	2.68	2.99
The year	26,500	969	5,300	3,840,000	+18,500	3,860,000	5,330	4.59	62.31

SKAGIT RIVER NEAR CONCRETE, WASH.

LOCATION.—Water-stage recorder in sec. 16, T. 35 N., R. 8 E., at dalles 2 miles below Baker River and 2½ miles southwest of Concrete. Zero of gage is 163 feet above mean sea level.

DRAINAGE AREA.—2,700 square miles, of which 390 square miles is in Canada.

RECORDS AVAILABLE.—September 1924 to September 1933.

DISCHARGE.—Maximum during year, 116,000 second-feet Nov. 13 (gage height, 22.9 feet); minimum, 4,660 second-feet Feb. 19 (gage height, 1.8 feet).

1924–33: Maximum, 147,000 second-feet Feb. 27, 1932 (gage height, 27.30 feet); minimum, probably less than 2,160 second-feet during period Oct. 1–24, 1925, when recorder was not operating and when gates in Baker River Dam were closed for first time.

High-water marks at gage height 56.6 feet indicate a flood of 500,000 second-feet about 1815. Records of other floods prior to establishment of station are given in Water-Supply Paper 612.

REMARKS.—Records excellent. Water diverted for operation of power plants upstream is returned to river above station. At low stages flow partly regulated by storage and release of water at power plants on Baker River and on upper Skagit River.

Discharge, in second-feet, of Skagit River near Concrete, Wash., 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7,120	12,000	32,100	8,520	6,890	8,460	9,000	23,500	28,300	34 600	20,000	8,940
2	6,440	18,100	63,600	8,500	6,560	8,530	8,060	21,000	26,000	40,100	20,700	8,130
3	6,970	15,800	49,200	8,580	6,320	8,270	10,400	19,600	31.500	36,600	19,500	7,550
4	6,960	14,500	34,700	8,780	6,050	7,160	12.300	18,600	37.400	33,100	18,800	6,990
5	6,790	16,300	27,600	11,300	5.870	6,180	11,000	17,600	37.800	33,100	24,200	7,760
6	6,380	20,600	22,600	15,100	5.920	7,040	10,100	15,400	37,800	36,800	22,700	9,730
7	6,700	16,200	18,700	18,600	6,060	10,300	9,260	14,900	35,100	39,200	20,100	9,340
8	6,510	14,800	16,300	24,100	5,820	9,040	9,040	15.000	35,800	42.200	21,300	8,200
9	6,520	14,800	14.900	32.000	5,490	8,270	9,020	12,200	35,200	38 300	20,800	7,920
10	6,000	12,800	13,500	25,100	5,760	7,730	8,700	11,500	28,500	36,100	20.500	7,020
11	6,390	11,600	12,500	18,400	5,510	7,960	8,270	16,200	24,600	31.700	19,800	7,830
12	6,450	28,500	12,400	15,500	5,380	10,300	7,780	20,100	26,800	32.100	19,700	7,920
13	6,600	97,800	11,800	13,500	5,290	10,600	7,420	20,400	43,000	36.000	18,000	7,430
14	8,520	54,100	10,200	13,500	5,500	9,830	7,480	21,600	59,400	41.700	19,500	9,280
15	12,900	37,300	9,630	11,800	5.390	9,170	8,140	22,800	66,500	46,200	19,600	11,900
16	11,600	45,600	9,560	10.600	5,480	9,070	7,900	21,900	63,900	49,000	19,800	15,700
17	9,470	68,500	9,420	9,800	5,360	9,120	8,220	20,600	52.000	42.800	19,600	12,400
18	8,420	63,200	8,700	9,400	5,300	8,700	8,080	19,300	42,800	37,000	19,100	12,000
19	7,770	47,900	9,600	9,100	5,200	7,850	7,420	18,100	36,800	33,000	17,800	10,600
20	7,900	38,400	10,100	8,710	5,500	9,460	8,100	17,300	35,200	31.100	15,600	11,600
21	12,400	31,200	9,770	8,500	6,280	9,930	10,200	17,700	35,400	27,100	12,800	13,900
22	17,800	26,800	9,410	7,500	6,880	9,140	12,700	18,600	34,000	25 700	11,100	18,600
23	12,100	22,000	10,200	7,920	7,400	8.440	14,000	18,600	33,600	26 900	12,300	16,300
24	10,300	18,600	9,980	7,830	6,980	8,000	15,100	19,600	32,600	32.300	13,200	13,900
25	11,100	17,700	9.320	7,880	6,840	7,660	16,600	23,800	38,200	32.400	12,100	11,000
26	17,600	18,000	10,300	7,630	10,700	7,360	21,000	36,300	42,800	31.900	10,400	10,400
27	19,300	19,100	10,600	7,640	9,850	7,260	22,200	32,000	37,400	28 700	9,760	16,600
28	15,800	20,400	9,980	7,500	8,520	7,640	29,700	27,400	38,000	23 500	11,200	30,600
29	12,200	26,600	9,490	6,780	-------	8,180	30,100	29,300	37,000	23 300	11,500	35,800
30	10,100	31,200	9.070	7,100	-------	10,200	26,600	35,300	35,000	24 100	10,500	20,400
31	10,800	-------	8,900	7,020	-------	11,400	-------	34.200	-------	20 700	9,390	-------

Month	Observed				Gain or loss in storage in Diablo and Lake Shannon Reservoirs (acre-feet)	Corrected for storage			
	Discharge in second-feet			Run-off in acre-feet		Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October	19,300	6,000	9,750	600,000	+24,400	624,000	10,100	3.74	4.31
November	97,800	11,600	29,300	1,740,000	+42,800	1,780,000	29,900	11.1	12.38
December	63,600	8,700	16,300	1,000,000	−5,800	994,000	16,200	6.00	6.92
January	32,000	6,780	11,700	719,000	−18,200	701,000	11,400	4.22	4.86
February	10,700	5,200	6,360	353,000	−64,900	288,000	5,190	1.92	2.00
March	11,400	6,180	8,650	532,000	+16,600	549,000	8,930	3.31	3.82
April	30,100	7,420	12,500	744,000	+50,200	794,000	13,300	4.93	5.50
May	36,300	11,500	21,300	1 310,000	+6,470	1.320,000	21,500	7.96	9.18
June	66,500	24,600	38,300	2,280,000	+1,430	2,280,000	38,300	14.2	15.84
July	49,000	20,700	33,800	2,080,000	+11,100	2,090,000	34,000	12.6	14.53
August	24,200	9,390	16,800	1,030,000	+280	1,030,000	16,800	6.22	7.17
September	35,800	6,990	12,500	744,000	+1,800	746,000	12,500	4.63	5.17
The year	97,800	5,200	18,100	13,100,000	+66,200	13,200,000	18,200	6.74	91.68

RUBY CREEK NEAR NEWHALEM, WASH.

LOCATION.—Water-stage recorder in sec. 31, T. 38 N., R. 14 E., 1 mile above mouth and 10½ miles northeast of Newhalem, Whatcom County.
DRAINAGE AREA.—210 square miles.
RECORDS AVAILABLE.—June 1919 to March 1920; April 1930 to September 1933.
DISCHARGE.—Maximum during year, 6,510 second-feet June 14 (gage height, 14.09 feet); minimum, 100 second-feet Oct. 10 (gage height, 7.13 feet).
1919–20, 1930–33: Maximum, 6,730 second-feet Feb. 27, 1932 (gage height, 14.15 feet); minimum, not determined, occurred during period Dec. 24, 1930, to Jan. 1, 1931, when stage-discharge relation was affected by ice.
REMARKS.—Records good except those estimated Dec. 9–16, Feb. 6–16, Sept. 26, 27, which are fair. No diversions or regulation. Results of some discharge measurements furnished by city of Seattle.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	137	282	845	257	170	145	208	1,350	2,010	2,540	888	305
2	146	315	1,240	247	166	143	220	1,190	2,010	2,730	888	283
3	146	282	1,160	244	162	145	390	1,060	2,600	2,480	935	275
4	132	259	960	252	162	141	360	960	3,270	2,480	960	278
5	128	304	825	292	162	143	352	910	3,130	2,540	1,490	283
6	123	306	725	278		162	363	845	3,060	2,660	1,140	390
7	114	264	572	327		175	343	785	2,480	2,860	1,010	316
8	109	259	502	335	150	160	318	745	2,180	2,920	985	275
9	103	251		421		156	294	705	1,900	2,600	910	275
10	101	226		366		156	278	745	1,630	2,480	845	283
11	103	226	450	318		160	275	825	1,600	2,180	805	278
12	109	1,010		292		183	260	1,010	2,030	2,360	785	255
13	106	2,670		270		185	265	1,250	3,880	2,540	825	252
14	174	1,320		278	130	181	305	1,380	5,680	2,800	805	366
15	346	935	400	260		188	332	1,280	5,880	2,960	805	352
16	241	865		237		208	318	1,160	5,090	2,920	785	324
17	188	1,510	366	230	123	205	313	1,080	3,780	2,420	805	302
18	165	1,900	357	227	120	203	302	1,040	3,060	2,060	785	310
19	150	1,630	357	227	117	203	305	960	2,920	1,960	685	286
20	194	1,320	346	227	120	225	375	960	2,920	1,710	572	268
21	411	1,110	332	222	123	217	502	1,040	2,920	1,490	453	268
22	460	888	324	213	132	203	645	1,060	2,800	1,490	437	324
23	331	805	313	205	123	194	785	1,060	2,730	1,560	453	294
24	272	725	302	203	123	190	935	1,080	2,600	1,670	453	273
25	272	685	297	199	145	183	1,110	1,540	2,860	1,710	406	250
26	360	665	300	192	217	181	1,250	2,420	2,730	1,600	375	250
27	443	685	286	192	164	188	1,520	1,900	2,660	1,380	369	320
28	372	685	278	185	152	199	1,850	1,760	2,800	1,140	406	729
29	331	825	270	181	-------	203	1,800	2,240	2,660	1,140	421	722
30	293	888	260	177	-------	215	1,600	2,730	2,540	1,010	406	556
31	290	-------	260	177	-------	217	-------	2,360	-------	888	338	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	460	101	221	1.05	1.21	13,600
November	2,670	226	803	3.82	4.26	47,800
December	1,240	260	480	2.29	2.64	29,500
January	421	177	249	1.19	1.37	15,300
February	217	117	143	.681	.71	7,940
March	225	141	182	.867	1.00	11,200
April	1,850	208	606	2.89	3.22	36,100
May	2,730	705	1,270	6.05	6.98	78,100
June	5,880	1,600	2,950	14.0	15.62	176,000
July	2,990	888	2,110	10.0	11.53	130,000
August	1,490	338	717	3.41	3.93	44,100
September	729	250	331	1.58	1.76	19,700
The year	5,880	101	840	4.00	54.23	609,000

THUNDER CREEK NEAR NEWHALEM, WASH.

LOCATION.—Water-stage recorder in SE¼ sec. 23, T. 37 N., R. 13 E. (unsurveyed), half a mile above backwater from Diablo Reservoir and 8 miles east of Newhalem.

DRAINAGE AREA.—98 square miles.

RECORDS AVAILABLE.—October 1930 to September 1933.

DISCHARGE.—Maximum during year, 5,540 second-feet Nov. 13 (gage height, 9.27 feet); minimum, 87 second-feet Feb. 25 (gage height, 1.96 feet).

1930–33: Maximum, 8,780 second-feet Feb. 26, 1932 (gage height, 11.3 feet); minimum not determined, occurred during December 1930 or January 1931.

REMARKS.—Records good except those estimated, Oct. 1–9, Dec. 10–14, Feb. 9–14, Apr. 1–8, which are fair. No diversions or regulation. Results of many discharge measurements furnished by city of Seattle.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		285	671	148	113	102		692	870	1,500	1,190	712
2		344	1,370	144	111	100		632	845	1,750	1,220	632
3	350	294	1,050	139	108	97	190	559	1,100	1,420	1,220	671
4		259	800	141	108	95		524	1,360	1,330	1,220	755
5		321	652	175	106	95		490	1,330	1,390	1,850	734
6		335	542	180	104	101	220	457	1,270	1,530	1,530	927
7		283	457	217	100	115		425	1,080	1,710	1,500	614
8	260	272	385	285	95	109		410	995	1,880	1,500	632
9		257	358	425		106	192	391	845	1,640	1,390	692
10	217	230	336	358		105	186	394	734	1,560	1,330	778
11	272	217	315	296	90	108	182	425	692	1,420	1,360	652
12	272	1,550	294	252		120	173	524	872	1,600	1,390	577
13	302	3,570	273	226		122	169	577	1,850	1,830	1,530	577
14	595	1,100	251	215		120	173	632	2,920	2,300	1,560	1,080
15	724	692	230	198	93	120	192	595	3,030	2,700	1,670	920
16	373	778	226	182	92	125	192	559	2,500	2,810	1,830	778
17	264	2,060	215	171	92	131	190	524	1,790	2,200	2,060	652
18	215	1,960	208	167	91	131	186	507	1,360	1,880	1,830	632
19	190	1,270	208	158	91	132	190	474	1,270	1,960	1,560	490
20	470	945	198	155	91	139	204	457	1,300	1,600	1,220	559
21	995	755	192	151	91	142	252	490	1,360	1,390	995	524
22	671	614	186	144	92	137	321	507	1,330	1,390	1,020	507
23	410	542	180	139	91	136	410	524	1,270	1,600	1,190	425
24	318	490	173	136	88	131	490	524	1,270	1,920	1,130	370
25	457	441	169	132	93	130	577	745	1,530	1,960	945	327
26	778	474	177	130	131	128	632	1,160	1,500	1,880	920	355
27	755	577	169	128	112	126	755	895	1,360	1,600	995	490
28	441	542	160	124	105	130	945	800	1,420	1,270	1,130	1,530
29	344	671	155	120	-------	134	920	970	1,360	1,570	1,130	1,070
30	285	671	149	118	-------	141	800	1,270	1,330	1,270	983	671
31	275	-------	149	116	-------	149	-------	1,050	-------	1,130	800	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	995	190	400	4.08	4.70	24,600
November	3,570	217	760	7.76	8.66	45,200
December	1,370	149	352	3.59	4.14	21,600
January	425	116	183	1.87	2.16	11,300
February	131	88	97.8	.998	1.04	5,430
March	149	95	121	1.23	1.42	7,440
April	945	169	332	3.39	3.78	19,800
May	1,270	391	619	6.32	7.29	38,100
June	3,030	692	1,390	14.2	15.84	82,700
July	2,810	1,130	1,710	17.4	20.06	105,000
August	2,060	800	1,330	13.6	15.68	81,800
September	1,530	327	678	6.92	7.72	40,300
The year	3,570	88	668	6.82	92.49	483,000

CASCADE RIVER AT MARBLEMOUNT WASH.

LOCATION.—Water-stage recorder in SW¼ sec. 9, T. 35 N., R. 11 E., 2 miles east of Marblemount.

DRAINAGE AREA.—180 square miles.

RECORDS AVAILABLE.—September 1928 to September 1933.

DISCHARGE.—Maximum during year, 10,400 second-feet Nov. 13 (gage height, 9.02 feet); minimum, 194 second-feet Oct. 14 (gage height, 1.37 feet).

1928–33: Maximum, 12,900 second-feet Feb. 26, 1932 (gage height, 9.88 feet); minimum, 149 second-feet Nov. 15, 1929; minimum gage height, that of Oct. 14, 1932; stage and discharge may have been lower during January or February 1929, when stage-discharge relation was affected by ice.

REMARKS.—Records good except those estimated because of ice Feb. 8–15, which are fair. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	393	850	1,810	425	300	312	501	1,320	1,640	2,590	1,900	812
2	409	1,290	4,180	413	292	298	483	1,260	1,680	3,000	1,900	760
3	425	1,050	2,780	397	287	303	760	1,150	2,210	2,540	1,760	735
4	393	870	2,080	401	282	295	735	1,050	2,660	2,360	1,680	760
5	371	1,260	1,720	555	287	289	690	1,020	2,360	2,540	2,360	785
6	338	1,440	1,400	668	276	366	645	960	2,260	2,860	1,980	1,120
7	320	1,080	1,150	840	266	514	582	900	2,030	3,140	1,940	812
8	309	1,020	990	1,220		445	546	840	2,120	3,280	2,030	690
9	295	960	900	1,640		401	578	812	1,980	2,720	1,940	690
10	222	812	840	1,320		378	622	840	1,640	2,660	1,850	712
11	247	735	760	990	230	401	668	990	1,520	2,310	1,800	712
12	289	3,530	712	812		546	622	1,290	2,060	2,540	1,760	645
13	240	6,650	690	712		555	524	1,260	3,850	2,930	1,900	582
14	214	3,080	645	690		519	600	1,320	5,150	3,440	1,900	1,140
15	360	2,260	600	622		501	712	1,290	5,050	3,900	1,940	1,320
16	560	3,210	564	568	244	532	840	1,220	4,290	3,990	1,980	1,440
17	449	6,300	542	524	242	542	785	1,150	3,000	3,220	1,940	1,120
18	371	5,090	519	496	242	510	506	1,120	2,420	2,790	1,850	1,120
19	329	3,210	550	461	244	483	474	1,050	2,310	2,860	1,680	930
20	682	2,310	524	437	247	578	555	1,020	2,360	2,600	1,400	930
21	1,410	1,900	510	425	256	560	712	1,120	2,540	2,310	1,180	930
22	1,360	1,560	492	401	279	510	960	1,150	2,360	2,310	1,080	1,290
23	870	1,360	496	385	276	474	1,150	1,180	2,310	2,600	1,220	1,120
24	668	1,220	478	378	264	437	1,260	1,220	2,310	2,860	1,260	990
25	1,040	1,120	470	360	276	417	1,320	1,860	2,860	2,930	1,080	812
26	2,020	1,150	510	350	455	401	1,360	2,600	2,860	2,720	1,020	812
27	1,980	1,320	492	344	371	393	1,680	1,940	2,540	2,420	1,020	1,120
28	1,220	1,290	461	335	332	421	2,080	1,680	2,720	1,940	1,150	3,080
29	930	1,810	445	323	------	441	1,900	2,030	2,480	2,280	1,080	2,460
30	760	1,800	421	317	------	496	1,560	2,420	2,540	2,080	1,020	1,680
31	760	------	425	312	------	542	------	1,980	------	1,850	900	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	2,020	214	653	3.63	4.18	40,200
November	6,650	735	2,050	11.4	12.72	122,000
December	4,180	421	941	5.23	6.03	57,900
January	1,640	312	585	3.25	3.75	36,000
February	455	----------	270	1.50	1.56	15,000
March	578	289	447	2.48	2.86	27,500
April	2,080	474	880	4.89	5.46	52,400
May	2,600	812	1,320	7.33	8.45	81,200
June	5,150	1,520	2,600	14.4	16.07	155,000
July	3,990	1,850	2,730	15.2	17.52	168,000
August	2,360	900	1,600	8.89	10.25	98,400
September	3,030	582	1,070	5.94	6.63	63,700
The year	6,650	214	1,270	7.06	95.48	917,000

SAUK RIVER ABOVE WHITECHUCK RIVER, NEAR DARRINGTON, WASH.

LOCATION.—Water-stage recorder in NW¼ sec. 24, T. 31 N., R. 10 E., half a mile above Whitechuck River and 9½ miles southeast of Darrington.

DRAINAGE AREA.—152 square miles.

RECORDS AVAILABLE.—August to November 1910 (fragmentary gage heights); October 1917 to September 1922; August 1928 to September 1933.

DISCHARGE.—Maximum during year ending Sept. 30, 1932, 20,000 second-feet Feb. 26 (gage height, 13.0 feet); minimum, 190 second-feet Feb. 18 (gage height, 2.20 feet).

Maximum during year ending Sept. 30, 1933, 13,000 second-feet Nov. 13 (gage height, 10.3 feet); minimum, 150 second-feet Oct. 10; minimum gage height, 2.55 feet Feb. 18.

1917–22, 1928–33: Maximum, 23,000 second-feet Dec. 12, 1921 (gage height, 14.65 feet); minimum discharge, 146 second-feet Sept. 25, 1930; minimum gage height, 2.01 feet Oct. 2, 3, 1929. Average, 10 years (1917–22, 1928–33), 1,130 second-feet.

REMARKS.—Records good except those for Oct. 1 to Nov. 15, 1931, May 6–11, 1932, which were estimated. No diversions or regulation.

Discharge, in second-feet, 1931–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1931-32												
1			320	404	320	2,440	1,730	2,220	1,930	2,140	815	449
2			335	366	320	1,860	1,730	2,140	1,860	2,000	783	400
3			330	345	288	1,560	1,610	2,070	1,860	2,610	815	314
4			325	335	283	1,440	1,440	2,000	2,000	2,750	863	275
5	650	1,550	315	366	274	2,220	1,390	2,000	1,730	1,860	903	292
6			306	415	270	1,730	1,240		1,560	1,500	887	330
7			350	366	278	1,390	1,160		1,500	1,440	863	351
8			350	366	296	1,180	1,090		1,610	1,500	831	582
9			325	574	320	1,060	1,020	2,400	2,220	1,440	719	470
10			320	543	315	969	1,010		3,070	2,500	642	358
11	400	1,450	296	2,680	278	903	1,120		3,480	2,000	620	330
12			278	1,750	261	855	1,390	2,440	3,910	1,500	605	286
13			265	1,140	245	823	1,800	2,590	4,090	1,440	522	257
14			257	899	233	879	2,290	2,360	4,000	1,440	500	257
15			253	737	222	927	1,930	2,000	3,820	1,440	552	252
16		1,020	268	638	214	903	1,730	1,800	2,750	1,560	628	234
17		998	1,040	582	208	1,240	1,730	1,860	2,290	1,390	620	248
18		854	1,940	1,100	204	2,520	1,800	2,070	2,140	1,200	552	230
19		980	2,540	1,050	204	2,990	2,070	2,220	2,000	1,060	515	334
20	350	872	2,080	827	225	2,070	1,800	2,670	2,290	1,070	508	582
21		694	1,410	710	278	1,610	1,500	2,360	2,910	1,240	478	372
22		598	1,090	622	296	1,390	1,340	2,140	2,990	1,340	508	302
23		529	908	550	278	1,290	1,240	2,070	2,750	1,290	470	262
24		487	845	501	450	1,560	1,190	1,860	2,360	1,240	500	275
25		474	755	474	2,370	1,730	1,240	1,610	2,290	1,200	545	266
26		428	662	441	14,600	1,390	1,440	1,440	2,290	1,060	552	234
27	950	388	598	428	11,700	1,240	1,670	1,340	2,360	1,000	522	226
28		360	529	388	6,380	1,560	1,730	1,390	2,440	1,060	500	226
29		345	480	360	3,560	1,440	1,670	1,610	2,590	919	449	230
30		330	434	345	------	1,390	1,860	1,800	2,290	815	421	230
31		------	410	320	------	1,390	------	1,860	------	791	337	------

Discharge, in second-feet, of Sauk River above Whitechuck River, near Darrington, Wash., 1931–33—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1932–33												
1	223	1,220	3,040	491	305	382	804	1,530	2,210	2,850	1,700	470
2	223	1,930	6,470	463	278	352	708	1,480	2,140	3,150	1,760	435
3	230	1,500	3,950	421	270	370	905	1,370	2,700	2,850	1,640	394
4	216	1,240	2,630	564	262	325	923	1,310	3,220	2,630	1,530	376
5	206	2,350	2,010	1,370	266	310	860	1,290	3,150	2,730	2,210	376
6	198	2,360	1,640	1,370	250	504	836	1,210	3,080	3,030	1,700	684
7	189	1,500	1,320	2,040	242	828	796	1,160	2,850	3,370	1,640	533
8	177	1,340	1,130	2,630	234	644	716	1,090	3,380	3,620	1,700	400
9	152	1,240	1,030	3,080	226	533	644	1,040	3,300	3,070	1,640	376
10	152	1,060	941	2,080	262	477	588	1,050	2,560	2,850	1,580	382
11	155	919	852	1,480	238	588	596	1,180	2,280	2,430	1,530	370
12	165	3,870	796	1,170	222	1,090	556	1,580	2,700	2,700	1,480	330
13	180	10,100	732	1,000	218	950	519	1,550	4,200	3,030	1,480	315
14	660	4,460	676	1,000	206	796	564	1,700	5,160	3,540	1,420	598
15	1,560	3,300	620	860	203	732	628	1,640	5,340	4,070	1,420	1,100
16	1,290	4,630	596	764	200	756	604	1,530	4,800	4,120	1,480	1,270
17	895	5,890	548	700	196	732	580	1,480	3,700	3,490	1,420	1,040
18	680	4,290	519	636	196	652	548	1,480	3,080	3,030	1,300	1,050
19	538	3,380	612	588	200	612	540	1,370	2,850	2,700	1,150	941
20	522	2,700	676	540	226	836	620	1,370	2,780	2,490	968	1,000
21	1,400	2,490	660	526	286	788	820	1,480	2,920	2,220	804	1,340
22	1,730	2,140	652	484	435	676	1,080	1,480	2,850	2,220	740	2,490
23	1,190	1,760	716	456	370	588	1,280	1,530	2,700	2,420	764	1,940
24	944	1,530	652	442	278	526	1,370	1,640	2,700	2,780	804	1,480
25	960	1,370	668	394	305	484	1,480	2,110	3,150	2,850	748	1,140
26	1,440	1,300	968	382	868	456	1,480	3,460	3,380	2,630	684	1,080
27	1,560	1,370	796	370	620	449	1,820	2,700	3,220	2,280	644	1,530
28	1,200	1,420	644	340	463	533	2,140	2,350	3,300	1,820	724	3,760
29	1,000	2,280	580	325	-------	628	2,080	2,630	3,000	2,080	652	2,700
30	855	2,420	512	315	-------	793	1,760	3,000	2,850	1,940	564	1,700
31	960	-------	498	310	-------	977	-------	2,630	-------	1,700	512	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1931–32						
October	-------	-------	585	3.85	4.44	36,000
November	-------	330	1,060	6.97	7.78	63,100
December	2,540	253	665	4.38	5.05	40,900
January	2,680	320	665	4.38	5.05	40,900
February	14,600	204	1,560	10.3	11.11	89,700
March	2,990	823	1,480	9.74	11.23	91,000
April	2,290	1,010	1,530	10.1	11.27	91,000
May	-------	1,340	2,070	13.6	15.68	127,000
June	4,090	1,500	2,510	16.5	18.41	149,000
July	2,750	791	1,480	9.74	11.23	91,000
August	903	337	614	4.04	4.66	37,800
September	582	226	315	2.07	2.31	18,700
The year	14,600	204	1,210	7.96	107 22	876,000
1932–33						
October	1,730	152	705	4.64	5.35	43,300
November	10,100	919	2,580	17.0	18.97	154,000
December	6,470	498	1,230	8.09	9.33	75,600
January	3,080	310	890	5.86	6.76	54,700
February	868	196	297	1.95	2.08	16,500
March	1,090	310	625	4.11	4.74	38,400
April	2,140	519	962	6.33	7.06	57,200
May	3,460	1,040	1,690	11.1	12.80	104,000
June	5,340	2,140	3,180	20.9	23.32	189,000
July	4,120	1,700	2,800	18.4	21.21	172,000
August	2,210	512	1,240	8.16	9.41	76,200
September	3,760	315	1,050	6.91	7.71	62,500
The year	10,100	152	1,440	9.47	127 69	1,040,000

SAUK RIVER NEAR SAUK, WASH.

LOCATION.—Water-stage recorder in NW¼ sec. 19, T. 34 N., R. 10 E.; 5 miles above mouth and 5 miles southeast of Sauk.

DRAINAGE AREA.—714 square miles.

RECORDS AVAILABLE.—July 1928 to September 1933; August 1910 to August 1912, various gages between a point 1 mile below and a point 5 miles above. Discharge measurements made at point 5 miles above.

DISCHARGE.—Maximum during year, 42,500 second-feet Nov. 13 (gage height, 12.62 feet); minimum, 952 second-feet Oct. 11 (gage height, 2.86 feet).

1910–12, 1928–33: Maximum, 68,500 second-feet Feb. 26, 1932 (gage height, 15.83 feet); minimum, 572 second-feet Dec. 5, 1929 (gage height, 2.62 feet); discharge may have been less sometime Jan. 10–27, 1930, when stage-discharge relation was affected by ice.

REMARKS.—Records excellent. No diversions or regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,410	4,610	10,900	2,740	1,740	2,300	3,250	5,260	7,360	9,640	6,480	2,560
2	1,450	7,820	24,500	2,740	1,660	2,110	2,940	5,130	7,060	11,400	6,620	2,380
3	1,560	6,200	15,300	2,560	1,580	2,220	3,570	4,880	8,960	9,990	6,200	2,300
4	1,380	5,130	9,990	2,650	1,560	2,080	3,800	4,630	10,700	9,300	5,780	2,300
5	1,300	7,640	7,980	5,090	1,620	2,000	3,460	4,630	9,990	9,640	8,300	2,300
6	1,240	8,830	6,480	6,140	1,580	2,590	3,360	4,260	9,990	10,700	6,480	3,120
7	1,140	5,920	5,520	7,480	1,500	4,380	3,140	4,020	9,300	11,800	6,340	2,560
8	1,060	5,390	4,630	9,990	1,410	3,360	2,940	3,800	10,700	12,600	6,480	2,130
9	1,000	5,390	4,260	11,800	1,340	2,840	2,650	3,570	10,700	11,000	6,340	2,110
10	964	4,500	3,910	8,630	1,570	2,650	2,470	3,570	8,300	10,300	6,060	2,130
11	1,050	3,910	3,570	6,200	1,470	2,840	2,470	4,020	7,360	9,300	5,920	2,220
12	1,130	11,300	3,360	5,000	1,400	4,880	2,380	5,260	8,630	9,990	5,780	2,050
13	1,140	34,200	3,140	4,260	1,330	4,380	2,300	5,260	13,800	11,000	5,780	1,920
14	2,350	16,400	2,940	4,140	1,320	3,680	2,380	5,520	18,500	12,600	5,780	2,790
15	4,190	11,000	2,740	3,800	1,300	3,360	2,560	5,390	19,500	14,300	5,780	4,310
16	3,910	15,800	2,650	3,360	1,280	3,360	2,470	5,130	17,100	14,700	5,920	4,880
17	2,840	24,100	2,470	3,040	1,270	3,250	2,380	4,880	13,000	12,600	5,780	3,800
18	2,220	18,800	2,470	2,840	1,280	3,040	2,300	4,760	10,300	11,000	5,650	3,680
19	1,810	13,400	2,940	2,740	1,290	2,840	2,220	4,630	9,640	9,990	5,130	3,460
20	1,780	10,700	3,250	2,560	1,400	3,680	2,470	4,500	9,640	9,300	4,380	3,360
21	4,140	8,960	3,140	2,470	1,680	3,570	2,940	4,880	9,990	8,300	3,680	4,020
22	6,560	8,300	3,140	2,380	2,130	3,040	3,800	4,880	9,640	8,300	3,460	6,920
23	4,380	6,770	3,570	2,300	2,220	2,740	4,500	5,000	9,300	8,960	3,570	6,340
24	3,250	5,920	3,360	2,220	1,920	2,560	4,880	5,260	9,300	9,990	3,680	5,000
25	3,580	5,260	3,360	2,100	1,950	2,380	5,130	7,320	10,700	10,300	3,460	3,800
26	6,620	5,000	4,260	2,030	4,410	2,300	5,130	10,700	11,400	9,640	3,140	3,570
27	7,210	5,130	3,910	2,000	3,360	2,300	6,060	8,630	10,700	8,630	3,040	4,880
28	5,520	5,260	3,250	1,940	2,650	2,470	7,520	7,360	11,000	7,060	3,460	9,940
29	4,140	7,570	2,940	1,840	-------	2,840	7,210	8,300	10,300	7,670	3,360	8,900
30	3,460	8,630	2,740	1,800	-------	3,140	6,060	9,640	9,990	7,360	2,840	5,920
31	3,800	-------	2,650	1,760	-------	3,910	-------	8,630	-------	6,480	2,650	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	7,210	964	2,830	3.96	4.56	174,000
November	34,200	3,910	9,590	13.4	14.95	571,000
December	24,500	2,470	5,140	7.20	8.30	316,000
January	11,800	1,760	3,890	5.45	6.28	239,000
February	4,410	1,270	1,760	2.46	2.56	97,800
March	4,880	2,000	3,000	4.20	4.84	184,000
April	7,520	2,220	3,620	5.07	5.66	215,000
May	10,700	3,570	5,600	7.84	9.04	344,000
June	19,500	7,060	10,800	15.1	16.85	643,000
July	14,700	6,480	10,100	14.1	16.26	621,000
August	8,300	2,650	5,070	7.10	8.19	312,000
September	9,940	1,920	3,860	5.41	6.04	230,000
The year	34,200	964	5,450	7.63	103.53	3,950,000

NOOKSACK RIVER BASIN

SOUTH FORK OF NOOKSACK RIVER AT SAXON BRIDGE, WASH.

LOCATION.—Staff gage in SE¼ sec. 21, T. 37 N., R. 5 E., at Saxon Bridge, 1 mile below Skookum Creek and 2½ miles northeast of Wickersham, Whatcom County.

DRAINAGE AREA.—129 square miles.

RECORDS AVAILABLE.—August 1920 to September 1921; July to September 1933.

DISCHARGE.—Maximum during period July 1 to Sept. 30, 1933, 3,900 second-feet Sept. 28 (gage height, 6.40 feet); minimum, 180 second-feet Sept. 3, 4, 12.

1920–21, 1933: Maximum, 13,100 second-feet Feb. 11, 1921 (gage height, 9.0 feet, former datum); minimum, 121 second-feet Sept. 8, 1920.

REMARKS.—Records fair. Discharge estimated July 1–11, 14–17, 27, 30, Aug. 7, 8, 11, 14–16, 19, Sept. 13. No diversions or regulation.

Discharge, in second-feet, 1933

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1	1,250	555	206	11	1,400	448	193	21	735	280	1,590
2		530	193	12	1,190	391	180	22	755	264	2,900
3		555	180	13	1,260	391	200	23	735	280	1,770
4		481	180	14		386	610	24	818	264	915
5		555	220	15	1,550	380	915	25	818	249	1,050
6	1,400	481	1,190	16		375	915	26	755	234	1,590
7		465	370	17		370	582	27	642	234	2,050
8		450	234	18	980	370	481	28	530	234	3,670
9		434	206	19	915	333	370	29	1,340	234	2,680
10		505	206	20	850	296	785	30	935	234	1,590
								31	530	220	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
July	------	530	1,120	8.68	10.01	68,900
August	555	220	370	2.87	3.31	22,800
September	3,670	180	941	7.29	8.13	56,000
The period	------	------	------	------	------	148,000

UPPER COLUMBIA RIVER BASIN

MAIN STREAM

COLUMBIA RIVER AT KETTLE FALLS, WASH.

LOCATION.—Water-stage recorder in northwest corner lot 1, sec. 14, T. 36 N., R. 37 E., 3¼ miles above mouth of Colville River at Kettle Falls. Gage datum is mean sea level.

DRAINAGE AREA.—64,500 square miles.

RECORDS AVAILABLE.—April 1913 to September 1933.

DISCHARGE.—Maximum during year, 438,000 second-feet June 22 (gage height, 1,198.16 feet); minimum, not determined, occurred during period Feb. 11–19, when stage-discharge relation was affected by ice.

1913–33: Maximum, 468,000 second-feet June 14, 15, 1913 (gage height, 34.2 feet, from high-water mark referred to United States Weather Bureau gage at Marcus); minimum (estimated), 13,000 second-feet Jan. 18–21, 1930, when stage-discharge relation was affected by ice. Average, 20 years (1913–33), 99,700 second-feet.

Maximum during 1894 flood, 700,000 second-feet, based on information from several sources.

REMARKS.—Records excellent. Discharge estimated Dec. 12–20, Feb. 11–19, Aug. 7–14, Sept. 8–14. Numerous diversions above gage for irrigation are very small in proportion to flow past gage. No regulation except the effect of natural storage in numerous lakes above gage.

Discharge, in second-feet, of Columbia River at Kettle Falls, Wash., 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	52,100	40,100	47,200	39,400	32,800	25,700	33,400	107,000	259,000	416,000	216,000	115,000
2	50,700	40,800	47,900	38,800	30,600	25,700	33,400	112,000	265,000	410,000	209,000	114,000
3	49,300	41,400	49,300	38,800	29,500	26,200	35,800	119,000	275,000	408,000	200,000	111,000
4	48,600	40,100	50,000	37,600	29,500	25,200	36,400	124,000	287,000	404,000	191,000	109,000
5	47,900	40,800	51,400	37,600	29,000	24,700	37,600	129,000	301,000	398,000	186,000	106,000
6	47,900	41,400	52,100	37,600	29,500	25,200	40,100	131,000	312,000	389,000	180,000	104,000
7	47,200	40,800	52,100	37,000	29,000	25,200	40,800	133,000	320,000	383,000	177,000	99,200
8	47,200	41,400	52,100	37,600	27,300	25,200	41,400	136,000	326,000	374,000	175,000	97,800
9	47,200	40,800	50,700	37,600	26,200	25,200	42,700	138,000	332,000	368,000	172,000	96,400
10	45,300	40,100	46,600	38,200	24,700	24,700	42,700	141,000	337,000	366,000	169,000	94,900
11	45,300	40,100	44,000	37,000	23,800	25,200	43,400	143,000	339,000	362,000	167,000	93,500
12	44,000	39,400	40,800	37,000	23,400	25,700	43,400	147,000	339,000	358,000	164,000	92,100
13	44,000	39,400	40,800	37,000	23,400	25,700	44,000	151,000	341,000	354,000	161,000	90,600
14	43,400	40,800	40,100	37,000	23,400	25,200	44,000	157,000	349,000	347,000	159,000	89,200
15	43,400	40,800	40,100	37,000	23,400	25,700	44,000	162,000	366,000	339,000	156,000	87,800
16	42,700	41,400	40,100	37,000	23,400	26,200	44,600	166,000	387,000	332,000	156,000	86,200
17	42,700	42,000	40,100	37,000	23,400	26,200	45,300	170,000	404,000	328,000	155,000	85,300
18	42,700	42,000	40,100	34,000	23,400	26,200	46,600	172,000	416,000	322,000	153,000	85,300
19	42,700	42,700	40,100	34,000	23,800	26,800	47,200	176,000	423,000	316,000	151,000	83,600
20	42,000	42,700	40,800	34,600	23,800	27,300	47,900	179,000	429,000	307,000	151,000	81,900
21	41,400	42,700	41,400	33,400	24,200	27,300	50,700	183,000	433,000	301,000	149,000	81,000
22	42,000	44,000	41,400	32,200	24,200	27,800	53,500	187,000	435,000	291,000	148,000	79,400
23	42,000	43,400	41,400	32,800	24,700	27,800	57,800	193,000	435,000	279,000	146,000	77,600
24	42,000	43,400	41,400	32,200	24,700	28,400	63,000	196,000	433,000	267,000	142,000	76,800
25	41,400	44,000	40,800	32,200	24,200	28,400	70,100	200,000	431,000	257,000	138,000	75,100
26	41,400	44,000	40,100	28,400	24,700	29,000	76,800	209,000	429,000	248,000	133,000	73,400
27	41,400	44,000	40,100	31,200	25,200	28,400	82,800	223,000	427,000	243,000	129,000	71,700
28	41,400	44,000	40,100	32,200	25,200	29,500	91,200	226,000	425,000	239,000	126,000	70,900
29	41,400	44,000	39,400	32,200	-------	30,000	99,200	231,000	421,000	234,000	122,000	69,300
30	41,400	46,600	39,400	32,800	-------	31,200	105,000	241,000	419,000	231,000	119,000	68,500
31	40,800	-------	38,800	32,800	-------	32,200	-------	253,000	-------	224,000	116,000	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	52,100	40,800	44,300	0.687	0.79	2,720,000
November	46,600	39,400	42,000	.651	.73	2,500,000
December	52,100	38,800	43,600	.676	.78	2,680,000
January	39,400	28,400	35,300	.547	.63	2,170,000
February	32,800	23,400	25,700	.398	.41	1,430,000
March	32,200	24,700	26,900	.417	.48	1,650,000
April	105,000	33,400	52,800	.819	.91	3,140,000
May	253,000	107,000	169,000	2.62	3.02	10,400,000
June	435,000	259,000	370,000	5.74	6.40	22,000,000
July	416,000	224,000	326,000	5.05	5.82	20,000,000
August	216,000	116,000	159,000	2.47	2.85	9,780,000
September	115,000	68,500	88,900	1.38	1.54	5,290,000
The year	435,000	23,400	116,000	1.80	24.36	83,800,000

COLUMBIA RIVER AT GRAND COULEE, NEAR NESPELEM, WASH.

LOCATION.—Water-stage recorder in lot 6, sec. 36, T. 29 N., R. 30 E., 4,000 feet below Grant County Ferry, at Grand Coulee, 15 miles south of Nespelem. Gage datum is mean sea level.

DRAINAGE AREA.—74,100 square miles.

RECORDS AVAILABLE.—June to December 1923; June 1928 to September 1933; monthly discharge, April 1913 to June 1923; January 1924 to May 1928.

EXTREMES.—Maximum during year, 469,000 second-feet June 23 (gage height, 979.88 feet); minimum, not determined, occurred during period Feb. 9–15, when stage-discharge relation was affected by ice.

1913–33: Maximum, 492,000 second-feet June 15, 1913 (determined from records at other gaging stations); minimum (estimated), less than 16,000 second-feet in January 1930. Average, 20 years (1913–33), 108,000 second-feet.

Maximum during flood of June 1894 (estimated), 725,000 second-feet.

REMARKS.—Records excellent. Stage-discharge relation affected by ice Feb. 9–20. Diversions for irrigation above station are small in proportion to flow past gage. Some diurnal fluctuation caused by operation of power plants on Spokane River.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	55,600	44,000	52,300	44,600	37,600	30,100	48,400	141,000	280,000	432,000	229,000	121,000
2	54,000	44,000	52,800	44,000	36,600	31,800	49,000	147,000	288,000	428,000	220,000	119,000
3	52,800	44,000	52,800	43,000	35,100	31,800	50,600	149,000	293,000	425,000	211,000	119,000
4	52,300	43,500	55,600	41,800	34,100	33,600	52,300	154,000	302,000	422,000	203,000	115,000
5	51,800	43,000	58,900	41,300	33,600	34,100	52,300	160,000	316,000	418,000	195,000	113,000
6	51,800	43,500	61,600	43,000	33,200	32,700	54,000	162,000	330,000	408,000	189,000	111,000
7	51,800	43,000	61,600	44,600	33,600	31,400	58,400	164,000	340,000	397,000	184,000	108,000
8	51,200	43,500	61,600	44,600	33,200	33,600	59,400	166,000	347,000	386,000	180,000	105,000
9	50,600	43,500	61,100	49,000		36,600	58,900	167,000	352,000	379,000	177,000	103,000
10	49,000	43,500	58,900	53,400		34,100	58,900	169,000	359,000	373,000	173,000	101,000
11	49,000	43,500	54,500	51,200	28,000	33,200	59,400	170,000	362,000	371,000	171,000	97,800
12	48,400	43,500	52,800	47,400		33,600	59,400	172,000	365,000	366,000	169,000	96,200
13	47,900	43,000	49,000	46,800		38,100	58,900	175,000	368,000	362,000	168,000	94,800
14	46,800	43,000	47,900	46,200		39,600	58,400	178,000	372,000	357,000	165,000	93,200
15	46,200	52,300	47,900	46,800	27,700	38,600	58,400	184,000	388,000	350,000	164,000	91,100
16	45,700	50,100	47,400	46,800	28,500	37,600	59,400	189,000	404,000	341,000	163,000	90,400
17	44,600	51,200	47,900	45,200	29,400	38,600	60,600	192,000	419,000	334,000	162,000	88,300
18	45,200	51,800	47,400	44,000	29,400	40,200	61,100	196,000	435,000	327,000	160,000	86,900
19	45,200	51,800	46,800	40,800	29,400	39,100	62,200	200,000	445,000	323,000	159,000	86,900
20	45,200	54,000	47,900	40,800	29,700	38,600	62,800	203,000	453,000	317,000	158,000	84,800
21	44,600	52,800	52,800	41,300	30,100	38,600	64,400	206,000	462,000	310,000	157,000	83,400
22	44,000	53,400	50,100	39,600	30,100	39,600	66,800	209,000	464,000	302,000	156,000	82,000
23	44,600	53,400	49,600	38,100	31,400	40,800	69,800	213,000	467,000	293,000	154,000	80,600
24	44,500	53,400	49,000	37,600	31,800	41,300	76,000	218,000	464,000	282,000	152,000	78,600
25	44,500	52,800	48,400	37,100	31,800	40,200	82,700	223,000	460,000	270,000	148,000	77,300
26	44,400	52,300	45,700	37,100	28,900	40,200	91,100	228,000	455,000	260,000	144,000	76,600
27	44,300	52,800	46,800	34,600	28,900	41,300	101,000	241,000	452,000	253,000	140,000	74,700
28	44,300	53,400	45,200	36,100	29,300	41,300	111,000	251,000	445,000	247,000	135,000	72,800
29	44,200	51,200	45,200	37,600		43,000	123,000	254,000	441,000	244,000	131,000	71,600
30	44,100	50,100	45,200	38,100		44,000	131,000	261,000	436,000	241,000	127,000	71,000
31	44,100		44,000	38,600		46,200		272,000		235,000	124,000	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	55,600	44,000	47,500	0.641	0.74	2,920,000
November	54,000	43,000	48,200	.650	.73	2,870,000
December	61,600	44,000	51,200	.691	.80	3,150,000
January	53,400	34,600	42,600	.575	.66	2,620,000
February	37,600		30,800	.416	.43	1,710,000
March	46,200	30,100	37,500	.506	.58	2,310,000
April	131,000	48,400	68,700	.927	1.03	4,090,000
May	272,000	141,000	194,000	2.62	3.02	11,900,000
June	467,000	280,000	392,000	5.29	5.90	23,300,000
July	432,000	235,000	337,000	4.55	5.25	20,700,000
August	229,000	124,000	167,000	2.25	2.59	10,300,000
September	121,000	71,000	93,100	1.26	1.41	5,540,000
The year	467,000		126,000	1.70	23.14	91,400,000

COLUMBIA RIVER AT TRINIDAD, WASH.

LOCATION.—Water-stage recorder in SE¼ sec. 13, T. 20 N., R. 22 E., half a mile southwest of Trinidad and 12 miles below Rock Island Dam. Zero of gage is 500 feet above mean sea level.

DRAINAGE AREA.—89,700 square miles.

RECORDS AVAILABLE.—October 1930 to September 1933. January to December 1910, May 1913 to December 1916 at Wenatchee; January 1917 to September 1930 at Vernita.

DISCHARGE.—Maximum during year, 508,000 second-feet June 23 (gage height, 52.5 feet); minimum, 30,500 second-feet Feb. 14 (gage height, 18.37 feet).

1913–33: Maximum, 528,000 second-feet June 15, 16, 1913 (gage height, 45.7 feet, on original Weather Bureau gage at Wenatchee); minimum, 4,120 second-feet Feb. 10, 1932 (gage height, 11.40 feet), caused by regulation. Average, 20 years (1913–33), 119,000 second-feet.

Maximum known, about 740,000 second-feet June 7, 1894.

REMARKS.—Records excellent. Diversions for irrigation above gage are small in proportion to flow past gage. Some diurnal fluctuation at low stage as result of operation of Rock Island power plant. Some regulation due to natural storage in numerous lakes.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	59,400	46,500	58,100	50,300	42,200	33,600	47,200	147,000	304,000	476,000	240,000	124,000
2	58,100	48,400	59,400	49,000	40,400	33,600	50,300	154,000	314,000	471,000	234,000	122,000
3	56,200	49,000	63,600	49,000	39,800	35,800	52,200	158,000	320,000	466,000	224,000	121,000
4	54,800	47,200	63,600	47,200	38,000	36,300	52,900	159,000	330,000	464,000	216,000	120,000
5	54,200	46,500	65,000	46,500	37,500	36,900	54,200	164,000	346,000	457,000	210,000	117,000
6	54,200	45,300	69,200	46,500	36,900	38,000	55,500	167,000	363,000	449,000	204,000	115,000
7	53,600	46,500	71,300	47,200	36,900	35,800	56,800	171,000	376,000	440,000	197,000	113,000
8	53,600	46,500	67,800	49,000	36,900	35,800	60,800	171,000	383,000	428,000	192,000	110,000
9	52,900	47,200	64,300	50,300	35,200	37,500	62,900	172,000	388,000	418,000	189,000	107,000
10	52,900	43,400	66,400	54,200	34,700	40,400	62,900	174,000	390,000	406,000	183,000	106,000
11	51,600	43,400	63,600	58,800	34,100	38,600	62,200	175,000	392,000	401,000	179,000	103,000
12	51,000	45,300	60,100	56,800	32,000	36,900	62,900	178,000	392,000	397,000	176,000	101,000
13	51,000	47,800	58,100	52,900	32,600	38,000	62,900	180,000	397,000	392,000	174,000	98,800
14	49,700	56,200	56,800	50,300	32,000	41,000	62,200	184,000	409,000	388,000	171,000	97,000
15	49,000	52,900	56,800	50,300	31,500	42,800	62,200	189,000	428,000	381,000	169,000	96,100
16	49,000	59,400	56,200	50,300	32,600	42,800	62,200	197,000	449,000	374,000	169,000	94,300
17	48,400	60,800	56,200	50,300	33,600	42,200	63,600	201,000	471,000	365,000	166,000	93,400
18	47,800	65,700	55,500	48,400	35,200	42,200	64,300	204,000	486,000	358,000	165,000	91,600
19	47,800	65,700	56,200	47,200	34,700	44,100	65,000	207,000	494,000	350,000	164,000	89,800
20	47,800	65,000	54,200	44,700	34,100	43,400	65,700	210,000	501,000	344,000	161,000	89,800
21	47,800	66,400	54,200	43,400	34,700	42,800	66,400	214,000	504,000	334,000	160,000	88,000
22	47,800	64,300	57,400	44,700	34,700	43,400	68,500	218,000	506,000	326,000	159,000	86,300
23	47,200	62,200	56,800	44,000	35,200	43,400	72,000	222,000	508,000	316,000	158,000	84,600
24	47,200	61,500	56,200	43,300	35,200	44,700	76,600	226,000	504,000	305,000	155,000	83,800
25	47,800	60,800	55,500	42,600	36,300	44,700	83,800	232,000	498,000	295,000	152,000	83,000
26	48,400	59,400	54,800	41,900	35,800	44,100	92,500	240,000	496,000	284,000	149,000	81,400
27	47,800	58,800	53,600	41,200	34,700	44,100	103,000	250,000	494,000	273,000	145,000	80,600
28	48,400	58,800	52,900	40,500	33,100	45,300	115,000	264,000	491,000	266,000	140,000	79,000
29	47,800	59,400	52,200	39,800	-------	43,400	127,000	275,000	486,000	259,000	136,000	78,200
30	47,200	58,100	51,600	41,000	-------	44,700	139,000	282,000	481,000	256,000	132,000	76,600
31	47,200	-------	51,600	41,000	-------	45,900	-------	293,000	-------	250,000	128,000	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	59,400	47,200	50,600	0.564	0.65	3,110,000
November	66,400	43,400	54,600	.609	.68	3,250,000
December	71,300	51,600	58,700	.654	.75	3,610,000
January	58,800	39,800	47,200	.526	.61	2,900,000
February	42,200	31,500	35,400	.395	.41	1,970,000
March	45,900	33,600	40,700	.454	.52	2,500,000
April	139,000	47,200	71,100	.793	.88	4,230,000
May	293,000	147,000	203,000	2.26	2.61	12,500,000
June	508,000	304,000	430,000	4.79	5.34	25,600,000
July	476,000	250,000	367,000	4.09	4.72	22,600,000
August	240,000	128,000	174,000	1.94	2.24	10,700,000
September	124,000	76,600	97,700	1.09	1.22	5,810,000
The year	508,000	31,500	136,000	1.52	20.63	98,800,000

KOOTENAI RIVER BASIN

KOOTENAI RIVER NEAR REXFORD, MONT.

(International gaging station)

LOCATION.—Staff gage in sec. 21, T. 36 N., R. 28 W., at highway bridge 300 feet below Sullivan Creek and 1.1 miles southwest of Rexford.

DRAINAGE AREA.—8,420 square miles.

RECORDS AVAILABLE.—March 1929 to September 1933.

DISCHARGE.—Maximum during year, 87,300 second-feet June 18 (gage height, 15.70 feet); minimum (estimated), 1,650 second-feet Feb. 10; minimum gage height, 1.20 feet Feb. 7.

1929–33: Maximum, that of June 18, 1933; minimum, 1,280 second-feet (estimated) Jan. 17, 18, 1932; minimum gage height, 0.35 foot Dec. 31, 1930.

REMARKS.—Records good except those estimated because of ice, Dec. 8 to Jan. 9, Jan. 19–24, Feb. 3–26, and those estimated July 24–31, which are fair. No diversions or regulation. Results of several discharge measurements furnished by Dominon Water Power and Hydrometric Bureau, Department of Interior, Canada. This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,480	4,760	5,760	2,150	2,790	2,650	3,240	16,600	44,700	40,000	14,500	11,300
2	4,380	4,660	5,760	2,500	2,520	2,650	3,240	16,100	42,300	40,000	13,000	11,600
3	4,480	4,570	6,640	2,900	2,400	2,720	3,650	16,600	40,000	39,300	12,000	10,700
4	4,380	4,570	6,190	3,100	2,300	2,790	4,100	17,000	43,100	40,000	12,000	9,470
5	4,380	4,480	6,190	3,400	2,200	2,650	4,010	17,400	49,700	37,800	12,300	8,370
6	4,380	4,570	5,760	3,600	2,100	2,650	4,010	17,400	54,200	35,700	13,000	8,370
7	4,380	4,570	4,010	3,500	2,000	2,790	4,100	17,400	51,400	33,700	13,000	8,110
8	4,280	4,480	2,900	3,500	1,850	2,790	4,010	17,400	45,500	32,400	12,600	7,850
9	4,280	4,280	2,000	3,700	1,700	2,720	3,920	16,600	42,300	33,700	12,300	7,600
10	4,190	4,190	1,850	3,830	1,650	2,580	3,650	15,300	38,600	33,700	11,600	7,600
11	4,100	4,100	1,800	3,480	1,700	2,720	3,560	14,500	34,400	34,400	11,600	7,600
12	4,100	4,010	1,750	3,400	1,800	2,580	3,560	14,500	31,100	33,700	11,300	7,600
13	4,010	4,280	1,700	3,240	1,900	2,720	3,480	14,900	31,700	31,700	11,300	7,600
14	4,190	4,570	1,700	3,320	2,200	3,010	3,400	17,000	40,800	30,400	11,000	7,600
15	4,570	4,480	1,700	3,320	2,400	2,790	3,650	21,800	56,900	29,200	10,700	7,350
16	5,050	4,190	1,700	2,940	2,600	2,790	3,920	25,000	73,300	28,000	10,700	7,350
17	5,550	4,280	1,800	2,860	2,750	2,790	4,010	25,000	82,500	27,400	10,400	7,350
18	5,350	4,760	1,900	2,580	2,750	2,720	4,100	24,500	87,300	26,800	10,100	7,350
19	5,150	5,350	2,000	2,500	2,750	2,790	4,010	23,400	83,700	25,600	9,760	7,350
20	4,860	5,550	2,200	2,550	2,750	2,790	4,100	21,800	67,900	23,900	9,760	7,110
21	4,760	5,550	2,400	2,800	2,700	2,790	4,190	20,800	55,100	21,800	9,760	7,110
22	4,660	5,550	2,600	2,800	2,700	2,940	5,150	20,800	53,200	20,300	10,100	6,870
23	5,150	4,950	2,600	2,950	2,700	2,860	6,410	23,900	53,200	17,900	9,470	7,110
24	5,350	4,760	2,500	2,950	2,650	2,790	7,850	25,600	51,400	16,700	8,910	7,110
25	5,150	4,570	2,400	2,940	2,600	2,650	9,470	26,200	48,000	16,300	10,400	7,110
26	4,950	4,480	2,300	2,940	2,600	2,650	12,000	33,000	44,700	17,000	9,190	6,870
27	4,860	4,380	2,250	2,940	2,580	2,720	15,300	36,400	43,900	17,400	9,760	6,640
28	5,050	4,380	2,200	2,940	2,720	2,790	19,300	36,400	42,300	17,000	9,470	6,640
29	5,050	4,570	2,200	2,940	-------	3,010	20,800	35,000	40,800	16,200	8,910	6,640
30	4,950	4,950	2,100	2,860	-------	3,160	18,800	36,400	40,000	15,200	8,910	7,110
31	4,860	-------	2,100	2,860	-------	3,160	-------	42,300	-------	14,800	9,760	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	5,550	4,010	4,690	0.557	0.64	288,000
November	5,550	4,010	4,630	.550	.61	276,000
December	6,640	1,700	2,930	.348	.40	180,000
January	3,830	2,150	3,040	.361	.42	187,000
February	2,790	1,650	2,370	.281	.29	132,000
March	3,160	2,580	2,780	.330	.38	171,000
April	20,800	3,240	6,500	.772	.86	387,000
May	42,300	14,500	22,800	2.71	3.12	1,400,000
June	87,300	31,100	50,500	6.00	6.69	3,000,000
July	40,000	14,800	27,400	3.25	3.75	1,680,000
August	14,500	8,910	10,900	1.29	1.49	670,000
September	11,600	6,640	7,810	.928	1.04	465,000
The year	87,300	1,650	12,200	1.45	19.69	8,840,000

KOOTENAI RIVER AT LIBBY, MONT.

LOCATION.—Water-stage recorder in NW¼ sec. 3, T. 30 N., R. 31 W., 1,200 feet below highway bridge at Libby.

DRAINAGE AREA.—11,000 square miles.

RECORDS AVAILABLE.—October 1910 to August 1933 (discontinued).

DISCHARGE.—Maximum during year, 81,400 second-feet June 18 (gage height, 16.95 feet); minimum, 1,320 second-feet Feb. 9 (gage height, 1.25 feet, ice-affected).

1910–33: Maximum, 130,000 second-feet June 21, 1916 (gage height, 19.17 feet); minimum, 895 second-feet Jan. 11, 1930 (discharge measurement; ice present).

REMARKS.—Records good except those for Oct. 1 to Feb. 28, which are fair. Chain gage 1,200 feet upstream used Oct. 21 to Feb. 20. Discharge estimated for Oct. 1–18 and for periods of ice effect, Dec. 22, 23, Jan. 17–19, 26–30, Feb. 7–24.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
1	4,740	4,870	a 5,600	a 3,500	a 3,060	2,980	4,350	24,600	53,200	41,800	14,800
2	4,740	a 4,740	6,320	3,080	3,080	3,000	4,350	22,700	50,600	41,200	12,700
3	4,610	4,610	7,880	a 3,340	a 3,060	3,000	4,740	22,700	47,400	40,600	12,700
4	4,610	a 4,610	8,110	3,600	3,030	3,030	5,650	23,200	48,600	41,800	12,400
5	4,610	4,610	7,550	a 3,660	a 2,780	3,000	5,920	23,700	54,500	40,600	12,400
6	4,480	a 4,610	a 6,600	3,720	a 2,530	2,930	5,920	23,200	59,000	38,300	12,700
7	4,480	a 4,610	5,650	3,980	2,280	3,030	5,920	22,700	58,400	36,000	13,000
8	4,480	4,610	a 4,260	a 3,980	a 1,800	3,180	5,780	22,700	54,500	33,800	13,400
9	4,350	a 4,480	2,860	3,980	1,320	3,280	5,520	21,800	54,500	33,800	12,400
10	4,350	4,350	1,370	a 4,040	a 1,340	3,080	5,000	20,590	51,200	34,300	12,000
11	4,220	a 4,280	a 1,850	4,100	1,370	2,840	4,740	18,700	43,000	34,900	11,700
12	4,350	4,220	a 2,330	3,850	a 1,370	2,810	4,740	17,900	38,300	34,900	11,700
13	4,350	a 4,440	2,810	a 3,780	1,370	3,050	4,480	18,700	37,100	32,700	11,400
14	4,350	a 4,660	a 2,660	3,720	a 1,440	3,320	4,350	21,400	43,000	31,600	11,400
15	4,480	4,870	2,500	a 3,460	1,510	3,480	4,480	26,600	57,100	30,100	11,100
16	4,610	a 4,740	2,330	3,200	1,880	3,350	5,000	30,600	69,200	28,600	10,800
17	4,740	4,610	a 2,420	a 3,200	a 2,240	3,480	5,650	31,700	77,300	27,600	10,800
18	5,130	a 5,460	a 2,510	3,200	2,600	3,480	5,650	31,100	80,000	26,600	10,500
19	5,390	6,320	2,600	a 2,880	a 2,720	3,350	5,520	29,600	80,000	26,600	10,200
20	5,520	6,600	3,850	2,550	2,840	3,350	5,520	27,600	73,200	25,100	9,850
21	4,740	a 6,320	a 4,420	2,860	2,880	3,350	5,920	26,100	60,300	23,200	9,850
22	a 4,610	a 6,050	5,000	a 2,940	2,930	3,300	6,730	26,600	55,800	20,900	9,850
23	4,480	5,780	4,480	3,030	2,960	3,280	8,680	28,600	55,100	18,700	9,850
24	a 4,680	a 5,320	4,480	a 3,020	3,100	3,250	11,400	30,600	55,100	17,400	9,260
25	4,870	4,870	a 4,350	a 3,010	3,150	3,120	14,100	32,200	51,900	17,000	9,260
26	a 4,870	4,740	4,220	3,000	3,100	3,080	17,400	34,900	47,400	17,400	10,500
27	4,870	a 4,610	a 4,220	a 2,960	3,050	3,030	22,000	41,200	46,100	17,800	a 10,100
28	a 5,000	4,480	4,220	2,930	2,960	3,250	27,600	44,200	44,900	17,800	a 9,670
29	5,130	a 4,680	a 4,280	a 2,960	-------	3,600	31,100	42,400	43,000	17,400	9,550
30	a 5,050	4,870	4,350	a 3,000	-------	3,980	29,100	43,000	42,400	16,600	9,550
31	a 4,960	-------	a 3,930	3,030	-------	4,220	-------	48,000	-------	15,900	9,850

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	5,520	4,220	4,700	0.427	0.49	289,000
November	6,600	4,220	4,930	.448	.50	293,000
December	8,110	1,370	4,190	.381	.44	258,000
January	4,110	2,550	3,340	.304	.35	205,000
February	3,150	1,320	2,420	.220	.23	134,000
March	4,220	2,810	3,240	.295	.34	199,000
April	31,100	4,350	9,240	.840	.94	550,000
May	48,000	17,900	28,400	2.58	2.97	1,750,000
June	80,000	37,100	54,400	4.95	5.52	3,240,000
July	41,800	15,900	28,400	2.58	2.97	1,750,000
August	14,800	9,260	11,100	1.01	1.16	682,000
The period						9,350,000

a Interpolated.

KOOTENAI RIVER AT LEONIA, IDAHO

LOCATION.—Water-stage recorder in SW¼ sec. 17, T. 33 N., R. 34 W., at Leonia, 450 feet east of Montana-Idaho State line and half a mile above mouth of Boulder Creek. Zero of gage is 1,700.00 feet above mean sea level, United States Coast and Geodetic Survey datum.

DRAINAGE AREA.—11,740 square miles.

RECORDS AVAILABLE.—March 1928 to September 1933.

DISCHARGE.—Maximum during year, 95,500 second-feet June 18 (water surface elevation 1,818.11 feet); minimum (estimated), 1,700 second-feet Feb. 11 (water-surface elevation 1,798.23 feet).

1928–33: Maximum discharge and water surface elevation, those of June 18, 1933; minimum discharge (estimated), that of Feb. 11, 1933; minimum water surface elevation, 1,797.56 feet Dec. 10, 1929.

Floods of June 1894 and 1916 reached stages of 1,824.6 and 1,821.6 feet, respectively (information furnished by Great Northern Railway Co.).

REMARKS.—Records excellent except those estimated because of ice Dec. 9–20, Dec. 30 to Jan. 3, Jan. 16–20, Feb. 2–20, and those estimated Apr. 25, 26, Sept. 19, 20, 27, which are fair. No regulation or diversions above station.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,970	5,360	7,190	4,200	3,490	3,720	5,770	34,300	65,000	45,300	16,300	11,200
2	4,900	5,270	8,930	4,100	3,400	3,780	5,990	31,100	63,000	44,800	15,000	12,200
3	4,830	5,200	10,900	4,100	3,300	3,760	6,760	30,700	59,700	44,200	14,100	12,200
4	4,790	5,130	10,900	4,210	3,150	3,680	7,980	30,700	61,600	45,200	13,500	11,300
5	4,740	5,130	9,910	4,360	3,100	3,700	8,650	30,700	67,900	43,700	13,800	10,400
6	4,740	5,340	9,070	4,630	2,850	3,620	8,520	29,800	72,400	41,600	14,100	9,840
7	4,720	5,320	7,580	4,810	2,700	3,680	8,650	28,900	71,600	39,100	14,400	9,260
8	4,720	5,220	5,870	4,930	2,200	3,780	8,240	28,100	67,900	37,100	14,400	8,970
9	4,700	5,090	4,300	5,200	1,750	3,820	7,580	27,200	69,400	36,700	13,800	8,970
10	4,670	4,880	3,150	5,390	1,700	3,640	6,960	25,300	65,000	37,100	13,200	8,830
11	4,630	4,630	3,010	5,340	1,750	3,560	6,580	23,800	54,700	37,100	12,800	8,830
12	4,580	4,320	2,910	5,160	1,900	3,560	6,380	23,000	47,600	38,100	12,800	8,690
13	4,670	5,870	2,860	4,860	2,200	3,820	6,010	23,800	47,000	35,700	12,500	8,690
14	4,700	7,190	2,820	4,810	2,600	4,040	5,890	27,200	52,800	33,900	12,200	8,690
15	4,860	6,540	2,820	4,630	2,800	4,170	6,140	33,400	68,600	32,500	12,100	8,550
16	5,250	5,870	2,800	4,100	3,200	4,170	7,010	38,100	84,800	31,100	11,900	8,550
17	5,650	5,680	2,900	3,700	3,600	4,130	7,710	39,100	92,800	29,400	11,700	8,690
18	6,010	6,140	3,200	3,300	3,800	4,170	7,710	38,600	95,500	28,500	11,500	8,690
19	5,840	7,190	4,000	3,200	3,900	4,060	7,710	36,700	93,700	28,100	11,300	8,600
20	5,600	7,840	4,800	3,200	4,000	4,080	7,840	33,900	85,600	26,800	11,000	8,500
21	5,460	7,840	5,250	3,320	4,040	4,170	8,650	32,500	70,100	24,900	10,900	8,410
22	5,360	7,580	5,650	3,390	4,060	4,170	10,500	33,400	62,300	22,700	10,900	8,410
23	5,390	7,060	5,510	3,520	3,900	4,130	13,500	35,200	61,000	20,600	10,900	8,410
24	5,510	6,510	5,720	3,680	3,860	4,000	17,200	37,600	61,000	19,600	10,300	8,410
25	5,750	6,080	5,510	3,780	3,800	3,940	21,500	39,100	57,800	18,900	10,300	8,410
26	5,700	5,870	5,290	3,740	3,760	3,940	26,500	44,200	53,400	18,600	11,500	8,550
27	5,580	5,650	5,020	3,740	3,680	3,900	32,500	51,000	51,000	19,200	11,600	8,300
28	5,480	5,580	4,880	3,640	3,560	4,130	39,600	54,700	49,900	19,200	10,700	7,990
29	5,560	5,720	4,630	3,600	-------	4,720	44,200	52,800	47,600	18,900	10,300	8,130
30	5,630	6,410	4,500	3,330	-------	5,130	40,100	54,700	46,400	17,900	9,980	8,270
31	5,510	-------	4,300	3,500	-------	5,530	-------	61,000	-------	17,300	10,300	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	6,010	4,580	5,180	0.441	0.51	319,000
November	7,840	4,320	5,920	.504	.56	352,000
December	10,900	2,800	5,360	.457	.53	330,000
January	5,390	3,200	4,110	.350	.40	253,000
February	4,060	1,700	3,140	.267	.28	174,000
March	5,530	3,560	4,020	.342	.39	247,000
April	44,200	5,770	13,300	1.13	1.26	791,000
May	61,000	23,000	35,800	3.05	3.52	2,200,000
June	95,500	46,400	64,900	5.53	6.17	3,860,000
July	45,300	17,300	30,800	2.62	3.02	1,890,000
August	16,300	9,980	12,300	1.05	1.21	756,000
September	12,200	7,990	9,100	.775	.86	541,000
The year	95,500	1,700	16,200	1.38	18.71	11,700,000

KOOTENAI RIVER AT KATKA, IDAHO

LOCATION.—Staff gage in NE¼ sec. 25, T. 62 N., R. 2 E., at Katka, 3,000 feet downstream from Great Northern Railway station and 3¼ miles above Moyie River. Zero of gage is 1,700.00 feet above mean sea level, United States Coast and Geodetic Survey datum.

DRAINAGE AREA.—11,860 square miles.

RECORDS AVAILABLE.—April 1928 to September 1933 (discontinued).

DISCHARGE.—Maximum during year, 96,500 second-feet June 18 (water-surface elevation, 1,796.80 feet); minimum (estimated), 1,750 second-feet Feb. 10; minimum water-surface elevation, 1,774.91 feet Mar. 27.

1928–33: Maximum discharge and water-surface elevation, those of June 18, 1933; minimum discharge (estimated), that of Feb. 10, 1933; minimum water-surface elevation, 1,773.74 feet Dec. 11, 1929.

REMARKS.—Records good except those estimated for period of ice effect, Dec. 8 to Mar. 17, which are fair. Discharge measurements are made 8 miles upstream. Estimated inflow is added to the measured discharge to obtain flow at Katka.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,930	5,420	7,510	4,250	3,550	3,750	5,920	35,500	65,800	46,000	16,800	11,200
2	4,820	5,320	8,900	4,200	3,450	3,800	6,110	31,700	63,500	45,500	15,300	12,500
3	4,780	5,280	11,500	4,200	3,350	3,800	6,680	31,200	60,600	45,500	14,400	12,500
4	4,730	5,230	11,500	4,300	3,200	3,700	8,010	31,700	62,000	45,500	14,200	11,500
5	4,690	5,280	10,500	4,400	3,100	3,750	8,510	31,700	68,100	44,100	14,200	10,500
6	4,690	5,550	9,420	4,700	2,900	3,650	8,640	30,400	71,600	41,800	14,400	9,880
7	4,690	5,460	8,010	4,900	2,750	3,700	8,510	29,600	71,900	39,100	14,700	8,810
8	4,730	5,350	6,050	5,000	2,200	3,800	8,260	29,200	67,600	36,900	14,700	8,810
9	4,670	5,190	4,450	5,350	1,800	3,850	7,640	28,400	70,300	36,400	14,200	8,920
10	4,600	5,020	3,300	5,550	1,750	3,650	7,020	26,400	65,500	37,300	13,600	9,040
11	4,540	4,840	3,100	5,450	1,800	3,600	6,680	24,500	54,600	37,300	13,100	8,810
12	4,470	4,730	3,000	5,150	1,900	3,600	6,470	23,800	47,800	38,200	13,100	8,700
13	4,600	6,010	2,950	4,950	2,250	3,850	6,160	24,100	46,900	35,600	12,800	8,580
14	4,690	7,760	2,900	4,900	2,600	4,100	5,990	27,600	53,200	33,900	12,500	8,700
15	4,780	7,020	2,900	4,700	2,850	4,200	6,160	32,900	68,100	32,600	12,300	8,460
16	5,260	6,300	2,850	4,150	3,200	4,200	6,950	38,700	83,700	30,900	12,000	8,460
17	5,650	5,940	2,950	3,750	3,650	4,200	7,760	40,000	92,400	29,700	12,000	8,460
18	6,110	6,300	3,300	3,400	3,800	4,290	7,760	39,600	95,300	28,900	11,800	8,580
19	5,880	7,510	4,100	3,250	3,950	4,210	7,760	37,800	94,700	28,500	11,500	8,700
20	5,550	8,260	4,900	3,250	4,000	4,230	7,880	35,100	88,300	26,900	11,200	8,700
21	5,370	8,140	5,300	3,400	4,100	4,340	8,510	33,400	72,500	25,000	11,100	8,460
22	5,370	7,880	5,700	3,450	4,100	4,400	9,820	34,200	64,400	22,800	11,000	8,460
23	5,460	7,510	5,600	3,600	3,900	4,380	13,500	36,000	62,300	21,000	11,000	8,350
24	5,460	6,830	5,800	3,750	3,900	4,270	17,200	38,700	61,800	19,600	10,400	8,460
25	5,830	6,400	5,600	3,850	3,850	4,120	21,600	40,000	58,700	19,600	10,400	8,460
26	5,690	6,110	5,400	3,800	3,800	4,180	26,800	45,200	53,600	19,000	11,800	8,350
27	5,530	5,880	5,100	3,800	3,700	4,070	32,500	51,100	51,700	19,300	11,800	8,240
28	5,460	5,810	4,900	3,700	3,600	4,290	39,600	55,100	50,200	19,600	10,900	8,120
29	5,510	5,880	4,700	3,650	-------	4,870	45,700	54,600	47,800	19,000	10,400	8,120
30	5,650	6,780	4,600	3,400	-------	5,370	41,900	54,900	46,900	18,400	10,100	8,120
31	5,530	-------	4,350	3,550	-------	5,650	-------	60,800	-------	17,700	10,500	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	6,110	4,470	5,150	0.434	0.50	317,000
November	8,260	4,730	6,170	.520	.58	367,000
December	11,500	2,850	5,520	.465	.54	339,000
January	5,550	3,250	4,190	.353	.41	258,000
February	4,100	1,750	3,180	.268	.28	177,000
March	5,650	3,600	4,120	.347	.40	253,000
April	45,700	5,920	13,400	1.13	1.26	797,000
May	60,800	23,800	36,600	3.09	3.56	2,250,000
June	95,300	46,900	65,400	5.51	6.15	3,890,000
July	46,000	17,700	31,000	2.61	3.01	1,910,000
August	16,800	10,100	12,500	1.05	1.21	769,000
September	12,500	8,120	9,100	.767	.86	541,000
The year	95,300	1,750	16,400	1.38	18.76	11,900,000

KOOTENAI RIVER AT BOOM CAMP, NEAR BONNERS FERRY, IDAHO

LOCATION.—Staff gage in NW¼ sec. 29, T. 62 N., R. 2 E., 600 feet east of Boom Camp, 3½ miles upstream from Bonners Ferry, and 4 miles downstream from Moyie River. Zero of gage is 1,754.08 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—October 1927 to September 1933. From April 1925 to September 1927, records were collected by Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

EXTREMES.—Maximum water-surface elevation recorded during year, 1,776.58 feet June 18; maximum probably occurred June 19, when gage was not read; minimum, 1,756.45 feet Feb. 10, 11.

1927–33: Maximum recorded water-surface elevation, that of June 18, 1933; minimum, 1,756.20 feet Dec. 3, 1931 (also estimated for Jan. 1, 1931).

REMARKS.—Records good. Gage read once daily and may not take account of diurnal fluctuations. No record on days for which no elevation is shown. Elevations affected by backwater from Kootenai Lake.

Elevation in feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	57.65	57.85	58.85	------	57.35	35.35	58.25	65.35	72.06	69.20	60.85	59.95
2	------	57.80	59.35	------	57.35	57.35	------	64.75	72.02	69.01	60.75	60.10
3	57.55	57.80	60.10	57.75	57.50	57.40	58.65	64.75	71.51	68 88	60.75	------
4	57.55	57.75	------	57.75	57.30	57.30	59.15	64.85	------	------	60.70	------
5	57.50	57.75	59.75	57.80	------	------	59.35	64.85	72.94	68 72	60.55	59.55
6	57.50	------	59.45	57.85	57.25	57.35	59.35	64.60	73.83	68 02	------	59.35
7	57.45	57.85	58.85	57.80	57.25	57.45	59.30	------	74.06	67.28	60.70	59.15
8	57.45	57.85	58.20	------	56.65	57.40	59.25	64.40	73.63	67.08	60.65	59.10
9	------	57.75	57.65	58.00	56.65	57.30	------	64.15	74.02	------	60.55	59.00
10	57.45	57.70	57.65	58.00	56.45	57.35	58.75	63.75	73.70	66.72	60.35	------
11	57.40	57.65	------	57.95	56.45	57.35	58.60	63.35	------	66 63	60.25	58.90
12	57.40	57.60	57.50	57.90	------	------	58.50	63.15	70.08	66 58	60.25	58.90
13	57.45	------	57.50	57.80	56.80	57.35	38.35	63.35	69.54	66.45	------	58.85
14	57.50	58.85	57.75	57.75	56.85	57.50	58.35	------	70.46	66.08	60.15	58.95
15	57.50	58.55	57.75	------	56.95	57.45	58.40	65.25	72.81	65.85	60.05	58.90
16	------	58.25	58.35	58.10	57.05	57.45	------	65.95	75.06	------	59.95	58.90
17	57.95	58.05	58.45	57.65	57.40	57.45	59.00	66.33	75.68	64 75	59.85	------
18	58.05	58.35	------	57.35	57.40	57.50	59.05	66.28	76.58	64 45	59.85	58.95
19	58.05	58.85	58.25	57.25	------	------	59.00	65.85	------	64 25	59.75	59.00
20	57.90	------	58.30	57.15	57.55	57.40	59.05	65.55	------	63 95	------	58.90
21	57.85	58.95	58.35	57.25	57.55	57.50	59.35	------	74.82	63 55	59.65	58.85
22	57.85	58.85	58.45	------	------	57.50	59.85	65.45	73.60	63 05	59.65	58.85
23	------	58.65	58.45	57.35	57.50	57.45	------	65.65	73.08	------	59.55	58.80
24	58.05	------	------	57.40	57.45	57.45	61.75	66.18	72.70	62.55	------	------
25	58.00	58.35	------	57.45	57.45	57.35	62.75	66.58	72.38	62.25	59.45	58.90
26	57.95	58.25	58.15	57.55	------	------	63.80	67.68	71.40	62.05	------	58.85
27	57.90	------	58.05	57.45	57.40	57.35	64.85	68.78	71.08	61.95	------	58.80
28	57.85	58.15	58.05	57.35	57.40	57.45	65.95	------	70.61	61.85	------	58.75
29	57.90	58.15	57.95	------	------	57.75	------	69.56	69.99	61.65	59.55	58.75
30	------	58.35	57.95	57.25	------	58.00	------	------	69.72	61.55	59.30	58.80
31	57.90	------	57.95	57.40	------	58.20	------	71.08	------	60 85	59.35	------

NOTE.—Add 1,700.00 feet to obtain elevations above mean sea level, United States Coast and Geodetic Survey datum.

KOOTENAI RIVER AT BONNERS FERRY, IDAHO

LOCATION.—Wire gage in NE¼ sec. 27, T. 62 N., R. 1 E., on highway bridge at Bonners Ferry. Zero of gage is 1,743.005 feet above mean sea level, United States Coast and Geodetic Survey datum.

DRAINAGE AREA.—13,000 square miles.

RECORDS AVAILABLE.—October 1927 to September 1933. May to October 1904 at point three-quarters of a mile downstream. Gage-height records collected by United States Weather Bureau May 1904 to September 1927.

DISCHARGE.—Maximum during year, 99,800 second-feet June 18; maximum water surface elevation, 1,774.98 feet June 19; minimum, 1,930 second-feet Feb. 10; minimum water-surface elevation, 1,742.76 feet Mar. 27.

1927–33: Maximum discharge, that of June 18, 1933; maximum water-surface elevation, that of June 19, 1933; minimum discharge, that of Feb. 10, 1933; minimum water-surface elevation, 1,741.14 feet Dec. 5, 1927.

Maximum elevation known, 1,777.2 feet in June 1894.

REMARKS.—Records of discharge fair. Gage-height records excellent. Discharge records comparable to those heretofore published were obtained by application of discharge measurements made 1½ miles downstream to gage heights at Boom Camp station or to mean gage height in reach when affected by backwater. No artificial regulation or diversions above station.

Elevation, in feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43.97	43.88	45.56	46.13	45.64	45.76	44.08	59.79	69.59	67.44	54.40	48.66
2	43.90	43.82	46.37	46.12	45.50	45.80	44.30	58.53	69.76	67.14	53.79	49.04
3	43.85	43.84	47.71	46.10	45.40	45.67	44.82	58.27	69.37	66.94	53.20	49.16
4	43.78	43.81	47.86	46.16	45.46	45.68	45.56	58.45	69.67	66.82	52.82	48.74
5	43.74	43.86	47.62	46.16	45.53	45.68	45.86	58.53	70.70	66.64	52.54	48.33
6	43.70	44.04	46.98	46.26	45.55	45.58	45.96	58.32	71.74	66.13	52.48	47.95
7	43.66	44.00	46.28	46.24	45.34	45.48	46.00	58.06	72.17	65.62	52.41	47.70
8	43.58	43.95	46.86	46.30	45.32	45.40	45.90	57.85	71.86	64.80	52.27	47.48
9	43.54	43.89	46.44	46.40	45.06	45.32	45.52	57.63	72.12	64.30	51.98	47.36
10	43.50	43.78	45.92	46.72	45.02	45.24	45.16	57.13	71.94	64.15	51.60	47.24
11	43.46	43.69	45.76	46.80	45.08	45.08	44.94	56.46	70.26	64.03	51.29	47.13
12	43.41	43.64	45.73	46.58	45.18	44.94	44.79	56.10	68.40	64.04	51.14	47.03
13	43.42	44.04	45.90	46.52	45.46	45.00	44.64	56.24	67.63	63.73	50.94	47.02
14	43.45	45.59	46.24	46.64	45.68	44.98	44.54	57.40	68.26	63.12	50.79	46.96
15	43.54	45.18	46.48	46.30	46.08	44.83	44.61	59.22	70.62	62.62	50.60	46.84
16	43.78	44.73	46.44	46.28	46.14	44.72	45.15	60.88	72.99	62.10	50.41	46.76
17	43.98	44.56	46.68	46.04	46.38	44.40	45.56	61.50	73.97	61.54	50.22	47.80
18	44.15	44.75	46.66	45.49	46.41	44.04	45.67	61.57	74.74	61.04	49.98	46.76
19	44.10	45.32	46.60	45.39	46.16	43.72	45.66	61.34	74.96	60.74	49.77	46.82
20	43.94	45.78	46.70	45.42	46.53	43.20	45.80	60.76	74.88	60.29	49.70	46.72
21	43.84	45.76	47.16	45.45	46.50	42.98	46.20	60.25	73.72	59.64	49.58	46.56
22	43.83	45.62	47.50	45.47	46.48	42.93	47.04	60.45	72.31	58.56	49.48	46.45
23	43.99	45.40	47.64	45.54	46.42	42.91	48.61	61.03	71.52	57.91	49.44	46.47
24	43.94	45.10	47.40	45.66	46.24	42.80	50.31	61.69	71.15	57.18	49.22	46.48
25	44.10	44.90	47.24	45.72	46.20	42.78	52.38	62.36	70.69	56.68	48.93	46.52
26	44.06	44.76	47.06	45.70	46.21	42.78	54.64	63.61	70.01	56.30	49.18	46.50
27	43.92	44.56	46.89	45.69	45.95	42.77	57.00	65.29	69.34	56.08	49.32	46.38
28	43.93	44.46	46.61	45.72	45.86	42.88	59.51	66.47	68.87	55.93	48.96	46.28
29	43.94	44.59	46.50	45.62	-------	43.28	61.64	66.77	68.41	55.66	48.60	46.24
30	44.00	45.06	46.34	45.62	-------	43.56	61.33	67.15	67.88	55.32	48.36	46.29
31	43.92	-------	46.23	45.60	-------	43.91	-------	68.42	-------	54.84	48.38	-------

NOTE.—Add 1,700.00 feet to obtain elevations above mean sea level.

Discharge, in second-feet, of Kootenai River at Bonners Ferry, Idaho, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,090	5,580	8,330	4,590	3,820	3,950	6,760	38,500	72,900	47,600	15,600	12,100
2	4,970	5,460	9,890	4,560	3,680	4,000	7,000	34,900	70,600	47,600	15,200	12,600
3	4,850	5,460	12,500	4,530	3,580	4,000	7,880	34,600	65,500	47,800	15,200	12,500
4	4,850	5,330	12,500	4,620	3,450	3,900	9,410	35,300	68,000	47,800	15,000	11,500
5	4,740	5,330	11,200	4,720	3,370	3,950	10,100	35,400	76,100	47,900	14,400	10,700
6	4,740	5,550	10,200	5,040	3,130	3,850	10,100	34,000	80,900	42,900	14,700	10,100
7	4,620	5,580	8,330	5,220	2,920	3,920	9,890	33,400	79,800	38,700	15,000	9,410
8	4,620	5,580	6,480	5,310	2,370	4,010	9,730	32,800	74,500	40,300	14,800	9,250
9	4,620	5,330	4,870	5,720	1,970	4,050	8,960	32,200	79,100	39,000	14,400	8,940
10	4,620	5,210	3,720	5,920	1,930	3,850	8,180	29,900	74,900	40,100	13,600	8,780
11	4,500	5,090	3,520	5,800	1,980	3,810	7,740	27,600	59,000	39,800	13,200	8,630
12	4,500	4,970	3,420	5,490	2,080	3,820	7,450	26,500	52,100	39,400	13,200	8,630
13	4,620	6,400	3,370	5,270	2,430	4,090	7,030	27,600	51,100	39,600	13,000	8,480
14	4,740	8,330	3,340	5,220	2,780	4,240	7,020	32,800	58,700	38,300	12,800	8,780
15	4,740	7,450	3,320	5,020	3,030	4,440	7,170	38,000	74,000	38,000	12,500	8,630
16	5,280	6,620	3,270	4,430	3,400	4,450	8,060	42,100	90,900	34,000	12,100	8,630
17	5,830	6,090	3,370	4,030	3,850	4,470	8,940	44,200	91,300	32,500	11,800	8,700
18	6,090	6,890	3,720	3,700	4,000	4,580	9,100	43,800	99,800	31,300	11,800	8,780
19	6,090	8,330	4,520	3,540	4,150	4,500	8,940	40,900	95,000	30,700	11,400	8,940
20	5,700	8,900	5,320	3,560	4,240	4,620	9,100	39,200	92,000	29,500	11,200	8,630
21	5,580	8,630	5,670	3,730	4,340	4,850	10,100	38,000	71,600	27,800	11,100	8,480
22	5,580	8,330	6,070	3,770	4,340	4,850	11,800	38,700	66,600	25,800	11,100	8,480
23	5,840	7,740	5,970	3,920	4,140	4,740	15,600	39,700	67,800	24,000	10,700	8,330
24	6,090	7,320	6,170	4,050	4,120	4,740	19,500	42,800	65,300	23,300	10,600	8,480
25	5,960	6,890	5,970	4,150	4,070	4,500	24,400	44,800	64,700	21,800	10,400	8,630
26	5,830	6,620	5,720	4,090	4,020	4,550	30,100	51,400	55,900	20,900	11,800	8,480
27	5,700	6,400	5,420	4,100	3,920	4,500	36,500	57,000	57,800	20,400	11,800	8,330
28	5,580	6,350	5,220	4,000	3,820	4,740	43,700	59,500	55,400	19,900	11,000	8,180
29	5,700	6,350	5,020	3,920	-------	5,460	50,000	58,900	50,900	19,000	10,700	8,180
30	5,750	6,890	4,900	3,690	-------	6,090	45,000	60,000	51,200	18,600	9,890	8,330
31	5,700	-------	4,660	3,820	-------	6,620	-------	67,900	-------	15,600	10,100	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	6,090	4,500	5,260	0.405	0.47	323,000
November	8,900	4,970	6,500	.500	.56	387,000
December	12,500	3,270	6,000	.462	.53	369,000
January	5,920	3,540	4,500	.346	.40	277,000
February	4,340	1,930	3,390	.261	.27	188,000
March	6,620	3,810	4,460	.343	.40	274,000
April	50,000	6,760	15,200	1.17	1.30	904,000
May	67,900	26,500	40,700	3.13	3.61	2,500,000
June	99,800	50,900	70,400	5.42	6.05	4,190,000
July	47,900	15,600	33,200	2.55	2.94	2,040,000
August	15,600	9,890	12,600	.969	1.12	775,000
September	12,600	8,180	9,220	.709	.79	549,000
The year	99,800	1,930	17,700	1.36	18.44	12,800,000

KOOTENAI RIVER NEAR BONNERS FERRY, IDAHO

LOCATION.—Water-stage recorder in NW¼ sec. 28, T. 62 N., R. 1 E., 1.6 miles downstream from highway bridge at Bonners Ferry. Zero of gage is 1,700.00 feet above mean sea level, United States Coast and Geodetic Survey datum.

DRAINAGE AREA.—13,000 square miles.

RECORDS AVAILABLE.—May 1928 to September 1933.

EXTREMES.—Maximum water-surface elevation during year, 1,774.17 feet June 20; minimum, 1,741.82 feet Feb. 10.

1928–33: Maximum water-surface elevation, that of June 20, 1933; minimum, 1,740.32 feet Jan. 16, 1930.

REMARKS.—Records excellent. Elevations affected by backwater from Kootenai Lake.

Elevation, in feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43.52	43.26	44.81	43.69	43.31	43.33	43.35	59.17	68.88	67.08	54.16	48.20
2	43.45	43.17	45.64	43.83	43.19	43.36	43.51	57.99	69.09	66.77	53.54	48.55
3	43.38	43.17	46.95	43.79	43.02	43.40	44.02	57.67	68.78	66.54	52.98	48.68
4	43.32	43.16	47.13	43.81	42.93	43.36	44.78	57.80	69.04	66.42	52.58	48.30
5	43.27	43.16	46.91	43.82	43.07	43.33	45.12	57.89	70.05	66.26	52.34	47.87
6	43.23	43.35	46.44	43.94	43.09	43.29	45.23	57.73	71.04	65.77	52.25	47.46
7	43.16	43.34	45.68	44.06	42.71	43.30	45.33	57.50	71.48	65.14	52.16	47.20
8	43.08	43.28	44.85	44.18	42.41	43.35	45.22	57.31	71.26	64.50	52.00	47.00
9	43.01	43.22	44.15	44.30	41.95	43.29	44.86	57.13	71.47	64.00	51.70	46.89
10	42.95	43.17	43.75	44.36	41.91	43.21	44.56	56.68	71.34	63.82	51.33	46.75
11	42.92	43.06	43.58	44.40	42.07	43.09	44.31	56.06	69.71	63.70	51.05	46.64
12	42.87	42.99	43.59	44.34	42.04	43.03	44.21	55.70	67.96	63.69	50.84	46.53
13	42.85	43.51	43.54	44.22	42.21	43.19	44.06	55.81	67.22	63.36	50.65	46.48
14	42.83	44.76	43.47	44.12	42.33	43.34	43.94	56.84	67.83	62.81	50.47	46.41
15	42.94	44.45	43.39	44.10	42.58	43.41	44.03	58.62	70.06	62.32	50.28	46.30
16	43.20	44.04	43.33	43.69	42.77	43.37	44.48	60.22	72.11	61.79	50.09	46.26
17	43.42	43.83	43.52	43.14	43.00	43.30	44.92	60.88	73.03	61.25	49.90	46.26
18	43.54	44.04	43.61	42.79	43.18	43.19	44.99	61.00	73.76	60.76	49.67	46.24
19	43.49	44.52	43.78	42.93	43.27	42.93	45.05	60.78	74.08	60.42	49.47	46.27
20	43.32	45.01	43.99	43.07	43.38	42.52	45.13	60.30	74.09	60.00	49.40	46.12
21	43.26	44.97	44.18	43.14	43.47	42.28	45.51	59.85	73.09	59.38	49.30	45.98
22	43.21	44.82	44.39	43.20	43.52	42.24	46.35	60.00	71.78	58.60	49.16	45.91
23	43.36	44.60	44.53	43.26	43.53	42.20	47.84	60.55	70.99	57.76	49.08	45.88
24	43.38	44.37	44.48	43.31	43.48	42.14	49.68	61.20	70.63	57.05	48.92	45.90
25	43.48	44.21	44.41	43.37	43.48	42.11	51.68	61.82	70.22	56.49	48.58	45.91
26	43.45	44.04	44.35	43.45	43.45	42.08	53.83	63.07	69.53	56.09	48.76	45.88
27	43.31	43.92	44.25	43.50	43.41	42.08	56.00	64.64	68.90	55.84	48.90	45.76
28	43.36	43.81	44.09	43.52	43.38	42.14	58.29	65.76	68.43	55.66	48.55	45.59
29	43.35	43.89	43.95	43.36	-------	42.48	60.53	66.09	67.94	55.42	48.21	45.59
30	43.38	44.38	43.82	43.31	-------	42.80	60.49	66.48	67.49	55.08	47.97	45.66
31	43.30	-------	43.65	43.26	-------	43.11	-------	67.74	-------	54.62	48.00	-------

NOTE.—Add 1,700.00 feet to obtain elevations above mean sea level.

KOOTENAI RIVER AT KLOCKMANN RANCH, NEAR BONNERS FERRY, IDAHO

LOCATION.—Water-stage recorder in SE¼ sec. 19, T. 63 N., R. 1 E., at Klockmann ranch, 800 feet south of viaduct on Kootenai Valley branch of Great Northern Railway and 8 miles north of Bonners Ferry. Zero of gage is 1,700.00 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—May 1928 to September 1933.

EXTREMES.—Maximum water-surface elevation during year, 1,771.24 feet June 20; minimum, 1,740.95 feet Feb. 13.

1928–33: Maximum water-surface elevation occurred on June 20, 1933; minimum, 1,739.99 feet Jan. 2, 1931.

REMARKS.—Records good. Elevations affected by backwater from Kootenai Lake.

Elevation, in feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43.03	42.61	43.91	42.63	41.92	41.41	42.48	57.25	66.20	65.67	53.41	47.30
2	42.96	42.54	44.53	42.70	41.82	41.45	42.60	56.19	66.46	65.34	52.84	47.59
3	42.90	42.55	45.57	42.66	41.73	41.47	43.05	55.90	66.34	65.11	52.34	47.67
4	42.84	42.52	45.79	42.65	41.67	41.50	43.62	56.04	66.63	64.95	51.95	47.37
5	42.79	42.53	45.65	42.65	41.67	41.49	43.90	56.15	67.49	64.80	51.66	47.00
6	42.75	42.68	45.25	42.74	41.62	41.48	44.03	56.02	68.36	64.37	51.53	46.67
7	42.70	42.68	44.75	42.79	41.51	41.51	44.16	55.80	68.80	63.82	51.40	46.43
8	42.62	42.62	43.99	42.86	41.25	41.56	44.08	55.67	68.74	63.21	51.22	46.26
9	42.53	42.58	43.53	42.96	41.14	41.55	43.83	55.51	68.91	62.74	50.95	46.14
10	42.47	42.54	43.24	43.08	41.05	41.53	43.60	55.11	68.87	62.54	50.59	46.01
11	42.45	42.42	43.09	43.03	41.01	41.46	43.43	54.56	67.66	62.41	50.32	45.91
12	42.38	42.40	43.07	42.95	40.98	41.44	43.36	54.24	66.18	62.35	50.12	45.80
13	42.35	42.78	43.02	42.86	40.95	41.53	43.25	54.34	65.47	62.10	49.92	45.74
14	42.36	43.70	42.94	42.76	40.99	41.62	43.17	55.20	65.92	61.60	49.74	45.66
15	42.40	43.52	42.89	42.71	41.05	41.65	43.23	56.75	67.69	61.16	49.56	45.55
16	42.58	43.22	42.86	42.47	41.08	41.64	43.55	58.26	69.30	60.68	49.38	45.49
17	42.69	43.07	42.85	42.25	41.12	41.63	43.89	58.96	70.15	60.19	49.19	45.48
18	42.82	43.19	42.91	42.13	41.22	41.63	43.99	59.11	70.60	59.74	48.98	45.46
19	42.81	43.54	42.99	42.09	41.25	41.58	44.06	58.96	70.88	59.39	48.77	45.44
20	42.70	43.92	43.06	42.08	41.31	41.55	44.12	58.53	71.14	59.00	48.69	45.35
21	42.61	43.94	43.12	42.07	41.38	41.60	44.41	58.12	70.55	58.43	48.59	45.19
22	42.58	43.89	43.24	42.06	41.41	41.60	45.09	58.24	69.61	57.75	48.44	45.12
23	42.70	43.73	43.33	42.05	41.42	41.59	46.32	58.74	68.99	56.97	48.33	45.09
24	42.70	43.54	43.28	42.03	41.39	41.55	47.94	59.35	68.67	56.29	48.20	45.09
25	42.78	43.42	43.23	42.09	41.39	41.52	49.81	59.96	68.36	55.74	47.87	45.07
26	42.77	43.28	43.17	42.07	41.39	41.50	51.41	61.06	67.85	55.34	47.93	45.04
27	42.68	43.19	43.09	42.09	41.51	41.50	54.15	62.50	67.31	55.06	48.04	44.94
28	42.69	43.12	42.94	42.04	41.41	41.53	56.40	63.52	66.89	54.84	47.74	44.82
29	42.68	43.18	42.84	41.97	-------	41.78	58.41	63.89	66.46	54.60	47.45	44.79
30	42.70	43.57	42.72	41.94	-------	42.00	58.44	64.22	66.05	54.29	47.24	44.81
31	42.64	-------	42.60	41.89	-------	42.28	-------	65.24	-------	53.85	47.22	-------

NOTE.—Add 1,700.00 feet to obtain elevations above mean sea level, United States Coast and Geodetic Survey datum.

KOOTENAI RIVER NEAR COPELAND, IDAHO

(International gaging station)

LOCATION.—Water-stage recorder in NW¼NW¼SW¼ sec. 12, T. 64 N., R. 1 W., at Andrews ranch, three-quarters of a mile below Mission Creek and 1½ miles northwest of Copeland. Zero of gage is 1,700.00 feet above mean sea level, United States Coast and Geodetic Survey datum.

DRAINAGE AREA.—13,400 square miles.

RECORDS AVAILABLE.—October 1927 to September 1933. Gage-height records were collected by Dominion Water Power and Hydrometric Bureau of Canada from April 1925 to September 1927.

DISCHARGE.—Maximum, 91,500 second-feet June 19; maximum water-surface elevation, 1,767.98 feet June 20; minimum mean daily discharge (estimated), 1,990 second-feet Feb. 10; minimum water-surface elevation, 1,740.68 feet Feb 14.

1927–33: Maximum and minimum discharge not determined; maximum water-surface elevation, that of June 20, 1933; minimum water-surface elevation, 1,739.59 feet Jan. 25, 1930.

Maximum elevation known, about 1,774.5 feet June 1894.

REMARKS.—Discharge records good except those during the ice-affected period Dec. 7 to Mar. 27, which are fair. Records of water-surface elevations excellent. Elevations affected by backwater from Kootenai Lake. Daily discharge record during open-water season based on computations by slope method applied to reach between this station and that near Bonners Ferry, 28 miles upstream. This station is one of the international gaging stations maintained by the United States under agreement with Canada. The discharge records collected at this station, while in international status, have been checked and approved by the Dominion Water Power and Hydrometric Bureau.

Elevation, in feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	42.77	42.27	43.31	42.18	41.49	40.94	41.84	54.38	62.72	63.65	52.61	46.64
2	42.72	42.22	43.76	42.22	41.42	40.97	41.94	53.60	63.07	63.36	52.12	46.75
3	42.67	42.24	44.52	42.17	41.35	40.97	42.27	53.40	63.09	63.14	51.67	46.78
4	42.59	42.23	44.75	42.17	41.28	41.01	42.63	53.55	63.37	62.96	51.30	46.60
5	42.54	42.23	44.73	42.16	41.28	41.00	42.83	53.69	64.10	62.78	50.99	46.31
6	42.48	42.34	44.46	42.19	41.24	41.00	42.96	53.66	64.83	62.45	50.82	46.05
7	42.43	42.33	44.07	42.22	41.13	41.03	43.08	53.53	65.31	62.00	50.65	45.84
8	42.32	42.30	43.56	42.26	40.99	41.09	43.04	53.45	65.39	61.52	50.44	45.69
9	42.26	42.28	43.27	42.33	40.88	41.09	42.92	53.38	65.56	61.13	50.19	45.59
10	42.23	42.25	43.06	42.42	40.82	41.08	42.82	53.10	65.65	60.90	49.90	45.47
11	42.21	42.17	42.94	42.40	40.80	41.04	42.72	52.73	64.84	60.73	49.65	45.37
12	42.17	42.15	42.86	42.35	40.77	41.04	42.69	52.48	63.75	60.62	49.44	45.27
13	42.12	42.40	42.78	42.28	40.73	41.11	42.63	52.54	63.18	60.40	49.25	45.21
14	42.12	43.00	42.68	42.20	40.71	41.18	42.58	53.14	63.44	60.02	49.07	45.12
15	42.12	42.91	42.58	42.15	40.74	41.21	42.61	54.32	64.69	59.64	48.92	45.03
16	42.26	42.75	42.49	42.02	40.74	41.21	42.80	55.52	66.06	59.23	48.74	44.97
17	42.34	42.66	42.49	41.86	40.75	41.20	43.01	56.16	66.73	58.82	48.56	44.94
18	42.39	42.72	42.47	41.73	40.79	41.21	43.10	56.35	67.06	58.40	48.36	44.92
19	42.39	42.94	42.48	41.71	40.79	41.19	43.18	56.31	67.30	58.09	48.17	44.87
20	42.31	43.19	42.52	41.68	40.82	41.18	43.23	56.05	67.86	57.72	48.14	44.79
21	42.26	43.23	42.54	41.66	40.86	41.20	43.44	55.80	67.53	57.22	48.03	44.66
22	42.26	43.20	42.58	41.65	40.89	41.22	43.90	55.91	66.85	56.63	47.86	44.59
23	42.37	43.13	42.68	41.63	40.91	41.21	44.77	56.30	66.39	55.99	47.73	44.56
24	42.36	43.02	42.63	41.62	40.89	41.19	46.01	56.76	66.13	55.41	47.57	44.54
25	42.40	42.95	42.61	41.64	40.89	41.18	47.53	57.26	65.86	54.91	47.34	44.52
26	42.39	42.85	42.60	41.60	40.90	41.17	49.27	58.17	65.49	54.51	47.29	44.48
27	42.33	42.79	42.54	41.62	40.93	41.17	51.17	59.30	65.05	54.21	47.30	44.40
28	42.33	42.72	42.46	41.58	40.94	41.20	53.12	60.20	64.69	53.96	47.07	44.29
29	42.32	42.78	42.41	41.54	-------	41.35	54.91	60.63	64.34	53.72	46.84	44.28
30	42.35	43.08	42.34	41.51	-------	41.48	55.16	61.04	63.97	53.44	46.65	44.28
31	42.29	-------	42.22	41.47	-------	41.68	-------	61.87	-------	53.03	46.60	-------

NOTE.—Add 1,700.00 feet to obtain elevations above mean sea level.

Discharge, in second-feet, of Kootenai River near Copeland, Idaho, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,910	5,630	8,150	4,750	3,960	4,040	7,380	43,600	74,200	50,300	17,900	11,100
2	4,800	5,490	9,950	4,670	3,810	4,100	7,590	39,100	73,500	49,600	16,300	12,300
3	4,720	5,410	12,900	4,650	3,710	4,100	8,490	37,700	70,700	48,900	15,000	12,800
4	4,750	5,420	12,900	4,730	3,580	3,990	10,300	37,900	71,200	49,300	14,600	11,700
5	4,740	5,420	12,100	4,850	3,490	4,040	10,900	37,900	75,900	49,200	14,600	10,800
6	4,800	5,740	10,900	5,160	3,210	3,940	11,000	37,000	79,900	46,800	15,000	9,880
7	4,720	5,800	9,000	5,400	2,980	4,020	11,000	35,800	80,400	44,200	15,300	9,490
8	4,780	5,620	6,900	5,650	2,430	4,120	10,700	34,900	77,400	41,900	15,200	9,060
9	4,700	5,480	5,110	6,060	2,030	4,170	9,650	34,300	78,500	39,900	14,600	8,980
10	4,580	5,350	3,960	6,210	1,990	3,980	8,840	32,300	77,200	40,200	13,900	8,760
11	4,540	5,220	3,740	6,050	2,060	3,950	8,190	29,800	66,700	40,200	13,300	8,670
12	4,490	5,030	3,640	5,680	2,160	3,980	7,910	28,800	58,000	40,800	13,200	8,580
13	4,590	6,170	3,590	5,460	2,510	4,250	7,540	29,300	55,300	39,600	13,000	8,580
14	4,540	9,040	3,560	5,420	2,860	4,490	7,280	33,000	59,400	37,400	12,900	8,570
15	4,940	8,360	3,540	5,200	3,110	4,600	7,500	40,000	71,500	35,900	12,600	8,380
16	5,460	7,110	3,470	4,600	3,500	4,610	8,640	45,400	80,700	34,200	12,300	8,460
17	6,030	6,500	3,570	4,200	3,950	4,630	9,520	46,400	84,800	32,600	12,100	8,540
18	6,310	7,160	3,920	3,870	4,100	4,760	9,560	46,400	89,600	31,400	11,600	8,530
19	6,130	8,270	4,720	3,720	4,250	4,690	9,590	44,900	90,500	30,600	11,400	8,790
20	5,700	9,410	5,520	3,740	4,380	4,760	9,720	42,800	86,500	29,900	11,100	8,480
21	5,680	9,110	5,850	3,880	4,500	4,910	10,600	41,000	78,800	28,200	11,100	8,340
22	5,510	8,590	6,250	3,920	4,500	4,960	12,200	41,600	71,000	26,000	11,100	8,280
23	5,690	7,950	6,150	4,070	4,280	4,930	15,800	43,300	65,900	23,900	11,200	8,260
24	5,840	7,420	6,330	4,210	4,240	4,790	20,000	45,600	65,300	22,300	11,000	8,420
25	6,070	7,060	6,130	4,310	4,170	4,640	24,500	47,700	63,500	21,300	10,100	8,520
26	5,990	6,700	5,870	4,230	4,090	4,730	30,000	52,200	59,500	20,800	11,200	8,500
27	5,660	6,420	5,570	4,240	3,990	4,650	36,300	58,200	56,800	20,700	11,900	8,330
28	5,830	6,220	5,380	4,150	3,890	4,930	42,900	62,100	55,000	20,900	11,100	7,950
29	5,810	6,370	5,200	4,080	-------	5,700	50,700	62,200	53,200	20,500	10,300	7,970
30	5,810	7,270	5,100	3,840	-------	6,470	49,200	62,700	51,700	19,600	9,940	8,240
31	5,730	-------	4,890	3,970	-------	6,980	-------	69,000	-------	18,600	10,200	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	6,310	4,490	5,290	0.395	0.46	325,000
November	9,410	5,030	6,690	.499	.56	398,000
December	12,900	3,470	6,250	.466	.54	384,000
January	6,210	3,720	4,680	.349	.40	288,000
February	4,500	1,990	3,490	.260	.27	194,000
March	6,980	3,940	4,610	.344	.40	283,000
April	50,700	7,280	15,800	1.18	1.32	940,000
May	69,000	28,800	43,300	3.23	3.72	2,660,000
June	90,500	51,700	70,800	5.28	5.89	4,210,000
July	50,300	18,600	34,100	2.54	2.93	2,100,000
August	17,900	9,940	12,700	.948	1.09	781,000
September	12,800	7,950	9,110	.680	.76	542,000
The year	90,500	1,990	18,100	1.35	18.34	13,100,000

KOOTENAI RIVER AT LUCAS CREEK, NEAR PORT HILL, IDAHO

LOCATION.—Staff gage in sec. 28, T. 65 N., R. 1 W., at mouth of Lucas Creek, 3 miles southeast of Port Hill. Zero of gage is 1,700.00 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—May 1928 to September 1930; May 19, 1932, to Aug. 3, 1933.

EXTREMES.—Maximum water-surface elevation during year, 1,765.78 feet June 21; minimum occurred during period of no record.

1928–30, 1932–33: Maximum water-surface elevation, that of June 21, 1933; minimum occurred during period of no record.

REMARKS.—Records reliable. No records obtained Oct. 1 to Apr. 26, Aug. 4 to Sept. 30. Elevation affected by backwater from Kootenai Lake.

Elevation, in feet, 1932–33

Day	Apr.	May	June	July	Aug.	Day	Apr.	May	June	July	Aug.
1		52.85	60.76	62.58		16		54.11	64.17		
2		52.30	61.10	62.34		17		54.82	64.74	58.20	
3		52.19	61.18	62.13	51.39	18		55.00	65.00		
4		52.38	61.48	61.96		19		55.04	65.17	57.52	
5		52.50	62.12	61.77		20		54.86	65.61		
6		52.48	62.74	61.38		21		54.66	65.66		
7		52.45	63.16	61.09		22		54.80	65.00	56.21	
8		52.42	63.30	60.67		23		55.10	64.76		
9		52.38	63.46	60.32		24		55.52	64.56		
10		52.20	63.56	60.07		25		55.94	64.31		
11		51.90	63.05	59.90		26		56.72	64.11		
12		51.72	62.44			27	49.08	57.74	63.76		
13		51.75	61.83	59.60		28	51.59	58.52	63.50		
14		52.22	62.05			29	53.25	58.94	63.17		
15		53.16	63.12	58.90		30	53.42	59.30	62.90	53.07	
						31		60.04			

NOTE.—Add 1,700.00 feet to obtain elevations above mean sea level, United States Coast and Geodetic Survey datum.

KOOTENAI RIVER AT PORT HILL, IDAHO

(International gaging station)

LOCATION.—Water-stage recorder in SW¼ sec. 8, T. 65 N., R. 1 W., 300 feet south of international boundary at Port Hill. Zero of gage is 1,700.00 feet above mean sea level, United States Coast and Geodetic Survey datum, and 1,699.80 feet above mean sea level, datum of Geodetic Survey of Canada, 1928 adjustment.

DRAINAGE AREA.—13,700 square miles.

RECORDS AVAILABLE.—May to July 1904; October 1927 to September 1933. Gage-height records collected by Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada, from October 1924 to September 1927 at the same site.

DISCHARGE.—Maximum mean daily during year, 93,200 second-feet June 19; maximum water-surface elevation, 1,763.92 feet June 20; minimum mean daily, 2,060 second-feet Feb. 10; minimum water-surface elevation, 1,740.43 feet Feb. 14, 17.

1928–33: Maximum, as above; minimum, Feb. 10, 1933; minimum water-surface elevation, 1,739.32 feet Jan. 28, 1930. Maximum elevation known, 1,772.7 feet June 1894.

REMARKS.—Discharge records good except those for period of ice effect Dec. 7 to Mar. 27, which are fair. Records of water-surface elevations excellent. Discharge record includes flow of Boundary Creek and represents entire flow passing international boundary. Elevations affected by backwater from Kootenai Lake. Daily discharge record obtained by adding tributary inflow to discharges near Copeland. Breach in the dike of the Reclamation Farm remained open during year allowing part of the river flow and part of normal tributary inflow to pass the international boundary at that point during May, June, and July. List of discharge measurements of flow in the regular channel, reversed flow entering mouth of Boundary Creek, and flow through break in dike are shown for the 3 months period. This station is one of the international gaging stations maintained by the United States under agreement with Canada. The discharge records collected at this station, while in international status, have been checked and approved by the Dominion Water Power and Hydrometric Bureau.

Elevation, in feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	42.51	41.95	42.87	41.87	41.16	40.62	41.43	51.64	59.07	61.63	51.92	46.11
2	42.45	41.91	43.23	41.90	41.10	40.63	41.50	51.23	59.42	61.42	51.48	46.16
3	42.40	41.92	43.78	41.84	41.05	40.63	41.77	51.17	59.59	61.22	51.08	46.14
4	42.33	41.91	43.97	41.84	41.01	40.66	42.01	51.35	59.91	61.04	50.75	45.97
5	42.27	41.91	44.00	41.83	41.00	40.65	42.16	51.54	60.47	60.87	50.45	45.75
6	42.22	42.00	43.82	41.83	40.96	40.64	42.27	51.58	61.02	60.59	50.24	45.54
7	42.15	41.99	43.55	41.87	40.87	40.68	42.41	51.57	61.44	60.25	50.03	45.40
8	42.05	41.97	43.21	41.90	40.74	40.71	42.38	51.56	61.61	59.89	49.82	45.26
9	41.99	41.97	42.99	41.93	40.65	40.70	42.30	51.54	61.80	59.57	49.58	45.16
10	41.97	41.94	42.81	42.00	40.60	40.70	42.26	51.40	61.91	59.33	49.32	45.04
11	41.93	41.88	42.69	41.97	40.58	40.69	42.20	51.19	61.54	59.15	49.10	44.93
12	41.91	41.86	42.60	41.94	40.56	40.69	42.19	51.04	61.01	59.09	48.90	44.82
13	41.85	42.07	42.52	41.88	40.50	40.74	42.17	51.08	60.68	58.79	48.71	44.76
14	41.84	42.49	42.43	41.81	40.47	40.79	42.14	51.46	60.86	58.50	48.54	44.67
15	41.84	42.43	42.33	41.77	40.48	40.81	42.15	52.24	61.65	58.20	48.38	44.59
16	41.95	42.33	42.24	41.67	40.48	40.81	42.28	53.12	62.58	57.85	48.22	44.53
17	42.00	42.27	42.22	41.56	40.47	40.82	42.43	53.64	63.09	57.53	48.05	44.49
18	42.03	42.32	42.18	41.46	40.50	40.84	42.51	53.85	63.37	57.17	47.85	44.46
19	42.03	42.48	42.18	41.42	40.49	40.84	42.59	53.92	63.51	56.89	47.69	44.40
20	41.97	42.67	42.20	41.39	40.51	40.85	42.62	53.83	63.84	56.55	47.65	44.33
21	41.94	42.71	42.20	41.35	40.53	40.89	42.76	53.72	63.80	56.13	47.54	44.21
22	41.97	42.71	42.22	41.33	40.56	40.90	43.13	53.83	63.55	55.66	47.37	44.14
23	42.05	42.65	42.27	41.31	40.59	40.90	43.76	54.11	63.40	55.12	47.24	44.11
24	42.04	42.59	42.23	41.28	40.56	40.88	44.69	54.46	63.26	54.60	47.12	44.09
25	42.07	42.54	42.22	41.29	40.54	40.88	45.84	54.86	63.08	54.14	46.88	44.06
26	42.06	42.48	42.22	41.26	40.58	40.86	47.19	55.52	62.89	53.75	46.77	44.02
27	42.02	42.42	42.16	41.27	40.60	40.86	48.66	56.40	62.65	53.42	46.71	43.95
28	42.02	42.37	42.11	41.25	40.60	40.88	50.20	57.06	62.40	53.16	46.53	43.85
29	42.01	42.43	42.06	41.21	------	41.00	51.62	57.45	62.16	52.92	46.34	43.84
30	42.02	42.69	41.99	41.18	------	41.11	51.98	57.82	61.89	52.65	46.17	43.82
31	41.97	------	41.90	41.15	------	41.30	------	58.45	------	52.28	46.12	------

NOTE.—Add 1,700.00 feet to obtain elevations above mean sea level, U. S. Coast and Geodetic Survey datum.

Discharge, in second-feet, of Kootenai River at Port Hill, Idaho, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,940	5,720	8,780	4,890	4,070	4,120	7,550	44,800	77,200	51,900	18,100	11,200
2	4,830	5,600	10,800	4,810	3,920	4,180	7,760	40,300	76,400	51,200	16,400	12,400
3	4,750	5,520	13,700	4,790	3,820	4,180	8,710	39,000	74,000	50,300	15,100	12,900
4	4,780	5,520	13,500	4,870	3,690	4,070	10,500	39,200	74,900	50,700	14,800	11,800
5	4,770	5,530	12,600	4,990	3,600	4,120	11,100	39,100	79,400	50,500	14,800	10,900
6	4,830	5,870	11,300	5,300	3,280	4,020	11,200	38,100	83,000	48,000	15,200	9,930
7	4,750	5,900	9,270	5,550	3,050	4,100	11,200	36,900	83,200	45,300	15,400	9,550
8	4,810	5,730	7,120	5,800	2,500	4,200	10,900	35,900	80,500	43,000	15,300	9,120
9	4,730	5,580	5,230	6,210	2,100	4,250	9,820	35,200	81,600	40,900	14,700	9,040
10	4,620	5,420	4,080	6,360	2,060	4,060	9,010	33,200	79,700	41,300	14,000	8,850
11	4,580	5,310	3,860	6,200	2,130	4,030	8,350	30,700	69,000	41,000	13,400	8,740
12	4,530	5,120	3,760	5,830	2,230	4,070	8,070	29,800	60,600	41,600	13,300	8,640
13	4,630	6,610	3,710	5,610	2,580	4,340	7,690	30,500	58,600	40,300	13,100	8,640
14	4,650	9,450	3,680	5,570	2,930	4,580	7,430	34,600	64,100	38,100	13,000	8,660
15	5,090	8,630	3,660	5,350	3,180	4,690	7,680	41,900	77,100	36,500	12,700	8,530
16	5,610	7,330	3,640	4,720	3,590	4,700	8,840	47,200	85,700	34,800	12,400	8,600
17	6,150	6,740	3,740	4,320	4,040	4,720	9,710	47,900	88,800	33,100	12,200	8,640
18	6,400	7,550	4,080	3,990	4,190	4,850	9,750	47,900	92,800	31,800	11,700	8,630
19	6,200	8,670	4,880	3,840	4,340	4,780	9,790	46,300	93,200	31,000	11,500	8,900
20	5,760	9,750	5,680	3,860	4,470	4,860	9,960	44,100	89,200	30,300	11,200	8,560
21	5,770	9,400	6,020	4,000	4,590	5,010	10,900	42,500	81,500	28,500	11,200	8,420
22	5,760	8,850	6,420	4,040	4,590	5,060	12,600	43,600	73,600	26,300	11,200	8,390
23	5,880	8,180	6,320	4,190	4,370	5,020	16,300	45,300	68,200	24,200	11,300	8,360
24	5,960	7,630	6,500	4,330	4,330	4,880	20,700	47,600	67,400	22,600	11,100	8,530
25	6,170	7,280	6,300	4,430	4,260	4,730	25,300	50,100	65,600	21,600	10,200	8,610
26	6,090	6,910	6,010	4,350	4,180	4,820	31,100	55,700	61,700	21,000	11,300	8,590
27	5,800	6,640	5,710	4,360	4,080	4,750	37,600	61,000	58,700	20,900	12,000	8,420
28	5,960	6,450	5,520	4,270	3,980	5,040	44,600	64,700	56,800	21,100	11,200	8,100
29	5,920	6,930	5,340	4,200	-------	5,820	52,300	65,100	55,200	20,700	10,400	8,210
30	5,900	8,090	5,240	3,960	-------	6,600	50,600	66,200	53,400	19,800	10,000	8,400
31	5,830	-------	5,030	4,080	-------	7,110	--------	72,300	--------	18,800	10,300	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	6,400	4,530	5,370	0.392	0.45	330,000
November	9,750	5,120	6,930	.506	.56	412,000
December	13,700	3,640	6,500	.474	.55	400,000
January	6,360	3,840	4,810	.351	.40	296,000
February	4,590	2,060	3,580	.261	.27	199,000
March	7,110	4,020	4,700	.343	.40	289,000
April	52,300	7,430	16,200	1.18	1.32	964,000
May	72,300	29,800	45,100	3.29	3.79	2,770,000
June	93,200	53,400	73,700	5.38	6.00	4,390,000
July	51,900	18,800	34,700	2.53	2.92	2,130,000
August	18,100	10,000	12,900	.942	1.09	793,000
September	12,900	8,100	9,210	.672	.75	548,000
The year	93,200	2,060	18,700	1.36	18.50	13,500,000

The following table is a list of discharge measurements during period in 1933 when a portion of the total flow was by-passing gage and measuring section through breaks in the dike of the Reclamation Farm in Canada. Measurements of the reversed river flow through the mouth of Boundary Creek represent a portion of the flow being by-passed.

Date	Main channel	Reversed flow through mouth of Boundary Creek	Flow through break in dike	Date	Main channel	Reversed flow through mouth of Boundary Creek	Flow through break in dike
	Second-feet	*Second-feet*	*Second-feet*		*Second-feet*	*Second-feet*	*Second-feet*
May 15	38,700	(a)	(a)	June 20	76,100	8,300	(a)
16	(a)	657	(a)	July 2	45,600	2,560	(a)
22	38,700	618	(a)	5	45,100	2,190	(a)
29	60,500	1,990	(a)	15	36,100	1,090	(a)
June 5	69,400	2,880	(a)	25	20,900	174	(a)
12	55,200	2,840	3,870				

a Not measured.

GRANITE CREEK NEAR LIBBY, MONT.

LOCATION.—Staff gage in SE¼ sec. 5, T. 29 N., R. 31 W., at Glacier silver-lead mine, 7 miles southwest of Libby.

RECORDS AVAILABLE.—January to December 1933 (discontinued).

DISCHARGE.—Maximum during period, 1,360 second-feet June 10, Dec. 22; maximum gage height, 4.10 feet Dec. 10; no flow Jan. 4 (creek blocked by snowslide above gage).

REMARKS.—Records good. No diversion. Gage-height record furnished by Glacier Silver Lead Mining Co.

Discharge, in second-feet, 1933

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	20	17	12	30	164	344	202	48	39	46	114	49
2	19	16	12	37	152	323	217	47	35	41	98	46
3	18	8	13	70	152	390	202	47	34	39	583	44
4	0	17	12	72	152	494	202	50	29	36	217	42
5	23	16	12	63	132	552	202	58	23	34	132	40
6	44	16	12	64	123	467	202	53	20	33	114	40
7	42	22	14	62	106	415	188	49	20	31	98	52
8	27	61	13	56	106	415	188	46	19	30	82	60
9	51	55	13	49	98	948	175	45	19	28	74	77
10	47	49	16	44	95	948	202	43	19	26	72	82
11	42	14	12	40	98	265	175	42	19	25	72	90
12	47	14	20	37	98	323	164	42	17	23	70	98
13	36	13	21	35	132	467	164	40	17	23	65	95
14	44	12	20	38	175	614	152	40	17	22	63	84
15	36	12	19	47	217	750	142	40	23	21	58	74
16	27	13	19	53	202	905	132	39	36	22	56	65
17	23	12	19	53	164	647	123	38	36	21	55	72
18	23	12	19	50	152	494	123	38	36	24	51	106
19	21	12	19	47	132	344	106	36	40	43	49	123
20	22	14	19	52	132	284	95	33	36	46	46	152
21	19	14	21	61	142	302	87	30	33	39	44	583
22	19	14	20	77	188	344	79	28	40	61	49	1,170
23	19	13	19	95	188	323	74	26	40	217	63	552
24	19	13	20	142	188	248	77	27	40	202	73	217
25	19	14	19	202	248	232	80	25	31	232	77	202
26	18	13	19	248	367	265	82	23	30	152	72	175
27	18	17	19	284	284	248	79	21	42	132	64	142
28	18	13	20	344	232	232	71	21	44	152	59	114
29	18	------	25	284	390	232	63	22	60	175	56	79
30	18	------	28	202	467	202	59	23	54	175	50	82
31	17	------	33	------	494	------	52	43	------	142	------	84

Month	Maximum	Minimum	Mean	Run-off in acre-feet
January	51	0	26.3	1,620
February	61	12	18.4	1,020
March	33	12	18.0	1,110
April	344	30	97.9	5,830
May	494	95	193	11,900
June	948	202	434	25,800
July	217	52	134	8,240
August	58	21	37.5	2,310
September	60	17	31.6	1,880
The period	------	------	------	59,700
October	232	21	74.0	4,550
November	583	44	92.5	5,500
December	1,170	40	158	9,720
The period	------	------	------	19,800

BOULDER CREEK NEAR LEONIA, IDAHO

LOCATION.—Water-stage recorder in NW¼ sec. 32, T. 61 N., R. 3 E., half a mile below McGinty Creek, 1 mile above buildings of the Idamount Lead-Zinc Mines Co., 3 miles above mouth, and 3 miles southwest of Leonia.

DRAINAGE AREA.—53 square miles.

RECORDS AVAILABLE.—April 1928 to September 1933. Prior to November 1928 records were collected at staff-gage site 1¼ miles downstream.

DISCHARGE.—Maximum during year, 1,330 second-feet May 26 (gage height, 4.79 feet); minimum, 3.8 second-feet July 29 (gage height, 1.21 feet).

1928–33: Maximum, 1,330 second-feet May 7, 1932, May 2[illegible], 1933; maximum gage height, 4.80 feet May 7, 1932; minimum discharge, 2 second-feet Aug. 25, Sept. 5, 1931.

REMARKS.—Records good except those estimated Dec. 9 to Jan. 3, Feb. 10 to Mar. 17, which are fair. An inconsiderable amount of water was diverted around the gage for mining purposes; returned to creek below gage.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6	16	210		33		88	577	652	175	19	11
2	6	25	398	40	30		94	602	626	172	17	7
3	6	27	331		32		155	652	677	161	18	5
4	6	20	240	35	29		160	602	812	145	17	4
5	6	32	196	46	30		147	558	758	135	25	5
6	6	65	160	48	22	30	147	503	626	125	20	5
7	6	33	112	43	23		134	490	602	121	18	6
8	7	25	101	48	22		114	458	785	113	16	6
9	7	22		103	22		101	412	868	107	15	8
10	7	19		88			90	391	652	109	14	23
11	7	18		68	22		82	395	602	93	13	12
12	9	25		61			76	441	626	87	12	10
13	12	364		57		35	72	563	652	81	11	10
14	25	210		59	25		80	758	704	76	10	10
15	24	126	70	50			108	812	730	70	10	10
16	23	97		44		40	117	730	677	62	9	9
17	22	136		56	30		112	652	544	57	8	8
18	14	278		52		44	108	626	437	51	6	31
19	12	292		52		42	108	544	391	49	6	33
20	12	219		48		46	131	535	379	45	6	20
21	20	163		46	35	52	175	626	363	40	8	21
22	48	134		43		46	257	758	340	36	8	31
23	43	112	60	42		42	364	730	289	32	6	26
24	22	101		38		37	464	730	261	30	6	26
25	17	90		37		37	570	812	248	28	7	23
26	17	86		36	30	38	730	1,040	245	27	6	20
27	30	88		36		40	840	758	225	25	5	23
28	29	124	50	36		65	1,010	730	204	23	5	40
29	22	178		34	------	80	868	785	210	22	5	51
30	17	250		34	------	44	652	950	189	21	5	34
31	16	------		33	------	88	------	758	------	20	15	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	48	6	16.3	0.308	0.36	1,000
November	364	16	11.2	.211	.24	6,660
December	398	----------	103	1.94	2.24	6,330
January	103	33	48.2	.909	1.05	2,960
February	----------	----------	28.4	.536	.56	1,580
March	88	----------	40.7	.768	.89	2,500
April	1,010	72	272	5.13	5.72	16,200
May	1,040	391	644	12.2	14.07	39,600
June	868	189	512	9.66	10.78	30,500
July	175	20	75.4	1.42	1.64	4,640
August	25	5	11.2	.211	.24	689
September	51	4	17.6	.332	.37	1,050
The year	1,040	4	157	2.96	38.16	114,000

MOYIE RIVER AT EASTPORT, IDAHO

(International gaging station)

LOCATION.—Water-stage recorder in SE¼ sec. 10, T. 65 N., R. 2 E., 1,000 feet downstream from international boundary at Eastport.

DRAINAGE AREA.—570 square miles.

RECORDS AVAILABLE.—August 1929 to September 1933.

DISCHARGE.—Maximum during year, 5,120 second-feet May 31 (gage height, 8.14 feet); minimum, 52 second-feet Oct. 3–5 (gage height, 3.45 feet).

1929–33: Maximum, about 5,440 second-feet May 22, 1932; minimum (estimated), 34 second-feet Jan. 16, 1930.

REMARKS.—Records good except those estimated for Nov. 30 to Dec. 3, Dec. 5–8 and those estimated because of ice, Dec. 9–24, 28, 30, 31, Jan. 15–20, 22–28, Jan. 30 to Feb. 27, Mar. 4, 9, which are fair. No regulation or diversions above station. This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	55	112	600	226		128	368	2,880	4,640	1,510	218	144
2	55	117	700	203		128	405	2,880	4,370	1,440	203	117
3	52	125	900	189		139	606	3,040	4,460	1,370	200	110
4	52	112	860	189	140	130	680	2,960	4,830	1,270	192	103
5	52	117	700	189		128	657	2,810	4,830	1,190	214	101
6	54	139	600	189		122	703	2,660	4,640	1,110	226	101
7	55	133	500	203		128	672	2,520	4,280	1,030	200	101
8	54	120	400	196		128	577	2,380	4,280	962	189	103
9	54	115		250	110	128	511	2,180	4,640	886	175	108
10	54	108		234		128	480	2,040	4,020	895	169	122
11	54	110		234		139	456	1,980	3,510	808	160	112
12	56	150		210		133	428	2,040	3,350	751	150	106
13	58	250		203	120	144	411	2,380	3,590	695	144	108
14	79	363		203		144	439	2,960	4,100	657	144	108
15	128	272	300			144	544	3,350	4,640	599	139	120
16	120	242				156	649	3,270	4,740	570	130	128
17	122	230		190		163	627	3,040	4,550	531	128	122
18	101	342			130	169	606	3,040	4,100	487	122	125
19	90	444				172	613	2,810	3,590	456	117	141
20	86	462				178	695	2,660	3,190	433	115	125
21	86	405		[a] 209		192	878	2,660	2,880	405	117	115
22	110	363	250		150	189	1,230	3,110	2,740	373	117	117
23	141	323		200		186	1,680	3,270	2,450	342	115	117
24	115	294				182	1,980	3,190	2,240	323	115	130
25	103	290	242		140	182	2,380	3,430	2,110	299	117	139
26	101	272	242			186	2,880	4,460	2,040	285	112	136
27	108	263	242	190		192	3,350	4,460	1,920	268	108	136
28	125	268	220		128	226	4,020	4,190	1,800	254	103	141
29	122	342	210	[a] 179	-------	285	3,930	4,370	1,740	242	103	182
30	115	500	220	160	-------	323	3,190	4,830	1,620	242	103	172
31	112	-------	220	150	-------	352	-------	4,920	-------	230	139	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	141	52	86.1	0.151	0.17	5,290
November	500	108	246	.432	.48	14,600
December	900	210	370	.649	.75	22,800
January	250	150	198	.347	.40	12,200
February	----------	----------	131	.230	.24	7,280
March	352	122	172	.302	.35	10,600
April	4,020	368	1,220	2.14	2.39	72,600
May	4,920	1,980	3,120	5.47	6.31	192,000
June	4,830	1,620	3,530	6.19	6.91	210,000
July	1,510	230	675	1.18	1.36	41,500
August	218	103	148	.260	.30	9,100
September	182	101	123	.216	.24	7,320
The year	4,920	52	836	1.47	19.90	605,000

[a] Discharge measurements.

MOYIE RIVER AT EILEEN, IDAHO

LOCATION.—Water-stage recorder in NE¼ sec. 35, T. 63 N., R. 2 E., an eighth of a mile downstream from Skin Creek, a quarter of a mile southeast of Eileen, and 4 miles above junction with Kootenai River.

DRAINAGE AREA.—755 square miles.

RECORDS AVAILABLE.—October 1925 to September 1933.

DISCHARGE.—Maximum during year, 6,390 second-feet May 31 (gage height, 4.16 feet); minimum, 87 second-feet Oct. 5 (gage height, 0.23 foot).

1925–33: Maximum, 6,840 second-feet May 22, 1932; maximum gage height, 4.8 feet May 17, June 10, 11, 1927, May 13, 17–19, 1928; minimum discharge (estimated), 60 second-feet Dec. 5, 1928, Jan. 16, 1930; minimum gage height, that of Oct. 5, 1932.

REMARKS.—Records good except those estimated because of ice, Dec. 9–29, Feb. 7 to Mar. 3, and those estimated Apr. 2–7, May 22–28, which are fair. No regulation or diversions above station.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	91	170	873	325	255		639	3,750	5,920	1,720	302	202
2	91	186	982	345	216	190	700	3,690	5,570	1,600	285	170
3	90	199	1,230	311	224		900	3,880	5,520	1,520	276	158
4	88	186	1,100	307	243	186	950	3,820	6,020	1,410	271	148
5	87	210	1,010	307	259	186	930	3,560	6,020	1,330	289	142
6	90	255	873	321	216	189	980	3,270	5,720	1,240	316	142
7	93	243	691	307		202	950	3,130	5,300	1,150	280	142
8	93	220	588	298	160	196	917	2,980	5,300	1,090	263	145
9	91	206		359		183	847	2,770	5,720	1,030	247	156
10	91	192		359		186	779	2,530	4,990	1,030	231	173
11	93	183	400	330		199	730	2,410	4,310	964	224	167
12	94	206		325	170	210	699	2,530	4,090	982	213	156
13	98	380		307		227	661	2,880	4,430	829	206	145
14	114	595	[a]421	307		227	684	3,650	4,910	779	199	150
15	164	461		307		231	812	4,270	5,520	738	192	164
16	192	395		263		239	954	4,200	5,620	707	186	180
17	196	380	400	263		251	945	3,920	5,260	668	180	180
18	164	504		280	190	271	908	3,850	4,660	617	173	180
19	142	661		280		271	908	3,560	4,090	582	167	199
20	134	684		298	[a]230	293	1,020	3,210	3,690	541	164	176
21	142	617		311		321	1,220	3,240	3,350	516	161	173
22	167	555		302	230	311	1,660	3,900	3,100	485	161	170
23	210	491	350	302		311	2,230	4,100	2,790	461	161	176
24	186	450		289		302	2,720	4,000	2,570	433	158	199
25	164	445		289		293	3,290	4,300	2,390	411	161	196
26	158	411		271	210	302	3,950	5,600	2,320	390	158	192
27	158	411	300	280		311	4,500	5,400	2,140	369	153	192
28	176	422		285		380	5,210	5,300	2,020	345	148	202
29	176	498		259	-------	479	5,260	5,340	1,940	330	145	231
30	170	812	280	271	-------	562	4,270	5,870	1,840	325	142	239
31	167	-------	298	259	-------	624	-------	6,230	-------	316	183	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	210	87	135	0.179	0.21	8,300
November	812	170	388	.514	.57	23,100
December	1,230	280	506	.670	.77	31,100
January	359	259	301	.399	.46	18,500
February	259	----------	202	.268	.28	11,200
March	624	183	275	.364	.42	16,900
April	5,260	639	1,710	2.26	2.52	102,000
May	6,230	2,410	3,910	5.18	5.97	240,000
June	6,020	1,840	4,240	5.62	6.27	252,000
July	1,720	316	803	1.06	1.22	49,400
August	316	142	206	.273	.31	12,700
September	239	142	175	.232	.26	10,400
The year	6,230	87	1,070	1.42	19.26	776,000

[a] Discharge measurement.

COW CREEK NEAR BONNERS FERRY, IDAHO

LOCATION.—Staff gage in SW¼ sec. 31, T. 62 N., R. 2 E., at footbridge on Goldbeck ranch, 3 miles southeast of Bonners Ferry.

RECORDS AVAILABLE.—May 1928 to September 1933 (except winters).

DISCHARGE.—Maximum during year, 60 second-feet June 9 (gage height, 5.48 feet); minimum, 1.1 second-feet Sept. 22, 23; minimum recorded gage height, 3.42 feet Mar. 2.

1928–33: Maximum stage and discharge, those of June 9, 1933; minimum discharge, 0.4 second-foot Sept. 8, 9, 14–17, 28–30, 1932.

REMARKS.—Records good except those for August and September, which are fair. Discharge estimated Mar. 1, 3, 4. Some water diverted above station for irrigation during summer. No records Oct. 1 to Feb. 28.

Discharge, in second-feet, 1933

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.0	8.4	23	47	13	3.2	2.0
2	2.3	7.6	22	43	13	2.8	1.7
3	2.6	9.6	21	42	13	2.8	1.6
4	3.0	9.2	21	45	13	2.8	1.5
5	3.3	8.6	21	51	11	2.8	1.5
6	2.9	8.4	19	48	10	2.6	1.4
7	6.0	8.0	19	45	10	2.8	1.4
8	5.2	7.6	17	44	9.4	2.6	1.6
9	7.8	6.7	20	60	9.2	2.6	1.6
10	3.1	6.6	17	49	9.6	2.4	1.8
11	2.5	6.4	15	43	8.8	2.0	1.6
12	3.1	6.6	15	40	8.2	1.6	1.5
13	6.0	6.6	14	42	7.8	1.4	1.3
14	4.5	6.2	16	48	7.5	1.4	1.2
15	4.5	6.4	20	51	7.1	1.4	1.5
16	4.2	6.9	24	53	6.7	1.3	1.6
17	5.2	7.3	23	47	6.6	1.5	1.6
18	6.0	7.1	22	40	6.2	1.3	1.6
19	5.2	6.6	21	35	6.0	1.4	1.6
20	4.9	6.6	22	30	5.6	1.6	1.5
21	4.5	7.1	19	28	5.2	1.9	1.3
22	4.8	7.6	22	27	4.9	1.7	1.1
23	4.5	8.8	23	26	4.6	1.7	1.1
24	4.2	11	25	23	4.3	1.9	1.5
25	4.0	12	28	22	4.0	2.1	1.3
26	3.8	15	37	20	3.9	2.0	1.3
27	3.5	21	39	19	3.5	1.8	1.4
28	5.2	24	37	18	3.2	2.0	1.4
29	6.7	32	36	17	3.0	2.0	1.3
30	6.6	28	42	15	3.2	1.7	1.3
31	8.8	------	50	------	3.2	2.5	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March	8.8	------	4.55	280
April	32	6.2	10.5	625
May	50	14	24.2	1,490
June	60	15	37.3	2,220
July	13	3.0	7.25	446
August	3.2	1.3	2.05	126
September	2.0	1.1	1.47	87
The period	------	------	------	5,270

DEEP CREEK AT MORAVIA, IDAHO

LOCATION.—Staff gage in sec. 18, T. 61 N., R. 1 E., at concrete highway bridge 1 mile below Ruby Creek and 1 mile southwest of Moravia.
DRAINAGE AREA.—133 square miles.
RECORDS AVAILABLE.—May 1928 to September 1933.
DISCHARGE.—Maximum during year, 975 second-feet Apr. 28 (gage height, 3.66 feet); minimum, 13 second-feet Aug. 28–31, Sept. 6, 7 (gage height, 0.28 foot).
1928–33: Maximum stage and discharge, those of Apr. 28, 1933; minimum discharge, 7 second-feet Aug. 15, 24, 25, 1931; minimum gage height, that of Aug. 28–31, Sept. 6, 7, 1933.
REMARKS.—Records fair. Discharge estimated Dec. 7–22, Jan. 15–23, Feb. 3–19, because of ice, and July 22 to Aug. 4. Diurnal fluctuations affect flow at high stages. No diversions above station.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	26	155	90	83	46	312	666	552	205		14
2	14	34	421	66	76	58	365	666	515	167	30	15
3	14	31	402	70		52	440	666	552	167		15
4	14	68	295	66	70	50	421	628	666	155		14
5	14	94	233	76		50	402	590	590	151	24	14
6	14	73	179	70	50	46	365	552	552	146	23	13
7	14	48	150	100		58	329	552	590	129	22	13
8	14	39		179	40	65	279	515	628	125	20	14
9	15	37	130	179		68	248	552	666	123	19	15
10	15	31		155		78	233	515	552	111	18	16
11	17	48		137		81	219	515	458	92	17	16
12	19	155		109		85	205	552	552	89	16	15
13	19	263	120	105	50	85	205	590	590	87	16	15
14	31	179		109		85	219	628	666	87	16	16
15	31	94				89	248	628	704	83	16	17
16	24	102		100		92	279	590	628	73	15	17
17	26	113			60	96	279	552	515	65	15	17
18	26	121	110			107	263	552	421	52	15	19
19	24	121				115	295	515	402	52	14	23
20	21	109			81	137	312	477	347	50	14	23
21	26	94	100		85	140	440	477	347	48	14	22
22	42	87	100	90	92	148	515	477	329		14	23
23	45	83	102		81	144	590	515	279	45	14	23
24	26	76	94	87	68	127	704	515	263		14	26
25	26	76	94	87	58	127	780	515	248		14	24
26	24	73	87	83	44	137	897	704	248		14	22
27	24	70	83	83	44	151	936	552	233	40	14	20
28	21	90	90	87	44	205	975	515	233		13	22
29	21	179	102	87	-------	263	936	552	248		13	23
30	21	155	113	87	-------	263	780	590	205	35	13	22
31	24	-------	125	83	-------	279	-------	590	-------		13	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	45	14	21.9	0.165	0.19	1,350
November	263	26	92.3	.694	.77	5,490
December	421	83	144	1.08	1.24	8,850
January	179	66	98.9	.744	.86	6,080
February	92	----------	59.5	.447	.47	3,300
March	279	46	114	.857	.99	7,010
April	975	205	449	3.38	3.77	26,700
May	666	477	565	4.25	4.90	34,700
June	704	205	459	3.45	3.85	27,300
July	205	----------	85.9	.646	.74	5,280
August	----------	13	17.7	.133	.15	1,090
September	26	13	18.3	.138	.15	1,090
The year	975	13	177	1.33	18.08	128,000

SNOW CREEK NEAR MORAVIA, IDAHO

LOCATION.—Staff gage in SW¼ sec. 1, T. 61 N., R. 1 W., 2 miles northwest of Moravia and 5 miles southwest of Bonners Ferry. Datum of gage lowered 0.51 foot Oct. 1, 1932.

DRAINAGE AREA.—19.5 square miles.

RECORDS AVAILABLE.—May 1928 to September 1933 (except winters).

DISCHARGE.—Maximum during year, 572 second-feet June 14, 15 (gage height, 2.80 feet); minimum, 3 second-feet Oct. 1–8, Sept. 2 (gage height, 0.34 foot Oct. 8).

1928–33: Maximum stage and discharge, those of June 14, 15, 1933; minimum discharge, 2 second-feet Sept. 9–12, 16–30, 1928, Sept. 1–15, 1929, Sept. 20, 1930, Aug. 12 to Sept. 6, Sept. 29, 30, 1931; minimum gage height, 0.30 foot (present datum) Sept. 16 and 22, 1932.

REMARKS.—Records fair. Gage read on alternate days. No records Oct. 9 to Feb. 28. No diversions above station. Diurnal fluctuations occur during spring run-off.

Discharge, in second-feet, 1932–33

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a 3	b 9	a 37	a 144	248	a 142	13	a 4
2	a 3	9	39	139	a 307	127	a 13	3
3	a 3	a 9	a 50	a 136	366	a 120	13	a 4
4	a 3	a 9	62	132	a 340	114	a 13	4
5	a 3	9	a 63	a 132	314	a 115	13	a 4
6	a 3	a 10	64	132	a 279	116	a 12	4
7	a 3	12	a 49	a 137	244	a 104	11	a 4
8	3	a 11	34	142	a 298	91	a 10	5
9	------	10	a 32	a 118	353	a 86	10	a 6
10	------	a 12	31	95	a 286	81	a 10	7
11	------	15	a 32	a 100	220	a 77	9	6
12	------	a 16	34	104	a 318	73	a 8	7
13	------	16	a 34	a 122	416	a 64	8	a 7
14	------	a 15	35	139	401	55	a 8	7
15	------	14	36	a 130	572	a 52	7	a 7
16	------	a 14	36	122	527	50	a 6	7
17	------	14	a 38	a 122	a 398	a 46	6	a 6
18	------	a 15	41	122	270	41	a 6	6
19	------	16	a 50	a 119	a 278	a 36	6	a 6
20	------	a 18	60	116	286	30	a 6	7
21	------	19	a 78	a 131	a 278	28	6	a 6
22	------	a 18	97	146	270	26	5	6
23	------	17	a 122	a 156	a 214	a 24	5	a 6
24	------	a 16	146	166	159	23	a 5	6
25	------	16	a 151	a 190	a 158	a 22	5	a 6
26	------	a 16	156	215	156	21	a 5	7
27	------	17	a 171	190	a 148	a 20	5	a 7
28	------	a 22	186	190	139	19	a 4	7
29	------	28	a 168	a 262	a 148	a 18	4	a 8
30	------	a 32	149	334	156	16	a 4	8
31	------	35	------	a 291	------	a 14	5	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October 1-8	3	3	3.0	0.154	0.05	48
March	35	9	15.8	.810	.93	972
April	186	31	76.0	3.90	4.35	4,520
May	334	95	154	7.90	9.11	9,470
June	572	139	285	14.6	13.29	17,000
July	142	14	59.7	3.06	3.53	3,670
August	13	4	7.8	.400	.46	480
September	8	3	5.9	.303	.34	351

a Interpolated. b Estimated.

CARIBOU CREEK NEAR MORAVIA, IDAHO

LOCATION.—Staff gage in NE¼ sec. 12, T. 61 N., R. 1 W., 600 feet above road following edge of valley and 1½ miles northwest of Moravia. During 1928, 1930, 1931, a staff gage in NE¼ sec. 11, T. 61 N., R. 1 W., 1 mile above and 2 miles northwest of Moravia was used.

DRAINAGE AREA.—14 square miles.

RECORDS AVAILABLE.—May 1928 to September 1933 (except winters).

DISCHARGE.—Maximum during year, 376 second-feet June 15 (gage height, 5.58 feet); minimum, 0.3 second-foot Oct. 1 (gage height, 3.80 feet).

1928–33: Maximum, that of June 15, 1933; minimum, that of Sept. 29, 30, Oct. 1, 1932.

REMARKS.—Records fair. Gage read on alternate days. No records Oct. 9 to Feb. 28. Flow at high stages affected by diurnal fluctuations. Several small diversions for irrigation and railroad water supply between upper and lower gage sites.

Discharge, in second-feet, 1932–33

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.3	[b] 7	[b] 27	[a] 100	128	[a] 112	9	[a] 1
2	[a] .3	[c] 7	30	98	[a] 152	91	[a] 8	1
3	[a] .3	[a] 8	[a] 34	[a] 97	175	[a] 84	8	[a] 1
4	[a] .4	[a] 8	39	96	[a] 174	76	[a] 8	1
5	[a] .4	9	[a] 40	[a] 96	172	[a] 75	7	[a] 1
6	[a] .5	[a] 10	42	96	[a] 162	74	[a] 6	1
7	[a] .5	10	[a] 33	[a] 103	153	[a] 75	6	[a] 2
8	.6	[a] 10	24	110	[a] 200	76	[a] 6	2
9	------	10	[a] 22	[a] 87	248	[a] 58	5	[a] 4
10	------	[a] 12	21	64	[a] 200	39	[a] 4	5
11	------	15	[a] 20	[a] 74	153	[a] 27	4	3
12	------	[a] 15	20	84	[a] 184	25	[a] 4	4
13	------	15	[a] 23	[a] 104	215	[a] 24	4	[a] 4
14	------	[a] 14	26	125	226	24	[a] 4	3
15	------	12	27	[a] 122	376	[a] 36	5	[a] 3
16	------	[a] 12	30	120	248	28	[a] 4	3
17	------	13	[a] 30	[a] 111	[a] 186	[a] 33	3	[a] 2
18	------	[a] 14	30	102	123	28	[a] 3	2
19	------	15	[a] 39	[a] 99	[a] 123	[a] 25	3	[a] 2
20	------	[a] 16	48	96	123	22	[a] 2	3
21	------	17	[a] 66	[a] 100	[a] 126	20	2	[a] 3
22	------	[a] 16	84	105	128	17	2	3
23	------	14	[a] 108	[a] 108	[a] 122	[a] 16	2	[a] 3
24	------	[a] 14	133	110	115	16	[a] 2	3
25	------	13	[a] 143	[a] 134	[a] 115	[a] 15	1	[a] 3
26	------	[a] 13	153	159	115	14	[a] 1	3
27	------	13	[a] 159	130	[a] 110	[a] 14	1	[a] 4
28	------	[a] 16	165	125	105	14	[a] 1	5
29	------	18	[a] 134	[a] 148	[a] 119	[a] 12	1	[a] 5
30	------	[b] 21	102	172	133	11	[a] 1	5
31	------	[b] 24	------	[a] 150	------	[a] 10	1	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October 1–8	0.6	0.3	0.41	6.5
March	24	7	13.3	818
April	165	20	61.7	3,670
May	172	64	110	6,760
June	376	105	164	9,760
July	112	10	40.0	2,460
August	9	1	3.8	234
September	5	1	2.8	167

[a] Interpolated. [b] Estimated. [c] Result of discharge measurement.

MYRTLE CREEK NEAR BONNERS FERRY, IDAHO

LOCATION.—Staff gage in sec. 23, T. 62 N., R. 1 W., 80 feet upstream from power plant of Bonners Ferry Light & Water Co. and 5½ miles west of Bonners Ferry.
DRAINAGE AREA.—37 square miles.
RECORDS AVAILABLE.—May 1928 to September 1933 (except winters).
DISCHARGE.—Maximum during year, 1,260 second-feet June 15 (gage height, 4.90 feet); minimum, 4 second-feet Oct. 8 (gage height, 1.14 feet).
1928–33: Maximum discharge and gage height, those of June 15, 1933; minimum discharge, 0.4 second-foot Sept. 6–22, 30, 1929; minimum gage height, 0.50 foot Sept. 8–22, 30, 1929.
REMARKS.—Records good except those for June, which are fair. Discharge estimated Oct. 2–7, Mar. 1, 3, 4. No records Oct. 9 to Feb. 28. No flow diverted above station during current year for power purposes.

Discharge, in second-feet, 1932–33

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5	14	42	172	465	352	41	16
2		14	46	184	465	318	33	16
3		14	70	172	525	300	38	16
4		15	60	172	660	300	36	16
5	5	15	54	161	570	255	40	15
6		14	53	150	505	270	38	13
7		16	50	140	465	255	36	14
8	5	16	42	140	548	255	32	14
9		18	40	140	660	225	30	22
10		18	36	130	505	210	29	24
11		16	32	130	425	172	27	21
12		19	32	130	505	161	24	18
13		22	30	140	710	161	26	17
14		21	35	172	970	150	24	24
15		21	46	210	1,080	130	22	26
16		22	47	197	1,020	130	23	32
17		22	42	172	810	114	23	29
18		23	45	172	615	100	21	35
19		24	50	172	485	87	20	26
20		28	59	197	570	80	19	22
21		26	68	172	592	73	21	21
22		25	112	210	525	69	19	21
23		22	121	210	505	68	18	29
24		21	140	210	445	63	18	30
25		21	161	255	425	59	20	26
26		22	172	388	405	56	19	23
27		23	210	352	405	52	17	26
28		30	270	335	370	49	16	24
29		34	240	388	388	46	14	26
30		36	197	505	405	45	14	23
31		39		485		42	18	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October 1–8			5.0	0.135	0.04	79
March	39	14	21.6	.584	.67	1,330
April	270	30	86.7	2.34	2.61	5,160
May	505	130	218	5.89	6.79	13,400
June	1,080	370	567	15.3	17.07	33,700
July	352	42	150	4.05	4.67	9,220
August	41	14	25.0	.676	.78	1,540
September	35	13	22.2	.600	.67	1,320

BALL CREEK NEAR BONNERS FERRY, IDAHO

LOCATION.—Staff gage in SW¼ sec. 24, T. 63 N., R. 1 W., three-quarters of a mile above mouth of creek and 8.2 miles northwest of Bonners Ferry.

DRAINAGE AREA.—27 square miles.

RECORDS AVAILABLE.—May 1928 to September 1933 (except winters).

DISCHARGE.—Maximum during year, 644 second-feet June 15 (gage height, 4.60 feet); minimum, 6 second-feet Sept. 5–9, 30 (gage height, 1.96 feet).

1928–33: Maximum, that of June 15, 1933; minimum, 4 second-feet several days in August and September 1928–32 and Oct. 3, 1931, Feb. 23, 1932; minimum gage height, 1.94 feet Sept. 4–10, 1930.

REMARKS.—Records good above 10 second-feet; others fair. No records Oct. 22 to Mar. 20. Discharge estimated Oct. 1–12, 14–20; interpolated June 25. Channel loses water in vicinity of gage by seepage. Diversions for irrigation above station negligible.

Discharge, in second-feet, 1932–33

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			16	118	344	217	19	8
2			19	112	329	217	18	8
3			31	116	358	217	18	7
4			28	114	403	130	17	7
5			25	116	403	177	19	6
6			25	106	373	177	17	6
7	6		22	97	373	177	17	6
8			19	89	388	182	14	6
9			16	87	403	149	14	7
10			15	80	358	146	14	9
11			14	82	329	132	12	8
12			14	86	358	130	12	8
13	9		13	91	449	123	11	8
14			13	130	496	114	11	12
15			15	146	577	106	11	12
16			20	149	594	97	10	14
17	8		20	144	496	81	10	12
18			18	137	418	71	9	10
19			19	130	418	62	9	9
20			22	128	403	53	9	9
21	7	13	28	134	388	51	9	8
22		12	39	146	344	45	9	9
23		11	51	159	300	39	9	10
24		10	62	164	300	38	9	10
25		10	84	204	293	34	8	9
26		10	112	272	286	32	8	9
27		10	128	244	272	29	8	8
28		12	149	258	230	26	7	8
29		14	146	286	230	23	7	7
30		14	137	344	230	22	7	6
31		15		358		21	8	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October 1–21			6.9	0.256	0.20	287
March 21–31	15	10	11.9	.441	.18	260
April	149	13	44.0	1.63	1.82	2,620
May	358	80	156	5.78	6.66	9,590
June	594	230	371	13.7	15.29	22,100
July	217	21	102	3.78	4.36	6,270
August	19	7	11.6	.430	.50	713
September	14	6	8.5	.315	.35	506

TROUT CREEK NEAR COPELAND, IDAHO

LOCATION.—Staff gage in NE¼ sec. 10, T. 63 N., R. 1 W., 2¼ miles above mouth and 5½ miles southwest of Copeland.

DRAINAGE AREA.—20 square miles.

RECORDS AVAILABLE.—May 1928 to September 1933 (except winters).

DISCHARGE.—Maximum during year, 533 second-feet June 16; minimum, 3 second-feet Oct. 1 (gage height, 0.18 foot).

1928–33: Maximum, that of June 16, 1933; minimum, 2 second-feet Sept. 19–30, 1928, Aug. 23–31, Sept. 1–9, 17–22, 1930, Aug. 17–24, 31, Sept. 4, 5, 24, 25, Oct. 17, 1931.

REMARKS.—Records fair. No records Oct. 2 to Mar. 17. Gage read on alternate days; discharge estimated Apr. 28, June 15, 16, and interpolated on other days of missing gage heights.

Discharge, in second-feet, 1932–33

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1		10	79	a 249	131	18	a 8
2		a 11	a 74	232	128	a 17	7
3		12	69	a 273	a 119	16	a 7
4		a 12	a 68	314	110	14	7
5		13	67	a 296	103	13	a 6
6		a 14	61	277	91	a 12	6
7		15	48	a 260	a 86	12	a 6
8		a 14	a 49	243	82	a 12	6
9		12	50	247	a 78	12	a 6
10		a 11	a 48	232	74	a 11	6
11		10	47	a 241	a 66	10	6
12		a 10	a 52	250	59	a 10	6
13		10	57	229	48	10	a 6
14		a 11	a 68	380	44	a 10	6
15		12	79	a 530	a 42	9	a 6
16		a 12	a 82	533	40	a 8	7
17		13	85	a 394	a 37	8	a 7
18	8	a 14	a 82	254	34	a 8	7
19	a 8	15	79	a 247	a 32	8	a 7
20	8	a 16	a 82	240	31	a 8	7
21	8	18	85	a 240	a 28	7	a 7
22	8	28	a 93	218	26	a 7	7
23	a 8	35	101	205	a 25	7	a 7
24	7	a 45	a 126	205	24	a 7	7
25	a 6	55	150	a 189	a 22	7	a 7
26	6	a 80	211	173	21	a 6	7
27	a 7	105	208	a 162	a 20	6	a 8
28	8	a 120	a 216	150	20	a 6	8
29	a 8	105	225	a 142	a 20	6	a 9
30	9	a 92	236	133	19	a 7	10
31	a 10	-------	266	-------	a 18	8	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
March 18–31	10	6	7.8	0.39	0.20	217
April	120	10	31.0	1.55	1.73	1,840
May	266	47	105	5.25	6.05	6,460
June	533	133	258	12.9	14.39	15,400
July	131	18	54.1	2.70	3.11	3,330
August	18	6	9.7	.485	.56	596
September	10	6	6.9	.345	.38	411
The period						28,300

a Estimated or interpolated.

MISSION CREEK AT COPELAND, IDAHO

LOCATION.—Staff gage in SE¼ sec. 18, T. 64 N., R. 1 E., 400 feet upstream from trestle on Kootenai Valley branch of Great Northern Railway and 0.8 mile south of Copeland.

DRAINAGE AREA.—31 square miles.

RECORDS AVAILABLE.—May 1928 to September 1933 (except winters).

DISCHARGE.—Maximum during year, 258 second-feet Apr. 28 (gage height, 2.60 feet); minimum, 3 second-feet Oct. 1–13 (estimated), Aug. 28–30, Sept. 5, 6; minimum gage height, 0.71 foot Aug. 28.

1928–33: Maximum, 370 second-feet May 22, 1932; maximum gage height, 3.35 feet May 12, 1928; minimum, 3 second-feet Oct. 5, 6, 1930, Aug. 11 to Sept. 6, Sept. 25–30, Oct. 2, 1931, Sept. 10–19, 29, 30, Oct. 1–13, 1932, Aug. 28–30, Sept. 5, 6, 1933; minimum gage height, 0.65 foot Sept. 1, 15–18, 1929.

REMARKS.—Records fair. Discharge estimated Oct. 1–20, Mar. 1–6, Mar. 8–13. Result of discharge measurement Mar. 7. No record Oct. 22 to Feb. 28. No regulation or diversions above station except as Round Prairie Creek, which flows into Moyie River Basin, taps Mission Creek at divide 5 miles above gage, and diverts a variable flow dependent upon the amount of drift which collects at junction of these creeks.

Discharge, in second-feet, 1932–33

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			21	173	216	49	10	5
2			24	171	196	46	10	4
3			32	171	196	41	10	4
4		7	29	166	201	36	9	4
5			30	148	196	32	12	3
6			32	135	180	29	10	3
7	3	7	35	148	176	27	9	4
8			30	123	162	25	8	4
9			29	113	148	24	8	5
10		5	26	107	142	23	7	5
11			24	104	133	22	7	5
12		6	23	107	131	22	7	4
13		7	23	137	142	20	6	4
14		7	26	173	162	19	6	5
15		7	30	203	171	17	5	8
16		7	33	193	162	17	5	8
17	6	8	32	183	148	18	5	6
18		8	32	173	127	16	5	5
19		8	33	164	102	15	5	5
20		9	38	162	86	14	5	5
21	6	9	50	168	77	15	5	5
22		9	67	188	75	14	5	5
23		8	80	190	71	13	4	5
24		8	130	188	68	12	4	6
25		8	150	198	68	12	4	5
26		9	176	249	64	11	4	5
27		8	201	238	59	11	4	5
28		13	244	224	55	10	3	6
29		15	232	221	61	10	3	7
30		16	190	238	55	10	3	6
31		20		235		10	6	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October 1–21			4.1	171
March	20		8.4	516
April	244	21	70.1	4,170
May	249	104	174	10,700
June	216	55	128	7,620
July	49	10	20.6	1,270
August	10	3	6.3	387
September	8	3	5.0	298

ROCK CREEK NEAR COPELAND, IDAHO

LOCATION.—Staff gage in NW¼ sec. 5, T. 63 N., R. 1 E., at trestle on Kootenai Valley branch of Great Northern Railway 4.7 miles south of Copeland.

DRAINAGE AREA.—14.3 square miles.

RECORDS AVAILABLE.—May 1928 to August 1933 (except winters).

DISCHARGE.—Maximum during year, 86 second-feet Apr. 26 (gage height, 2.44 feet); minimum, 0.2 second-foot Oct. 1–11, July 27 to Sept. 13 (minimum gage height, 0.28 foot Aug. 1, 11, 22, 28).

1928–33: Maximum, that of Apr. 26, 1933; minimum, 0.1 second-foot July 20 to Sept. 7, 1931, Aug. 3, 5–10, 14, 15, 17–19, 1932.

REMARKS.—Records good except those estimated, which are fair. Results of measurements shown Dec. 12, Jan. 10, 28, Feb. 23, Mar. 11. No diversions above station.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			e6.0				30	38	5.3		0.2	
2			e5.0				31	41	5.0			e0.2
3			6.5			1.5	35	39	4.7	e1.1		
4				e1.0			36	38	4.3			
5		e0.8					35	32	4.0			.2
6	e0.2		e4.0				36	26	3.7		e.2	
7							35	22	3.5			
8				e3.0	e1.0	e1.8	32	23	4.0	e.9		e.2
9		.9					27	29	4.7			
10		.7	e1.2	3.7			24	27	5.3			
11	.2	e1.6		e3.1		2.0	25	26	4.0		.2	
12			1.2	e2.5			25	22	3.7			.2
13	e.3		e1.0			e3.0	25	21	3.5	e.7		e.2
14			e.8	e2.3			26	22	3.2			e.3
15	.3		e.6				28	21	2.5			
16		e2.5				e5.0	31	20	2.4			e.4
17							31	17	2.1		e.2	
18				e2.0			30	16		e.5		e.3
19			e.8		e1.5		33	14	e2.0			.3
20							35	13				
21		2.5				e8.0	47	10		e.3		
22	e.4						52	12		e.3	.2	
23				e1.8	1.9	9.9	66	10		e1.7		
24						9.6	70	10				
25		e2.5	e1.0	e1.7		e11	84	9.3		e.3	e.2	e.3
26				e1.6	e1.5	12	86	9.3				
27				e1.6		17	70	8.8	e1.4			
28	.5		e1.2	1.5		23	74	7.8			.2	
29		2.9				27	67	6.9	1.3			
30	e.5	e5.0	e1.2	e1.3		27	56	6.5	e1.3	e.2	e.2	
31						31		6.1				

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October			0.33	0.023	0.03	20
November			2.00	.140	.16	119
December			1.85	.129	.15	114
January			1.89	.132	.15	116
February			1.25	.087	.09	69
March	31		8.0	.559	.64	492
April	86	24	42.7	2.99	3.34	2,540
May	41	6.1	19.5	1.36	1.57	1,200
June	5.3	1.3	2.91	.203	.23	173
July			.61	.043	.05	38
August			.20	.014	.02	12
September			.27	.019	.02	16
The year	86		6.78	.474	6.45	4,910

e Estimated.

BRUSH CREEK NEAR COPELAND, IDAHO

LOCATION.—Staff gage in SE¼ sec. 19, T. 64 N., R. 1 E., at wooden bridge on valley road paralleling Kootenai Valley branch of Great Northern Railway 1.8 miles south of Copeland.

DRAINAGE AREA.—7.2 square miles.

RECORDS AVAILABLE.—May 1928 to September 1933.

DISCHARGE.—Maximum during year, 68 second-feet Apr. 26 (gage height, 5.20 feet); no flow Oct. 1–10.

1928–33: Maximum, that of Apr. 26, 1933; no flow June 2, 1929, July 4 to Oct. 31, 1931, July 8 to Aug. 14, Aug. 23 to Oct. 10, 1932.

REMARKS.—Records poor. Small amount of water is diverted for irrigation from Brush Lake about 2 miles above gage; some regulation at outlet of Brush Lake.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			a0.4				38	26	a4.3			
2			.4				40	28	a4.5			
3			.4	a0.5	a0.7		45	28	4.8			
4							45	27	a4.8			
5	a0	a0.2				a1.0	45	25	a4.8			
6							41	21	4.8		a0.2	a0.1
7			a.4	a1.0			45	18				
8							36	19				
9		.2					45	18				
10		.1		1.2			37	17				
11	0.1				a.5	1.1	36	17	a4.6	a0.2		
12			.4				36	17			a.2	.1
13	a.1	a.2		a1.0			35	17				
14						a1.5	36	17	4.5			a.1
15	.1	a.3					24	17	3.8			
16							25	16	4.0			
17							25	17	3.8			
18		a.2				a2.0	24	17				
19					a.8		26	17	a2.5			
20							26	14			a.2	
21	a.1	.2	a.3	a.9		a3.0	26	10				
22						4.0	27	13	a1.5	a.2		a.2
23					.8	a4.8	44	11				
24						4.6	45	11				
25		a.2				a13	62	10	a.5			
26					a.8	22	68	7.9		a.2		
27						22	35	4.5				
28	.1			.9		24	47	5.6	a.2		.2	
29		.3				27	47	4.8				
30	a.1	a.4		a.9		32	35	4.5			a.2	
31						36		4.1				

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October			0.07	4.3
November			.21	12
December			.34	21
January			.87	53
February			.68	38
March	36		7.08	435
April	68	24	38.2	2,270
May	28	4.1	15.5	953
June			3.02	180
July			.20	12
August			.20	12
September			.15	8.9
The year	68		5.53	4,000

a Estimated.

PARKER CREEK NEAR COPELAND, IDAHO

LOCATION.—Staff gage in SW¼ sec. 8, T. 64 N., R. 1 W., at Forest Service bridge 4¼ miles west of Copeland.

DRAINAGE AREA.—16.5 square miles.

RECORDS AVAILABLE.—May 1928 to September 1933 (except winters).

DISCHARGE.—Maximum during year (estimated), 400 second-feet June 15; minimum, 3 second-feet Sept. 11–13; minimum gage height, −0.67 foot Sept. 11. 1928–33: Maximum, that of June 15, 1933; minimum, 1 second-foot Sept. 4–6, 1930.

REMARKS.—Records poor. Discharge was estimated on basis of graphical comparison with flow of nearby streams except on Oct. 21, Apr. 11, 19, May 3, 6, 17, 27, June 6, 7, 13, 22, July 1, 3, 13, 26, 29, Aug. 2, 4, 12, 14, 23 Sept. 6, 11, 20, when gage was read. No records Oct. 22 to Mar. 23. No diversions above station.

Discharge, in second-feet, 1932–33

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				a 90		107	a 12	
2			a 13	a 90		a 100	12	
3				88	a 160	93	a 12	a 4
4				a 85			12	
5			a 17	a 85		a 90	a 12	
6				75	151		a 11	4
7			a 17		144		a 11	
8						a 75	a 10	
9			a 14				a 10	a 4
10				a 70	a 160		a 9	
11	a 4		b 10			a 60	a 9	3
12							8	a 3
13			a 10		152	54	a 7	a 3
14					a 300		6	
15				a 95	a 400	a 50		
16					a 300		a 6	a 5
17			a 13	94	a 250			
18						a 40		
19			14					
20				a 90	a 200		a 5	5
21	b 4		a 22			a 30		
22					172			
23						5		
24		a 7	a 50			a 20		
25				a 125	a 150			a 5
26		a 7				20		
27				148		a 18	a 5	
28			a 100		a 130	a 16		
29						15		
30		a 10		a 160		a 14		
31						a 13		

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October 1–21			4.0	0.242	0.19	167
March 24–31		7	8.5	.515	.15	135
April			32.3	1.96	2.19	1,920
May			101	6.12	7.06	6,210
June	400		180	10.9	12.16	10,700
July	107	13	49.8	3.02	3.48	3,060
August	12		7.4	.448	.52	455
September		3	4.5	.273	.30	268

a Estimated or interpolated. b Result of discharge measurement.

LONG CANYON CREEK NEAR PORT HILL, IDAHO

LOCATION.—Water-stage recorder in NW¼ sec. 36, T. 65 N., R. 2 W., on Forest Service bridge at mouth of canyon, 4 miles southwest of Port Hill.

DRAINAGE AREA.—29 square miles.

RECORDS AVAILABLE.—May 1928 to September 1933 (except winters).

DISCHARGE.—Maximum during year (estimated), 950 second-feet for day, June 15; maximum gage height, 6.55 feet (caused by drift jam); minimum, 5 second-feet Oct. 9 (gage height, 1.17 feet).

1928–33: Maximum, that of June 15, 1933; minimum, 4.2 second-feet Nov. 8, 1930 (gage height, 0.91 foot).

REMARKS.—Records good except those for Dec. 7, 8, Apr. 26 to Sept. 30, which are fair. Discharge estimated Dec. 7, 8 because of ice and June 15 because of log jam. No diversions above gage. No records Dec. 9 to Mar. 15.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6	10	58	------	19	159	448	229	36	15
2	6	12	96	------	22	155	436	226	34	13
3	6	12	96	------	36	155	466	220	33	12
4	6	11	81	------	32	153	548	206	34	12
5	6	12	69	------	29	149	478	184	35	12
6	6	15	55	------	30	144	436	170	33	11
7	6	11	40	------	27	135	378	168	30	12
8	6	12	30	------	24	129	384	159	28	12
9	6	10	------	------	22	122	378	148	27	15
10	6	7	------	------	20	119	304	153	25	17
11	6	10	------	------	20	118	280	127	24	14
12	7	10	------	------	19	119	280	122	23	12
13	7	44	------	------	19	132	406	118	22	12
14	17	43	------	------	20	164	762	111	21	18
15	21	28	------	------	26	188	950	102	20	22
16	20	24	------	12	27	196	914	93	19	22
17	15	24	------	12	26	186	762	85	19	17
18	11	35	------	13	26	186	576	78	18	17
19	9	35	------	12	27	176	490	73	17	18
20	9	34	------	14	32	174	478	66	17	15
21	12	32	------	15	39	196	484	61	17	14
22	26	30	------	14	52	240	484	58	16	17
23	22	27	------	12	65	243	418	56	16	16
24	13	27	------	12	76	253	384	55	15	17
25	12	26	------	12	95	296	378	54	15	15
26	11	25	------	12	118	418	340	51	14	15
27	13	27	------	12	142	378	314	47	13	16
28	12	29	------	15	184	362	288	44	13	20
29	11	50	------	18	186	394	284	42	13	31
30	9	74	------	19	166	454	250	40	13	22
31	10	------	------	19	------	466	------	37	17	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	26	6	10.7	0.369	0.42	658
November	74	7	24.9	.859	.96	1,480
December 1–8	96	30	65.6	2.26	.67	1,040
March 16–31	19	12	13.9	.479	.29	441
April	186	19	54.2	1.87	2.09	3,230
May	466	118	218	7.52	8.67	13,400
June	950	250	459	15.8	17.63	27,300
July	229	37	109	3.76	4.34	6,700
August	36	13	21.8	.752	.87	1,340
September	31	11	16.0	.552	.62	952

SMITH CREEK NEAR PORT HILL, IDAHO

LOCATION.—Water-stage recorder in NE¼ sec. 26, T. 65 N., R. 2 W., at Forest Service bridge 1 mile south of Smith Creek ranger station and 4 miles southwest of Port Hill.

DRAINAGE AREA.—70 square miles.

RECORDS AVAILABLE.—May 1928 to September 1933 (except winters).

DISCHARGE.—Maximum during year, 3,060 second-feet June 14 (gage height, 7.15 feet); minimum, 5 second-feet Oct. 9 (gage height, 1.02 feet).

1928–33: Maximum discharge and gage height, those of June 14, 1933; minimum discharge, that of Oct. 9, 1932; minimum gage height, 0.80 foot Sept. 15–18, 1929, Sept. 10, 1930.

REMARKS.—Records good except those estimated, Nov. 29, 30, Dec. 2, 3, 7, 8, Mar. 17 to Apr. 13, June 16–20, which are poor. Results of discharge measurement used Mar. 16. No diversions above gage.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9	43	294			442	1,120	670	55	25
2	8	55	400			446	1,090	670	53	18
3	8	55	400			485	1,240	575	53	16
4	8	47	291			463	1,380	575	67	14
5	8	54	243		75	429	1,320	526	64	13
6	8	70	203			405	1,150	526	59	13
7	8	54	150			386	1,090	480	54	15
8	9	52	130			358	1,180	480	44	16
9	8	47				330	1,210	438	40	19
10	9	34				314	970	526	38	30
11	10	48			65	327	860	361	34	22
12	11	45				375	1,000	327	31	18
13	12	298				458	1,320	296	30	16
14	50	218			61	620	1,780	296	28	32
15	67	146			70	750	2,200	269	28	60
16	67	121		34	73	670	1,800	241	26	57
17	51	130			69	545	1,500	197	25	38
18	36	222			68	531	1,200	178	23	36
19	28	227			73	489	1,000	160	22	42
20	25	185			84	476	1,000	144	22	30
21	37	157			104	545	970	128	22	27
22	124	136		35	136	750	942	128	20	40
23	92	121			180	722	836	111	19	38
24	55	114			234	722	778	99	18	40
25	46	108			291	888	778	98	17	34
26	46	103			394	1,350	832	94	16	32
27	69	114			489	1,030	722	82	16	36
28	64	118			620	942	670	75	15	64
29	52	250		45	620	1,090	832	69	14	117
30	43	350			494	1,380	645	69	14	71
31	46					1,240		61	24	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	124	8	35.9	0.513	0.59	2,210
November	350	34	124	1.77	1.98	7,380
December 1–8	400	130	264	3.77	1.12	4,190
March 16–31			38.1	.544	.32	1,210
April	620		166	2.37	2.64	9,880
May	1,380	314	644	9.20	10.61	39,600
June	2,200	645	1,110	15.9	17.74	66,000
July	670	61	289	4.13	4.76	17,800
August	67	14	32.0	.457	.53	1,970
September	117	13	34.3	.490	.55	2,040

BOUNDARY CREEK NEAR PORT HILL, IDAHO

(International gaging station)

LOCATION.—Water-stage recorder in SW¼ sec. 11, T. 65 N., R. 2 W., 140 feet below bridge at mouth of canyon, a fifth of a mile south of the international boundary, and 3 miles west of Port Hill.

DRAINAGE AREA.—97 square miles.

RECORDS AVAILABLE.—May 1928 to September 1933.

DISCHARGE.—Maximum during year, 2,400 second-feet June 15 (gage height, 5.22 feet); minimum, 11 second-feet Oct. 9 (gage height, 0.50 foot).

1928–33: Maximum, that of June 15, 1933; minimum, 9 second-feet Oct. 31, 1929 (gage height, 0.33 foot).

REMARKS.—Records good except those estimated because of ice, Dec. 7 to Jan. 5, Jan. 7–30, Feb. 1 to Mar. 5, which are poor. Results of discharge measurements Jan. 6, 31. No diversions above gage. This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	34	244				59	540	1,230	634	53	31
2	16	39	310				63	540	1,230	585	51	27
3	15	41	310	60	45	35	94	585	1,430	550	50	25
4	15	39	237				90	570	1,630	505	50	24
5	15	37	198				84	535	1,550	454	58	24
6	15	40	154	58		35	87	495	1,350	427	56	24
7	15	30				36	82	472	1,230	404	49	26
8	15	38				35	74	445	1,390	376	45	25
9	14	33				32	68	422	1,310	332	42	27
10	18	18				34	67	414	1,060	356	39	35
11	18	27	50	65	30	35	63	432	985	292	38	29
12	19	31				37	62	476	1,120	264	36	27
13	19	84				39	60	565	1,470	244	35	25
14	40	130				37	63	736	1,900	218	33	36
15	56	78				37	75	852	2,080	198	32	66
16	55	63				39	84	820	1,940	181	31	54
17	50	66				39	82	694	1,510	163	30	39
18	35	115				39	81	662	1,200	147	29	38
19	30	120				39	85	618	1,060	132	28	41
20	26	105	70			40	98	606	1,060	118	28	34
21	40	90				42	124	678	1,060	110	34	32
22	94	77			40	41	173	950	985	102	30	47
23	73	64		50		39	244	950	885	94	28	46
24	46	58				40	306	918	820	84	29	45
25	39	69				39	384	1,060	820	78	27	39
26	37	64				39	486	1,630	918	72	27	37
27	47	64				39	601	1,270	754	67	26	38
28	50	67	60			44	760	1,120	694	62	25	56
29	39	247			-------	50	736	1,270	790	63	25	90
30	28	384			-------	53	606	1,550	689	62	25	60
31	35	-------		47	-------	55	-------	1,390	-------	58	31	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	94	14	33.2	0.342	0.39	2,040
November	384	18	78.4	.808	.90	4,670
December	310	----------	95.6	.986	1.14	5,880
January	----------	----------	56.1	.578	.67	3,450
February	----------	----------	37.3	.385	.40	2,070
March	55	----------	39.0	.402	.46	2,400
April	760	59	198	2.04	2.28	11,800
May	1,630	414	783	8.07	9.30	48,100
June	2,080	689	1,200	12.4	13.83	71,400
July	634	58	240	2.47	2.85	14,800
August	58	25	36.1	.372	.43	2,220
September	90	24	38.2	.394	.44	2,270
The year	2,080	14	237	2.44	33.09	171,000

CLARK FORK BASIN

CLARK FORK ABOVE MISSOULA, MONT.

LOCATION.—Water-stage recorder in SE¼ sec. 19, T. 13 N., R. 18 W., 1½ miles below mouth of Blackfoot River and 4 miles east of Missoula.

RECORDS AVAILABLE.—March 1929 to September 1933.

DISCHARGE.—Maximum, 21,600 second-feet June 2 (gage height, 9.90 feet); minimum occurred during winter.

1929–33: Maximum, that of June 2, 1933; minimum, 86 second-feet Jan. 8, 1930 (gage height, 0.52 foot; ice jammed above gage).

REMARKS.—Records good except those for July 29 to Aug. 8, which are poor. Discharge not computed for January. Observer's readings used Dec. 13–19, 29–31, Feb. 1–14. Discharge estimated Feb. 1 to Mar. 4, July 29 toAug. 8. Stage-discharge relation affected by ice Dec. 13 to Mar. 4. Several diversions for irrigation above station.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	737	1,200	1,390			1,560	5,290	17,200	4,940		1,310
2	805	1,320	1,200		1,200	1,680	5,060	18,300	4,620		1,380
3	680	1,260	1,200			1,740	4,940	19,000	4,310		1,360
4	720	1,420	1,200			1,810	5,170	19,000	3,920		1,310
5	895	1,240	1,300		1,190	2,080	5,060	19,400	3,820	1,550	1,320
6	788	1,280	1,200		1,190	1,620	4,940	18,700	3,640		1,240
7	904	1,330	1,200		1,140	1,680	4,720	17,600	3,370		1,200
8	1,130	1,340	805		1,130	1,740	4,830	16,200	3,200		1,180
9	1,110	1,440	610		1,190	1,620	4,940	16,200	3,030	1,260	1,180
10	1,070	1,200	469		1,190	1,500	4,830	18,300	3,030	1,110	1,320
11	1,510	1,320	544	800	1,190	1,440	4,620	18,700	2,860	1,130	1,300
12	1,090	1,310	625		1,130	1,400	4,210	17,200	2,700	1,400	1,320
13	1,070	1,420	565		1,190	1,420	3,820	17,200	2,540	895	1,220
14	1,270	1,420	688		1,330	1,330	3,920	18,000	2,460	990	1,200
15	1,180	1,340	720		1,400	1,380	4,210	18,000	2,300	952	1,280
16	1,240	1,440	841		1,500	1,620	4,720	17,200	2,160	933	1,320
17	1,380	1,300	805		1,320	2,080	5,170	16,500	2,080	886	1,280
18	1,320	1,440	914		1,560	2,160	5,920	15,200	1,940	933	1,270
19	1,200	1,390	1,200		1,560	1,940	6,180	13,800	2,860	971	1,200
20	1,220	1,390	1,440		1,880	1,940	6,050	11,500	2,860	952	1,260
21	1,220	1,400	1,260		1,620	1,880	6,580	10,200	2,860	868	1,380
22	1,220	1,400	1,090		1,620	1,880	7,830	8,990	3,120	1,110	1,280
23	1,140	1,420	1,010		1,560	2,230	8,990	8,690	1,620	1,500	1,340
24	1,340	1,340	942		1,430	2,620	8,690	7,830	1,940	1,560	1,370
25	1,320	1,340	990	1,050	1,370	3,030	8,690	6,180	1,880	1,560	1,360
26	990	1,300	990		1,380	3,370	9,590	6,320	1,810	1,740	1,320
27	1,300	1,500	942		1,390	3,820	11,200	5,790	1,940	1,440	1,270
28	1,220	1,300	805		1,440	4,720	10,800	5,410	1,940	1,090	1,220
29	1,300	1,220	754	-------	1,500	5,290	10,800	5,170		1,320	1,330
30	1,200	1,280	859	-------	1,880	5,540	11,500	5,170	1,840	1,390	1,310
31	1,320	-------	595	-------	1,450	-------	14,100	-------		1,360	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,510	680	1,130	69,500
November	1,500	1,200	1,340	79,700
December	1,440	469	940	57,800
January	-------	-------	-------	-------
February	-------	-------	871	48,400
March	1,880	1,130	1,370	84,200
April	5,540	1,330	2,270	135,000
May	14,100	3,820	6,690	411,000
June	19,400	5,170	13,800	821,000
July	4,940	1,620	2,750	169,000
August	1,740	868	1,280	78,700
September	1,380	1,180	1,290	76,800

CLARK FORK BELOW MISSOULA, MONT.

LOCATION.—Water-stage recorder in SE¼ sec. 21, T. 13 N., R. 20 W., 2 miles below mouth of Bitterroot River and 6 miles west of Missoula.

RECORDS AVAILABLE.—October 1929 to August 1933 (discontinued).

DISCHARGE.—Maximum during year, 36,800 second-feet June 11 (gage height, 10.14 feet); minimum, 388 second-feet Jan. 18 (gage height, 0.58 foot; ice present).

1929–33: Maximum, that of June 11, 1933; minimum, that of Jan. 18, 1933.

REMARKS.—Records good except those for periods of ice effect, Dec. 6–19, Dec. 28 to Jan. 2, Jan. 15–22, Feb. 5–26, which are fair. Observer's readings used Oct. 13–16, Dec. 6–19, Feb. 8–14. Numerous diversions above station.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
1	1,760	2,040	2,290	1,450	1,480	1,440	2,380	11,300	26,900	12,400	2,120
2	1,920	2,120	2,290	1,630	1,560	1,510	2,840	10,200	30,800	11,300	2,090
3	1,440	2,090	2,290	1,820	1,560	1,560	2,470	9,860	31,900	11,000	2,000
4	1,480	2,200	2,380	1,870	1,560	1,520	2,840	9,500	34,100	10,200	1,950
5	1,410	2,120	2,290	1,950	1,470	1,630	3,250	9,140	34,600	10,200	1,930
6	1,480	2,100	2,290	2,090	1,210	1,600	3,040	8,790	34,100	9,140	1,950
7	1,480	2,200	1,760	2,040	980	1,600	3,040	8,450	31,900	8,450	[a] 1,950
8	1,560	2,290	640	2,120	710	1,630	2,840	8,450	30,200	7,780	[a] 1,870
9	1,790	2,290	640	2,200	675	1,650	2,840	8,450	29,700	7,290	1,790
10	1,890	2,120	610	2,290	640	1,630	2,650	8,110	29,100	6,810	1,660
11	1,950	2,200	622	2,200	640	1,630	2,560	7,780	36,300	6,490	1,630
12	2,120	2,200	668	2,120	647	1,740	2,560	7,290	33,500	6,010	1,790
13	2,090	2,290	682	2,090	689	1,950	2,560	6,810	33,500	5,530	1,410
14	2,470	2,290	758	2,040	726	2,200	2,470	6,810	35,200	5,080	1,480
15	2,120	2,380	844	1,870	930	2,200	2,470	6,970	36,300	4,940	1,370
16	2,120	2,290	940	1,410	980	2,290	2,560	7,780	36,300	4,530	1,340
17	2,100	2,290	940	808	1,000	2,290	3,040	8,450	35,700	4,400	1,260
18	2,200	2,380	980	640	1,040	2,290	3,570	9,140	33,500	4,150	1,310
19	2,020	2,380	1,760	580	1,070	2,290	3,250	9,500	30,200	4,030	1,380
20	2,200	2,560	1,790	710	1,150	2,560	3,250	9,860	25,800	3,800	2,070
21	2,100	2,740	1,820	1,090	1,200	2,380	3,250	9,860	22,700	3,460	-------
22	2,040	2,650	1,870	1,560	1,280	2,470	3,250	11,300	20,700	3,570	-------
23	1,970	2,650	1,710	1,630	1,210	2,470	3,460	13,600	19,200	2,650	-------
24	1,970	2,650	1,840	1,660	1,190	2,290	4,030	14,400	18,300	3,040	-------
25	2,120	2,470	1,820	1,660	1,200	2,200	5,080	14,000	16,000	2,940	-------
26	2,020	2,290	1,820	1,630	1,230	2,200	6,170	14,800	15,200	2,840	-------
27	2,020	2,380	1,810	1,710	1,470	2,200	7,450	17,300	14,400	2,650	-------
28	2,040	2,470	1,660	1,660	1,540	2,290	9,140	19,700	13,200	2,560	-------
29	2,120	2,290	1,580	1,760	-------	2,290	11,000	18,700	13,200	2,470	-------
30	2,090	2,290	1,450	1,630	-------	2,840	11,700	18,700	13,200	2,290	-------
31	2,200	-------	1,130	1,510	-------	2,120	-------	22,200	-------	2,200	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,470	1,410	1,940	119,000
November	2,740	2,040	2,320	138,000
December	2,380	610	1,480	91,000
January	2,290	580	1,660	102,000
February	1,560	640	1,110	61,600
March	2,840	1,440	2,030	125,000
April	11,700	2,380	4,030	240,000
May	22,200	6,810	11,200	689,000
June	36,300	13,200	27,200	1,620,000
July	12,400	2,200	5,620	346,000
August 1-20	2,120	1,260	1,720	68,200
The period	-------	-------	-------	3,600,000

[a] Interpolated.

CLARK FORK AT ST. REGIS, MONT.

LOCATION.—Staff gage in sec. 19, T. 18 N., R. 27 W., at St. Regis, half a mile below mouth of St. Regis River.

DRAINAGE AREA.—10,500 square miles.

RECORDS AVAILABLE.—October 1910 to September 1923; February 1929 to September 1933.

DISCHARGE.—Maximum during year, 50,000 second-feet June 11 (gage height, 16.80 feet); minimum, 1,200 second-feet Feb. 8 (gage height, 2.70 feet).

1910–23, 1929–33: Maximum, 62,800 second-feet May 20–31, 1913 (gage height, 19.1 feet); minimum, 1,050 second-feet Feb. 19–22, 1929; ice on control.

REMARKS.—Records good except those for periods of ice effect, Dec. 10–29, Feb. 9–19, which are fair. Numerous diversions above station.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a2,340	2,840	3,280	3,280	2,210	2,320	a3,860	15,900	35,200	a15,900	3,280	3,130
2	2,570	2,980	3,280	3,280	2,320	2,320	3,780	14,500	39,200	14,800	3,280	2,980
3	2,100	2,980	3,610	3,610	2,320	2,440	4,120	13,800	41,300	14,500	3,130	2,980
4	2,100	2,980	a3,610	3,440	2,320	2,700	5,050	13,500	44,000	a13,700	3,130	2,700
5	2,100	2,980	3,610	3,610	2,440	2,570	5,050	13,500	45,600	12,900	2,980	2,570
6	2,100	a2,980	3,440	3,610	2,100	2,700	5,050	12,900	46,200	12,300	a2,980	2,570
7	2,100	2,980	3,130	3,610	1,990	2,570	4,660	12,600	44,000	11,100	2,980	2,570
8	2,210	3,130	2,100	3,610	1,200	2,570	4,660	12,000	42,400	10,200	3,130	2,570
9	2,210	3,130	1,990	4,120		2,570	4,480	12,000	45,100	9,970	2,980	2,700
10	2,210	2,980		3,610		2,700	4,300	12,000	48,900	9,450	2,980	2,700
11	2,210	2,980		3,440	1,410	2,700	3,950	11,400	50,000	8,200	2,700	2,570
12	2,440	2,840	1,560	3,130		2,700	3,950	9,700	49,500	7,720	2,570	2,570
13	2,700	a3,220		3,130		2,700	3,950	9,970	45,600	7,240	2,700	2,570
14	2,440	3,610		3,280		2,840	3,950	10,500	46,200	7,240	2,570	2,570
15	2,440	3,280		3,130		3,130	3,950	11,700	49,500	7,240	2,570	2,570
16	a2,570	3,130		2,570	2,620	2,980	a4,300	12,300	49,500	7,000	2,440	2,700
17	2,700	3,440	2,250	1,990		3,280	4,660	13,200	48,900	6,120	2,440	2,700
18	2,700	3,440		1,520		3,280	5,470	13,800	44,500	6,120	2,320	2,570
19	2,840	3,610		1,600		3,280	5,470	14,200	40,800	5,900	2,320	2,570
20	2,840	3,440		1,890	5,900	3,280	5,470	14,500	35,700	5,470	2,320	2,570
21	2,840	3,610		1,990	4,120	3,610	5,470	14,800	29,900	5,260	2,320	2,570
22	2,840	3,610	2,790	2,320	2,440	3,440	5,680	15,600	27,600	5,050	a2,510	2,700
23	a2,770	3,610		2,320	2,320	3,610	7,000	18,000	25,000	4,660	2,700	2,980
24	2,700	3,440		2,320	2,440	3,130	7,960	19,500	23,400	a4,390	2,980	2,980
25	2,440	3,280		2,320	2,320	2,980	9,200	19,500	21,400	4,120	3,130	2,980
26	2,440	3,280		2,320	2,440	3,280	11,100	21,800	19,900	4,120	3,130	2,980
27	2,700	a3,280	3,150	2,440	2,440	3,130	13,200	24,200	19,500	4,120	a3,060	2,980
28	2,980	3,280		2,440	2,440	3,280	a15,600	26,800	18,000	3,950	2,980	2,980
29	2,840	3,280		2,320	-------	3,440	18,000	25,400	17,700	3,780	2,840	2,980
30	2,840	3,280	3,440	2,210	-------	3,780	17,700	26,300	17,000	3,610	2,700	3,130
31	2,840	-------	3,440	2,320	-------	3,950	-------	30,400	-------	3,280	2,840	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,980	2,100	2,520	155,000
November	3,610	2,840	3,230	192,000
December	3,610	----------	2,700	166,000
January	4,120	1,520	2,800	172,000
February	5,900	1,200	2,380	132,000
March	3,950	2,320	3,010	185,000
April	18,000	3,780	6,700	399,000
May	30,400	9,700	16,000	984,000
June	50,000	17,000	37,000	2,200,000
July	15,900	3,280	7,720	475,000
August	3,280	2,320	2,810	173,000
September	3,130	2,570	2,760	164,000
The year	50,000	1,200	7,460	5,400,000

a Interpolated.

CLARK FORK NEAR PLAINS, MONT.

LOCATION.—Water-stage recorder on lot 7, sec. 7, T. 19 N., R. 26 W., 3 miles above Plains and 7 miles below mouth of Flathead River.

DRAINAGE AREA.—19,900 square miles.

RECORDS AVAILABLE.—October 1910 to September 1933.

DISCHARGE.—Maximum during year, 120,000 second-feet June 17 (gage height, 18.00 feet); minimum probably occurred during ice period.

1910–33: Maximum, 126,000 second-feet May 28, 1928; minimum, 3,860 second-feet Jan. 18, 1930.

REMARKS.—Records good except those indicted by braces, which are fair. Numerous diversions for irrigation above station. Flow somewhat regulated by natural storage in Flathead Lake.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,450	6,650	9,250			6,250	6,850	31,800	72,800	75,800	22,100	10,600
2	5,260	6,650	9,450			6,250	6,850	32,500	78,800	73,800	21,500	10,600
3	5,260	6,850	9,650			6,250	7,650	32,500	86,000	70,800	20,200	10,600
4	5,450	6,650	10,000			6,250	7,850	33,300	90,300	68,800	19,600	10,200
5	5,850	6,650	10,200	[a]8,500	[a]5,900	6,050	8,250	34,100	96,700	66,900	19,600	10,200
6	5,850	6,650	10,600			6,050	8,650	34,100	98,900	64,000	18,400	10,000
7	5,850	6,850	11,100			6,050	8,650	34,800	100,000	61,300	17,900	9,800
8	5,850	6,850	10,000			6,050	8,650	34,800	98,900	59,500	17,900	9,650
9	5,850	7,050	6,800			5,850	8,450	36,300	103,000	56,800	17,300	9,450
10	5,850	7,450				5,850	8,450	37,100	107,000	54,200	16,200	9,450
11	5,850	7,250				5,850	8,050	37,100	111,000	52,400	16,200	[a]9,400
12	5,850	7,250				5,850	7,850	36,300	113,000	50,700	15,700	[a]9,350
13	5,650	7,250				6,050	8,050	35,600	111,000	48,200	15,200	[a]9,250
14	5,650	7,450				6,450	8,050	[a]36,100	112,000	46,600	14,700	[a]9,150
15	5,650	7,450	[a]8,000	[a]7,200	[a]6,250	6,650	8,050	[a]36,600	116,000	45,000	14,200	9,050
16	[a]5,900	7,850				6,850	8,250	37,100	118,000	42,600	13,700	8,850
17	[a]6,150	7,850				6,650	9,050	[a]39,100	119,000	41,000	13,700	8,850
18	[a]6,400	8,050				6,650	9,450	[a]41,100	118,000	38,600	13,200	8,850
19	6,650	8,250				6,650	9,850	42,600	117,000	37,100	12,800	8,850
20	[a]6,450	8,450				6,650	10,000	43,400	112,000	35,600	12,300	8,650
21	[a]6,650	8,850				6,850	10,000	44,200	108,000	34,100	11,900	8,650
22	[a]6,450	9,250				6,650	10,200	45,000	103,000	33,300	11,900	8,850
23	[a]6,350	9,250				6,850	10,600	46,600	100,000	32,500	11,900	9,050
24	[a]6,150	9,650				6,850	11,900	49,900	95,600	30,300	11,900	8,850
25	[a]5,850	9,650			[a]6,000	6,650	13,700	50,700	92,400	29,600	12,300	8,850
26	6,050	9,650	[a]8,500	[a]6,550		6,450	15,700	53,300	88,100	28,200	12,300	9,050
27	6,450	9,450				6,450	19,000	55,000	86,000	26,800	11,900	9,050
28	6,250	9,650				6,450	23,400	59,500	82,900	26,100	11,500	8,850
29	6,650	9,650				6,650	27,500	61,300	79,800	24,700	11,500	8,850
30	6,650	9,650				6,850	31,000	63,100	77,800	23,400	11,100	8,650
31	6,450					7,250		66,900		22,800	10,600	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	6,650	5,260	6,020	370,000
November	9,650	6,650	8,000	476,000
December	11,100		8,660	532,000
January			7,390	454,000
February			6,050	336,000
March	7,250	5,850	6,420	395,000
April	31,000	6,850	11,300	672,000
May	66,900	31,800	42,600	2,620,000
June	119,000	72,800	99,800	5,940,000
July	75,800	22,800	45,200	2,780,000
August	22,100	10,600	14,900	916,000
September	10,600	8,650	9,320	555,000
The year	119,000	5,260	22,200	16,000,000

[a] Interpolated.

CLARK FORK NEAR HERON, MONT.

LOCATION.—Water-stage recorder in sec. 28, T. 27 N., R. 34 W., 600 feet above Dead Horse Creek and 1½ miles northwest of Heron.

RECORDS AVAILABLE.—September 1928 to September 1933.

DISCHARGE.—Maximum during year, 137,000 second-feet June 17 (gage height, 46.64 feet); minimum, 4,940 second-feet Mar. 9 (gage height, 10.33 feet).

1928–33: Maximum, that of June 17, 1933; minimum, 1,640 second-feet, as measured Jan. 13, 1930, during period of ice effect (gage height, 8.81 feet, present datum).

Maximum stage known, 59.1 feet, present datum, June 1894.

REMARKS.—Records excellent except those estimated Dec. 11–23, Feb. 9–16, Sept. 17, which are fair. Power-plant operation at Thompson Falls causes considerable diurnal fluctuation during low-water periods. Considerable water diverted for irrigation from tributaries upstream.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7,070	7,250	10,800	9,550	8,180	7,250	10,400	40,400	83,600	84,400	24,700	11,400
2	7,070	7,250	11,000	9,350	7,990	7,250	9,950	40,000	90,500	81,800	23,800	11,400
3	7,250	7,070	12,300	9,150	7,610	7,250	10,400	39,700	97,100	78,800	22,900	11,400
4	7,070	7,250	12,700	9,350	7,800	7,250	11,900	39,700	103,000	76,300	22,100	11,200
5	6,890	7,250	13,000	9,550	7,610	7,430	12,100	40,400	110,000	73,000	21,800	11,000
6	6,710	7,250	13,000	9,350	7,610	7,070	12,700	41,100	113,000	70,500	20,700	11,400
7	6,710	7,430	13,000	9,550	7,610	6,710	13,200	40,700	114,000	67,600	20,100	10,800
8	6,710	7,430	12,300	10,200	7,070	7,800	12,700	40,700	114,000	64,800	19,300	10,600
9	6,710	7,430	9,350	9,950		6,890	12,300	40,700	119,000	62,000	19,000	9,750
10	6,710	7,430	7,610	10,400		7,610	12,100	41,500	125,000	59,600	18,500	9,950
11	6,710	7,610		10,200	5,000	6,030	11,400	41,500	127,000	57,200	18,000	9,750
12	6,710	7,430	7,000	9,750		6,710	11,200	41,100	129,000	54,900	17,200	9,950
13	6,890	7,990		9,750		7,990	10,800	40,400	129,000	53,000	16,500	9,950
14	7,070	8,950		10,200		8,560	10,800	40,700	130,000	51,000	16,500	9,950
15	7,070	8,750	8,000	9,550	6,000	7,990	11,000	42,200	133,000	49,200	16,000	9,750
16	7,250	7,990		9,550		8,180	12,300	43,600	136,000	47,300	15,800	9,750
17	6,890	8,750		8,370	6,890	8,180	12,500	45,100	137,000	45,100	14,800	10,000
18	7,070	9,350		6,540	7,070	8,180	13,000	47,300	135,000	43,300	14,800	10,200
19	7,070	9,950	9,000	7,250	7,250	8,370	13,200	48,800	132,000	41,100	14,600	9,950
20	7,070	10,200		7,070	7,250	8,370	13,600	49,500	129,000	39,300	13,900	9,950
21	6,890	9,950		7,430	7,610	8,560	14,100	50,300	124,000	37,600	13,600	9,750
22	7,070	10,600	10,000	8,180	7,430	8,750	14,800	51,000	118,000	36,200	13,200	9,550
23	7,070	10,600	10,000	8,370	7,250	8,560	16,500	52,600	114,000	35,100	13,000	9,550
24	6,890	10,600	10,400	8,560	7,430	8,560	18,800	55,300	110,000	33,800	13,200	9,350
25	7,070	10,600	10,400	8,560	7,250	8,560	21,200	57,200	105,000	31,800	13,000	9,350
26	6,890	10,600	10,600	8,370	7,250	8,370	24,700	60,000	101,000	30,400	13,600	9,350
27	6,890	10,600	10,400	8,370	7,610	8,560	28,800	64,400	96,200	28,800	12,700	9,550
28	6,890	10,600	10,200	8,370	7,250	8,560	36,200	67,600	93,100	28,200	12,700	9,550
29	7,070	10,800	10,200	8,180	.....	8,950	40,000	70,900	90,000	27,200	12,100	9,150
30	7,070	10,800	9,750	8,180	.....	9,350	41,100	73,400	87,000	26,200	11,900	9,550
31	7,070	.....	9,350	8,180	.....	9,750	.....	78,000	.....	25,300	12,100	.....

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	7,250	6,710	6,950	427,000
November	10,800	7,070	8,860	527,000
December	13,000	.....	9,880	608,000
January	10,400	6,540	8,880	546,000
February	8,180	.....	6,890	383,000
March	9,750	6,030	7,990	491,000
April	41,100	9,950	16,500	982,000
May	78,000	39,700	49,200	3,030,000
June	137,000	83,600	114,000	6,780,000
July	84,400	25,300	49,700	3,060,000
August	24,700	11,900	16,500	1,010,000
September	11,400	9,150	10,100	601,000
The year	137,000	.....	25,500	18,400,000

PEND OREILLE LAKE AT HOPE, IDAHO

LOCATION.—Water-stage recorder in lot 2, sec. 35, T. 57 N., R. 1 E., at floating dock near Northern Pacific Railway station at Hope. Zero of gage is 2,000.00 feet above mean sea level, United States Coast and Geodetic Survey datum.

DRAINAGE AREA.—22,900 square miles.

RECORDS AVAILABLE.—September 1921 to September 1933; March 1914 to September 1922 at Sandpoint.

EXTREMES.—Maximum water-surface elevation during year, 2,068.78 feet June 21; minimum, 2,047.41 feet Oct. 11, 12.

1921–33: Maximum water-surface elevation, 2,068.78 feet June 21, 1933; minimum, 2,046.59 feet Jan. 28, 1930.

Maximum known water-surface elevation, 2,076.08 feet [1] June 1894.

REMARKS.—Records excellent. Considerable water diverted from tributaries of Clark Fork for irrigation.

Gage height, in feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	47.65	47.50	48.54	48.62	48.08	47.68	48.41	52.77	59.60	65.51	53.69	49.28
2	47.64	47.51	48.64	48.63	48.06	47.67	48.48	53.17	60.11	65.08	53.44	49.23
3	47.62	47.53	48.75	48.60	48.03	47.68	48.57	53.52	60.70	64.66	53.22	49.17
4	47.60	47.54	48.84	48.57	48.00	47.68	48.66	53.82	61.33	64.23	52.99	49.11
5	47.58	47.58	48.93	48.56	47.97	47.67	48.76	54.09	62.03	63.80	52.81	49.04
6	47.55	47.63	49.00	48.57	47.96	47.67	48.86	54.33	62.74	63.36	52.58	49.01
7	47.49	47.63	49.01	48.58	47.94	47.69	48.96	54.53	63.40	62.93	52.37	48.96
8	47.48	47.62	49.03	48.60	47.93	47.70	49.06	54.67	64.00	62.49	52.19	48.88
9	47.43	47.63	49.07	48.62	47.91	47.70	49.10	54.80	64.60	62.05	51.99	48.84
10	47.42	47.63	48.99	48.63	47.86	47.70	49.14	54.94	65.20	61.63	51.83	48.78
11	47.41	47.63	48.89	48.63	47.84	47.70	49.17	55.03	65.74	61.19	51.67	48.71
12	47.41	47.65	48.83	48.62	47.78	47.69	49.18	55.12	66.22	60.75	51.51	48.66
13	47.44	47.78	48.75	48.62	47.74	47.70	49.18	55.20	66.66	60.35	51.34	48.62
14	47.47	47.92	48.69	48.61	47.70	47.73	49.16	55.28	67.07	59.91	51.18	48.59
15	47.49	47.97	48.64	48.58	47.67	47.76	49.17	55.39	67.46	59.50	51.04	48.59
16	47.50	48.03	48.60	48.59	47.64	47.78	49.19	55.53	67.87	59.09	50.91	48.55
17	47.50	48.04	48.57	48.58	47.58	47.80	49.21	55.66	68.23	58.70	50.77	48.48
18	47.49	48.08	48.57	48.50	47.58	47.83	49.25	55.83	68.51	58.28	50.63	48.52
19	47.49	48.15	48.62	48.41	47.58	47.86	49.28	55.98	68.68	57.90	50.52	48.48
20	47.49	48.22	48.64	48.35	47.58	47.89	49.31	56.12	68.76	57.50	50.39	48.43
21	47.48	48.26	48.65	48.28	47.61	47.94	49.37	56.25	68.75	57.12	50.24	48.43
22	47.49	48.31	48.68	48.24	47.63	47.98	49.44	56.40	68.63	56.76	50.13	48.43
23	47.53	48.33	48.72	48.21	47.65	48.01	49.56	56.56	68.43	56.42	50.02	48.40
24	47.50	48.37	48.72	48.20	47.65	48.03	49.74	56.73	68.16	56.09	49.87	48.40
25	47.49	48.36	48.72	48.18	47.65	48.04	49.98	------	67.85	55.77	49.77	48.38
26	47.49	48.38	48.74	48.17	47.65	48.06	50.30	------	67.52	55.44	49.70	48.34
27	47.50	48.39	48.73	48.16	47.67	48.08	50.70	------	67.14	55.13	49.62	48.31
28	47.50	48.42	48.72	48.15	47.68	48.12	51.21	------	66.75	54.83	49.56	48.31
29	47.47	48.44	48.70	48.12	------	48.18	51.76	------	66.36	54.52	49.49	48.33
30	47.47	48.49	48.67	48.11	------	48.26	52.30	------	65.93	54.24	49.43	48.31
31	47.50	------	48.64	48.09	------	48.32	------	59.30	------	53.94	49.35	------

[1] Elevation of 2,079.29 feet previously published for this flood is referred to the original datum of U. S. Geological Survey bench mark at Hope.

CLARK FORK AT PRIEST RIVER, IDAHO

LOCATION.—Water-stage recorder in lot 4, sec. 26, T. 56 N., R. 5 W., at Priest River.

DRAINAGE AREA.—24,200 square miles.

RECORDS AVAILABLE.—June 1903 to April 1905, October 1921 to September 1933. June 1903 to September 1921 comparable records at Newport, Wash., 6 miles below present site.

DISCHARGE.—Maximum during year, 136,000 second-feet June 21 (gage height, 24.18 feet); minimum, 7,290 second-feet Oct. 10, 14.

1903–33: Maximum, 136,000 second-feet June 15, 1913, June 21, 1933; minimum, 2,200 second-feet Dec. 12, 1919. Average, 30 years (1903–33), 25,800 second-feet.

Maximum stage known, 38.9 feet June 1894, from high-water marks referred to Newport gage (estimated discharge, 217,000 second-feet).

REMARKS.—Records excellent except those estimated because of ice Dec. 6–19, Jan. 17 to Feb. 19. Discharge estimated Dec. 25–30. Numerous small diversions from upper tributaries for irrigation. Flow subject to natural regulation in several lakes and to slight regulation during log-driving seasons, owing to oprations of flash dam on tributary of Priest River.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8,540	8,110	12,500	13,000		9,200	12,500	31,700	73,000	114,000	36,200	15,700
2	8,320	8,110	13,000	13,000		9,420	13,000	34,200	76,500	110,000	34,900	15,700
3	8,540	8,110	13,900	12,500	10,500	9,200	12,500	35,500	80,000	108,000	33,600	15,300
4	8,320	8,320	14,300	12,500		9,420	13,900	37,500	83,500	104,000	32,300	15,300
5	8,110	8,540	14,300	12,100		9,420	14,300	38,800	88,400	102,000	31,700	14,800
6	8,320	8,760		12,500		9,420	14,300	40,100	92,600	97,800	30,400	14,300
7	8,540	8,980		13,000		9,200	14,800	41,500	97,000	94,800	29,200	14,300
8	8,110	8,980	12,000	13,000	8,300	9,200	15,300	42,200	102,000	91,900	28,600	14,300
9	7,490	8,760		12,500		9,420	15,300	43,600	105,000	89,100	27,500	14,300
10	7,290	8,760		13,000		9,640	15,300	44,300	110,000	86,300	26,900	13,900
11	7,490	8,760		13,000		9,640	15,300	44,300	114,000	83,500	25,800	13,400
12	7,490	8,980		13,000		9,420	15,700	45,000	117,000	80,000	25,200	13,400
13	7,690	9,200	11,500	13,000	7,900	9,420	15,700	45,000	120,000	77,900	24,700	13,400
14	7,490	10,100		13,000		9,640	15,700	45,700	123,000	75,100	24,100	13,000
15	7,690	10,700		13,900		9,860	15,300	46,400	126,000	72,300	23,500	12,500
16	7,690	11,000		11,200		9,860	15,700	47,800	128,000	69,500	22,400	12,500
17	7,900	11,000	12,500		8,300	9,860	16,200	48,500	132,000	66,700	21,900	12,500
18	7,900	11,200				10,100	16,200	49,200	134,000	64,600	21,300	12,100
19	7,690	11,000		11,000		10,300	16,200	50,600	135,000	61,800	20,800	11,600
20	7,900	11,600	13,000		8,540	10,300	16,600	51,300	135,000	59,700	20,200	11,600
21	7,900	11,600	13,000		8,540	10,500	16,600	52,000	135,000	56,900	19,700	11,200
22	7,900	11,600	13,400		8,760	10,700	17,100	52,700	134,000	54,800	19,200	11,200
23	7,900	12,100	13,400		8,760	11,000	17,600	53,400	134,000	52,700	18,600	11,200
24	7,900	12,100	13,400		8,760	11,000	18,100	54,800	132,000	50,600	18,600	11,200
25	7,900	12,500	13,300		8,980	11,200	19,200	56,200	130,000	48,500	17,600	11,200
26	8,110	12,500	13,300	10,500	8,540	11,200	20,200	57,600	128,000	46,400	17,600	11,200
27	7,690	12,500	13,200		8,980	11,200	21,900	60,400	125,000	44,300	17,100	11,200
28	8,110	12,500	13,200		9,420	11,600	24,700	62,500	122,000	42,200	16,600	11,200
29	7,900	12,500	13,100			11,600	26,900	64,600	120,000	40,800	16,200	11,000
30	7,690	12,100	13,100			12,100	29,200	66,700	116,000	39,500	16,200	11,000
31	8,110		13,000			12,100		70,200		38,200	16,200	

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	8,540	7,290	7,920	0.327	0.38	487,000
November	12,500	8,110	10,400	.430	.48	619,000
December	14,300		12,700	.525	.61	781,000
January	13,900		11,700	.483	.56	719,000
February			8,780	.363	.38	488,000
March	12,100	9,200	10,200	.421	.49	627,000
April	29,200	12,500	17,000	.702	.78	1,010,000
May	70,200	31,700	48,800	2.02	2.33	3,000,000
June	135,000	73,000	115,000	4.75	5.30	6,840,000
July	114,000	38,200	71,700	2.96	3.41	4,410,000
August	36,200	16,200	23,700	.979	1.13	1,460,000
September	15,700	11,000	12,800	.529	.59	762,000
The year	135,000	7,290	29,300	1.21	16.44	21,200,000

CLARK FORK BELOW Z CANYON, NEAR METALINE FALLS, WASH.

(International gaging station)

LOCATION.—Water-stage recorder in lot 2, sec. 11, T. 40 N., R. 43 E., three-quarters of a mile below Z Canyon and 10 miles below Metaline Falls.

DRAINAGE AREA.—25,200 square miles.

RECORDS AVAILABLE.—October 1928 to September 1933. November 1908 to September 1910, October 1912 to September 1928 for a station at Metaline Falls.

DISCHARGE.—Maximum during year, 137,000 second-feet June 22, 23; maximum gage height, 53.63 feet June 22; minimum discharge, 7,640 second-feet Feb. 9 (gage height, 11.34 feet).

1912–33: Maximum, 139,000 second-feet June 16, 1913 (gage height, 41.2 feet, Metaline Falls gage); minimum, 2,500 second-feet Dec. 12, 1919 (gage height, −2.4 feet, Metaline Falls gage).

REMARKS.—Records excellent. Numerous small diversions from upper tributaries for irrigation. No artificial regulation of any consequence. This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8,740	8,050	13,400	15,200	13,400	10,300	13,700	32,500	71,800	122,000	40,000	16,100
2	8,740	8,500	13,400	14,900	12,500	10,300	14,300	34,900	74,500	120,000	38,500	15,800
3	8,740	8,500	14,000	14,600	11,900	10,000	14,600	37,000	78,100	117,000	37,300	15,500
4	8,740	8,500	14,300	14,600	11,600	9,480	14,900	38,500	82,100	114,000	35,800	15,500
5	8,500	8,740	14,900	14,300	11,900	9,230	15,800	40,300	85,900	110,000	34,600	15,200
6	8,500	8,980	15,200	13,700	11,400	9,480	16,100	41,500	90,100	107,000	33,400	14,900
7	8,500	8,980	15,500	13,700	11,400	9,480	16,400	42,700	95,000	104,000	32,500	14,600
8	8,740	9,230	16,400	14,000	9,230	9,230	16,800	43,900	99,800	100,000	31,600	14,300
9	8,500	9,230	14,900	14,300	7,840	9,230	17,100	44,800	104,000	96,600	30,700	14,300
10	8,270	9,230	12,200	14,000	8,270	9,480	17,400	46,000	108,000	93,100	29,500	14,300
11	8,050	8,980	11,400	13,700	9,230	9,740	17,100	46,900	112,000	89,800	28,800	14,000
12	8,050	9,230	12,500	14,000	9,230	9,740	17,100	47,500	116,000	86,500	27,800	13,700
13	8,050	9,480	13,700	14,000	9,480	9,740	17,100	47,800	119,000	83,000	27,200	13,400
14	8,270	9,740	13,700	14,300	9,480	9,740	17,400	48,400	122,000	80,200	26,500	13,100
15	8,270	10,300	13,700	14,000	10,300	9,740	17,400	48,800	125,000	77,800	25,400	13,100
16	8,270	10,800	14,000	14,300	10,000	10,300	17,400	49,100	128,000	75,100	24,700	12,800
17	8,270	11,100	13,700	13,400	10,000	10,300	17,400	50,000	130,000	72,700	24,000	12,500
18	8,270	11,400	13,100	11,600	10,000	10,500	17,800	50,900	132,000	70,000	23,300	12,500
19	8,500	11,600	14,600	12,800	10,000	10,500	17,800	51,900	134,000	67,300	22,600	12,200
20	8,270	11,600	14,300	13,400	10,000	10,800	18,100	52,800	135,000	64,600	21,800	12,200
21	8,500	11,900	14,300	12,200	10,000	11,100	18,800	53,700	136,000	62,600	20,600	12,200
22	8,740	12,200	14,300	11,900	10,000	11,100	19,200	54,600	137,000	60,200	20,300	11,900
23	8,050	12,200	14,300	12,500	10,000	11,400	19,900	55,600	137,000	57,800	19,900	11,400
24	8,050	12,500	14,600	11,900	9,740	11,600	20,600	56,500	136,000	55,300	19,200	11,400
25	8,050	12,500	14,600	10,300	9,740	11,600	21,800	57,800	135,000	53,100	19,200	11,400
26	8,050	13,100	14,600	10,300	9,740	11,600	22,900	59,900	134,000	50,900	18,400	11,400
27	8,270	13,100	14,600	12,800	9,740	11,900	24,700	60,800	132,000	48,800	17,800	11,400
28	8,050	13,100	14,600	13,100	9,740	12,200	26,100	62,900	130,000	46,600	17,400	11,400
29	8,050	13,400	15,200	13,100	------	12,500	28,200	65,200	128,000	44,800	17,100	11,400
30	8,270	13,700	14,600	13,700	------	13,100	30,700	67,300	125,000	42,700	16,800	11,100
31	8,050	------	15,200	14,300	------	13,700	------	69,400	------	41,500	16,100	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	8,740	8,050	8,330	0.331	0.38	512,000
November	13,700	8,050	10,700	.425	.47	637,000
December	16,400	11,400	14,200	.563	.65	873,000
January	15,200	10,300	13,400	.532	.61	824,000
February	13,400	7,840	10,200	.405	.42	566,000
March	13,700	9,230	10,600	.421	.49	652,000
April	30,700	13,700	18,800	.746	.83	1,120,000
May	69,400	32,500	50,300	2.00	2.31	3,090,000
June	137,000	71,800	116,000	4.60	5.13	6,900,000
July	122,000	41,500	77,900	3.09	3.56	4,790,000
August	40,000	16,100	25,800	1.02	1.18	1,590,000
September	16,100	11,100	13,200	.524	.58	786,000
The year	137,000	7,840	30,800	1.22	16.61	22,300,000

FLATHEAD RIVER NEAR TRAIL CREEK, MONT.

(International gaging station)

LOCATION.—Staff gage at highway bridge 500 feet north of international boundary, about 1,000 feet northwest of intersection of international boundary with line between secs. 4 and 5, T. 37 N., R. 22 W., and 7 miles northwest of Trail Creek post office.

DRAINAGE AREA.—450 square miles.

RECORDS AVAILABLE.—March 1929 to September 1933.

DISCHARGE.—Maximum during year, 10,600 second-feet June 17 (gage height, 6.90 feet); minimum recorded, 168 second-feet Apr. 12, 13 (gage height, 1.08 feet). Lower discharge may have occurred during winter, when gage was not read.

1929–33: Maximum, that of June 17, 1933; minimum recorded, 65 second-feet Apr. 9, 1929 (gage height, 0.76 foot). Probably not actual minimum.

REMARKS.—Records good. No records Dec. 9 to Mar. 31. Records computed and four discharge measurements furnished by Dominion Water Power and Hydrometric Bureau, Department of Interior, Canada. This station is one of the international gaging stations maintained by Canada under agreement with the United States.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Apr.	May	June	July	Aug.	Sept
1	208	329	465	176	1,640	6,940	2,340	566	356
2	200	329	465	180	1,860	6,060	2,250	552	345
3	200	324	458	187	1,820	6,160	2,340	537	324
4	194	318	452	190	1,880	6,990	2,140	523	315
5	194	312	-------	187	1,940	7,150	2,000	509	296
6	194	307	-------	190	2,130	6,340	1,780	496	296
7	194	285	-------	201	2,110	5,760	1,740	503	291
8	191	285	-------	194	1,970	5,130	1,690	496	286
9	188	276	-------	180	1,800	5,560	1,670	496	305
10	188	280	-------	180	1,660	4,740	1,610	482	334
11	191	340	-------	173	1,530	3,960	1,480	469	334
12	191	370	-------	168	1,600	3,860	1,390	469	324
13	200	352	-------	168	1,770	5,040	1,360	442	315
14	212	388	-------	173	2,180	6,730	1,280	429	324
15	382	521	-------	201	3,640	7,590	1,230	416	315
16	452	521	-------	216	3,580	8,760	1,160	403	305
17	432	535	-------	208	3,330	10,100	1,080	390	296
18	413	521	-------	204	3,100	8,370	1,040	379	296
19	388	521	-------	201	2,630	6,940	1,000	373	329
20	376	507	-------	216	2,560	4,840	948	368	324
21	364	493	-------	238	2,690	4,600	872	356	310
22	413	493	-------	324	3,250	4,270	830	345	315
23	426	458	-------	455	3,620	3,760	814	351	315
24	432	426	-------	595	3,580	4,060	773	345	324
25	364	400	-------	830	4,290	3,960	740	345	324
26	376	388	-------	1,280	5,640	4,160	701	334	324
27	382	394	-------	1,870	5,740	3,960	686	334	324
28	364	420	-------	2,420	4,700	3,560	670	329	329
29	352	465	-------	2,420	5,160	2,660	648	324	334
30	340	465	-------	1,790	6,160	2,500	625	379	334
31	340	-------	-------	-------	7,820	-------	595	368	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	452	188	301	0.669	0.77	18,500
November	535	276	401	.891	.99	23,900
December	465	452	460	1.02	.15	3,650
April	2,420	168	534	1.19	1.33	31,800
May	7,820	1,530	3,140	6.98	8.05	193,000
June	10,100	2,500	5,480	12.2	13.61	326,000
July	2,340	595	1,270	2.82	3.25	78,100
August	566	324	423	.940	1.08	26,000
September	356	286	318	.707	.79	18,900

FLATHEAD RIVER NEAR COLUMBIA FALLS, MONT.

LOCATION.—Water stage recorder in NW¼ sec. 7, T. 31 N., R. 19 W., at Potter's ranch, three-quarters of a mile above junction with Middle Fork and 10 miles northeast of Columbia Falls.

DRAINAGE AREA.—1,620 square miles.

RECORDS AVAILABLE.—September 1910 to September 1917; April to August 1929; May 1930 to July 1933 (discontinued).

DISCHARGE.—Maximum recorded during year, 24,400 second-feet June 17 (gage height, 11.14 feet); minimum, 745 second-feet Oct. 10–11 (gage height, 2.00 feet).

1910–16, 1929–33: Maximum, 29,500 second-feet June 20, 1916 (gage height, 9.8 feet); minimum, 350 second-feet Nov. 10, 1911, Feb. 5–16, 1914 (gage height, 0.70 foot).

REMARKS.—Records fragmentary but reliable. No diversions or storage.

Discharge, in second-feet, 1932–33

Day	Oct.	Dec.	Feb.	Apr.	May	June	July
1	795					19,900	
2	795	1,990				18,600	
3	795	2,240			8,110	17,800	
4	770	2,110			7,830	18,200	
5	770	1,990			7,560	19,900	
6	770	1,760			7,560	19,900	
7	770	2,240			7,830	18,600	
8	770				7,560	17,800	
9	770				7,560	18,600	
10	745				8,110	18,200	
11	745				8,400	16,200	
12	770			1,040	8,700	14,700	
13	770			1,000	8,700	15,400	
14	822			1,040	7,830	18,200	
15	880			1,200	9,600	21,200	
16	1,070			1,430	10,500	23,500	
17	1,170			1,430	10,500	24,000	5,210
18	1,130			1,340	10,200	21,600	5,100
19	1,100			1,340	9,600	18,200	4,900
20	1,040			1,430	8,700	16,200	4,420
21	1,040			1,660	8,400	15,400	4,070
22	1,040			2,240	8,700	15,400	3,900
23	1,070			3,330	9,600	15,400	3,650
24	1,100		770	4,070	10,200	14,700	
25	1,070		770	5,100	10,500	13,200	
26	1,040		770	6,560	12,500	13,200	
27			745		15,000	12,900	
28			745		14,700		
29					13,900		
30					14,700		
31					18,200		

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October 1–26	1,170	745	908	0.560	0.54	46,800
December 2–7	2,240	1,760	2,060	1.27	.28	24,500
February 24–28	770	745	760	.469	.09	7,540
April 12–26	6,560	1,000	2,280	1.41	.78	67,800
May 3–31	18,200	7,560	10,000	6.17	6.65	575,000
June 1–27	24,000	12,900	17,700	10.9	10.94	948,000
July 17–23	5,210	3,650	4,460	2.75	.72	61,900

FLATHEAD RIVER AT COLUMBIA FALLS, MONT.

LOCATION.—Water-stage recorder in SW¼ sec. 17, T. 30 N., R. 20 W., about 200 feet below highway bridge on Roosevelt Highway at Columbia Falls. Zero of gage is 2,978.44 feet above mean sea level.

RECORDS AVAILABLE.—May 1922 to September 1923 (fragmentary); June 1928 to September 1933.

DISCHARGE.—Maximum during year, 91,200 second-feet June 16 (gage height, 17.63 feet); minimum, 1,360 second-feet Jan. 18.

1922–23, 1928–33: Maximum, 102,000 second-feet June 5, 1923 (gage height, 17.3 feet); minimum, 798 second-feet Dec. 8, 1929 (gage height, −0.08 foot).

REMARKS.—Records good except those for period of ice effect, Dec. 10 to Mar. 9, which are fair. No diversions.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,200	3,220	7,250	3,220	1,830	1,890	2,760	27,300	73,400	32,000	6,990	3,900
2	2,140	3,220	8,070	3,220	1,780	1,950	2,840	25,200	69,200	30,800	6,730	3,810
3	2,070	3,140	10,200	3,060	1,780	2,010	3,380	25,700	65,900	30,200	6,480	3,550
4	2,070	3,140	9,840	2,760	1,720	2,070	4,180	25,700	72,600	29,000	6,480	3,380
5	2,070	3,060	8,930	2,610	1,720	2,070	4,270	24,600	79,300	27,300	6,730	3,300
6	2,070	3,380	7,790	2,610		2,010	4,360	25,200	74,200	24,600	6,730	3,140
7	2,070	3,550	6,110	2,540		2,470	4,560	24,600	68,400	23,200	6,230	3,140
8	2,070	3,380	5,070	2,540	1,720	2,330	4,460	23,700	63,400	21,800	5,990	3,060
9	2,010	3,220	4,270	2,910		2,010	4,080	22,200	72,600	20,900	5,640	2,840
10	2,010	3,220	3,900	2,840		2,010	3,810	20,500	81,000	20,500	5,520	2,980
11	1,950	3,060	3,640	2,610	1,720	2,070	3,720	18,900	69,200	20,500	5,290	3,140
12	2,010	3,060	3,640	2,470	[a]1,760	2,010	3,720	18,100	61,800	18,900	5,070	2,980
13	2,070	4,560	3,550	2,470	[a]1,800	2,070	3,460	18,500	67,500	18,100	4,960	2,910
14	2,330	6,110	3,720	2,470	1,830	2,070	3,300	20,900	76,800	17,300	4,860	2,840
15	2,910	5,070	3,720	2,470	1,830	2,010	3,810	27,300	83,500	16,100	4,760	2,760
16	3,220	4,660	3,720	2,200	1,890	2,010	4,860	30,200	88,600	15,300	4,660	2,910
17	3,460	4,660	3,720	1,830	1,950	2,010	5,180	31,400	86,900	14,200	4,460	[a]2,940
18	3,380	6,230	3,380	1,510	2,010	2,070	4,960	30,800	74,200	13,500	4,360	2,980
19	3,220	8,930	3,380	1,610	1,950	2,070	4,860	29,600	59,400	12,800	4,270	3,060
20	3,140	9,840	3,220	1,780	2,010	2,070	5,180	26,700	52,300	12,100	4,180	[a]3,060
21	2,980	8,930	3,220	2,070	2,070	2,140	5,870	26,700	50,000	11,800	4,080	3,060
22	2,980	8,350	3,720	1,950	1,950	2,070	7,790	29,000	50,000	11,100	4,080	3,300
23	2,980	7,520	3,550	2,010	1,950	2,010	12,100	32,000	49,200	10,500	3,990	3,550
24	2,980	6,730	3,380	1,950	2,140	2,010	15,700	32,000	44,000	9,840	3,900	3,550
25	2,980	6,110	3,380	1,950	2,140	2,010	19,700	32,000	39,800	9,530	3,900	3,380
26	2,910	5,750	3,220	1,950	2,140	2,010	24,200	39,800	39,800	9,230	3,720	3,220
27	2,910	5,400	3,220	1,950	2,010	2,010	30,800	50,000	37,700	8,930	3,640	3,220
28	3,060	5,520	3,140	1,950	1,950	2,070	39,100	45,500	35,100	8,640	3,460	3,300
29	3,220	6,480	2,980	2,070	------	2,400	40,500	42,600	36,400	8,070	3,380	3,380
30	3,220	7,250	3,060	1,830	------	2,470	32,000	50,800	35,100	7,790	3,380	3,640
31	3,220	------	3,060	1,830	------	2,680	------	66,700	------	7,250	3,720	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	3,460	1,950	2.640	162,000
November	9,840	3,060	5 220	311,000
December	10,200	2,980	4.610	283,000
January	3,220	1,510	2.300	141,000
February	2,140	1,720	1.880	104,000
March	2,680	1,890	2.100	129,000
April	40,500	2,760	10 300	613,000
May	66,700	18,100	30 500	1,880,000
June	88,600	35,100	61.900	3,680,000
July	32,000	7,250	16 800	1,030,000
August	6,990	3,380	4.890	301,000
September	3,900	2,760	3 210	191,000
The year	88,600	1,510	12.200	8,820,000

[a] Interpolated.

FLATHEAD RIVER NEAR KALISPELL, MONT.

LOCATION.—Chain gage in NE¼ sec. 10, T. 28 N., R. 21 W., at highway bridge 3 miles east of Kalispell. Gage readings adjusted to mean sea level, Somers datum.

RECORDS AVAILABLE.—May 1928 to September 1933.

EXTREMES.—Maximum water surface elevation during year, 2,913.27 feet June 16; minimum, 2,901.63 feet Oct. 5–7.

1928–33: Maximum water surface elevation, 2,913.95 feet May 27, 1928; minimum, 2,901.63 feet Oct. 5–7, 1932.

REMARKS.—Records collected for river profile study. Records fragmentary but reliable.

Elevations, in feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	------	2.62	4.97	3.16	2.59	1.74	2.71	7.82	12.42	9.82	------	3.57
2	1.67	2.66	4.47	------	------	1.74	------	7.92	11.97	9.60	4.68	------
3	1.69	2.64	5.92	3.04	2.59	1.70	2.83	8.07	11.57	9.48	4.65	3.40
4	1.65	2.64	5.87	3.56	------	------	3.33	8.12	11.98	------	4.70	------
5	1.63	2.66	5.62	3.68	2.55	1.70	3.33	8.17	12.32	8.93	4.79	------
6	1.63	------	3.97	3.78	1.95	1.68	3.38	8.27	12.57	8.85	------	3.36
7	1.63	2.73	3.92	3.80	------	1.64	3.49	8.22	11.97	8.67	4.72	------
8	1.71	2.78	5.62	3.80	1.85	1.66	3.43	6.97	11.67	8.48	4.46	------
9	1.69	2.68	5.17	3.78	------	1.72	------	------	12.17	8.34	------	3.30
10	1.67	2.64	5.27	3.76	2.09	1.74	3.33	7.22	12.67	8.28	4.35	------
11	1.64	2.68	------	3.68	------	------	2.99	7.22	12.00	8.25	------	3.30
12	1.67	------	5.32	3.66	2.25	1.80	2.99	7.37	11.66	8.05	4.20	------
13	1.99	2.94	5.40	3.68	2.41	1.84	3.01	7.57	11.92	7.84	------	3.37
14	2.19	------	5.42	3.80	2.55	1.86	3.13	------	12.67	7.70	4.16	------
15	2.34	3.83	5.47	------	------	1.94	3.28	8.57	12.87	7.64	------	------
16	2.37	3.68	5.57	3.12	2.56	1.90	------	8.72	13.27	------	4.03	3.35
17	2.39	3.63	------	3.46	2.55	1.84	2.88	8.92	13.22	7.08	------	------
18	2.45	3.98	5.52	3.46	2.55	------	3.03	8.77	11.97	6.94	3.85	3.35
19	2.52	4.98	5.12	3.41	------	1.86	3.53	------	------	6.76	------	------
20	2.55	5.88	------	2.71	2.47	1.84	3.88	8.72	11.37	6.63	3.76	3.30
21	2.56	5.58	5.07	------	------	1.88	4.13	------	11.34	6.43	------	------
22	------	5.56	4.97	2.96	2.38	1.82	4.48	7.72	11.05	6.25	3.70	------
23	2.53	5.52	4.87	3.16	2.17	1.78	------	------	11.10	------	------	3.36
24	2.49	------	4.72	3.26	2.01	------	5.28	7.82	10.72	5.94	3.53	3.30
25	2.47	4.98	4.47	3.08	------	1.78	5.93	8.02	10.37	5.65	------	3.21
26	2.51	4.54	4.22	------	1.95	------	6.63	9.32	10.21	5.54	3.37	------
27	2.55	------	3.87	2.81	1.91	1.80	7.78	10.37	10.17	5.53	3.35	3.15
28	2.55	4.08	------	------	1.81	1.82	8.33	10.17	10.02	5.44	------	------
29	2.57	4.53	3.87	2.62	------	2.02	7.93	------	10.07	5.41	3.32	------
30	2.59	4.63	3.82	2.68	------	2.14	------	10.12	10.08	5.09	------	3.00
31	2.61	------	3.72	2.66	------	2.27	------	11.42	------	4.98	3.66	------

NOTE.—Add 2,900.00 feet to obtain elevations above mean sea level, Somers datum.

FLATHEAD RIVER AT DEMERSVILLE, NEAR KALISPELL, MONT.

LOCATION.—Staff gage in NE¼ sec. 28, T. 28 N., R. 21 W., at Demersville, 3 miles south of Kalispell.

RECORDS AVAILABLE.—April 1909 to July 1912; April 1928 to September 1933.

EXTREMES.—Maximum water surface elevation during year, 2,904.94 feet June 17; minimum, 2,882.87 feet Oct. 19–23.

1909–12, 1928–33: Maximum water-surface elevation, 2,904.94 feet June 17, 1933; minimum, 2,882.6 feet Oct. 1, 1910, Feb. 5–28, 1929, Oct. 8 to Dec. 31, 1931.

REMARKS.—Records for profile study of Flathead River between Kalispell and Flathead Lake. Records good.

Elevation in feet, 1932–33

Day	Oct.	Nov.	Dec.	Apr.	May	June	July	Aug.	Sept.
1	83.01	82.93	84.51	-------	91.20	-------	96.57	86.69	84.04
2	83.01	82.93	84.91	-------	90.70	-------	95.93	86.51	83.97
3	82.99	82.93	85.01	-------	90.85	-------	95.71	86.35	83.87
4	82.99	82.93	85.31	-------	91.06	-------	95.31	86.29	83.87
5	82.97	82.93	85.31	-------	90.96	102.64	94.86	86.25	83.70
6	82.95	82.93	85.21	-------	91.00	102.04	94.41	86.23	83.64
7	82.95	82.93	85.50	-------	91.20	101.54	93.85	85.93	83.64
8	82.93	82.93	-------	-------	91.15	101.14	93.41	85.83	83.59
9	82.93	82.95	-------	-------	91.02	101.34	93.05	85.72	83.54
10	82.93	82.95	-------	-------	90.56	102.84	92.75	85.57	83.53
11	82.91	82.95	-------	83.00	90.25	103.04	92.40	85.42	83.52
12	82.91	82.95	-------	82.98	90.10	101.74	92.11	85.28	83.49
13	82.91	83.05	-------	83.02	89.90	101.34	91.73	85.24	83.45
14	82.91	83.71	-------	82.94	90.08	102.14	91.35	85.16	83.44
15	82.89	83.61	-------	83.10	91.10	103.34	91.01	85.03	83.45
16	82.89	83.51	-------	83.15	92.30	104.24	90.56	84.95	83.39
17	82.89	83.51	-------	83.26	92.56	104.94	90.33	84.89	83.32
18	82.89	83.57	-------	83.34	92.78	104.74	90.01	84.82	83.38
19	82.87	84.25	-------	83.36	92.74	103.04	89.79	84.76	83.36
20	82.87	84.67	-------	83.42	92.36	101.24	89.47	84.68	83.36
21	82.87	84.71	-------	83.58	92.08	100.44	89.07	84.76	83.36
22	82.87	84.61	-------	83.90	92.42	100.14	88.81	84.50	83.44
23	82.87	84.57	-------	84.66	93.14	100.04	88.56	84.44	83.38
24	82.89	84.25	-------	86.01	93.32	99.01	88.31	84.32	83.33
25	82.89	84.11	-------	87.26	93.24	98.47	88.07	84.26	83.31
26	82.91	82.71	-------	88.58	93.88	98.07	87.79	84.15	83.29
27	82.91	83.31	-------	89.96	96.08	97.97	87.61	84.11	83.28
28	82.91	82.95	-------	92.00	96.86	97.29	87.51	84.06	83.36
29	82.91	83.11	-------	93.88	95.66	97.11	87.31	84.00	83.28
30	82.91	84.41	-------	92.08	95.90	97.11	87.09	84.02	83.20
31	82.91	-------	-------	-------	98.20	-------	86.91	84.30	-------

NOTE.—Add 2,800.00 feet to obtain elevations above mean sea level, Somers datum.

FLATHEAD RIVER AT DAMON RANCH, NEAR KALISPELL, MONT.

LOCATION.—Staff gage in NW¼ sec. 32, T. 28 N., R. 20 W., at Damon ranch, 7 miles southeast of Kalispell.

RECORDS AVAILABLE.—April 1909 to July 1912; May 1928 to September 1933.

EXTREMES.—Maximum water-surface elevation, 2,900.94 feet June 17; minimum, 2,882.36 feet Oct. 8–11.

1909–12, 1928–33: Maximum water-surface elevation, that of June 17, 1933; minimum, 2,881.50 feet Jan. 20–26, 1930.

REMARKS.—Records good. Records used for river profile studies on Flathead River above Flathead Lake.

Elevation, in feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	82.63	82.68	84.09	83.59	83.07	82.75	82.69	88.99	96.55	94 78	86.28	83.93
2	82.54	82.73	84.06	83.57	83.07	82.75	82.71	88.86	96.93	94 27	86.14	83.85
3	82.55	82.64	84.33	83.57	83.05	82.75	82.75	89.03	96.64	93 87	86.03	83.76
4	82.51	82.64	84.46	83.56	83.03	82.75	82.81	89.15	97.23	93 54	86.00	83.70
5	82.44	82.62	84.36	83.54	83.03	82.71	82.91	89.19	98.11	93 15	85.93	83.63
6	82.39	82.64	84.22	83.52	83.01	82.71	82.99	89.34	98.26	92.84	85.85	83.59
7	82.38	82.68	83.99	83.50	82.99	82.69	83.01	89.43	98.02	92.48	85.75	83.54
8	82.36	82.66	83.96	83.48	82.95	82.67	83.03	89.58	97.66	92.12	85.60	83.53
9	82.36	82.72	83.94	83.56	82.93	82.67	83.05	89.42	97.78	91.89	85.47	83.50
10	82.37	82.68	83.90	83.51	82.93	82.63	83.03	89.22	98.79	91.66	85.34	83.47
11	82.36	82.68	83.88	83.49	82.93	82.61	83.05	89.07	98.89	91.37	85.22	83.43
12	82.37	82.75	83.85	83.49	82.89	82.63	83.09	88.95	98.17	91.13	85.07	83.41
13	82.43	82.95	83.83	83.51	82.89	82.61	83.11	88.92	98.14	90 75	85.01	83.36
14	82.49	83.01	83.81	83.53	82.88	82.61	83.12	89.11	98.74	90.46	84.98	83.36
15	82.50	83.00	83.79	83.39	82.87	82.61	83.19	89.78	99.54	90.06	84.93	83.38
16	82.50	83.00	83.73	83.27	82.87	82.61	83.23	90.33	100.27	89.81	84.83	83.36
17	82.52	83.03	83.70	83.25	82.87	82.63	83.27	90.56	100.84	89.56	84.77	83.29
18	82.51	83.14	83.69	83.23	82.85	82.61	83.33	90.72	100.61	89.27	84.70	83.23
19	82.51	83.45	83.71	83.23	82.83	82.59	83.33	90.73	99.69	89.00	84.64	83.22
20	82.61	83.76	83.77	83.23	82.83	82.61	83.37	90.53	98.64	88 73	84.54	83.18
21	82.51	83.70	83.76	83.21	82.81	82.61	83.56	90.50	98.07	88 48	84.49	83.23
22	82.50	83.70	83.72	83.21	82.83	82.61	83.80	90.75	97.91	88 27	84.44	83.38
23	82.52	83.70	83.71	83.21	82.83	82.61	84.32	91.20	97.77	87.99	84.36	83.31
24	82.53	83.70	83.71	83.21	82.81	82.63	85.10	91.32	97.21	87.79	84.18	83.22
25	82.54	83.67	83.71	83.19	82.81	82.63	85.96	91.33	96.45	87.56	84.16	83.17
26	82.62	83.64	83.71	83.19	82.79	82.63	86.96	91.90	96.21	87.35	84.08	83.16
27	82.54	83.64	83.69	83.17	82.77	82.63	87.99	93.15	95.96	87.18	84.02	83.15
28	82.52	83.69	83.67	83.15	82.75	82.65	89.13	93.43	95.55	87.07	83.97	83.13
29	82.54	83.77	83.65	83.13	-------	82.65	90.27	93.05	95.30	86 92	83.92	83.12
30	82.56	83.92	83.63	83.11	-------	82.67	89.64	93.52	95.14	86 66	83.90	83.14
31	82.64	-------	83.61	83.09	-------	82.69	-------	95.05	--------	86 47	84.00	------

NOTE.—Add 2,800.00 feet to obtain elevations above mean sea level, Somers datum.

FLATHEAD RIVER NEAR HOLT, MONT.

LOCATION.—Staff gage in NE¼ sec. 22, T. 27 N., R. 20 W., at Keller's ranch, near Holt, Mont.

RECORDS AVAILABLE.—April 1909 to July 1912, June 1928 to September 1933.

EXTREMES.—Maximum water-surface during year, 2,897.02 feet June 18; minimum, 2,882.29 feet Oct. 12.

1909–12, 1928–33: Maximum water-surface, 2,897.35 feet May 29–30, 1928 (determined from flood mark); minimum, 2,881.24 feet Jan. 25–26, 1930.

REMARKS.—Records good. Records used for profile study of river between Kalispell and Flathead Lake.

Elevations, in feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	82.55	82.43	83.59	83.30	82.70	82.37	82.37	86.78	92.28	93.78	86.26	83.80
2	82.53	82.45	83.63	83.28	82.68	82.37	82.39	87.02	92.54	93.52	86.08	83.74
3	82.51	82.45	83.71	83.26	82.68	82.35	82.41	87.14	92.78	93.20	85.96	83.68
4	82.47	82.45	83.83	83.22	82.66	82.37	82.43	87.20	93.08	92.82	85.84	83.64
5	82.45	82.47	83.81	83.18	82.61	82.39	82.45	87.30	93.70	92.52	85.78	83.58
6	82.41	82.47	83.79	83.16	82.59	82.37	82.53	87.44	94.18	92.20	85.70	83.54
7	82.37	82.49	83.79	83.12	82.59	82.37	82.50	87.56	94.36	91.88	85.54	83.48
8	82.35	82.51	83.77	83.12	82.57	82.35	82.50	87.74	94.48	91.60	85.46	83.42
9	82.33	82.53	83.73	83.10	82.57	82.35	82.50	87.80	94.78	91.30	85.38	83.36
10	82.31	82.57	83.69	83.08	82.55	82.35	82.52	87.76	95.14	91.04	85.28	83.34
11	82.31	82.63	83.65	83.08	82.55	82.35	82.54	87.74	95.46	90.80	85.16	83.36
12	82.29	82.69	83.61	83.10	82.53	82.35	82.58	87.72	95.38	90.56	85.04	83.32
13	82.31	82.73	83.57	83.06	82.53	82.33	82.66	87.70	95.42	90.26	84.94	83.28
14	82.33	82.77	83.53	83.02	82.51	82.33	82.68	87.74	95.56	89.96	84.88	83.28
15	82.35	82.77	83.49	83.00	82.51	82.33	82.70	87.90	96.00	89.72	84.78	83.26
16	82.37	82.79	83.47	82.96	82.49	82.31	82.72	88.18	96.40	89.46	84.72	83.24
17	82.37	82.81	83.45	82.94	82.49	82.31	82.74	88.36	96.84	89.26	84.64	83.22
18	82.35	82.83	83.43	82.92	82.51	82.31	82.76	88.56	97.02	89.02	84.56	83.20
19	82.35	82.93	83.41	82.90	82.51	82.31	82.78	88.66	96.88	88.76	84.48	83.18
20	82.37	83.03	83.39	82.88	82.49	82.33	82.82	88.66	96.58	88.52	84.42	83.16
21	82.37	83.13	83.39	82.86	82.47	82.31	82.90	88.72	96.34	88.28	84.34	83.14
22	82.39	83.29	83.37	82.84	82.45	82.31	82.96	88.86	96.18	88.06	84.28	83.12
23	82.39	83.33	83.37	82.84	82.43	82.31	83.24	88.92	95.98	87.82	84.20	83.10
24	82.41	83.35	83.35	82.82	82.43	82.31	83.64	89.12	95.70	87.60	84.12	83.08
25	82.41	83.37	83.38	82.80	82.41	82.31	84.12	89.22	95.38	87.44	84.06	83.06
26	82.39	83.37	83.36	82.78	82.41	82.35	84.68	89.50	95.08	87.22	83.98	83.06
27	82.39	83.41	83.34	82.76	82.39	82.35	85.32	90.18	94.78	87.06	83.92	83.04
28	82.41	83.45	83.34	82.74	82.39	82.33	86.18	90.30	94.48	86.92	83.88	83.04
29	82.41	83.51	83.32	82.72	------	82.33	86.64	90.48	94.18	86.76	83.84	83.02
30	82.43	83.55	83.32	82.72	------	82.35	86.64	90.82	94.04	86.60	83.80	83.00
31	82.43	------	83.30	82.70	------	82.35	------	91.38	------	86.44	83.84	------

NOTE.—Add 2,800.00 feet to obtain elevations above mean sea level, Somers datum.

FLATHEAD LAKE AT SOMERS, MONT.

LOCATION.—Water-stage recorder in NE¼ sec. 26, T. 27 N., R. 21 W., at steamboat dock at Somers.

RECORDS AVAILABLE.—April 1922 to September 1933.

EXTREMES.—Maximum water-surface elevation during year, 2,896.26 feet June 19; minimum, 2,882.12 feet Apr. 3.

1922–33: Maximum water-surface elevation, that of June 19, 1933; minimum, 2.881.20 feet Dec. 10, 1929.

REMARKS.—Records for water-stage recorder excellent; others good. Twice-daily readings used Oct. 9–17.

Elevations, in feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	82.51	82.40	83.48	83.30	82.76	82.28	82.28	85.89	90.70	93.47	86.14	83.74
2	82.49	82.42	83.50	83.27	82.73	82.28	82.27	86.15	91.23	93.18	86.03	83.66
3	82.44	82.43	83.54	83.27	82.71	82.29	82.28	86.41	91.71	92.86	85.92	83.64
4	82.42	82.42	83.64	83.24	82.68	82.28	82.30	86.64	92.10	92.61	85.88	83.60
5	82.41	82.45	83.66	83.26	82.63	82.28	82.35	86.83	92.52	92.32	85.82	83.55
6	82.35	82.45	83.66	83.24	82.63	82.27	82.38	86.97	92.98	92.04	85.73	83.48
7	82.31	82.43	83.72	83.22	82.59	82.28	82.42	87.07	93.43	91.75	85.58	83.45
8	82.27	82.44	83.71	83.18	82.54	82.26	82.44	87.30	93.74	91.46	85.47	83.40
9	82.26	82.48	83.67	83.20	82.50	82.25	82.49	87.40	93.95	91.17	85.41	83.36
10	82.25	82.49	83.68	83.17	82.50	82.24	82.52	87.44	94.18	90.90	85.32	83.38
11	82.24	82.51	83.58	83.18	82.49	82.25	82.57	87.47	94.50	90.65	85.21	83.34
12	82.23	82.54	83.57	83.16	82.48	82.25	82.59	87.47	94.68	90.39	85.10	83.30
13	82.26	82.60	83.53	83.14	82.45	82.25	82.63	87.45	94.78	90.14	85.03	83.26
14	82.34	82.60	83.50	83.15	82.43	82.23	82.65	87.45	94.92	89.87	84.94	83.26
15	82.33	82.65	83.49	83.08	82.44	82.23	82.68	87.48	95.13	89.61	84.85	83.26
16	82.31	82.70	83.47	83.06	82.43	82.23	82.65	87.60	95.42	89.37	84.77	83.23
17	82.30	82.74	83.42	83.03	82.41	82.25	82.68	87.77	95.69	89.16	84.70	83.16
18	82.34	82.78	83.38	83.00	82.40	82.24	82.75	87.96	96.05	88.92	84.63	83.17
19	82.38	82.86	83.41	82.98	82.39	82.23	82.77	88.09	96.22	88.68	84.58	83.14
20	82.37	82.92	83.42	82.95	82.38	82.24	82.80	88.20	96.16	88.45	84.45	83.13
21	82.36	83.03	83.40	82.94	82.37	82.24	82.87	88.28	95.99	88.26	84.43	83.13
22	82.38	83.13	83.38	82.92	82.37	82.23	82.92	88.38	95.78	87.99	84.35	83.15
23	82.37	83.18	83.38	82.91	82.35	82.23	83.01	88.47	95.54	87.80	84.27	83.12
24	82.37	83.22	83.36	82.88	82.34	82.23	83.15	88.60	95.35	87.58	84.13	83.10
25	82.37	83.25	83.35	82.87	82.32	82.23	83.37	88.70	95.06	87.37	84.07	83.05
26	82.37	83.28	83.35	82.85	82.32	82.24	83.65	88.86	94.77	87.21	84.03	83.05
27	82.39	83.32	83.36	82.83	82.32	82.24	84.03	89.12	94.46	87.01	83.98	83.04
28	82.35	83.34	83.37	82.82	82.28	82.24	84.44	89.42	94.20	86.88	83.94	83.04
29	82.37	83.35	83.36	82.79	-------	82.25	84.96	89.68	93.96	86.71	83.89	83.05
30	82.38	83.46	83.32	82.77	-------	82.25	85.51	89.92	93.74	86.52	83.87	83.00
31	82.40	-------	83.29	82.75	-------	82.27	-------	90.25	-------	86.32	83.78	------

NOTE.—Add 2,800.00 feet to obtain elevations above mean sea level, Somers datum.

FLATHEAD LAKE AT POLSON, MONT.

LOCATION.—Water-stage recorder in SW¼ sec. 4, T. 22 N., R. 20 W., at south end of Flathead Lake at Polson.

RECORDS AVAILABLE.—August 1908 to December 1926; June 1928 to September 1933.

EXTREMES.—Maximum water-surface elevation during year, 2,896.26 feet June 19; minimum 2,882.15 feet Oct. 15.

1908–26, 1928–33: Maximum water-surface elevation, 2,896.26 feet June 19, 1933; minimum 2,881.5 feet Feb. 16–23, 1913, Nov. 24, 1923.

REMARKS.—Records excellent. Twice-daily staff-gage readings used Jan. 6–8.

Elevation, in feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1	82.50	82.33	83.22	83.12	82.72	82.32	82.18	85.70	90.62	93.35	86.18	83.61
2	82.47	82.34	83.28	83.08	82.71	82.32	82.21	86.02	91.17	93.08	86.02	83.62
3	82.50	82.30	83.35	83.08	82.69	82.31	82.19	86.24	91.61	92.80	85.88	83.59
4	82.43	82.30	83.42	83.05	82.68	82.30	82.22	86.46	92.00	92.50	85.78	83.54
5	82.39	82.29	83.51	83.04	82.67	82.30	82.24	86.65	92.38	92.23	85.65	83.54
6	82.44	82.30	83.68	83.07	82.66	82.30	82.27	86.83	92.77	91.96	85.54	83.52
7	82.42	82.32	83.77	83.01	82.62	82.29	82.30	87.02	93.26	91.68	85.47	83.45
8	82.38	82.36	83.67	83.05	82.60	82.28	82.45	87.14	93.57	91.37	85.38	83.42
9	82.32	82.39	83.63	83.00	82.60	82.27	82.48	87.38	93.77	91.11	85.28	83.38
10	82.22	82.42	83.60	83.00	82.60	82.27	82.46	87.46	94.06	90.83	85.18	83.29
11	82.21	82.44	83.55	83.02	82.60	82.27	82.45	87.43	94.41	90.54	85.12	83.30
12	82.21	82.46	83.51	83.00	82.60	82.27	82.48	87.41	94.61	90.25	85.03	83.29
13	82.21	82.43	83.49	83.01	82.60	82.26	82.52	87.37	94.72	90.04	84.94	83.26
14	82.19	82.42	83.47	82.98	82.60	82.26	82.53	87.36	94.83	89.81	84.84	83.22
15	82.17	82.46	83.43	83.02	82.57	82.25	82.56	87.40	95.04	89.56	84.77	83.09
16	82.19	82.52	83.39	83.06	82.52	82.25	82.58	87.55	95.32	89.28	84.68	83.07
17	82.24	82.58	83.37	83.04	82.48	82.24	82.63	87.73	95.65	89.00	84.59	83.13
18	82.31	82.62	83.35	83.03	82.44	82.24	82.64	87.87	95.98	88.78	84.49	83.06
19	82.30	82.65	83.34	83.01	82.43	82.24	82.68	88.03	96.15	88.53	84.33	83.07
20	82.27	82.70	83.32	82.99	82.38	82.24	82.74	88.14	96.10	88.35	84.28	83.05
21	82.27	82.77	83.31	82.97	82.37	82.24	82.76	88.20	95.90	88.12	84.23	82.98
22	82.29	82.83	83.30	82.93	82.37	82.24	82.78	88.28	95.64	87.88	84.18	82.92
23	82.27	82.91	83.27	82.88	82.36	82.24	82.80	88.37	95.50	87.72	84.15	82.94
24	82.27	83.00	83.27	82.85	82.35	82.24	82.84	88.51	95.26	87.52	84.23	82.96
25	82.26	83.09	83.24	82.82	83.35	82.24	82.92	88.63	94.98	87.32	84.07	83.00
26	82.28	83.13	83.23	82.80	82.34	82.24	83.12	88.75	94.65	87.13	83.96	82.97
27	82.26	83.17	83.20	82.78	82.33	82.24	83.47	89.03	94.38	86.95	83.89	82.93
28	82.32	83.22	83.22	82.77	82.33	82.24	83.82	89.36	94.09	86.77	83.83	82.89
29	82.33	83.24	83.20	82.75	-------	82.24	84.44	89.63	93.82	86.57	83.79	82.83
30	82.34	83.23	83.20	82.74	-------	82.28	85.24	89.84	93.57	86.47	83.73	82.91
31	82.34	-------	83.18	82.73	-------	82.18	-------	90.17	-------	86.35	83.62	-------

NOTE.—Add 2,800.00 feet to obtain elevations above mean sea level, Somers datum.

FLATHEAD RIVER NEAR POLSON, MONT.

LOCATION.—Water-stage recorder in sec. 19, T. 22 N., R. 21 W., at highway bridge at Norrisvale, 12 miles below Polson.

DRAINAGE AREA.—7,010 square miles.

RECORDS AVAILABLE.—July 1907 to September 1933.

DISCHARGE.—Maximum during year, 77,400 second-feet June 19 (gage height, 17.25 feet); minimum, 2,740 second feet Apr. 3 (gage height, 2.0[illegible] feet).

1907–33: Maximum, 82,100 second-feet May 29–30, 1928 (gage height, 17.1 feet); minimum, 1,360 second-feet Dec. 9–14, 1919, Mar. 14, 1920 (gage height, −0.1 foot).

REMARKS.—Records excellent. Several small diversions from tributaries above Flathead Lake. Flow somewhat regulated by natural storage in Flathead Lake. Observer's readings used July 19 to Aug. 8.

Discharge, in second-feet, 1931–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1931-32												
1	2,890	2,580	2,540	2,580	2,230	2,680	5,500	17,500	42,400	38,000	12,000	5,690
2	2,890	2,440	2,490	2,580	2,140	4,020	5,880	17,500	42,400	36,800	11,600	5,880
3	2,890	2,580	2,490	2,580	2,140	4,160	5,690	17,500	43,000	35,600	11,300	5,690
4	2,890	2,580	2,540	2,580	2,140	4,160	6,290	17,900	43,600	34,400	11,300	5,690
5	2,890	2,540	2,540	2,580	2,140	4,020	6,290	18,400	44,200	33,800	10,900	5,500
6	3,000	2,490	2,540	2,630	2,190	3,880	6,710	19,400	43,600	32,600	10,600	5,500
7	3,000	2,440	2,540	2,680	2,190	3,880	6,930	20,400	43,600	32,600	10,300	5,500
8	2,890	2,490	2,540	2,680	2,230	3,740	7,150	21,900	43,000	30,800	8,950	4,800
9	2,890	2,490	2,540	2,680	2,230	3,610	7,370	23,500	42,400	29,100	9,310	5,140
10	2,890	2,580	2,580	2,580	2,230	3,740	7,600	25,100	42,400	27,900	9,310	5,140
11	3,000	2,680	2,630	2,490	2,230	3,880	7,600	27,900	41,800	26,800	9,000	4,800
12	2,890	2,630	2,580	2,440	2,190	4,020	7,840	30,200	41,800	25,700	8,590	4,800
13	2,780	2,680	2,580	2,400	2,190	4,160	8,010	32,000	41,800	24,600	8,590	4,800
14	2,780	2,680	2,540	2,400	2,140	4,310	8,290	35,000	42,400	23,000	8,590	4,640
15	2,780	2,780	2,490	2,370	2,140	4,610	9,630	38,600	43,000	23,000	8,290	4,640
16	2,780	2,680	2,490	2,400	2,140	4,770	10,600	40,500	43,600	21,900	8,290	4,640
17	2,680	2,780	2,490	2,400	2,190	4,960	11,300	41,800	44,800	21,400	8,010	4,340
18	2,680	2,680	2,490	2,400	2,190	4,960	12,400	42,400	45,500	20,400	7,840	4,060
19	2,680	2,490	2,540	2,400	2,230	5,140	13,600	42,400	45,500	19,400	7,600	4,200
20	2,680	2,400	2,540	2,400	2,230	5,140	14,400	43,600	44,800	18,400	7,600	4,200
21	2,680	2,400	2,540	2,440	2,320	5,140	15,200	44,200	44,200	18,400	7,600	4,200
22	2,630	2,400	2,580	2,440	2,370	5,320	15,700	44,800	43,600	17,900	7,370	4,200
23	2,440	2,370	2,580	2,440	2,320	5,320	16,100	48,600	43,000	17,000	7,150	4,060
24	2,490	2,370	2,580	2,490	2,400	5,320	16,600	49,900	43,000	16,100	7,150	4,060
25	2,630	2,400	2,630	2,440	2,400	5,320	17,000	51,200	43,000	15,700	7,150	4,060
26	2,490	2,440	2,630	2,440	2,440	5,320	17,500	50,600	43,000	15,200	6,930	3,920
27	2,580	2,490	2,630	2,400	2,320	5,320	17,500	49,300	42,400	14,800	7,610	3,920
28	2,540	2,400	2,630	2,400	2,580	5,500	17,500	48,000	41,100	14,000	6,290	3,920
29	2,630	2,400	2,630	2,370	2,580	5,500	17,500	46,100	39,900	13,600	6,080	3,920
30	2,580	2,490	2,630	2,370	-------	5,500	17,500	44,800	39,300	13,200	5,880	3,780
31	2,580	-------	2,630	2,270	-------	5,690	-------	43,600	-------	12,400	5,880	-------

Discharge, in second-feet, of Flathead River near Polson, Mont., 1931–33—Contd.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1932–33												
1	3,780	3,380	5,500	5,130	4,060	3,260	3,140	15,200	39,900	57,100	17,000	6,710
2	3,640	3,380	5,500	5,130	4,060	3,260	3,260	16,100	43,000	55,100	16,600	6,710
3	3,780	3,260	6,080	4,960	3,920	3,260	3,140	17,000	45,500	53,200	16,100	6,710
4	3,640	3,380	6,290	4,960	3,920	3,260	3,380	18,400	48,000	51,800	15,200	6,500
5	3,510	3,380	6,710	4,800	3,920	3,260	3,380	19,400	50,600	50,600	14,800	6,500
6	3,640	3,380	7,150	4,800	3,920	3,260	3,380	19,900	53,200	48,000	14,400	6,500
7	3,640	3,510	7,150	4,800	3,780	3,260	3,510	20,900	55,800	46,700	12,800	6,290
8	3,510	3,510	7,150	4,960	3,920	3,260	3,920	21,400	58,500	44,800	12,800	6,100
9	3,380	3,640	6,500	4,800	3,920	3,260	3,780	22,400	59,900	43,000	12,400	6,100
10	3,260	3,640	6,500	4,960	3,920	3,260	3,640	23,000	61,300	41,800	12,400	5,690
11	3,260	3,640	6,290	4,800	3,920	3,260	3,640	23,000	64,200	39,900	12,400	5,690
12	3,260	3,510	6,290	4,800	3,920	3,260	3,920	22,400	65,700	38,700	12,000	5,690
13	3,260	3,380	6,290	4,800	3,920	3,140	3,920	22,400	66,400	37,400	11,600	5,690
14	3,140	3,640	6,080	4,610	3,640	3,140	3,920	22,400	67,100	35,600	11,300	5,500
15	3,020	3,780	6,080	4,560	3,640	3,140	3,920	22,400	68,600	34,400	10,900	5,140
16	3,260	4,060	5,880	4,490	3,640	3,140	4,060	23,000	70,100	33,200	10,600	5,140
17	3,260	4,060	5,880	4,490	3,510	3,140	4,340	24,000	73,000	31,400	9,950	5,320
18	3,380	4,200	5,880	4,490	3,510	3,140	4,200	24,600	75,900	30,200	9,950	5,140
19	3,380	3,920	5,880	4,490	3,510	3,140	4,640	25,100	76,600	28,500	9,310	5,140
20	3,260	4,490	5,690	4,490	3,510	3,140	4,490	26,200	76,600	27,900	9,000	5,140
21	3,380	4,640	5,690	4,340	3,380	3,140	4,490	26,800	75,200	26,200	9,000	4,960
22	3,260	4,800	5,690	4,340	3,380	3,140	4,490	27,400	74,400	25,700	8,590	4,640
23	3,260	5,140	5,690	4,340	3,380	3,260	4,640	27,400	72,200	24,000	8,290	4,800
24	3,260	5,320	5,690	4,200	3,380	3,140	4,960	27,900	70,800	23,000	8,590	4,800
25	3,260	5,500	5,500	4,200	3,380	3,140	5,500	29,100	68,600	21,900	8,290	4,960
26	3,380	5,500	5,500	4,200	3,260	3,140	6,290	29,600	66,400	21,400	8,010	4,960
27	3,140	5,690	5,500	4,200	3,260	3,260	7,600	30,800	64,200	19,900	7,600	4,800
28	3,510	5,690	5,500	4,200	3,260	3,140	9,310	33,200	62,800	18,900	7,600	4,640
29	3,380	5,690	5,320	4,200	-------	3,140	11,600	34,400	60,600	18,400	7,370	4,490
30	3,380	5,320	5,320	4,060	-------	3,140	13,600	35,600	59,200	17,900	7,150	4,640
31	3,380	-------	5,320	4,060	-------	3,140	-------	38,000	-------	17,500	6,710	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
1931–32						
October	3,000	2,440	2,750	0.392	0.45	169,000
November	2,780	2,370	2,530	.361	.40	151,000
December	2,630	2,490	2,560	.365	.42	157,000
January	2,680	2,270	2,480	.354	.41	152,000
February	2,580	2,140	2,260	.322	.35	130,000
March	5,690	2,680	4,620	.659	.76	284,000
April	17,500	5,500	11,200	1.60	1.78	666,000
May	51,200	17,500	35,300	5.04	5.81	2,170,000
June	45,500	39,300	42,900	6.12	6.83	2,550,000
July	38,000	12,400	23,400	3.34	3.85	1,440,000
August	12,000	5,880	8,490	1.21	1.40	522,000
September	5,880	3,780	4,660	.665	.74	277,000
The year	51,200	2,140	11,900	1.69	23.20	8,670,000
1932–33						
October	3,780	3,020	3,380	.482	.56	208,000
November	5,690	3,260	4,210	.601	.67	251,000
December	7,150	5,320	5,980	.853	.98	368,000
January	5,130	4,060	4,570	.652	.75	281,000
February	4,060	3,260	3,670	.524	.55	204,000
March	3,260	3,140	3,190	.455	.52	196,000
April	13,600	3,140	4,940	.705	.79	294,000
May	38,000	15,200	24,800	3.54	4.08	1,520,000
June	76,600	39,900	63,100	9.00	10.04	3,750,000
July	57,100	17,500	34,300	4.89	5.64	2,110,000
August	17,000	6,710	10,900	1.55	1.79	670,000
September	6,710	4,490	5,500	.785	.88	327,000
The year	76,600	3,020	14,100	2.01	27.25	10,200,000

MIDDLE FORK OF FLATHEAD RIVER AT BELTON, MONT.

LOCATION.—Staff gage in NW¼ sec. 36, T. 32 N., R. 19 W., at Belton.
DRAINAGE AREA.—900 square miles.
RECORDS AVAILABLE.—October 1910 to September 1923, February 1929 to June 30, 1933 (discontinued).
DISCHARGE.—Maximum during year, 23,400 second-feet June 16 (gage height, 12.70 feet); minimum, 226 second-feet Feb. 9–11.
1910–23, 1929–33: Maximum, 49,000 second-feet June 21, 1916 (gage height, 20.0 feet); minimum, 115 second-feet Mar. 1, 1929 (gage height, 1.50 feet; ice present).
REMARKS.—Records excellent except those for periods of ice effect, Dec. 7–21, Jan. 17–28, Feb. 6–25, which are fair. No diversions nor storage.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1	369	647	1,950	647	476	369	647	6,400	19,800
2	369	647	1,950	622	454	390	730	6,210	17,700
3	369	647	2,640	596	454	390	818	6,020	15,700
4	369	647	2,400	572	454	390	1,010	6,400	18,000
5	369	622	2,280	477	432	369	945	6,210	19,100
6	369	788	1,850	622	369	369	945	6,600	18,700
7	369	758	1,300	622	331	390	1,010	6,210	17,000
8	369	674	1,150	647	252	410	1,010	6,020	14,400
9	369	622	945	758	226	331	945	5,470	20,600
10	369	647	838	701	226	350	818	4,960	22,200
11	350	596	730	647	226	350	788	4,330	17,700
12	350	758	674	647	252	410	818	4,180	14,700
13	390	945	701	622	280	432	758	4,180	17,700
14	500	1,010	701	622	280	432	701	5,470	19,800
15	788	945	701	572	331	410	818	7,210	21,800
16	818	945	788	500	331	410	1,150	8,070	23,400
17	788	945	788	454	369	410	1,150	8,290	21,800
18	730	1,010	880	390	369	432	1,080	7,850	17,700
19	674	1,750	880	369	369	432	1,080	7,210	12,500
20	647	2,770	880	350	390	454	1,150	6,400	11,200
21	622	2,520	880	350	390	454	1,300	6,600	11,400
22	622	2,170	880	331	390	454	1,750	7,000	11,700
23	647	1,750	818	350	410	454	3,030	7,630	11,400
24	622	1,470	788	350	369	432	4,180	7,630	9,660
25	596	1,380	758	390	390	432	5,470	7,850	8,290
26	572	1,220	730	410	390	432	7,000	11,400	9,190
27	572	1,220	701	454	390	432	8,510	13,100	8,510
28	622	1,150	701	432	369	454	10,900	10,900	7,630
29	701	1,750	674	454	-------	572	11,400	10,400	8,730
30	701	1,950	647	454	-------	596	8,290	13,100	8,070
31	674	-------	596	454	-------	647	-------	19,400	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	818	350	538	0.598	0.69	33,100
November	2,770	622	1,160	1.29	1.44	69,000
December	2,640	596	1,070	1.19	1.37	65,800
January	758	331	512	.569	.65	31,500
February	476	226	356	.395	.41	19,800
March	647	331	429	.477	.55	26,400
April	11,400	647	2,670	2.97	3.31	159,000
May	19,400	4,180	7,700	8.55	9.86	473,000
June	23,400	7,630	15,200	16.9	18.74	904,000
The period						1,780,000

SOUTH FORK OF FLATHEAD RIVER NEAR COLUMBIA FALLS, MONT.

LOCATION.—Water-stage recorder in NE¼ sec. 17, T. 30 N., R. 19 W., 2 miles above mouth and 9 miles east of Columbia Falls.

DRAINAGE AREA.—1,640 square miles.

RECORDS AVAILABLE.—September 1910 to September 1916, April 1923 to September 1933.

DISCHARGE.—Maximum during year, 36,800 second-feet June 16 (gage height, 18.25 feet); minimum, 495 second-feet Oct. 6 (gage height, 1.44 feet).

1910–16, 1923–33: Maximum, about 46,200 second-feet June 19, 1916 (gage height, 16.6 feet); minimum, 243 second-feet Mar. 11, 1930 (ice on control).

REMARKS.—Records excellent except those estimated for Nov. 20 to Dec. 5, Jan. 31 to Feb. 7, and for period of ice effect, Dec. 8 to Mar. 24, which are fair. No records July 11 to Sept. 20. No diversions above stations. No storage.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Sept.
1	536	1,020		1,090		748	915	9,930	30,000	11,000	-------
2	530	1,020		1,280		812	950	9,540	28,200	10,300	-------
3	514	1,020	3,580	1,240		845	1,240	9,540	26,100	9,930	-------
4	502	1,020		1,200	1,000	915	1,520	9,540	30,300	9,540	-------
5	502	1,060		1,240		880	1,520	9,160	32,200	8,780	-------
6	502	1,350	3,120	1,240		950	1,560	9,350	29,400	8,240	-------
7	508	1,280	1,910	1,200		985	1,640	8,780	26,700	7,520	-------
8	514	1,160	1,780	1,280	915	1,060	1,600	8,420	24,900	6,980	-------
9	514	1,120	1,600	1,560	915	985	1,520	7,700	30,600	6,620	-------
10	514	1,060	1,430	1,520	880	950	1,390	6,980	33,700	6,260	-------
11	519	1,020	1,350	1,470	845	845	1,350	6,440	29,700	-------	-------
12	590	1,120	1,560	1,390	832	950	1,310	6,080	26,700	-------	-------
13	734	2,560	1,560	1,390	715	1,020	1,200	6,260	30,900	-------	-------
14	1,020	3,860	1,560	1,390	880	950	1,160	6,980	34,300	-------	-------
15	1,240	3,000	1,600	1,310	985	880	1,350	9,160	35,600	-------	-------
16	1,240	2,640	1,780	1,160	985	845	1,780	9,930	36,500	-------	-----
17	1,200	2,580	1,690	1,090	1,020	845	1,930	10,300	35,000	-------	-------
18	1,120	3,860	1,600	1,020	950	733	1,830	10,700	27,300	-------	-------
19	1,060	4,270	1,690	915	985	880	1,830	10,300	22,900	-------	-------
20	1,060		1,690	985	1,060	915	1,980	9,730	20,600	-------	-------
21	985		1,640	1,020	1,200	950	2,300	9,930	20,000	-------	845
22	950	3,640	1,640	985	915	915	3,240	11,400	20,000	-------	985
23	950		1,600	985	721	880	4,970	12,300	19,100	-------	1,090
24	950		1,550	845	676	880	6,620	11,600	16,700	-------	1,020
25	880		1,470	950	734	880	8,420	11,600	14,800	-------	985
26	915		1,390	1,020	767	760	10,100	15,300	15,100	-------	950
27	950		1,310	1,090	780	734	12,500	19,400	14,300	-------	950
28	1,120	2,180	1,240	1,090	715	728	15,900	17,000	12,800	-------	950
29	1,090		1,240	1,120	-------	780	15,600	15,600	13,500	-------	985
30	1,060		1,160	1,090	-------	832	11,000	19,700	12,500	-------	1,090
31	1,020	-------	1,060	1,090	-------	880	-------	26,700	-------	-------	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,240	502	832	0.507	0.58	51,100
November	4,270	1,020	2,290	1.40	1.56	136,000
December	----------	1,060	1,910	1.16	1.34	117,000
January	1,560	845	1,170	.713	.82	71,900
February	1,200	676	910	.554	.58	50,500
March	1,060	728	878	.535	.62	54,000
April	15,900	915	4,010	2.44	2.72	239,000
May	26,700	6,080	11,100	6.76	7.80	682,000
June	36,500	12,500	25,000	15.20	17.00	1,490,000
July 1-10	11,000	6,260	852	.519	.20	17,500
September 21-30	1,090	845	985	.600	.22	19,500

STILLWATER RIVER NEAR WHITEFISH, MONT.

LOCATION.—Water-stage recorder in SW¼ sec. 34, T. 30 N., R. 22 W., 600 feet below highway bridge and 7 miles southwest of Whitefish.

RECORDS AVAILABLE.—November 1930 to September 1933.

DISCHARGE.—Maximum during year, 1,930 second-feet June 3 (gage height, 11.63 feet); minimum, 89 second-feet Feb. 9 (ice on control).

1930–33: Maximum, 1,930 second-feet June 3, 1933 (gage height, 11.63 feet); minimum, 58 second-feet Sept. 6, 1930 (gage height, 0.82 foot).

REMARKS.—Records good except those for period of ice effect, Dec. 5 to Mar. 20, which are fair. Some water stored and released for logging operations during summer. No diversions. Once-daily readings used Oct. 1–24, Nov. 1 to Dec. 23, Dec. 26 to Feb. 16, Feb. 23 to Mar. 19, Apr. 4–6, Apr. 9 to May 6, May 20–25.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	111	131	174	129	105	118	156	1,660	1,910	885	251	174
2	111	133	168	129	109	118	180	1,680	1,930	845	244	174
3	109	133	174	133	107	118	192	1,640	1,930	825	238	168
4	107	131	174	136	105	118	192	1,600	1,930	785	251	162
5	105	131	151	140	102	116	212	1,600	1,930	747	264	162
6	104	136	131	140	100	116	225	1,570	1,910	709	264	156
7	105	144	117	144	95	116	258	1,550	1,910	673	264	151
8	104	142	107	146	92	118	258	1,530	1,890	637	251	151
9	102	138	98	146	89	117	264	1,510	1,870	619	258	146
10	102	138	98	143	91	118	258	1,490	1,850	515	244	146
11	102	136	98	136	92	118	251	1,450	1,870	566	238	151
12	102	136	98	136	92	123	258	1,380	1,850	549	225	151
13	107	142	98	129	92	128	258	1,320	1,780	532	225	146
14	117	162	98	127	92	128	251	1,280	1,720	515	212	146
15	123	180	98	113	92	128	258	1,280	1,680	481	199	146
16	123	180	98	104	98	122	285	1,320	1,660	464	186	146
17	123	186	102	100	100	118	321	1,380	1,640	447	186	140
18	125	186	107	100	104	118	328	1,450	1,620	430	186	146
19	123	180	107	100	104	118	328	1,510	1,570	398	180	146
20	121	186	110	100	105	114	358	1,570	1,530	382	174	146
21	123	186	121	104	110	117	382	1,620	1,470	366	174	146
22	121	192	121	104	112	116	430	1,640	1,340	351	174	146
23	123	192	123	105	112	117	515	1,640	1,240	344	168	151
24	123	186	125	105	115	112	673	1,660	1,160	336	162	168
25	121	174	126	117	115	117	785	1,660	1,100	321	162	168
26	121	174	123	124	120	125	925	1,640	1,060	306	156	162
27	123	174	123	123	120	127	1,060	1,640	1,000	292	151	162
28	126	168	125	123	120	124	1,200	1,760	945	292	151	162
29	130	168	125	119	------	126	1,380	1,800	925	278	151	162
30	130	162	125	119	------	135	1,550	1,850	905	264	151	162
31	130	------	123	119	------	143	------	1,870	------	264	162	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	130	102	116	7,130
November	192	131	160	9,520
December	174	98	121	7,440
January	146	100	122	7,500
February	120	89	103	5,720
March	143	112	121	7,440
April	1,550	156	466	27,700
May	1,870	1,280	1,570	96,500
June	1,930	905	1,570	93,400
July	885	264	497	30,600
August	264	151	203	12,500
September	174	140	155	9,220
The year	1,930	89	435	315,000

LOGAN CREEK AT TALLY LAKE, NEAR WHITEFISH, MONT.

LOCATION.—Water-stage recorder in SE¼ sec. 30, T. 31 N., R. 2? W., at Tally Lake, about 10 miles west of Whitefish.

RECORDS AVAILABLE.—August 1931 to April 1933 (discontinued). April to September 1931 at point 5 miles downstream; records not comparable.

EXTREMES.—Maximum stage during year, 7.22 feet May 28–29 (discharge not computed); minimum, 11.4 second-feet Oct. 10 (gage height, 1.2? feet).

1931–33: Maximum stage, that of May 28–29, 1933 (discharge not computed); minimum, 0.8 second-foot Sept. 6, 1931.

REMARKS.—Records fair. Natural storage in Tally Lake.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
1	16.2	23.8	29	20.6	19.8	19.0	23.8
2	16.2	24.6	30	21.4	19.8	19.0	23.8
3	15.5	24.6	32	22.2	20.6	19.0	25.4
4	14.8	24.6	36	23.0	19.0	19.8	26.2
5	14.8	24.6	40	23.8	19.8	19.8	28
6	14.8	26.2	40	23.8	21.4	19.8	31
7	14.1	27.0	36	25.4	20.6	19.0	35
8	13.4	27.0	34	25.4	20.6	19.0	40
9	12.7	26.2	30	26.2	20.6	19.0	40
10	12.7	26.2	27.0	26.2	20.6	19.0	40
11	12.7	25.4	26.2	27.0	20.6	19.0	41
12	14.1	26.2	23.8	26.2	19.8	20.6	44
13	15.5	31	23.0	25.4	19.0	20.6	41
14	18.3	36	22.2	24.6	19.0	20.6	40
15	22.2	39	22.2	24.6	19.0	20.6	40
16	23.0	41	20.6	24.6	19.0	20.6	40
17	23.8	40	18.3	25.4	18.3	20.6	44
18	24.6	39	18.3	23.8	17.6	20.6	46
19	23.8	39	19.0	22.2	17.6	20.6	47
20	23.0	39	18.3	22.2	17.6	20.6	48
21	23.0	40	18.3	22.2	16.9	20.6	51
22	23.0	40	18.3	22.2	16.9	21.4	60
23	23.0	38	18.3	21.4	16.2	21.4	81
24	22.2	35	18.3	21.4	16.2	22.2	117
25	22.2	33	18.3	21.4	15.5	22.2	154
26	22.2	31	19.0	20.6	15.5	22.2	206
27	23.0	30	19.8	20.6	15.5	21.4	-------
28	24.6	29	20.6	20.6	19.0	22.2	-------
29	24.6	29	20.6	20.6	-------	23.0	-------
30	23.8	30	20.6	20.6	-------	23.0	-------
31	23.8	-------	20.6	19.8	-------	23.8	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	24.6	12.7	19.4	1,190
November	41	23.8	31.5	1,870
December	40	18.3	24.5	1,510
January	27.0	19.8	23.1	1,420
February	21.4	15.5	18.6	1,030
March	23.8	19.0	20.7	1,270
April 1–26	206	23.8	54.4	2,810
The period	-------	-------	-------	11,100

WHITEFISH CREEK NEAR KALISPELL, MONT.

LOCATION.—Water-stage recorder in SW¼ sec. 34, T. 30 N., R. 21 W., 8 miles north of Kalispell.

RECORDS AVAILABLE.—November to December 1906; July 1928 to September 1933.

DISCHARGE.—Maximum during year, 1,140 second-feet June 18 (gage height, 4.01 feet); minimum, 24 second-feet Feb. 11 (ice on control).

1906, 1928–33: Maximum, 1,260 second-feet June 3, 1932 (gage height, 4.26 feet); minimum, 7.2 second-feet Oct. 22, 1929, and Oct. 16, 1930 (gage height, 0.94 foot on new gage).

REMARKS.—Records good except those for period of ice effect, Dec. 6 to Mar. 13, which are poor. Some regulation at Whitefish Lake. No diversions. Staff-gage readings used Dec. 8–23, Feb. 1–15, Feb. 23 to Mar. 16.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	94	29	178				123	404	785	742	190	143
2	91	29	171				125	412	828	700	190	140
3	89	27	171		65	140	131	397	850	658	187	134
4	89	27	171				123	404	872	616	197	128
5	87	27	171	85			114	412	916	595	207	128
6	84	27	146				117	416	938	554	207	125
7	79	29	101				117	452	960	508	204	125
8	62	29	96		40	155	120	476	982	480	200	123
9	59	27	73				120	492	1,030	460	197	123
10	57	27	62				123	488	1,050	440	190	123
11	55	26	51		24	152	123	468	1,070	424	187	123
12	55	26	39		27	152	128	456	1,050	404	184	120
13	55	29	39		27	117	134	444	1,050	385	177	117
14	55	45	37		35	87	131	436	1,050	366	174	114
15	53	45	35		55	64	137	452	1,070	355	174	114
16	51	94	35	110	64	64	134	476	1,090	340	171	114
17	49	99	35		68	64	134	488	1,140	325	168	114
18	49	94	35		75	59	134	521	1,140	309	168	114
19	47	91	48		75	59	131	533	1,110	290	164	114
20	45	87	61		89	62	152	525	1,090	279	161	114
21	45	82	75		89	66	168	521	1,050	268	158	112
22	45	79	88		91	66	190	521	1,030	256	155	112
23	41	77	101		94	66	224	525	982	249	149	112
24	37	75	101		104	70	264	529	960	238	143	114
25	37	75	104		109	73	290	521	938	231	143	114
26	37	75	96	65	106	77	328	554	894	227	137	114
27	33	75	91		94	79	363	595	850	217	134	114
28	31	75	73		125	84	389	637	806	210	128	112
29	31	89	66		-------	96	408	658	764	207	128	112
30	29	174	66		-------	104	408	679	764	204	134	109
31	29	-------	55		-------	112	-------	721	-------	200	140	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	94	29	54.8	3,370
November	174	26	59.7	3,550
December	178	35	86.2	5,300
January	----------	----------	86	5,290
February	125	24	67	3,720
March	----------	----------	59	6,460
April	408	114	105	11,100
May	721	397	186	31,000
June	1,140	764	504	57,700
July	742	200	970	23,300
August	207	128	379	10,400
September	143	109	169	7,080
The year	1,140	24	119	7,080
			232	168,000

ASHLEY CREEK NEAR KALISPELL, MONT.

LOCATION.—Staff gage in SE¼ sec. 16, T. 28 N., R. 22 W., 4 miles (revised) west of Kalispell.

RECORDS AVAILABLE.—April 1931 to March 1933 (discontinued).

DISCHARGE.—Maximum during period October 1932 to March 1933, 29.3 second-feet Mar. 17 (gage height, 6.80 feet); no flow Dec. 8 to Mar. 17.

1931–32: Maximum, 124 second-feet May 14–15, 1932 (gage height, 8.20 feet); no flow various periods.

REMARKS.—Records fair. Some diversions and natural storage in Smith Lake.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Day	Oct.	Nov.	Dec.	Day	Oct.	Nov.	Dec.
1	1.7	4.3	18.3	11	1.7	2.8	0	21	2.2	5.8	0
2	1.4	7.1	10.0	12	2.3	3.2	0	22	4.2	7.0	0
3	.5	7.6	2.9	13	3.4	11.0	0	23	5.6	3.6	0
4	1.5	3.6	4.5	14	6.0	3.1	0	24	1.8	4.3	0
5	1.9	7.0	.7	15	10.0	3.8	0	25	2.8	4.5	0
6	1.2	12.5	2.7	16	13.8	5.4	0	26	2.8	5.0	0
7	1.0	1.1	.7	17	5.4	10.0	0	27	7.6	5.5	0
8	.2	3.7	0	18	4.6	12.5	0	28	2.7	10.0	0
9	.4	6.0	0	19	3.3	16.5	0	29	2.4	6.8	0
10	1.2	2.5	0	20	4.6	8.5	0	30	2.2	16.8	0
								31	2.4		0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	13.8	0.2	3.32	204
November	16.8	1.1	6.72	400
December	18.3	0	1.28	78
The period				682

NOTE.—No flow Dec. 8, 1932, to Mar. 17, 1933, when station was discontinued (creek frozen solid).

SWAN RIVER NEAR BIG FORK, MONT.

LOCATION.—Water-stage recorder in NW¼ sec. 14, T. 26 N., R. 19 W., at outlet of Swan Lake, 7 miles southeast of Big Fork.

DRAINAGE AREA.—647 square miles.

RECORDS AVAILABLE.—April 1922 to September 1933.

DISCHARGE.—Maximum during year, 8,280 second-feet May 24 (gage height, 7.00 feet); minimum, 310 second-feet Feb. 12 (gage height, 2.17 feet, ice affected).

1922–33: Maximum, that of May 24, 1933 (gage height, 7.00 feet); minimum, 85 second-feet Jan. 24–29, 1930 (gage height, 0.04 foot).

REMARKS.—Records good. No diversions above station. Natural storage in Swan Lake. Stage-discharge relation affected by ice Dec. 6–25, Feb. 11–22. Once-daily readings Oct. 2–6, Dec. 7–21, June 16–20.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	468	638	746	526	442	404	563	2,970	3,660	4,050	1,030	626
2	474	622	754	526	435	404	594	2,730	4,250	3,850	1,020	626
3	474	615	804	526	429	417	658	2,570	4,450	3,560	978	610
4	462	608	884	526	423	423	761	2,500	4,850	3,380	960	594
5	450	622	931	533	429	423	860	2,340	5,350	3,300	951	578
6	450	638	923	533	416	417	905	2,200	5,970	3,130	941	556
7	456	645	923	540	404	417	969	2,120	6,180	2,970	923	548
8	438	645	887	548	368	423	978	2,120	5,970	2,810	896	548
9	438	645	815	556	356	411	951	2,120	5,970	2,650	869	540
10	444	645	692	578	327	404	923	2,050	6,390	2,570	851	556
11	462	630	610	578	315	417	878	1,910	6,830	2,500	815	563
12	480	622	594	563	310	417	851	1,780	6,830	2,340	797	556
13	512	682	578	556	315	417	824	1,700	6,690	2,270	770	548
14	566	830	594	548	315	417	797	1,620	6,690	2,200	761	533
15	580	931	578	556	315	423	797	1,610	7,290	2,120	734	533
16	594	950	533	563	339	423	851	1,670	7,530	1,980	718	540
17	608	940	548	503	374	417	923	1,780	7,780	1,910	709	533
18	622	931	563	455	398	417	969	1,910	8,280	1,800	684	540
19	638	970	563	442	404	423	997	1,980	7,290	1,690	675	556
20	638	990	570	435	398	429	997	1,980	6,690	1,620	666	540
21	622	1,030	570	449	404	442	1,020	1,980	5,970	1,540	658	548
22	638	1,040	570	455	411	462	1,070	2,050	5,550	1,480	666	578
23	615	1,050	563	455	417	462	1,180	2,200	5,150	1,400	666	602
24	615	970	563	455	417	462	1,370	2,270	4,950	1,360	642	610
25	615	912	556	455	411	455	1,600	2,270	4,750	1,280	650	610
26	615	838	563	455	411	462	1,910	2,340	4,450	1,240	634	602
27	608	812	563	462	404	469	2,200	2,570	4,250	1,190	634	594
28	622	787	556	462	411	469	2,570	2,810	4,150	1,160	618	594
29	622	754	556	455	------	483	2,890	2,890	4,150	1,130	610	578
30	630	754	548	449	------	510	3,050	2,970	4,150	1,080	586	578
31	638	------	540	435	------	533	------	3,130	------	1,070	610	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	638	438	551	0.852	0.98	33,900
November	1,050	608	792	1.22	1.36	47,100
December	931	533	653	1.01	1.16	40,200
January	578	435	503	.777	.90	30,900
February	442	310	386	.596	.62	21,400
March	533	404	437	.675	.78	26,900
April	3,050	563	1,200	1.85	2.06	71,400
May	3,130	1,610	2,230	3.45	3.98	137,000
June	8,280	3,660	5,750	8.89	9.92	342,000
July	4,050	1,070	2,150	3.32	3.83	132,000
August	1,030	586	765	1.18	1.36	47,000
September	626	533	571	.882	.98	34,000
The year	8,280	310	1,330	2.06	27.93	964,000

PRIEST LAKE AT OUTLET, NEAR COOLIN, IDAHO

LOCATION.—Staff gage in W½ sec. 5, T. 59 N., R. 4 W., 400 feet north of lake outlet and 2 miles northwest of Coolin. Zero of gage is 2,435.06 feet above mean sea level, United States Coast and Geodetic Survey datum, or 2,437.99 feet, United States Geological Survey datum (Bulletin 567).

DRAINAGE AREA.—572 square miles.

RECORDS AVAILABLE.—April 1928 to September 1933. Fragmentary gage-height records at Coolin from June 1911 to September 1913 are published in connection with the station on Priest River at outlet of Priest Lake, at Coolin.

EXTREMES.—Maximum gage height during year, 5.54 feet June 17–18; minimum, 0.22 foot Oct. 9–11.

1928–33: Maximum gage height, 5.94 feet May 23, 1932; minimum, 0.06 foot Oct. 20, 21, 1931.

REMARKS.—Records good.

Gage height, in feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.34	0.60	1.40	1.50	1.16	0.98	1.00	3.48	4.90	4.24	1.70	0.72
2	.30	.60	1.52	1.50	1.16	.96	1.00	3.60	4.96	4.14	1.68	.70
3	.28	.61	1.68	1.50	1.14	.98	1.00	3.70	5.00	4.10	1.60	.68
4	.28	.64	1.70	1.48	1.14	.96	1.00	3.80	5.10	4.02	1.58	.66
5	.26	.68	1.72	1.46	1.14	.96	1.02	3.86	5.16	3.82	1.56	.64
6	.26	.72	1.70	1.44	1.12	.96	1.08	3.90	5.20	3.72	1.54	.64
7	.23	.72	1.70	1.46	1.10	.96	1.15	3.92	5.24	3.60	1.50	.62
8	.23	.73	1.68	1.42	1.00	.96	1.18	3.94	5.36	3.50	1.46	.62
9	.22	.74	1.68	1.30	1.00	.94	1.23	3.96	5.36	3.46	1.42	.60
10	.22	.74	1.68	1.32	.98	.94	1.22	3.96	5.36	3.40	1.38	.60
11	.22	.74	1.68	1.34	.98	.94	1.20	3.94	5.36	3.28	1.34	.60
12	.23	.78	1.64	1.32	.98	.94	1.20	3.94	5.12	3.18	1.32	.58
13	.24	.86	1.62	1.30	.98	.94	1.24	3.94	5.14	3.08	1.28	.58
14	.26	.90	1.60	1.30	.98	.94	1.22	3.90	5.16	2.98	1.24	.60
15	.28	.98	1.58	1.30	.98	.92	1.22	4.06	5.30	2.90	1.22	.62
16	.30	1.05	1.56	1.30	.96	.92	1.28	4.12	5.48	2.80	1.20	.64
17	.32	1.14	1.54	1.28	.96	.92	1.28	4.15	5.54	2.72	1.16	.64
18	.34	1.12	1.52	1.24	.96	.92	1.30	4.15	5.54	2.64	1.12	.64
19	.32	1.10	1.54	1.22	.96	.94	1.30	4.15	5.46	2.55	1.08	.66
20	.30	1.14	1.56	1.22	.94	.94	1.38	4.16	5.32	2.49	1.02	.64
21	.34	1.18	1.56	1.20	.94	.96	1.50	4.15	5.20	2.42	1.00	.58
22	.40	1.22	1.56	1.20	.92	.98	1.56	4.16	5.06	2.36	.96	.54
23	.44	1.24	1.54	1.20	.90	.96	1.68	4.16	4.98	2.28	.92	.54
24	.48	1.26	1.54	1.20	.88	.94	1.82	4.22	4.90	2.18	.90	.56
25	.50	1.26	1.56	1.20	.88	.90	2.00	4.26	4.84	2.14	.88	.62
26	.52	1.26	1.56	1.22	.88	.92	2.28	4.24	4.62	2.08	.84	.64
27	.54	1.28	1.58	1.22	.94	.88	2.54	4.50	4.54	2.00	.84	.66
28	.56	1.30	1.56	1.22	.98	.90	2.84	4.60	4.40	1.90	.82	.64
29	.56	1.30	1.54	1.18	------	.94	3.02	4.72	4.34	1.80	.78	.64
30	.58	1.32	1.52	1.18	------	.96	3.24	4.86	4.28	1.78	.74	.64
31	.58	------	1.52	1.18	------	.98	------	4.88	------	1.76	.73	------

PRIEST RIVER AT OUTLET OF PRIEST LAKE, NEAR COOLIN, IDAHO

LOCATION.—Water-stage recorder in SW¼ sec. 5, T. 59 N., R. 4 W., at southwest end of Priest Lake and 2 miles northwest of Coolin. Zero of gage is 2,435.06 feet above mean sea level, United States Coast and Geodetic Survey datum, or 2,437.99 feet, United States Geological Survey datum (Bulletin 567).

DRAINAGE AREA.—572 square miles.

RECORDS AVAILABLE.—June 1911 to September 1918 (fragmentary); May 1919 to September 1933.

DISCHARGE.—Maximum during year, 5,940 second-feet June 17 (gage height, 4.89 feet); minimum, 178 second-feet Oct. 11–12 (gage height, 0.01 foot).

1911–33: Maximum, 7,290 second-feet May 30, 1917 (gage height, 6.83 feet); minimum discharge, 120 second-feet Dec. 7, 1929; minimum gage height, that of Oct. 20, 21, 1931.

REMARKS.—Records excellent except those estimated, Dec. 4–9, Feb. 9, July 18, which are good. No diversions above station.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	222	320	837	758	590	450	499	2,860	4,870	3,790	942	379
2	222	334	942	766	577	450	510	3,000	4,870	3,630	906	365
3	222	347	1,000	750	571	450	516	3,160	5,040	3,470	870	356
4	218	351	1,020	743	553	455	534	3,310	5,220	3,310	845	342
5	218	370	1,050	743	553	439	553	3,470	5,220	3,160	813	338
6	211	398	1,020	736	546	429	577	3,470	5,400	3,080	796	334
7	197	403	1,000	743	522	434	603	3,470	5,400	2,930	788	334
8	197	413	960	743	510	434	630	3,470	5,400	2,780	758	329
9	188	413	940	736	500	434	636	3,550	5,580	2,630	728	329
10	181	413	915	736	488	434	657	3,470	5,400	2,560	713	334
11	178	413	888	728	488	450	678	3,390	5,400	2,490	692	342
12	181	424	862	713	482	455	692	3,390	5,220	2,350	671	338
13	188	439	845	706	471	455	699	3,310	5,220	2,280	664	329
14	194	471	829	685	466	450	706	3,390	5,220	2,140	650	342
15	201	499	804	685	455	450	713	3,470	5,400	2,080	623	347
16	228	522	780	657	450	444	736	3,550	5,760	2,020	610	347
17	236	540	773	630	450	439	743	3,630	5,940	1,880	584	351
18	236	565	766	617	450	439	758	3,630	5,940	1,790	565	351
19	236	590	796	610	444	439	766	3,710	5,760	1,700	540	356
20	236	617	796	603	439	439	788	3,710	5,580	1,640	510	356
21	246	636	788	603	434	455	821	3,630	5,400	1,520	510	347
22	254	657	788	597	439	450	870	3,710	5,220	1,470	488	338
23	269	678	821	597	439	444	960	3,790	4,870	1,390	482	342
24	272	685	813	603	434	444	1,080	3,870	4,870	1,350	477	360
25	284	692	813	617	429	439	1,250	3,870	4,530	1,280	439	365
26	292	692	804	617	429	444	1,470	4,110	4,530	1,220	429	360
27	292	699	796	623	424	444	1,760	4,360	4,360	1,150	418	360
28	300	706	788	617	429	460	2,020	4,530	4,110	1,090	408	360
29	296	736	773	603	------	466	2,420	4,530	4,030	1,040	398	365
30	300	788	750	597	------	477	2,630	4,700	3,950	1,000	379	370
31	308	------	750	590	------	488	------	4,870	------	969	370	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	308	178	236	0.413	0.48	14,500
November	788	320	527	.921	1.03	31,400
December	----------	750	855	1.49	1.72	52,600
January	766	590	669	1.17	1.35	41,100
February	590	424	481	.841	.88	26,700
March	488	429	448	.783	.90	27,500
April	2,630	499	942	1.65	1.84	56,100
May	4,870	2,860	3,690	6.45	7.44	227,000
June	5,940	3,950	5,120	8.95	9.99	305,000
July	3,790	969	2,100	3.67	4.23	129,000
August	942	370	615	1.08	1.24	37,800
September	379	329	349	.610	.68	20,800
The year	5,940	178	1,340	2.34	31.78	970,000

PRIEST RIVER NEAR PRIEST RIVER, IDAHO

LOCATION.—Water-stage recorder in NE¼SE¼ sec. 11, T. 56 N., P. 5 W., 500 feet below Saddler Creek, a quarter of a mile below mouth of Lower West Branch, 2½ miles north of Priest River, and 3½ miles above mouth.

RECORDS AVAILABLE.—October 1930 to September 1933. At Priest River, 3 miles downstream, June 1903 to April 1905, November 1910 to April 1911, May to December 1923, February 1929 to September 1930.

DISCHARGE.—Maximum during year, 7,080 second-feet June 9 (gage height, 7.06 feet); minimum, 294 second-feet Oct. 12 (gage height, 0.86 foot).

1903–5, 1910–11, 1923, 1929–33: Maximum, 8,890 second-feet May 23, 1932 (gage height, 803 feet); minimum 195 second-feet Dec. 31, 1930 (gage height, 0.72 foot), and Oct. 14, 1931 (gage height, 0.90 foot); minimum gage height, 0.72 foot Dec. 31, 1930.

REMARKS.—Records good Oct. 1–21 and May 4 to Sept. 30; others fair. Discharge estimated Oct. 1–4, Dec. 9–17, Jan. 17–19, Feb. 6–10, Mar. 15 to Apr. 21.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	340	635	1,250	1,040	796	609	900	4,600	6,170	4,460	1,200	516
2	335	705	1,250	1,070	761	616	900	4,880	6,170	4,320	1,160	504
3	330	761	1,250	1,020	789	635	950	4,880	6,170	4,180	1,120	486
4	325	663	1,250	992	789	596	1,000	5,020	6,320	3,900	1,080	474
5	318	733	1,300	992	782	590	1,050	5,020	6,470	3,770	1,030	462
6	318	1,120	1,250	992	770	583	1,100	5,020	6,620	3,640	1,030	456
7	318	1,010	1,160	1,010	750	635	1,150	4,880	6,620	3,380	1,020	450
8	310	905	1,040	1,020	730	628	1,200	4,600	6,770	3,250	984	462
9	310	875	1,000	1,080	710	602	1,250	4,600	7,080	3,120	944	456
10	310	905		1,070	690	609	1,300	4,600	6,920	3,010	920	456
11	310	796	980	1,020	677	609	1,350	4,460	6,770	2,890	912	462
12	314	635		1,000	705	663	1,350	4,460	6,470	2,770	882	456
13	346	976		952	684	719	1,400	4,320	6,320	2,660	852	445
14	390	1,060		928	684	712	1,400	4,460	6,470	2,550	838	474
15	390	890	960	882	698		1,500	4,600	6,620	2,440	810	534
16	390	898		845	698		1,500	4,740	6,920	2,330	782	510
17	390	936	950		705	700	1,600	4,740	7,080	2,220	761	486
18	405	984	952	840	705		1,600	4,880	6,920	2,120	733	456
19	400	992	1,020		691		1,700	4,880	6,920	2,020	705	504
20	395	976	1,020	852	684		1,800	4,880	6,620	1,920	677	540
21	410	952	1,030	860	663		2,000	4,880	6,320	1,870	677	480
22	450	944	1,050	831	656		2,170	4,740	6,170	1,770	649	456
23	492	912	1,160	817	656	730	2,330	4,740	5,870	1,720	635	456
24	540	875	1,120	803	628		2,500	4,880	5,720	1,620	622	534
25	558	898	1,120	831	602		2,890	4,880	5,440	1,570	602	522
26	564	882	1,120	817	622	750	3,190	5,160	5,300	1,520	576	504
27	558	898	1,120	860	609	750	3,510	5,440	5,020	1,430	558	498
28	558	920	1,080	838	596	800	3,900	5,580	4,880	1,380	552	498
29	576	992	1,070	817	------	800	4,180	5,720	4,740	1,300	540	540
30	570	1,160	1,030	810	------	850	4,320	5,720	4,600	1,250	516	522
31	602	------	1,060	796	------	850	------	6,020	------	1,200	516	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	602	310	414	0.459	0.53	25,500
November	1,160	635	896	.993	1.11	53,300
December	1,300	----------	1,080	1.20	1.38	66,400
January	1,080	796	915	1.01	1.16	56,300
February	796	596	698	.774	.81	38,800
March	----------	583	692	.767	.88	42,500
April	4,320	----------	1,900	2.11	2.35	113,000
May	6,020	4,320	4,910	5.44	6.27	302,000
June	7,080	4,600	6,220	6.90	7.70	370,000
July	4,460	1,200	2,500	2.77	3.19	154,000
August	1,200	516	803	.890	1.03	49,400
September	540	445	487	.540	.60	29,000
The year	7,080	310	1,800	2.00	27.01	1,300,000

SHEEP CREEK BASIN

SHEEP CREEK NEAR NORTHPORT, WASH.

LOCATION.—Water-stage recorder in NE¼NE¼ sec. 25, T. 40 N., R. 39 E., at county highway bridge 1 mile above mouth and 1½ miles north of Northport. Zero of gage is 1,300.00 feet above mean sea level.

DRAINAGE AREA.—225 square miles.

RECORDS AVAILABLE.—June 1929 to September 1933.

DISCHARGE.—Maximum during year, 2,450 second-feet Apr. 29 (gage height, 27.46 feet); minimum discharge, 26 second-feet Sept. 4, 13; minimum gage height, 22.60 feet Oct. 2, 4.

1929–33: Maximum, that of Apr. 29, 1933; minimum, probably less than 8 second-feet, occurred during period Dec. 25, 1929, to Apr. 7, 1930.

REMARKS.—Records good except those estimated, which are poor. Stage-discharge relation affected by ice Dec. 9–22, 30, Jan. 17–22, Feb. 2–5, 7–17, 28, Mar. 1. Flow partly regulated by flash dam 6½ miles above gage. No diversions.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	29	a 30	a 100	64	55	a 40	156	1,850	1,400	276	47	30
2	28			64		45	174	1,680	1,180	269	44	29
3	30			62	a 55	48	220	1,680	1,150	251	47	28
4	28	35		62		46	269	1,680	1,180	228	47	27
5	29	38	120	62		45	320	1,600	1,320	208	44	27
6	29	42	113	62	54	45	352	1,430	1,290	191	43	32
7	29		101	62		45	349	1,290	1,120	178	42	32
8	30		88	64		44	341	1,220	940	167	39	30
9	30			65		44	325	1,150	834	160	37	30
10	30	a 45		65		44	322	1,080	735	154	36	32
11	31		a 65	64		45	310	1,040	651	146	34	31
12	32			64	a 35	46	310	1,080	603	135	34	28
13	32			62		47	306	1,180	595	127	34	27
14	32			62		46	329	1,430	669	121	33	37
15	31	a 40		62		46	380	1,600	799	113	33	42
16	32			58		47	448	1,640	891	107	34	37
17						50	480	1,500	840	101	33	34
18		40				51	517	1,290	705	96	32	33
19		42				51	541	1,220	587	90	32	31
20	a 35	43	a 70	55		55	608	1,120	512	85	40	29
21		43				64	700	1,040	468	81	39	28
22		42				65	864	1,150	424	76	34	31
23			77	54	a 40	67	1,120	1,220	392	70	33	33
24	a 40		67	55		70	1,360	1,220	356	68	32	37
25		a 40	66	55		71	1,640	1,260	325	63	31	36
26			67	55		80	1,780	1,470	318	58	30	33
27			67	56		84	1,920	1,920	303	56	30	33
28			65	56		96	2,060	1,680	280	53	29	32
29	a 30	a 60	65	55	-------	110	2,210	1,500	291	52	28	32
30			a 65	55	-------	129	2,060	1,500	291	49	28	32
31		-------	64	55	-------	143	-------	1,570	-------	48	30	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	----------	28	32.5	0.144	0.17	2,000
November	----------	----------	42.8	.190	.21	2,550
December	120	----------	76.5	.340	.39	4,700
January	65	----------	59.0	.262	.30	3,630
February	----------	----------	41.2	.183	.19	2,290
March	143	40	61.6	.274	.32	3,790
April	2,210	156	759	3.37	3.76	45,200
May	1,920	1,040	1,400	6.22	7.17	86,100
June	1,400	280	715	3.18	3.55	42,500
July	276	48	125	.556	.64	7,690
August	47	28	35.8	.159	.18	2,200
September	42	27	31.8	.141	.16	1,890
The year	2,210	27	282	1.25	17.04	205,000

a Estimated.

KETTLE RIVER BASIN

KETTLE RIVER NEAR FERRY, WASH.

(International gaging station)

LOCATION.—Water-stage recorder in lot 7, sec. 10, T. 40 N., R. 32 E., 1¼ miles south of international boundary and Ferry. Zero of gage is 1,840.00 feet above mean sea level.

DRAINAGE AREA.—2,220 square miles.

RECORDS AVAILABLE.—August 1928 to September 1933.

DISCHARGE.—Maximum during year, 14,000 second-feet June 17 (gage height, 18.40 feet); minimum probably occurred during period of ice effect.

1928–33: Maximum discharge, that of June 17, 1933; minimum, 14 second-feet Jan. 23, 1930, result of current-meter measurement; may have been less during period Jan. 18–23, 1930.

REMARKS.—Records excellent except those estimated. Stage-discharge relation affected by ice Dec. 10–19, Jan. 21, 22, Feb. 2–20. Numerous small diversions above station for irrigation. This is one of the international gaging stations maintained by the United States under agreement with Canada.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	238	390	668		245	226	445	7,360	9,100	5 900	616	179
2	230	370	674			226	450	7,170	8,500	6 790	578	179
3	215	365	668	a 400		230	494	7,550	8,700	6 070	536	182
4	208	345	687			234	572	7,360	9,730	5 050	512	182
5	204	340	656		a 220	226	626	6,980	10,400	4 540	542	175
6	194	331	524			226	715	6,430	10,400	4 210	584	172
7	187	326	279			230	798	6,070	9,310	3 900	560	182
8	177	331	145	a 350		230	806	5,900	7,930	3 900	512	125
9	174	318	128			219	782	5,560	7,550	3 600	471	192
10	174	331				215	750	5,560	6,790	3 300	439	199
11	174	313	a 180		a 150	226	722	5,900	6,070	3 080	402	199
12	174	287				261	701	6,430	6,070	2.800	377	192
13	180	318				261	687	6,980	7,170	2.600	362	189
14	201	340		a 290		257	715	7,930	9,730	2.400	339	189
15	208	350				270	830	8,310	12,200	2.210	320	199
16	204	355	a 360		a 190	278	946	8,120	13,800	2.020	285	229
17	208	340				304	1,020	7,550	12,800	1.900	280	311
18	208	345				313	1,070	6,980	9,520	1.660	272	325
19	212	428				304	1,160	6,610	7,740	1.490	256	307
20	215	632	423	a 200		304	1,360	6,250	7,360	1.370	256	294
21	215	620	440		223	308	1,800	6,250	7,550	1,270	244	272
22	253	578	450		223	304	2,480	6,610	6,980	1.140	240	252
23	308	a 550	462	234	223	287	3,380	6,980	6,610	1.070	232	244
24	340	a 520	467	234	219	282	4,500	6,980	5,900	988	225	260
25	318	450	462	234	215	287	5,730	7,170	5,900	902	221	256
26	295	445	456	238	238	300	6,070	9,030	6,980	842	210	248
27	345	472	456	226	245	326	7,170	10,600	6,070	783	199	248
28	428	518	456	234	223	350	8,310	9,100	5,390	727	196	244
29	428	518	456	230	------	380	8,500	9,100	5,560	662	189	244
30	396	566	434	234	------	406	7,930	10,400	6,250	642	185	272
31	360	------	a 430	245	------	440	------	10,600	------	655	182	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	428	174	247	15,200
November	632	287	413	24,600
December	687	----------	404	24,800
January	----------	----------	284	17,500
February	245	----------	201	11,200
March	440	215	281	17,300
April	8,500	445	2,380	142,000
May	10,600	5,560	7,410	456,000
June	13,800	5,390	8,140	484,000
July	6,790	642	2,530	156,000
August	616	182	349	21,500
September	325	172	227	13,500
The year	13,800	----------	1,910	1,380,000

a Estimated.

KETTLE RIVER AT CASCADE, BRITISH COLUMBIA

(International gaging station)

LOCATION.—Staff gage on highway bridge half a mile below Cascade Falls, at Cascade.

DRAINAGE AREA.—3,550 square miles.

RECORDS AVAILABLE.—October 1930 to September 1933; April 1916 to September 1929 in Canadian water-resources papers.

DISCHARGE.—Maximum during year, 22,500 second-feet June 17 (gage height, 13.65 feet); minimum, 300 second-feet Oct. 13 (gage height, 3.31 feet).

1916–33: Maximum, 29,300 second-feet June 8, 1921; minimum, 60 second-feet Jan. 24, 25, 1930. Average, 16 years (1916–29, 1930–33), 2,570 second-feet.

REMARKS.—Records good except those estimated for period of ice effect, Dec. 7 to Mar. 13, which are fair. Numerous diversions above station for irrigation. This station is one of the international gaging stations maintained by Canada under agreement with the United States.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	385	506	1,400	640	560	530	975	12,700	16,000	9,000	1,080	345
2	380	594	1,580	630	470	535	588	11,900	13,300	8,790	1,030	340
3	355	532	1,660	625	470	535	2,930	12,400	13,500	9,320	948	318
4	350	558	1,720	620	470	525	690	12,700	15,400	7,940	896	318
5	340	572	1,660	615	470	525	1,070	12,200	17,400	7,230	879	331
6	340	565	1,460	610	410	525	2,340	11,100	18,000	6,730	975	326
7	350	552	1,200	605	410	500	2,100	10,300	15,900	6,330	1,020	331
8	318	558	1,000	600	410	475	2,100	9,870	13,200	6,230	966	326
9	313	539	800	600	400	415	1,950	9,320	12,200	6,040	879	326
10	308	506	770	600	400	465	1,870	9,080	11,300	5,560	805	340
11	308	520	730	595	410	525	1,770	9,430	9,540	5,370	735	340
12	308	482	700	590	415	525	1,730	10,200	9,320	4,800	705	336
13	300	470	705	585	420	555	1,660	10,900	10,300	4,420	655	340
14	308	513	710	585	430	467	1,680	12,700	14,000	3,940	620	355
15	318	532	715	585	440	555	1,870	13,900	20,000	3,760	581	336
16	322	565	720	550	450	588	2,210	13,700	19,700	3,470	549	350
17	318	565	725	525	460	588	2,310	12,700	22,500	3,200	519	360
18	326	546	730	520	470	467	2,320	11,400	17,400	2,980	484	484
19	326	598	735	520	480	620	2,550	11,100	13,100	2,650	495	462
20	318	740	740	525	490	620	2,840	10,400	11,900	2,400	451	451
21	345	1,020	745	550	500	620	3,560	10,100	12,400	2,280	435	425
22	360	965	750	570	505	620	4,610	10,600	11,500	2,070	435	425
23	380	918	750	580	510	620	6,430	11,500	10,600	1,910	420	410
24	400	861	730	600	520	588	8,060	11,400	9,760	1,740	410	430
25	440	740	715	625	525	588	9,940	11,500	9,000	1,260	395	456
26	446	724	700	640	525	588	10,700	12,900	9,980	1,160	390	440
27	415	740	685	640	525	478	11,900	12,500	9,650	1,110	380	440
28	420	780	675	640	525	495	13,900	14,900	8,580	1,020	365	456
29	500	825	665	640	------	525	14,800	13,900	8,370	993	350	440
30	532	918	655	640	------	555	13,600	16,500	9,320	1,020	345	446
31	539	------	650	640	------	1,440	------	18,400	------	1,080	345	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	539	300	367	22,600
November	1,020	470	650	38,700
December	1,720	650	909	55,900
January	640	520	569	36,600
February	560	400	467	25,900
March	1,440	415	570	35,000
April	14,800	588	4,500	268,000
May	18,400	9,080	12,000	738,000
June	22,500	8,370	13,100	780,000
July	9,320	993	4,060	250,000
August	1,080	345	630	38,700
September	484	318	383	22,800
The year	22,500	300	3,190	2,310,000

KETTLE RIVER NEAR LAURIER, WASH.

(International gaging station)

LOCATION.—Water-stage recorder in SW¼ sec. 11, T. 40 N., R. 36 E., 500 feet below Deep Creek and 1½ miles southeast of Laurier.

DRAINAGE AREA.—3,800 square miles.

RECORDS AVAILABLE.—September 1929 to September 1933.

DISCHARGE.—Maximum during year, 23,800 second-feet June 17 (gage height, 14.48 feet); minimum, 290 second-feet Oct. 11 (gage height, 2.88 feet).

1929–33: Maximum, that of June 17, 1933; minimum occurred during winter of 1929–30.

Maximum stage known, about 22 feet in 1894.

REMARKS.—Records excellent except those estimated because of ice Dec. 10 to Jan. 19, Jan. 21–27, Feb. 1 to Mar. 9. North Fork regulated by storage above dam at Grand Forks, British Columbia. Numerous small diversions for irrigation and domestic use. This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	410	570	1,280				819	14,500	17,500	9,590	1,240	402
2	410	554	1,500				833	13,400	14,800	9,590	1,160	395
3	381	595	1,550				2,080	13,700	14,800	10,200	1,120	388
4	374	622	1,600				900	14,200	16,300	8,550	1,060	381
5	354	634	1,550	650	520	570	1,560	13,700	18,100	7,760	1,060	402
6	348	626	1,410				2,690	12,500	18,700	7,380	1,090	402
7	354	618	1,240				2,210	11,700	17,200	7,000	1,160	395
8	342	626	1,020				2,150	10,900	14,500	6,800	1,090	388
9	324	614	790				2,090	10,500	12,800	6,600	1,060	402
10	300	595				600	2,030	10,200	11,900	6,000	985	416
11	300	590				626	1,920	10,200	10,500	5,600	915	409
12	300	565				626	1,920	11,200	10,000	5,220	850	416
13	300	548	740			646	1,860	12,200	10,900	4,660	790	416
14	312	575			480	595	1,860	13,700	14,500	4,390	760	416
15	324	605		610		642	2,090	15,700	19,600	4,040	736	409
16	336	630				642	2,390	15,400	22,900	3,800	706	409
17	324	634				605	2,520	14,500	22,900	3,560	680	423
18	336	618				634	2,650	13,100	18,700	3,260	660	506
19	342	638				700	2,840	12,500	14,200	2,980	634	565
20	342	760	780	600		706	3,040	11,700	12,800	2,720	600	554
21	367	950				742	3,720	11,400	12,800	2,580	560	536
22	374	950				736	4,840	11,700	12,500	2,330	570	530
23	402	915				724	6,400	12,800	11,400	2,150	554	518
24	444	880		640	560	712	8,150	12,800	10,500	2,030	548	530
25	518	790				706	9,800	12,800	9,590	1,500	518	530
26	512	754				706	11,200	14,200	10,500	1,360	486	530
27	479	760	720			610	12,200	19,000	10,500	1,280	465	518
28	465	790		660		630	14,800	17,500	9,170	1,200	451	524
29	542	850		665	------	660	16,300	15,700	8,960	1,160	430	506
30	585	915		685	------	739	15,700	17,500	9,590	1,200	416	512
31	580	------		650	------	1,650	------	19,000	------	1,240	402	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	585	300	390	24,000
November	950	548	692	41,200
December	1,600	----------	916	56,300
January	----------	----------	636	39,100
February	----------	----------	519	28,800
March	1,650	----------	670	41,200
April	16,300	819	4,790	285,000
May	19,000	10,200	13,500	830,000
June	22,900	8,960	14,000	833,000
July	10,200	1,160	4,440	273,000
August	1,240	402	766	47,100
September	565	381	458	27,300
The year	22,900	300	3,490	2,530,000

MYERS CREEK NEAR MYNCASTER, BRITISH COLUMBIA

(International gaging station)

LOCATION.—Water-stage recorder 50 feet north of international boundary and a quarter of a mile south of Myncaster.

DRAINAGE AREA.—80 square miles.

RECORDS AVAILABLE.—October 1929 to September 1933; May 1923 to September 1929 in Canadian water-resources papers.

DISCHARGE.—Maximum during year, 41.6 second-feet June 5, 6 (gage height, 1.40 feet); minimum, 1.1 second-feet Aug. 28 (gage height, 0.19 foot).

1923–33: Maximum, 99 second-feet June 14, 1923; no flow July 16–18, 25, 1926.

REMARKS.—Records fair. Discharge estimated Nov. 1–4, 6, 8–10, 12, 13, 15, 17, 18, 20, 21, 23, 24, 26, 28, 30, Apr. 2, 3, 5–7, 10, 12, 15, 16, 18, 21, 25, 27. Diversion above station for irrigation of about 50 acres. No record during winter. This station is one of the international gaging stations maintained by Canada under agreement with the United States.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	1.4	e3.0	11.2	14.9	36.9	13.9	2.0	1.4
2	1.4	e3.2	e12.0	16.3	35.6	15.2	1.9	1.3
3	1.4	e3.4	e13.0	19.0	37.5	13.5	1.7	1.3
4	1.3	e3.6	13.9	17.6	39.6	12.2	e1.9	1.3
5	1.3	3.8	e13.0	18.3	41.6	11.8	2.8	1.2
6	1.4	e3.5	e12.0	18.6	41.6	10.8	2.5	1.6
7	1.4	3.3	11.0	17.6	41.3	9.8	2.2	1.9
8	1.5	e3.2	10.1	17.6	37.5	9.5	2.6	1.8
9	1.5	e3.0	8.8	17.3	36.6	9.5	2.1	1.7
10	1.7	e2.9	e8.5	17.3	31.6	9.5	1.9	1.9
11	1.8	2.7	8.1	17.3	30.0	8.8	1.8	1.9
12	1.9	e3.0	e8.1	17.6	27.6	7.5	1.8	1.7
13	2.0	e3.3	8.1	18.6	27.0	7.2	1.9	1.6
14	2.1	3.6	16.6	23.0	28.3	6.9	1.9	1.8
15	2.1	e4.3	e15.3	24.7	31.6	6.6	1.8	2.1
16	2.1	5.0	e13.8	24.7	31.6	5.6	1.8	2.2
17	2.0	e4.7	12.5	24.0	29.0	4.7	1.7	2.1
18	2.0	e4.4	e11.3	25.0	26.6	4.7	1.6	1.9
19	2.0	4.1	10.1	24.7	24.3	4.4	1.7	1.8
20	2.1	e3.9	11.5	23.0	21.6	4.4	1.7	1.8
21	2.3	e3.6	e13.2	23.3	20.0	4.4	1.7	1.8
22	3.6	3.3	14.9	25.0	18.0	3.7	1.7	1.9
23	3.4	e3.3	14.2	24.7	16.9	3.1	1.7	2.1
24	2.9	e3.3	13.5	24.7	15.9	3.0	1.7	2.9
25	2.6	3.3	e13.4	25.7	15.2	2.6	1.4	3.0
26	2.6	e3.3	13.2	34.9	15.2	2.4	1.3	2.6
27	2.6	3.3	e13.9	33.9	14.2	2.2	1.2	2.9
28	2.5	e5.8	14.6	32.6	13.9	2.3	1.1	2.9
29	2.6	8.4	15.9	34.9	14.9	2.1	1.2	2.9
30	2.8	e8.4	16.3	39.6	14.9	2.1	1.3	2.9
31	2.9			40.2		2.0	1.3	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	3.6	1.3	2.1	129
November	8.4	2.7	3.9	232
April	16.6	8.1	12.4	738
May	40.2	14.9	23.8	1,460
June	41.6	13.9	27.2	1,620
July	15.2	2.0	6.7	412
August	2.8	1.1	1.8	111
September	3.0	1.2	2.0	119

e Estimated.

COLVILLE RIVER BASIN

COLVILLE RIVER AT MEYERS FALLS, WASH.

LOCATION.—Staff gage in sec. 29, T. 36 N., R. 38 E., 300 feet below Stevens County Light & Power Co.'s plant at foot of Meyers Falls. Prior to Oct. 21, 1932, staff gage 300 feet upstream was used.

RECORDS AVAILABLE.—October 1922 to September 1933.

DISCHARGE.—Maximum during year ending Sept. 30, 1932, 1,760 second-feet Apr. 27 (gage height, 5.55 feet, old datum); minimum, 21 second-feet Oct. 4, 5 (gage height, 0.70 foot, old datum).

Maximum during year ending Sept. 30, 1933, 1,540 second-feet Apr. 28–30 (gage height, 4.4 feet, new datum); minimum discharge, not determined, occurred during period of faulty gage-height record; minimum gage height, 0.65 foot (new datum) Dec. 9.

1922–33: Maximum, that of Apr. 27, 1932; minimum, 0.5 second-foot Aug. 15, 1930 (gage height, 0.00 foot, former datum). Average, 10 years (1923–33), 212 second-feet.

REMARKS.—Records good except those for Nov. 29 to Dec. 3, Dec. 11–14, 16, 1931, Jan. 3, 5–9, 16–18, Jan. 24 to Feb. 4, Apr. 28 to Oct. 20, Dec. 10–22, 29–31, 1932, Jan. 1–5, 17–21, Feb. 4–19, 1933, which were estimated. Several small ditches divert water for irrigation above station. Small reservoir above falls; effect of regulation probably slight. Gage-height record and many discharge measurements furnished by Washington Water Power Co.

Discharge, in second-feet, 1931–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
1931–32							
1	23	43		78		309	820
2	23	41	[a]30	64	[a]65	340	913
3	23	41		[a]65		372	1,010
4	21	43	32	75		424	1,060
5	21	41	63		75	442	1,160
6	33	39	53		77	424	1,110
7	28	42	52	[a]80	77	406	1,110
8	31	43	48		76	372	1,110
9	29	52	46		81	309	1,110
10	31	54	46	86	89	279	1,160
11	33	57		97	86	252	1,110
12	33	52	[a]40	82	85	227	1,110
13	29	54		72	72	216	1,210
14	39	59		76	72	205	1,360
15	35	67	32	75	72	216	1,710
16	38	65	[a]35		73	216	1,660
17	35	72	36	[a]80	69	240	1,660
18	35	67	49		71	279	1,660
19	35	67	57	90	72	309	1,710
20	36	60	70	97	75	389	1,710
21	33	62	67	97	72	406	1,710
22	36	54	84	85	75	461	1,710
23	42	43	78	70	80	461	1,710
24	42	40	78		85	500	1,710
25	46	49	89		85	601	1,710
26	49	57	82		112	601	1,710
27	70	32	75	[a]70	186	601	1,710
28	44	28	84		252	601	
29	48	[a]30	89		279	643	[a]1,600
30	42	[a]30	72			775	
31	48		77			775	

[a] Estimated.

Discharge, in second-feet, of Colville River at Myers Falls, Wash., 1931–33—Contd.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1932-33												
1		90	167		131	175	600	1,480	575	210	56	44
2		106	172		108	183	600	1,480	526	210	55	47
3		114	164	a 100	94	224	625	1,420	480	210	51	48
4		121	167			196	675	1,320	503	183	60	52
5		131	161			224	725	1,320	458	180	106	54
6		126	159	121		224	725	1,320	435	167	73	57
7		141	104	128	a 85	252	775	1,260	435	161	80	58
8		156	69	134		252	775	1,200	435	148	68	58
9		154	52	151		210	775	1,150	414	128	63	60
10		146		172		267	775	1,100	414	144	60	70
11	a 50	141	a 45	172	a 65	252	725	1,100	394	134	52	70
12		136		196		252	725	1,040	394	121	56	68
13		131		167		297	675	985	358	116	52	68
14		131		161		312	675	930	342	111	56	73
15		161		154		327	675	875	342	94	50	83
16		172	a 50	111	a 90	358	725	875	252	94	45	84
17		167				394	725	875	327	94	45	94
18		167				458	725	775	282	88	44	90
19		175		a 95		458	775	775	267	83	44	90
20		172			111	480	775	775	252	76	43	90
21	84	170	a 70		116	550	825	775	238	73	43	86
22	90	161		118	118	575	930	775	224	73	44	84
23	92	156	86	131	121	550	985	775	238	73	44	80
24	98	151	90	136	124	550	1,100	725	224	73	44	86
25	100	141	94	136	126	550	1,200	675	224	73	44	92
26	94	138	96	114	141	526	1,320	675	224	72	44	106
27	90	141	102	131	146	503	1,420	675	178	69	45	111
28	94	144	102	118	167	503	1,540	675	210	65	41	118
29	88	156		121		503	1,540	625	210	65	46	116
30	86	161	a 95	136		503	1,540	625	224	66	45	108
31	90			136		550		575		60	46	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1931-32				
October	70	21	35.8	2,200
November	72	28	49.5	2,950
December	89		56.3	3,460
January	97		77.7	4,780
February	279		93.4	5,370
March	775	205	408	25,100
April	1,710	820	1,410	83,900
May			a 900	55,300
June			a 450	26,800
July			a 100	6,150
August			a 45.0	2,770
September			a 35.0	2,080
The year	1,710	21	304	221,000
1932-33				
October	100		64.7	3,980
November	175	90	145	8,630
December	172		89.5	5,500
January	196		126	7,750
February	167		99.6	5,530
March	575	175	376	23,100
April	1,540	600	888	52,800
May	1,480	575	956	58,800
June	575	178	336	20,000
July	210	60	113	6,950
August	106	41	53.1	3,260
September	118	44	78.2	4,650
The year	1,540		278	201,000

a Estimated.

SPOKANE RIVER BASIN

COEUR D'ALENE RIVER NEAR CATALDO, IDAHO

LOCATION.—Water-stage recorder in sec. 26, T. 49 N., R. 1 E., 1½ miles above Cataldo and 3 miles below South Fork of Coeur d'Alene River. Zero of gage is 2,100.00 feet above mean sea level.

DRAINAGE AREA.—1,220 square miles.

RECORDS AVAILABLE.—April 1911 to December 1912; July 1920 to September 1933.

DISCHARGE.—Maximum during year, 21,500 second-feet Apr. 28 (gage height, 49.44 feet); minimum, 337 second-feet Oct. 6 (gage height, 37.50 feet).

1911–12, 1920–33: Maximum, 27,600 second-feet Feb. 5, 1925 (gage height, 51.3 feet), minimum, 122 second-feet Dec. 4, 1929; minimum gage height, 37.03 feet Sept. 6, 1931.

REMARKS.—Records good. Discharge estimated Dec. 9–24, Feb. 8–18. No diversions or regulation above station. Gage-height record and results of six discharge measurements furnished by Washington Water Power Co.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	380	511	2,290	880	977	769	4,550	12,900	9,020	2,270	706	498
2	368	557	4,400	946	915	826	4,550	11,300	8,180	2,110	687	488
3	362	661	9,250	946	826	1,010	5,690	10,600	7,970	2,060	681	467
4	362	682	7,990	946	855	1,010	7,390	10,600	8,810	1,960	675	457
5	362	687	6,610	1,140	855	977	7,190	10,600	8,810	1,820	699	452
6	354	1,670	5,180	1,710	855	977	6,990	9,900	7,970	1,720	693	447
7	348	1,430	4,250	1,790	714	1,110	6,800	8,810	7,560	1,680	681	457
8	340	1,110	3,320	2,970	}	1,220	6,050	8,180	8,180	1,590	669	462
9	344	1,080	2,500	3,830	700	1,180	4,860	7,560	13,700	1,590	638	447
10	344	977	1,700	3,700	}	1,180	4,110	6,960	16,000	1,590	603	462
11	354	880	1,200	2,970	}	1,220	3,700	6,760	12,000	1,500	591	467
12	387	855	900	2,490		1,550	3,440	7,360	9,680	1,460	580	457
13	463	2,970	700	2,150		2,390	3,080	7,970	9,240	1,420	558	442
14	557	6,990	900	2,200		2,540	3,080	9,680	9,020	1,340	558	447
15	605	4,250	1,100	2,240	650	2,640	4,400	11,000	8,390	1,300	552	493
16	511	3,570	1,200	2,060	}	2,860	6,420	10,800	7,970	1,260	530	498
17	480	4,550	1,300	1,880		2,860	6,610	9,460	6,960	1,180	530	477
18	450	5,350	1,400	1,670	700	2,860	5,870	8,810	5,280	1,060	519	493
19	422	5,180	1,600	1,670	797	2,750	5,520	8,390	4,600	995	509	493
20	402	4,250	1,700	1,670	797	2,970	6,420	7,560	4,120	960	530	462
21	387	3,700	1,600	1,590	826	3,440	7,790	7,560	3,820	960	530	457
22	399	3,440	1,500	1,430	826	3,200	9,690	7,970	3,670	960	524	514
23	454	3,080	1,400	1,360	855	2,860	12,400	8,390	3,390	890	530	530
24	506	2,860	1,300	1,280	797	2,590	14,700	8,180	3,110	809	530	558
25	484	2,490	1,180	1,250	769	2,440	16,800	8,180	2,920	769	524	558
26	489	2,200	1,180	1,180	769	2,390	18,800	9,680	2,730	750	503	530
27	484	2,020	1,180	1,140	769	2,440	20,300	10,600	2,610	731	493	498
28	472	1,880	1,080	1,110	741	2,970	21,200	8,810	2,490	718	477	493
29	454	1,840	1,040	1,010	-------	4,250	20,000	8,180	2,490	712	462	519
30	450	2,060	946	1,010	-------	4,400	16,200	9,240	2,380	718	467	519
31	450	-------	826	1,010	-------	4,550	-------	10,100	-------	693	477	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	605	340	427	0.350	0.40	26,300
November	6,990	511	2,460	2.02	2.25	146,000
December	9,250	700	2,350	1.93	2.22	144,000
January	3,830	880	1,720	1.41	1.63	106,000
February	977	650	760	.623	.65	42,200
March	4,550	769	2,270	1.86	2.14	140,000
April	21,200	3,080	8,820	7.23	8.07	525,000
May	12,900	6,760	9,100	7.46	8.60	560,000
June	16,000	2,380	6,770	5.55	6.19	403,000
July	2,270	693	1,280	1.05	1.21	78,700
August	706	462	571	.468	.54	35,100
September	558	442	485	.398	.44	28,900
The year	21,200	340	3,090	2.53	34.34	2,240,000

COEUR D'ALENE LAKE AT COEUR D'ALENE, IDAHO

LOCATION.—Water-stage recorder in sec. 24, T. 50 N., R. 4 W., 500 feet southwest of south end of Eleventh Street, Coeur d'Alene. Zero of gage is 2,100.00 feet above mean sea level.

DRAINAGE AREA.—3,750 square miles.

RECORDS AVAILABLE.—February 1905 to September 1933; April 1903 to February 1905 at St. Joe Boom Co.'s gage at mouth of St. Joe River.

EXTREMES.—Maximum stage recorded during year, 33.00 feet May 2; minimum, 22.59 feet Mar. 2.

1903–33: Maximum stage, 36.0 feet Jan. 3, 1918; minimum, 19.9 feet Oct. 10–12, 1904, Sept. 24, 25, 1905, Oct. 14 to Nov. 3, 1906.

Maximum stage known, 37.6 feet (from high-water marks) May 31, 1894.

REMARKS.—Records excellent. Considerable storage used by Washington Water Power Co. Regulation affected by Taintor gates and bear-trap dam at Post Falls. Gage-height record furnished by Washington Water Power Co. Add 2,100.00 feet to stages to refer them to originally accepted elevation (2,157.404 feet) of the United States Geological Survey bench mark in southeast corner of Merriam Building (see Water-Supply Paper 672).

Gage height, in feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24.88	24.67	24.67	24.18	23.73	22.61	25.96	32.89	30.72	27.14	26.40	26.10
2	24.86	24.71	24.71	24.22	23.70	22.59	26.09	32.97	30.84	26.86	26.42	26.10
3	24.83	24.74	25.24	24.26	23.68	22.63	26.26	32.89	30.89	26.62	26.43	26.09
4	24.81	24.77	25.59	24.25	23.65	22.72	26.57	32.71	30.90	26.39	26.44	26.07
5	24.79	24.84	25.76	24.21	23.63	22.81	26.89	32.52	30.98	26.13	26.47	26.03
6	24.75	24.95	25.82	24.11	23.58	22.90	27.15	32.32	31.05	26.02	26.49	26.02
7	24.70	25.08	25.80	24.02	23.59	22.98	27.37	32.13	31.07	26.01	26.50	26.00
8	24.66	25.19	25.65	24.11	23.56	23.00	27.50	31.87	31.07	26.08	26.51	25.96
9	24.62	25.30	25.42	24.59	23.55	23.02	27.51	31.60	31.12	26.11	26.51	25.97
10	24.60	25.31	25.24	24.87	23.48	23.03	27.42	31.30	31.43	26.19	26.50	25.98
11	24.56	25.31	25.10	25.01	23.43	23.04	27.29	30.99	31.88	26.22	26.49	25.97
12	24.57	25.34	25.11	25.00	23.42	23.08	27.11	30.70	32.14	26.27	26.48	25.94
13	24.61	25.44	25.22	24.91	23.39	23.20	26.92	30.45	32.19	26.31	26.45	25.92
14	24.67	25.77	25.30	24.83	23.37	23.43	26.74	30.30	32.16	26.35	26.43	25.93
15	24.68	25.84	25.34	24.71	23.35	23.67	26.64	30.26	32.10	26.41	26.41	25.93
16	24.67	25.79	25.35	24.59	23.32	23.87	26.72	30.33	32.01	26.49	26.40	25.90
17	24.65	25.78	25.35	24.46	23.23	24.20	26.92	30.46	31.85	26.51	26.39	25.88
18	24.62	25.87	25.37	24.30	23.15	24.42	27.09	30.53	31.61	26.50	26.39	25.91
19	24.61	25.98	25.41	24.21	23.07	24.57	27.14	30.55	31.29	26.48	26.38	25.88
20	24.59	25.96	25.21	24.18	22.98	24.74	27.21	30.50	30.91	26.45	26.33	25.89
21	24.56	25.90	24.99	24.17	22.88	24.97	27.34	30.39	30.51	26.43	26.29	25.90
22	24.58	25.77	24.77	24.15	22.80	25.12	27.59	30.30	30.12	26.43	26.29	25.92
23	24.58	25.62	24.61	24.13	22.73	25.18	27.96	30.21	29.73	26.42	26.28	25.91
24	24.58	25.47	24.42	24.10	22.68	25.15	28.47	30.17	29.37	26.42	26.21	25.93
25	24.57	25.26	24.36	24.06	22.63	25.10	29.07	30.14	29.01	26.47	26.20	25.94
26	24.56	25.08	24.33	24.01	22.64	25.03	29.76	30.13	28.67	26.49	26.19	25.93
27	24.56	24.89	24.29	23.99	22.67	25.02	30.50	30.26	28.32	26.49	26.19	25.93
28	24.56	24.70	24.23	23.88	22.64	25.09	31.25	30.42	28.02	26.48	26.17	25.93
29	24.59	24.58	24.21	23.78	------	25.30	32.00	30.50	27.72	26.45	26.16	25.93
30	24.60	24.60	24.16	23.75	------	25.57	32.57	30.51	27.43	26.41	26.13	25.90
31	24.61	------	24.13	23.71	------	25.80	------	30.58	------	26.40	26.12	------

SPOKANE RIVER AT POST FALLS, IDAHO

LOCATION.—Water-stage recorder in sec. 4, T. 50 N., R. 5 W., a quarter of a mile below power plant of Washington Water Power Co. and 1 mile west of Post Falls. Zero of gage is 2,000 feet above mean sea level.

DRAINAGE AREA.—3,880 square miles.

RECORDS AVAILABLE.—January 1913 to September 1933.

DISCHARGE.—Maximum during year, 28,900 second-feet May 1–2 (gage height, 74.93 feet); minimum, 652 second-feet Aug. 28 (gage height, 65.57 feet).

1913–33: Maximum, 39,800 second-feet May 18, 1917 (gage height, 79.20 feet); minimum, 540 second-feet Sept. 5, 1926 (gage height, 65.3 feet).

REMARKS.—Records good. Discharge estimated Nov. 3–27, Feb. 9–17, Mar. 12–20. Spokane Valley Farms Co.'s canal diverts three-quarters of a mile above gage for irrigation (see records for canal, p. 150). Flow partly regulated by storage and release of water at Coeur d'Alene Lake. Gage-height record and the results of two discharge measurements furnished by Washington Water Power Co.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	900	795	3,690	1,650	2,240	2,380	9,880	28,400	22,200	11,700	820	820
2	900	795	3,900	1,720	2,240	1,980	10,200	28,900	22,700	10,900	845	820
3	900		5,120	1,980	2,240	1,980	10,600	28,400	23,200	10,600	820	820
4	870		8,000	2,590	2,240	1,910	10,900	27,900	23,200	9,880	795	820
5	870		8,590	3,690	2,240	1,910	11,700	27,000	23,200	7,180	795	820
		800										
6	900		8,900	5,620	1,840	2,520	12,400	26,000	23,600	5,000	795	820
7	1,000		8,590	5,370	1,530	3,590	12,800	25,500	23,600	3,050	795	820
8	1,040		8,290	5,620	1,480	3,790	13,200	24,600	23,600	2,590	845	795
9	1,040	1,000	7,450	6,420	1,950	3,900	13,200	23,600	23,600	2,520	1,040	770
10	1,040		7,180	7,180	2,700	4,000	13,200	22,700	24,600	2,590	1,040	770
		1,700										
11	1,110		4,000	7,450	2,400	3,900	12,800	21,800	26,000	2,170	1,000	795
12	1,150		1,480	7,450	2,350	4,200	12,400	21,300	27,000	1,840	965	795
13	1,150	2,450	1,150	7,180	2,200	4,300	12,000	20,400	27,000	1,910	930	965
14	1,150	7,000	1,780	7,180	2,250	4,700	11,700	20,400	27,000	1,150	820	1,070
15	1,110	8,850	2,190	6,910	2,400	5,050	11,300	20,000	27,000	900	820	965
16	1,110	8,750	2,380	6,420	3,100	5,500	11,300	20,400	26,500	1,420	820	930
17	1,150	8,700	2,380	5,870	3,400	6,000	12,000	20,400	25,500	1,910	820	965
18	1,110	8,900	2,520	5,000	3,310	6,200	12,400	20,800	24,600	1,910	795	965
19	1,070	9,450	5,620	4,210	3,310	6,600	12,400	21,300	23,600	1,980	795	870
20	1,070	9,400	7,180	4,210	3,220	6,900	12,400	21,300	22,200	1,910	795	900
21	1,070	9,300	6,910	3,690	3,220	8,000	12,800	20,800	20,800	1,780	795	870
22	1,000	9,050	6,420	3,310	3,220	8,290	13,200	20,800	20,000	1,590	820	870
23	870	8,700	6,260	3,310	3,140	8,290	14,000	20,800	19,100	1,320	795	900
24	930	8,450	4,320	3,310	2,520	8,290	15,200	20,400	17,700	930	795	870
25	965	7,700	3,310	3,310	1,650	8,000	16,900	20,400	16,900	870	795	1,000
26	900	7,450	3,310	3,310	1,720	8,000	18,600	20,800	16,000	1,070	795	1,150
27	845	7,100	3,310	3,900	2,520	8,000	20,800	20,800	14,800	1,320	795	1,150
28	870	6,260	2,970	4,100	2,890	8,000	23,200	21,300	14,000	1,370	795	1,150
29	845	4,430	2,740	3,220	-------	8,590	25,500	21,800	13,200	1,420	820	1,110
30	870	3,500	2,740	2,890	-------	8,900	27,400	21,800	12,400	1,070	820	1,110
31	820	-------	2,100	2,450	-------	9,550	--------	21,800	--------	845	820	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,150	820	988	0.255	0.29	60,800
November	9,450	795	4,930	1.27	1.42	293,000
December	8,900	1,150	4,670	1.20	1.38	287,000
January	7,450	1,650	4,530	1.17	1.35	279,000
February	3,400	1,480	2,480	.639	.67	138,000
March	9,550	1,910	5,590	1.44	1.66	344,000
April	27,400	9,880	14,200	3.66	4.08	845,000
May	28,900	20,000	22,700	5.85	6.74	1,400,000
June	27,000	12,400	21,800	5.62	6.27	1,300,000
July	11,700	845	3,120	.804	.93	192,000
August	1,040	795	839	.216	.25	51,600
September	1,150	770	916	.236	.26	54,500
The year	28,900	770	7,230	1.86	25.30	5,240,000

Discharge of Spokane River and Spokane Valley Farms Co.'s canal at Post Falls, Idaho, 1932–33

Month	Discharge in second-feet						Combined run-off	
	River mean	Canal mean	Combined				Inches	Acre-feet
			Maximum	Minimum	Mean	Per square mile		
October	988		1,150	820	988			60,800
November	4,930		9,450	795	4,930			293,000
December	4,670		8,900	1,150	4,670			287,000
January	4,530		7,450	1,650	4,530			279,000
February	2,480		3,400	1,480	2,480			138,000
March	5,590	16	9,590	1,910	5,610			345,000
April	14,200	73	27,600	9,920	14,300			849,000
May	22,700	214	29,100	20,200	22,900			1,410,000
June	21,800	249	27,300	12,600	22,000			1,310,000
July	3,120	221	11,900	1,070	3,340			206,000
August	839	240	1,290	1,020	1,080			66,400
September	916	119	1,290	870	1,040			61,600
The year	7,230	94	29,100	795	7,320	1.89	25.66	5,310,000

NOTE.—Monthly figures showing discharge in second-feet per square mile and run-off in inches are not published, owing to regulation by Coeur d'Alene Lake. The yearly figures represent more nearly the natural discharge and run-off.

SPOKANE RIVER AT SPOKANE, WASH.

LOCATION.—Water-stage recorder in sec. 13, T. 25 N., R. 42 E., at Cochran Street, Spokane. Zero of gage is about 1,700 feet above mean sea level.

DRAINAGE AREA.—4,350 square miles.

RECORDS AVAILABLE.—April 1891 to September 1933.

DISCHARGE.—Maximum during year, 28,500 second-feet May 1 (gage height, 25.9 feet); minimum, 792 second-feet Sept. 18 (gage height, 16.99 feet).

1891–1933: Maximum, 49,000 second-feet May 31, 1894; minimum, 425 second-feet Sept. 20, 1931. Average, 42 years, 6,920 second-feet.

REMARKS.—Records excellent except those estimated Nov. 5 to Dec. 4, Feb. 9–13, which are fair. Water diverted above station for irrigation by Spokane Valley Farms Co. Flow partly regulated by storage and release of water at Coeur d'Alene Lake and by pondage at Spokane. Gage-height record and several discharge measurements furnished by Washington Water Power Co.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,440	1,400		2,480	2,990	3,360	9,630	27,500	21,800	13,400	1,700	1,460
2	1,460	1,420		2,400	2,930	2,640	9,980	28,000	22,200	12,600	1,710	1,390
3	1,480	1,410	5,400	2,500	2,900	2,640	10,300	28,000	22,200	11,900	1,700	1,380
4	1,480	1,400		3,050	2,880	2,570	11,100	27,500	22,200	11,200	1,640	1,430
5	1,470		8,960	3,600	2,880	2,560	11,800	27,000	22,200	9,590	1,680	1,410
6	1,440		8,960	5,850	2,770	2,640	12,500	26,600	22,700	6,980	1,580	1,410
7	1,500	1,700	8,960	5,620	2,270	3,740	12,900	26,100	22,700	5,380	1,610	1,440
8	1,570		8,960	5,740	2,180	4,040	13,200	25,600	23,200	4,330	1,630	1,460
9	1,640		8,260	6,360		4,140	13,200	24,600	23,200	4,110	1,680	1,380
10	1,640		7,390	7,260		4,240	13,200	24,200	23,700	4,110	1,840	1,370
11	1,640		6,150	7,720	2,800	4,240	13,200	23,200	24,600	3,890	1,780	1,410
12	1,710		3,110	7,720		4,340	12,900	22,200	25,600	3,270	1,710	1,400
13	1,730	6,000	2,090	7,720		4,660	12,500	21,800	26,100	3,180	1,710	1,440
14	1,720		2,520	7,430	2,640	4,970	12,100	21,300	26,100	2,940	1,660	1,620
15	1,710		2,660	7,430	2,800	5,290	11,800	20,800	26,100	2,160	1,610	1,630
16	1,680		2,980	7,010	3,320	5,620	11,800	20,800	26,100	2,260	1,480	1,580
17	1,700		2,980	6,560	3,750	6,090	12,100	20,800	25,600	2,960	1,570	1,570
18	1,710	9,700	3,060	5,990	3,750	6,340	12,500	21,300	25,100	3,030	1,590	1,620
19	1,630		4,920	4,860	3,660	6,470	12,500	21,300	24,200	3,000	1,570	1,560
20	1,640		7,120	4,860	3,660	6,740	12,900	21,300	22,700	2,980	1,580	1,580
21	1,660		7,010	4,550	3,660	7,150	12,900	20,800	21,800	2,910	1,440	1,550
22	1,670		6,600	4,040	3,660	7,720	13,200	20,800	20,800	2,740	1,570	1,510
23	1,520	9,100	6,470	4,040	3,660	8,020	14,000	20,800	19,500	2,510	1,570	1,550
24	1,460		5,510	3,940	3,410	8,020	15,100	20,400	18,600	2,110	1,590	1,390
25	1,510		3,940	3,940	2,500	8,020	16,200	20,400	17,800	1,780	1,570	1,520
26	1,520		3,940	3,840	2,210	7,720	17,800	20,400	17,000	1,840	1,590	1,710
27	1,450		3,840	3,840	2,880	7,720	19,500	20,800	16,300	2,180	1,440	1,780
28	1,400	6,200	3,770	5,130	3,160	7,720	21,800	21,300	15,500	2,180	1,460	1,780
29	1,400		3,410	3,860	-------	8,330	24,200	21,300	14,800	2,180	1,350	1,780
30	1,380		3,360	3,660	-------	8,640	25,600	21,300	14,100	2,250	1,430	1,710
31	1,430	-------	3,200	3,320	-------	9,290	--------	21,300	--------	1,840	1,410	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,730	1,380	1,560	----------	----------	95,900
November	----------	----------	5,690	----------	----------	339,000
December	8,960	2,090	5,220	----------	----------	321,000
January	7,720	2,400	5,040	----------	----------	310,000
February	3,750	2,180	3,020	----------	----------	168,000
March	9,290	2,560	5,670	----------	----------	349,000
April	25,600	9,630	14,100	----------	----------	839,000
May	28,000	20,400	22,900	----------	----------	1,410,000
June	26,100	14,100	21,800	----------	----------	1,300,000
July	13,400	1,780	4,440	----------	----------	273,000
August	1,840	1,350	1,600	----------	----------	98,400
September	1,780	1,370	1,530	----------	----------	91,000
The year	28,000	1,350	7,720	1.77	24.00	5,590,000

NOTE.—Monthly discharge in second-feet per square mile and run-off in inches not computed, owing to regulation. Yearly figures closely represent natural flow.

SPOKANE RIVER BELOW LITTLE FALLS, NEAR LONG LAKE, WASH.

LOCATION.—Water-stage recorder in NW¼ sec. 19, T. 27 N., R. 3? E., 1½ miles below Little Falls power plant of Washington Water Power Co. and 5 miles below Long Lake. Zero of gage is 1,200 feet above mean sea level.

DRAINAGE AREA.—6,380 square miles.

RECORDS AVAILABLE.—November 1912 to September 1933.

DISCHARGE.—Maximum during year, 38,300 second-feet May 1 (gage height, 90.2 feet); minimum, 782 second-feet Oct. 23 (gage height, 73.47 feet).

1912–33: Maximum, 41,300 second-feet May 18, 1917 (gage height, 90.32 feet); minimum, 169 second-feet Sept. 30, 1931 (result of stream-flow measurement). Average, 21 years (1912–33), 7,620 second-feet.

REMARKS.—Records excellent except those estimated Nov. 20–22, Dec. 8 to Jan. 12, which are good. Water diverted for irrigation above station. Flow affected considerably by power regulation and by storage in Coeur d'Alene Lake. Gage-height record and several discharge measurements furnished by Washington Water Power Co.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,790	2,490	5,240	4,810	3,510	5,350	13,200	32,800	21,900	14,400	2,810	2,120
2	1,310	2,390	4,580	4,100	3,360	4,580	14,000	31,200	23,000	13,900	2,540	2,420
3	1,900	2,210	5,260	3,900	3,620	5,630	14,700	29,700	22,400	13,100	2,280	1,900
4	2,220	2,050	7,340	3,690	3,530	7,530	13,700	29,200	22,400	12,000	2,240	2,070
5	2,540	1,990	10,500	4,290	3,250	6,450	14,000	28,800	23,900	11,300	2,060	2,580
6	3,060	1,660	10,300	6,510	3,890	5,560	15,500	28,400	23,700	8,190	1,710	2,220
7	3,010	2,140	10,000	6,920	3,630	5,980	16,500	28,200	24,300	5,200	2,210	2,410
8	2,810	1,960	9,460	8,280	3,560	9,940	15,900	27,000	24,400	4,250	2,550	2,600
9	1,700	2,110	9,240	15,000	3,680	8,430	15,000	25,900	24,200	3,920	2,000	2,380
10	2,590	2,690	7,400	13,900	2,940	6,680	15,600	25,800	23,900	5,680	2,060	1,890
11	2,940	3,120	7,490	11,000	2,260	6,490	15,900	25,100	24,900	4,560	2,880	2,450
12	2,900	3,200	5,460	8,850	2,270	8,260	15,500	24,200	27,100	3,320	2,410	2,660
13	2,370	2,700	3,640	8,980	3,230	11,800	14,800	23,300	27,200	4,100	2,060	2,660
14	2,310	9,000	3,730	8,840	3,240	11,000	14,300	22,900	27,200	4,590	2,620	2,360
15	2,330	8,740	3,230	9,110	3,280	9,980	14,300	22,400	27,100	3,460	2,300	2,410
16	1,550	9,380	4,250	7,940	4,350	8,710	14,200	22,200	26,500	2,540	2,350	2,040
17	1,840	9,560	4,750	7,260	4,640	11,300	14,400	21,700	25,600	3,760	2,180	1,560
18	2,120	9,690	3,950	6,340	4,400	10,700	14,500	23,000	25,100	3,520	2,010	2,280
19	2,310	10,500	5,220	6,060	4,690	9,660	14,200	22,800	25,800	3,970	1,990	2,140
20	1,990	10,700	8,890	6,210	5,120	9,810	14,700	22,700	24,700	3,680	2,170	2,070
21	1,850	8,980	9,300	5,950	4,580	9,630	14,900	22,400	22,600	3,550	2,620	2,220
22	1,880	10,400	7,380	5,510	5,240	10,900	15,000	22,800	22,100	3,490	2,100	2,300
23	1,200	10,600	7,560	4,710	6,640	11,400	15,500	21,800	20,700	3,320	2,180	2,430
24	2,070	9,290	7,310	4,630	6,570	10,700	16,900	21,800	19,800	3,460	2,190	1,840
25	2,090	9,220	5,150	4,680	4,030	9,900	18,000	21,900	19,300	2,730	2,050	2,360
26	2,200	7,990	5,590	4,810	2,660	10,600	20,700	21,700	18,400	2,640	2,150	2,410
27	2,040	9,360	5,300	4,740	2,820	10,100	21,500	21,600	16,000	2,340	1,990	2,180
28	2,070	8,050	4,900	5,220	3,200	11,500	24,100	21,800	15,100	2,320	2,400	2,170
29	2,340	6,360	4,960	5,470	------	11,700	25,500	23,000	15,100	3,720	2,300	2,240
30	1,480	5,710	4,590	5,860	------	12,100	28,200	22,700	14,600	2,870	2,170	2,060
31	2,130	------	4,780	4,570	------	13,000	------	22,300	------	2,980	2,010	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	3,060	1,200	2,160	------	------	133,000
November	10,700	1,660	6,140	------	------	365,000
December	10,500	3,230	6,350	------	------	390,000
January	15,000	3,690	6,710	------	------	413,000
February	6,640	2,260	3,860	------	------	214,000
March	13,000	4,580	9,210	------	------	566,000
April	28,200	13,200	16,500	------	------	982,000
May	32,800	21,600	24,600	------	------	1,510,000
June	27,200	14,600	22,600	------	------	1,340,000
July	14,400	2,320	5,250	------	------	323,000
August	2,880	1,710	2,240	------	------	138,000
September	2,660	1,560	2,250	------	------	134,000
The year	32,800	1,200	9,000	1.41	19.14	6,510,000

NOTE.—Monthly discharge in second-feet per square mile and run-off in inches not computed, owing to regulation. Yearly figures closely represent natural flow.

ST. JOE RIVER AT CALDER, IDAHO

LOCATION.—Water-stage recorder in sec. 3, T. 45 N., R. 2 E., 150 feet southwest of Chicago, Milwaukee & St. Paul Railway station at Calder. Zero of gage is about 2,100 feet above mean sea level.

DRAINAGE AREA.—1,080 square miles.

RECORDS AVAILABLE.—July 1920 to September 1933; April 1911 to September 1912 at station 2½ miles downstream.

DISCHARGE.—Maximum during year, 19,600 second-feet June 9 (gage height, 88.23 feet); minimum, 359 second-feet Oct. 8 (gage height, 79.02 feet).

1911–12, 1920–33: Maximum, that of June 9, 1933; minimum, 96 second-feet Dec. 5, 1928 (gage height, 78.43 feet).

REMARKS.—Records good except those estimated Dec. 9 to Jan. 9, Jan. 19 to Feb. 24, which are fair. No diversions above gage. Operation of splash dam at Marble Creek causes diurnal fluctuation at gage of about 0.5 foot during log-driving season. Gage-height record and results of five discharge measurements furnished by Washington Water Power Co.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	376	502	1,560	750		592	2,000	9,360	13,100	3,350	826	582
2	370	538	3,510			714	2,270	8,510	12,400	3,050	795	563
3	370	653	5,570	800	548	826	3,430	7,970	13,100	2,910	795	535
4	366	593	3,670			795	4,190	7,710	14,500	2,770	857	521
5	366	574	3,050	900		730	3,920	7,970	14,500	2,580	956	521
6	370	1,500	2,510	1,000		691	4,010	7,200	12,400	2,450	890	554
7	370	1,040	2,030	1,300		691	3,670	6,470	11,200	2,330	739	508
8	366	740	1,560	2,000	500	719	2,910	6,010	12,800	2,220	748	508
9	370	816	1,200	2,600		697	2,330	5,360	18,400	2,100	725	516
10	376	723	900	2,580		708	2,100	5,260	18,100	2,100	714	526
11	384	618	700	1,690		675	1,890	5,360	15,200	1,940	691	508
12	436	608	600	1,210		857	1,740	5,790	13,800	1,790	686	521
13	589	2,640	550	1,020		1,290	1,640	6,710	13,800	1,690	675	498
14	685	3,050	700	990		1,170	1,940	8,240	13,800	1,640	691	456
15	707	1,660	850	1,020	450	1,170	3,430	9,940	13,400	1,550	664	544
16	574	1,560	1,000	857		1,330	4,750	9,360	12,800	1,500	617	612
17	510	2,380	1,100	719		1,330	4,010	8,790	10,800	1,420	602	530
18	493	3,430	1,200	675	500	1,290	3,590	9,070	8,790	1,330	592	563
19	452	2,980	1,400		550	1,290	3,670	7,970	7,450	1,290	592	558
20	428	2,450	1,500	650	550	1,420	4,660	7,450	6,950	1,210	592	460
21	417	2,090	1,400			1,690	5,360	8,240	6,240	1,210	612	460
22	413	2,030	1,300		600	1,420	6,950	8,510	6,010	1,170	659	617
23	524	1,700	1,200			1,250	9,070	8,510	5,360	1,140	622	697
24	510	1,500	1,000			1,140	10,200	8,790	4,950	1,100	558	691
25	448	1,320		600	554	1,140	12,100	9,360	4,660	1,020	549	617
26	510	1,240	900		597	1,170	13,400	12,800	4,370	990	535	521
27	560	1,120			587	1,250	14,500	12,400	4,010	956	530	503
28	551	1,200	850		558	1,690	15,200	10,200	4,010	922	526	490
29	506	1,320	800	550	-------	2,270	13,800	10,500	3,840	922	516	539
30	481	1,560	750		-------	2,160	10,800	12,800	3,670	922	563	530
31	464	-------	750		-------	2,100	--------	14,100	--------	857	622	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	707	366	463	0.429	0.49	28,500
November	3,430	502	1,470	1.36	1.52	87,500
December	5,570	550	1,480	1.37	1.58	91,000
January	2,600	550	952	.881	1.02	58,500
February	600	450	524	.485	.50	29,100
March	2,270	592	1,170	1.08	1.24	71,900
April	15,200	1,640	5,780	5.35	5.97	344,000
May	14,100	5,260	8,600	7.96	9.18	529,000
June	18,400	3,670	10,100	9.35	10.40	601,000
July	3,350	857	1,690	1.56	1.80	104,000
August	956	516	671	.621	.72	41,300
September	697	456	542	.502	.56	32,300
The year	18,400	366	2,790	2.58	34.98	2,020,000

ST. MARIES RIVER AT LOTUS, IDAHO

LOCATION.—Staff gage in sec. 20, T. 45 N., R. 2 W., just below Lotus. Zero of gage is approximately 2,160 feet above mean sea level.

DRAINAGE AREA.—420 square miles.

RECORDS AVAILABLE.—July 1911 to October 1912, July 1920 to September 1933.

DISCHARGE.—Maximum during year, 3,740 second-feet Apr. 27, 28 (gage height, 6.40 feet); minimum (estimated), 42 second-feet Oct. 3–8.

1911–12, 1920–33: Maximum, 8,660 second-feet Mar. 18, 1921; minimum (estimated), 16 second-feet Nov. 21, 1929; minimum gage height, 2.71 feet Nov. 20, 1929.

REMARKS.—Records good except those estimated Dec. 9 to Mar. 19, which are fair. No diversions above gage. Gage-height record and results of six discharge measurements furnished by Washington Water Power Co.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	44	89	282	130		230	1,920	2,580	1,230	253	77	66
2	44	114	357			280	2,240	2,240	1,110	226	77	64
3	42	140	880	150	100	350	2,580	1,920	1,110	221	77	58
4	42	120	880			400	3,330	1,840	1,060	217	79	53
5	42	108	880	190		350	2,580	1,840	1,060	213	88	50
6	42	282	745	250			2,580	1,770	1,000	190	121	48
7	42	343	486	300			2,240	1,630	890	175	116	48
8	42	169	204	350	80	350	1,840	1,420	1,110	166	90	56
9	44	223	150	400			1,490	1,300	2,240	152	82	51
10	45	259	110	400			1,110	1,230	1,630	172	75	64
11	46	147	80	350		400	1,000	1,230	1,360	166	69	77
12	56	123	60	300		469	1,000	1,230	1,110	152	66	71
13	68	532	50		70	540	1,000	1,230	1,000	138	66	64
14	136	930	70	270		700	2,080	1,230	890	135	64	56
15	151	426	100			900	1,920	1,490	790	127	64	71
16	133	657	130		70		2,580	1,630	740	124	60	116
17	105	1,370	150		90	1,000	2,240	1,630	690	121	56	93
18	79	1,030	160	200	110		2,080	1,560	690	116	56	79
19	62	614	190		130	1,300	1,920	1,560	560	109	56	82
20	58	412	210		150	1,630	2,000	1,560	453	107	56	79
21	58	376			170	1,920	2,240	1,360	413	107	58	75
22	58	305	190		190	1,840	2,580	1,360	387	104	64	79
23	105	249		150	210	1,230	3,130	1,360	356	99	62	99
24	92	204	180		220	1,000	3,330	1,360	332	97	60	107
25	79	182	180		220	790	3,530	1,300	320	95	53	121
26	76	174				890	3,530	1,360	288	90	51	121
27	76	161	150		200	1,170	3,740	1,420	267	86	50	119
28	76	169		120		1,920	3,740	1,360	262	84	48	79
29	72	186			-------	2,760	3,330	1,300	320	79	48	79
30	72	208	130		-------	2,080	3,130	1,300	272	77	48	84
31	76	-------			-------	2,240	-------	1,300	-------	77	67	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	151	42	69.8	0.166	0.19	4,290
November	1,370	89	343	.817	.91	20,400
December	880	50	256	.610	.70	15,700
January	400	----------	206	.490	.56	12,700
February	220	----------	122	.290	.30	6,780
March	2,760	230	972	2.31	2.66	59,800
April	3,740	1,000	2,400	5.71	6.37	143,000
May	2,580	1,230	1,510	3.60	4.15	92,800
June	2,240	262	798	1.90	2.12	47,500
July	253	77	138	.329	.38	8,480
August	121	48	67.9	.162	.19	4,180
September	121	48	77.0	.183	.20	4,580
The year	3,740	42	581	1.38	18.73	420,000

HAYDEN LAKE AT HAYDEN LAKE, IDAHO

LOCATION.—Staff gage in sec. 18, T. 51 N., R. 3 W., at Avondale and Hayden Lake pumping plants, a quarter of a mile north of Bozanta Tavern. Zero of gage is 2,200.00 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS AVAILABLE.—May 1920 to September 1933.

EXTREMES.—Maximum water-surface elevation during year, 2,230.92 feet June 14–15; minimum, 2,224.01 feet Oct. 30.

1920–33: Maximum water-surface elevation, 2,240.41 feet Apr. 30 to May 18, 1921; minimum, 2,219.38 feet Dec. 16, 1931.

REMARKS.—Records good. Water is pumped from lake for irrigation and domestic purposes.

Gage height, in feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24.35	24.05	24.37	------	24.89	24.85	26.38	29.96	30.72	28.94	27.94	26.16
2	24.33	24.05	24.39	24.55	24.89	24.83	26.44	30.06	30.70	28.90	27.88	26.10
3	24.31	24.05	24.39	24.55	24.89	24.83	26.52	30.15	30.66	28.84	27.82	26.04
4	24.29	24.05	24.39	24.55	24.89	24.83	26.64	30.20	30.62	28.78	27.76	26.00
5	24.26	24.05	24.39	24.55	24.89	24.83	26.78	30.26	30.60	28.72	27.70	25.94
6	24.23	24.07	24.39	24.55	24.89	24.83	26.94	30.34	30.58	28.66	27.66	25.88
7	24.21	24.07	------	24.55	24.89	24.85	27.06	30.38	30.56	28.60	27.60	25.84
8	24.19	24.07	------	24.61	24.89	24.86	27.20	30.44	30.62	28.54	27.54	25.78
9	24.17	24.09	24.35	24.67	24.89	24.87	27.30	30.48	30.68	28.48	27.49	25.74
10	24.14	24.08	24.35	24.71	24.89	24.89	27.38	30.50	30.76	28.42	27.44	25.70
11	24.12	24.07	24.33	24.75	24.89	24.91	27.42	30.52	30.84	28.35	27.38	25.66
12	24.13	24.07	24.33	24.75	24.87	24.93	27.46	30.54	30.88	28.28	27.32	25.62
13	24.17	24.11	24.33	24.76	24.87	24.99	27.48	30.56	30.90	28.20	27.26	25.58
14	24.21	24.19	24.31	24.78	24.87	25.10	27.50	30.58	30.92	28.14	27.18	25.54
15	24.25	24.21	24.29	24.79	24.87	25.14	27.52	30.58	30.92	28.08	27.13	25.50
16	24.23	24.25	24.27	24.79	24.87	25.20	27.58	30.62	30.86	28.03	27.08	25.46
17	24.21	24.29	24.27	24.79	24.87	25.30	27.62	30.66	30.80	28.95	27.02	25.42
18	24.19	24.33	24.27	24.79	24.87	25.36	27.76	30.72	30.74	28.87	26.96	25.42
19	24.17	24.37	24.27	24.79	24.87	25.42	27.82	30.78	30.68	28.80	26.90	25.42
20	24.14	24.35	24.27	24.81	24.87	25.50	27.90	30.82	30.62	28.74	26.84	25.40
21	24.11	24.37	24.31	24.83	24.87	25.58	27.95	30.82	30.56	28.66	26.78	25.38
22	24.09	24.39	24.35	24.83	24.87	25.67	28.06	30.82	30.49	28.58	26.72	25.36
23	24.11	24.39	24.37	24.83	24.87	25.72	28.20	30.81	30.42	28.52	26.64	25.34
24	24.11	24.37	24.39	24.83	24.87	25.78	28.42	30.80	30.36	28.48	26.58	25.30
25	24.09	24.35	24.45	24.85	24.85	25.82	28.70	30.80	30.30	28.42	26.52	25.28
26	24.07	24.37	24.49	24.86	24.85	25.88	28.96	30.80	30.24	28.36	26.46	25.28
27	24.06	24.35	24.51	24.87	24.85	25.91	29.20	30.80	30.18	28.28	26.40	25.27
28	24.05	24.37	24.51	24.89	24.85	26.00	29.42	30.80	30.12	28.20	26.34	25.26
29	24.03	24.37	24.51	24.89	------	26.10	29.66	30.80	30.06	28.12	26.28	25.24
30	24.01	24.37	24.50	24.89	------	26.14	29.84	30.78	30.00	28.04	26.24	25.22
31	24.03	------	24.49	24.89	------	26.28	------	30.76	------	27.98	26.20	------

SPOKANE VALLEY FARMS CO.'S CANAL AT POST FALLS, IDAHO

LOCATION.—Staff gage in NE¼ sec. 4, T. 50 N., R. 5 W., 1,200 feet below head gates and half a mile west of Post Falls.

RECORDS AVAILABLE.—May 1911 to September 1917, September 1919 to September 1933.

DISCHARGE.—Maximum during year, 257 second-feet June 8, 9, 11, 12; maximum gage height, 4.90 feet June 8, 9, 11, 12, 30, July 22–26; no flow Oct. 1 to Mar. 17, July 27–28, Sept. 19–30.

1911–17, 1919–33: Maximum, 286 second-feet July 18, 1927; maximum gage height, 5.00 feet Aug. 3, 1932; no flow during nonirrigation season.

REMARKS.—Records fair. Canal diverts water for irrigation from Spokane River in SE¼ sec. 3, T. 50 N., R. 5 W. Gage-height record furnished by Spokane Valley Farms Co.

Discharge, in second-feet, 1932–33

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1		40	161	248	248	239	230
2		40	161	257	248	239	230
3		40	161	257	239	239	221
4		40	179	257	239	239	221
5		48	185	257	239	239	221
6		48	185	257	239	239	221
7		48	195	257	239	239	221
8		48	203	257	239	239	221
9		48	203	255	239	248	221
10		48	203	248	248	248	221
11		46	203	257	248	248	221
12		46	210	257	248	239	221
13		46	230	248	248	239	221
14		46	230	248	248	239	221
15		46	230	248	248	239	212
16		46	230	248	248	239	124
17		46	230	248	248	239	97
18	14	52	230	248	248	239	32
19	26	56	230	248	248	239	
20	32	73	230	248	248	239	
21	36	96	230	239	248	239	
22	36	108	230	248	248	248	
23	36	117	230	248	248	239	
24	36	117	230	248	248	239	
25	36	117	230	239	248	239	
26	36	117	221	239	130	230	
27	38	117	221	239	0	239	
28	40	142	235	239	0	239	
29	40	153	239	239	137	239	
30	40	153	239	248	139	239	
31	40		246		228	230	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
Mar. 18–31	40	14	34.7	964
April	153	40	72.9	4,340
May	246	161	214	13,200
June	257	239	249	14,800
July	248	0	221	13,600
August	248	230	240	14,800
Sept. 1–18	230	32	199	7,100
The year	257	0	187	68,800

NOTE.—Canal closed Oct. 1 to Mar. 17 and Sept. 19–30.

OKANOGAN RIVER BASIN

OKANOGAN RIVER AT OKANOGAN FALLS, BRITISH COLUMBIA

(International gaging station)

LOCATION.—Staff gage between highway bridge and crest of falls at Okanogan Falls, British Columbia.

DRAINAGE AREA.—2,550 square miles.

RECORDS AVAILABLE.—October 1930 to September 1933; March 1915 to September 1930 in Canadian water-resources papers.

DISCHARGE.—Maximum during year, 1,300 second-feet May 30, 31 (gage height, 2.85 feet); minimum, 118 second-feet Feb. 25 (gage height, 0.64 foot).

1915–33: Maximum, 2,680 second-feet June 10, 1928; minimum, 4.6 second-feet Mar. 14, 1931. Average, 17 years (1916–33), 419 second-feet.

REMARKS.—Flow regulated by control dam at outlet of Okanogan Lake. This station is one of the international gaging stations maintained by Canada under agreement with the United States.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	446	307	504	670	622	160	713	948	1,260	1,070	815	634
2	456	340	510	670	617	152	719	968	1,260	1,070	808	652
3	451	336	587	652	543	200	808	961	1,270	1,070	808	622
4	456	320	593	652	488	206	744	961	1,260	1,030	815	599
5	456	320	652	664	593	166	713	955	1,280	1,040	802	576
6	456	357	652	682	482	175	751	975	1,270	1,030	821	582
7	440	340	664	652	461	175	732	975	1,260	1,020	808	571
8	456	349	652	652	374	181	713	961	1,260	1,010	821	565
9	411	340	622	640	287	190	713	968	1,240	1,000	828	582
10	402	353	622	695	260	172	713	968	1,190	1,000	828	498
11	430	349	605	646	245	172	713	975	1,210	990	828	532
12	456	340	611	646	230	166	719	996	1,200	990	828	532
13	430	320	622	682	190	184	713	996	1,190	975	821	532
14	472	349	617	658	166	175	707	1,020	1,230	982	821	498
15	456	349	628	695	155	178	707	1,090	1,230	989	802	565
16	430	411	628	701	146	260	713	1,110	1,250	982	763	554
17	430	430	646	682	141	315	713	1,110	1,240	955	751	571
18	421	392	634	670	138	392	713	1,120	1,200	968	744	548
19	425	332	664	695	141	456	707	1,090	1,180	948	713	565
20	383	383	652	652	133	526	701	1,120	1,180	941	713	559
21	383	379	640	617	133	571	713	1,110	1,160	948	658	565
22	416	383	664	645	133	611	713	1,090	1,140	934	652	554
23	397	383	682	664	120	622	744	1,120	1,060	894	646	520
24	362	411	664	565	128	664	763	1,150	1,070	874	682	548
25	383	421	713	477	118	701	782	1,150	1,070	874	646	548
26	340	416	726	362	138	682	828	1,260	1,070	848	646	537
27	340	397	744	440	144	707	808	1,260	1,090	848	658	537
28	357	456	701	504	157	701	907	1,260	1,070	815	652	548
29	340	493	640	543	-------	713	934	1,260	1,060	848	652	537
30	320	520	670	576	-------	676	914	1,300	1,060	815	658	559
31	299	-------	640	617	-------	726	-------	1,300	-------	821	670	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	472	299	410	25,200
November	520	307	376	22,400
December	744	504	640	39,400
January	701	362	625	38,400
February	622	118	267	14,800
March	726	152	386	23,700
April	934	701	751	44,700
May	1,300	948	1,080	66,400
June	1,280	1,060	1,180	70,200
July	1,070	815	954	58,700
August	828	646	747	45,900
September	652	498	560	33,300
The year	1,300	118	668	483,000

OSOYOOS LAKE NEAR OROVILLE, WASH.

(International gaging station)

LOCATION.—Water-stage recorder in lot 1, sec. 8, T. 40 N., R. 27 E., 1 mile south of Canadian boundary and 3 miles north of Oroville. Gage datum is at mean sea level.

DRAINAGE AREA.—3,250 square miles.

RECORDS AVAILABLE.—July 1928 to September 1933.

EXTREMES.—Maximum stage recorded during year, 915.89 feet June 18; minimum, 912.66 feet Feb. 26, 27, Mar. 2.

1928–33: Maximum stage recorded, 916.01 feet July 28, 1928; minimum, 911.21 feet Oct. 14, 1929.

REMARKS.—Records excellent. Stage may have been affected by ice at lake outlet during some part of period December to February. Diversion in Canada for irrigation. Okanogan River subject to natural regulation in several lakes, and, in the interest of navigation, to artificial regulation in Okanogan Lake. This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Gage height, in feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13.11	13.01	13,28	13,87	13,60	12.67	13.93	15.10	15.83	14.91	13.96	13.57
2	13.12	13.04	13.30	13.86	13.60	12.67	14.01	15.17	15.85	14.89	13.94	13.55
3	13.11	13.03	13.32	13.85	13.60	12.70	14.11	15.21	15.84	14.88	13.92	13.53
4	13.10	13.02	13.35	13.86	13.60	12.70	14.14	15.25	15.83	14.84	13.91	13.52
5	13.09	13.06	13.39	13.85	13.59	12.72	14.21	15.29	15.81	14.81	13.91	13.52
6	13.11	13.08	13.41	13.84	13.56	12.72	14.27	15.27	15.80	14.78	13.91	13.55
7	13.06	13.08	13.44	13.84	13.53	12.72	14.33	15.27	15.80	14.74	13.91	13.56
8	13.04	13.09	13.50	13.84	13.51	12.70	14.35	15.28	15.79	14.70	13.91	13.54
9	13.02	13.10	13.63	13.83	13.44	12.70	14.38	15.27	15.76	14.67	13.90	13.51
10	13.02	13.10	13.77	13.83	13.38	12.68	14.41	15.25	15.74	14.64	13.90	13.53
11	13.03	13.09	13.86	13.83	13.34	12.68	14.44	15.22	15.69	14.60	13.90	13.52
12	13.05	13.09	13.84	13.83	13.30	12.68	14.44	15.21	15.64	14.57	13.90	13.52
13	13.05	13.11	13.80	13.83	13.24	12.69	14.45	15.21	15.60	14.52	13.89	13.51
14	13.06	13.11	13.77	13.83	13.18	12.70	14.47	15.23	15.54	14.48	13.89	13.54
15	13.05	13.11	13.72	13.85	13.12	12.73	14.49	15.31	15.53	14.44	13.87	13.55
16	13.06	13.14	13.68	13.85	13.08	12.76	14.50	15.38	15.62	14.41	13.86	13.55
17	13.07	13.15	13.64	13.84	13.02	12.79	14.51	15.43	15.78	14.38	13.86	13.56
18	13.07	13.16	13.60	13.84	12.99	12.82	14.50	15.46	15.88	14.35	13.84	13.58
19	13.06	13.17	13.61	13.84	12.94	12.88	14.50	15.48	15.83	14.33	13.82	13.57
20	13.06	13.15	13.61	13.84	12.89	12.93	14.49	15.48	15.74	14.29	13.78	13.54
21	13.06	13.15	13.66	13.84	12.81	12.99	14.49	15.48	15.65	14.26	13.72	13.54
22	13.10	13.16	13.77	13.83	12.75	13.05	14.50	15.46	15.54	14.22	13.70	13.54
23	13.08	13.14	13.85	13.84	12.72	13.12	14.52	15.46	15.43	14.21	13.70	13.55
24	13.08	13.16	13.86	13.83	12.68	13.20	14.54	15.46	15.33	14.20	13.67	13.58
25	13.08	13.17	13.87	13.80	12.68	13.29	14.59	15.48	15.25	14.18	13.63	13.56
26	13.07	13.18	13.87	13.77	12.67	13.36	14.67	15.55	15.19	14.15	13.61	13.56
27	13.06	13.18	13.88	13.74	12.67	13.47	14.75	15.59	15.12	14.12	13.60	13.55
28	13.02	13.20	13.88	13.69	12.69	13.57	14.85	15.63	15.06	14.08	13.59	13.54
29	13.02	13.25	13.88	13.65	------	13.66	14.96	15.70	15.00	14.06	13.58	13.55
30	13.00	13.26	13.87	13.63	------	13.77	15.03	15.77	14.96	14.01	13.58	13.54
31	13.00	------	13.86	13.61	------	13.86	------	15.80	------	13.99	13.58	------

NOTE.—Add 900 feet to obtain mean sea-level elevations.

OKANOGAN RIVER NEAR TONASKET, WASH.

(International gaging station)

LOCATION.—Water-stage recorder in lot 3, sec. 8, T. 36 N., R. 27 E., 1,000 feet above Chewiliken Creek and 5½ miles south of Tonasket.

DRAINAGE AREA.—7,250 square miles.

RECORDS AVAILABLE.—April 1929 to September 1933.

DISCHARGE.—Maximum during year, 20,200 second-feet June 18 (gage height, 15.37 feet); minimum, 642 second-feet Oct. 8, 9 (gage height, 4.37 feet).

1929–33: Maximum, that of June 18, 1933; minimum, 126 second-feet Sept. 5, 1931 (gage height, 3.43 feet).

REMARKS.—Records excellent except those estimated because of ice Dec. 11–17, Jan. 17–22, Feb. 2–4, 9–20. Numerous irrigation diversions above station. Flow subject to natural regulation in several lakes, and, in the interest of navigation, to artificial regulation in Okanogan Lake. Operation of power plant with pondage on Similkameen River affects low-water flow slightly. This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	702	1,320	2,010	1,860	1,240	932	1,000	6,790	12,500	9,610	2,580	1,120
2	702	1,240	2,010	1,810		932	1,040	6,450	11,800	9,230	2,460	1,120
3	690	1,200	1,960	1,810	1,150	1,080	1,040	6,110	11,600	9,420	2,340	1,080
4	684	1,200	2,180	1,760		1,040	1,000	5,940	12,500	8,870	2,230	1,040
5	696	1,200	2,230	1,760	1,200	932	1,080	5,940	13,700	8,510	2,400	1,040
6	690	1,160	2,120	1,760	1,240	932	1,200	5,770	14,900	8,150	2,520	1,040
7	732	1,120	2,060	1,760	1,200	932	1,240	5,600	15,400	7,980	2,640	1,040
8	660	1,160	1,580	1,810	1,080	932	1,280	5,430	15,100	7,980	2,520	1,040
9	678	1,120	2,190	1,810		900	1,280	5,270	13,700	7,980	2,400	1,120
10	660	1,120	1,480	1,710		900	1,280	5,110	12,200	7,640	2,230	1,120
11	666	1,120		1,660	900	870	1,280	5,110	10,900	7,130	2,010	1,080
12	678	1,080		1,620		932	1,280	5,430	10,200	6,620	1,960	1,080
13	672	1,040		1,580		900	1,280	5,940	10,600	6,450	1,910	1,000
14	684	1,720	1,500	1,480		840	1,280	6,790	12,500	6,280	1,810	1,040
15	690	2,710		1,440		840	1,280	7,640	14,900	6,280	1,760	1,040
16	684	2,180		1,400		900	1,320	7,810	17,300	6,110	1,710	1,040
17	708	1,910			950	900	1,400	7,470	19,200	5,940	1,710	1,080
18	900	1,860	1,760			870	1,440	7,300	19,900	5,600	1,660	1,120
19	932	3,370	1,810			870	1,440	7,300	18,200	5,270	1,620	1,120
20	900	3,680	1,860	1,250		870	1,440	7,130	15,800	4,950	1,530	1,080
21	900	3,460	1,960		1,040	870	1,440	6,960	14,200	4,630	1,480	1,080
22	900	2,840	1,960		1,080	870	1,530	7,300	13,200	4,150	1,440	1,040
23	965	2,580	2,060	1,480	1,080	870	1,660	7,470	12,500	3,910	1,440	1,040
24	1,120	2,340	2,060	1,530	1,000	870	2,010	7,470	11,600	3,680	1,360	1,080
25	1,160	2,180	2,010	1,360	1,000	900	2,520	7,470	10,900	3,530	1,320	1,120
26	1,120	2,120	1,960	1,280	1,280	900	3,240	7,980	11,100	3,380	1,280	1,080
27	1,080	2,060	1,960	1,320	1,040	932	4,070	9,610	11,100	3,310	1,240	1,080
28	1,280	2,010	1,960	1,280	965	965	5,110	9,800	10,400	3,100	1,200	1,040
29	1,620	2,010	1,960	1,280	------	965	6,280	9,610	10,200	2,970	1,160	1,080
30	1,530	2,010	1,910	1,280	------	965	6,790	10,600	10,000	2,780	1,120	1,500
31	1,400	------	1,860	1,280	------	1,000	------	12,500	------	2,780	1,120	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,620	660	887	54,500
November	3,680	1,040	1,870	111,000
December	2,230	----------	1,850	114,000
January	1,860	----------	1,500	92,200
February	1,280	----------	1,040	57,800
March	1,080	840	916	56,300
April	6,790	1,000	1,980	118,000
May	12,500	5,110	7,200	443,000
June	19,900	10,000	13,300	791,000
July	9,610	2,780	5,940	365,000
August	2,640	1,120	1,810	111,000
September	1,500	1,000	1,090	64,900
The year	19,900	660	3,280	2,380,000

SIMILKAMEEN RIVER NEAR NIGHTHAWK, WASH.

(International gaging station)

LOCATION.—Water-stage recorder in NW¼ sec. 7, T. 40 N., R. 26 E., about 1¼ miles below Nighthawk.

DRAINAGE AREA.—3,420 square miles.

RECORDS AVAILABLE.—September 1928 to September 1933.

DISCHARGE.—Maximum during year, 20,900 second-feet June 17 (gage height, 13.30 feet); minimum, 312 second-feet Oct. 13 (gage height, 2.80 feet).

1928–33: Maximum, that of June 17, 1933; minimum, 120 second-feet Jan. 6, 1930 (gage height, 2.05 feet).

REMARKS.—Records excellent except those estimated because of ice Dec. 8–18, Jan. 19, Feb. 2–19. Some regulation caused by natural diversion into Palmer Lake. Small irrigation diversions above station. This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	348	842	1,580	856	586	533	513	5,830	10,900	8,410	1,920	680
2	342	800	1,540	835		533	513	5,260	10,300	8,410	1,820	668
3	339	765	1,670	793		586	503	4,910	10,900	8,200	1,720	648
4	333	746	1,820	786		574	538	4,750	12,300	7,600	1,720	623
5	330	713	1,720	793	470	554	629	4,590	13,700	7,400	1,770	611
6	330	694	1,620	807		559	668	4,440	14,300	7,200	1,920	604
7	324	694	1,440	856		564	687	4,290	14,300	7,000	1,970	617
8	330	680		884		559	694	4,140	12,800	7,200	1,770	720
9	318	654		877		543	680	3,990	11,400	7,000	1,620	713
10	318	654		870		523	668	3,990	10,100	6,600	1,540	680
			940		380							
11	321	642		870		513	654	4,140	9,310	6,020	1,490	642
12	321	586		828		518	642	4,440	9,070	5,640	1,400	611
13	324	704		779		528	642	5,260	10,300	5,450	1,360	598
14	324	2,740		758		528	635	6,400	13,400	5,450	1,260	604
15	324	1,920		732		523	661	7,000	16,700	5,450	1,220	611
			780									
16	333	1,540		687	500	533	732	6,800	19,800	5,260	1,180	623
17	487	1,440		586		538	772	6,400	20,500	5,080	1,140	654
18	528	2,360		457		538	758	6,210	17,000	4,590	1,100	654
19	482	3,470	877	450		533	752	6,020	14,000	4,140	1,050	635
20	452	3,270	942	457	580	528	746	5,830	12,800	3,990	1,020	611
21	436	2,640	980	503	604	528	786	5,830	12,000	3,620	1,000	611
22	486	2,240	1,000	543	604	528	928	6,210	11,400	3,270	980	598
23	710	1,970	1,000	598	598	518	1,220	6,400	10,900	3,080	920	586
24	752	1,820	980	642	564	508	1,720	6,400	10,100	2,880	863	592
25	674	1,720	905	648	564	498	2,320	6,600	9,800	2,820	821	642
26	629	1,670	912	642	592	503	3,140	8,000	10,300	2,700	800	642
27	833	1,580	935	661	548	508	3,990	9,070	9,800	2,580	772	629
28	1,310	1,540	920	642	543	518	5,080	8,620	9,310	2,400	739	604
29	1,220	1,580	891	642	------	508	6,020	9,310	9,310	2,240	706	598
30	1,030	1,540	870	648	------	513	6,020	11,200	9,070	2,180	694	611
31	912	------	884	635	------	513	------	12,000	------	2,120	687	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,310	318	523	32,200
November	3,470	586	1,470	87,500
December	1,820	----------	1,070	65,800
January	884	450	702	43,200
February	604	----------	496	27,500
March	586	498	531	32,600
April	6,020	503	1,480	88,100
May	12,000	3,990	6,270	386,000
June	20,500	9,070	12,200	726,000
July	8,410	2,120	5,030	309,000
August	1,970	687	1,260	77,500
September	720	586	631	37,500
The year	20,500	318	2,640	1,910,000

CHELAN RIVER BASIN

STEHEKIN RIVER AT STEHEKIN, WASH.

LOCATION.—Water-stage recorder in SE¼ sec. 26, T. 33 N., R. 17 E., 1,200 feet above Boulder Creek and 2 miles above Lake Chelan and Stehekin. Flow of Boulder Creek included in records of discharge.

DRAINAGE AREA.—372 square miles.

RECORDS AVAILABLE.—December 1910 to October 1915; January 1927 to September 1933.

DISCHARGE.—Maximum during year, 12,100 second-feet June 15 (gage height, 26.94 feet); minimum, 220 second-feet Mar. 13 (gage height, 19.23 feet).

1910–15, 1927–33: Maximum, that of June 15, 1933; minimum, 56 second-feet Jan. 12, 1930 (gage height, 18.59 feet).

REMARKS.—Records good. Discharge estimated Apr. 19–24. At very high stages small percentage of flow is diverted above gage by natural sloughs; amount diverted included in daily discharge. Gage-height record and several discharge measurements furnished by Chelan Electric Co.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	399	510	1,130	433	370	284	357	2,930	3,390	4,670	2,270	867
2	457	506	2,520	428	353	280	397	2,530	3,390	5,010	2,340	813
3	457	470	2,340	420	341	280	571	2,270	4,190	4,350	2,340	786
4	403	457	1,970	406	332	268	604	2,030	5,370	4,190	2,400	800
5	384	465	1,730	456	332	268	616	1,910	5,190	4,190	3,000	793
6	370	465	1,530	460	324	268	656	1,790	5,010	4,510	2,530	999
7	334	441	1,260	538	320	264	668	1,670	4,350	5,010	2,460	793
8	312	437	1,080	645	284	252	651	1,550	3,870	5,190	2,460	734
9	287	418	1,030	760	268	236	616	1,470	3,310	4,670	2,340	728
10	280	392	978	710	304	236	555	1,470	2,860	4,510	2,270	741
11	305	384	902	686	308	244	520	1,550	2,660	4,350	2,150	741
12	309	1,140	881	674	300	240	510	1,910	3,080	4,350	2,150	680
13	312	3,840	840	645	280	236	515	2,460	5,720	4,670	2,210	645
14	465	1,950	780	633	292	236	566	2,720	9,710	5,370	2,210	980
15	548	1,360	734	604	292	240	610	2,600	10,300	5,750	2,270	895
16	445	1,360	710	577	292	256	616	2,460	8,710	5,950	2,400	874
17	381	3,930	656	560	280	264	616	2,340	6,570	5,010	2,460	774
18	348	4,440	639	545	272	264	622	2,150	5,010	4,350	2,460	741
19	320	3,310	627	520	272	272	640	2,030	4,510	4,190	2,210	668
20	412	2,660	599	515	272	284	760	1,910	4,670	3,630	1,790	639
21	1,020	2,150	560	505	272	292	910	2,030	4,670	3,160	1,390	616
22	907	1,790	550	487	280	292	1,100	2,030	4,670	3,230	1,290	722
23	621	1,550	525	474	280	292	1,400	2,090	4,350	3,470	1,320	662
24	520	1,370	510	464	264	292	1,700	2,150	4,190	3,870	1,350	604
25	563	1,200	492	446	264	292	2,150	2,660	4,510	3,950	1,150	550
26	888	1,110	505	433	288	296	2,600	3,710	4,510	3,710	1,060	545
27	888	1,060	496	428	284	304	3,230	3,230	4,510	3,310	1,050	616
28	685	1,000	474	406	308	320	3,870	3,080	4,670	2,720	1,180	1,660
29	589	1,060	460	397	------	324	3,790	3,710	4,670	2,860	1,240	1,500
30	534	1,110	446	384	------	345	3,390	4,510	4,510	2,600	1,170	1,030
31	515	------	438	379	------	353	------	3,950	------	2,270	962	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,020	280	492	1.32	1.52	30,300
November	4,440	384	1,410	3.79	4.23	83,900
December	2,520	438	916	2.46	2.84	56,300
January	760	379	517	1.39	1.60	31,800
February	370	264	297	.798	.83	16,500
March	353	236	277	.745	.86	17,000
April	3,870	357	1,190	3.20	3.57	70,800
May	4,510	1,470	2,420	6.51	7.50	149,000
June	10,300	2,660	4,900	13.2	14.73	292,000
July	5,950	2,270	4,160	11.2	12.91	256,000
August	3,000	962	1,930	5.19	5.98	119,000
September	1,660	545	807	2.17	2.42	48,000
The year	10,300	236	1,620	4.35	58.99	1,170,000

LAKE CHELAN AT CHELAN, WASH.

LOCATION.—Water-stage recorder in lot 3, sec. 15, T. 27 N., R. 22 E., 2 miles west of Chelan. Gage datum is mean sea level.

DRAINAGE AREA.—950 square miles.

RECORDS AVAILABLE.—September 1897 to December 1899; January to June 1905; December 1910 to September 1933.

EXTREMES.—Maximum water-surface elevation during year, 1,09[illegible].79 feet Aug. 5, 6; minimum, 1,090.04 feet Mar. 28.

1897–99, 1905, 1910–33: Maximum water-surface elevation, 1,099.88 feet July 13, 1930; minimum, 1,076.78 feet Jan. 27, 28, Dec. 2, 3, 1898.

REMARKS.—Records excellent. Lake level regulated under stipulation of Federal Power Commission for power and for scenic effect during tourist season. Gage-height record furnished by Chelan Electric Co.

Gage height, in feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	97.74	95.55	97.86	95.74	95.15	92.55	90.17	92.76	96.83	98.68	99.38	99.50
2	97.65	95.55	97.97	95.70	95.12	92.45	90.21	93.03	96.82	98.88	99.50	99.48
3	97.60	95.55	97.99	95.61	95.09	92.40	90.30	93.21	96.86	99.03	99.63	99.45
4	97.50	95.48	98.04	95.54	95.04	92.28	90.29	93.39	97.02	98.97	99.70	99.43
5	97.41	95.53	98.06	95.50	95.04	92.21	90.33	93.57	97.11	98.89	99.73	99.42
6	97.34	95.60	98.01	95.46	95.00	92.15	90.40	93.68	97.12	98.92	99.74	99.47
7	97.23	95.53	97.92	95.41	94.92	92.11	90.43	93.84	97.08	99.00	99.66	99.43
8	97.11	95.50	97.83	95.35	94.81	91.96	90.43	93.97	97.00	99.08	99.60	99.40
9	97.05	95.48	97.75	95.33	94.71	91.83	90.44	94.10	96.86	99.13	99.61	99.37
10	96.97	95.43	97.66	95.31	94.60	91.73	90.45	94.24	96.67	99.18	99.60	99.34
11	96.90	95.42	97.58	95.25	94.46	91.67	90.50	94.38	96.47	99.20	99.62	99.36
12	96.81	95.46	97.49	95.18	94.34	91.60	90.48	94.53	96.30	99.22	99.63	99.31
13	96.74	95.80	97.38	95.16	94.22	91.52	90.48	94.71	96.32	99.24	99.61	99.29
14	96.66	96.03	97.28	95.19	94.10	91.41	90.50	94.92	96.73	99.29	99.63	99.29
15	96.63	96.11	97.17	95.19	94.00	91.32	90.52	95.13	97.31	99.40	99.61	99.26
16	96.56	96.21	97.06	95.19	93.89	91.22	90.53	95.32	97.70	99.57	99.61	99.23
17	96.48	96.35	96.96	95.18	93.78	91.11	90.56	95.54	97.89	99.64	99.62	99.22
18	96.38	96.69	96.87	95.17	93.66	91.01	90.58	95.73	97.86	99.61	99.70	99.21
19	96.29	96.97	96.83	95.18	93.57	90.87	90.58	95.89	97.74	99.58	99.69	99.14
20	96.19	97.08	96.72	95.17	93.46	90.80	90.58	96.03	97.64	99.53	99.64	99.10
21	96.12	97.20	96.63	95.16	93.36	90.68	90.62	96.12	97.52	99.50	99.52	99.06
22	96.10	97.30	96.54	95.16	93.25	90.56	90.71	96.17	97.45	99.48	99.43	99.08
23	96.06	97.36	96.49	95.18	93.14	90.43	90.81	96.19	97.38	99.46	99.42	99.03
24	96.02	97.42	96.38	95.19	93.01	90.34	90.92	96.23	97.42	99.49	99.42	99.02
25	95.94	97.48	96.31	95.19	92.90	90.24	91.10	96.30	97.59	99.53	99.43	98.99
26	95.87	97.52	96.27	95.17	92.84	90.17	91.28	96.44	97.81	99.54	99.45	98.97
27	95.86	97.63	96.20	95.18	92.75	90.10	91.54	96.47	97.97	99.57	99.47	98.93
28	95.78	97.70	96.08	95.17	92.64	90.06	91.85	96.48	98.17	99.50	99.47	98.93
29	95.67	97.79	96.00	95.17	-------	90.08	92.18	96.53	98.33	99.44	99.51	99.03
30	95.62	97.85	95.89	95.16	-------	90.12	92.46	96.69	98.53	99.34	99.52	99.00
31	95.57	-------	95.79	95.16	-------	90.16	-------	96.81	-------	99.29	99.52	-------

NOTE.—Add 1,000 feet to obtain mean sea-level elevations.

CHELAN RIVER AT CHELAN, WASH.

LOCATION.—Water-stage recorder in NE¼ sec. 30, T. 27 N., R. 23 E., half a mile above mouth and 2 miles southeast of Chelan. Gage datum is mean sea level.

DRAINAGE AREA.—950 square miles.

RECORDS AVAILABLE.—November 1903 to September 1933.

DISCHARGE.—Maximum mean daily during year, 8,710 second-feet June 18; minimum mean daily, 46 second-feet May 7.

1903–33: Maximum, 11,600 second-feet June 8, 1921; no flow part of day Jan. 30, 1917, when lake outlet was blocked with ice, and at times during winter, owing to artificial regulation. Average, 30 years (1903–33), 2,040 second-feet.

REMARKS.—Records good. Unmeasured diversion for irrigation above station is small proportion of run-off. Chelan Electric Co. diverts water at Chelan for power purposes and irrigation of small acreage, which is included in discharge tables. Flow regulated by operation of power plant. Records of diversion, gage-height record, and discharge measurements furnished by Chelan Electric Co.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,830	971	1,710	2,100	706	2,030	292	129	5,170	4,030	1,150	1,410
2	1,620	993	1,700	2,100	702	1,980	414	157	5,420	4,150	1,140	1,280
3	1,730	1,120	1,770	2,070	938	1,970	413	158	5,490	5,950	1,130	1,220
4	1,790	1,130	1,770	1,910	1,240	1,840	409	166	5,460	7,210	1,980	1,280
5	1,860	1,150	2,140	1,900	1,250	1,720	412	164	7,060	6,300	3,260	1,400
6	1,850	967	2,410	1,760	1,320	1,680	413	164	8,220	5,730	4,220	1,450
7	1,880	1,230	2,470	1,770	1,540	2,000	412	46	8,050	5,830	4,570	1,400
8	1,850	1,200	2,560	1,660	1,820	2,350	638	162	7,960	5,810	3,290	1,420
9	1,870	1,110	2,570	1,660	1,820	2,230	894	162	7,790	5,780	2,960	1,390
10	1,850	752	2,490	1,770	2,000	2,170	848	162	7,550	5,740	2,750	1,270
11	1,800	254	2,510	1,750	2,480	2,110	803	166	7,400	5,850	2,590	1,400
12	1,830	276	2,530	1,690	2,250	2,050	806	168	7,260	5,860	2,590	1,400
13	1,760	257	2,580	1,160	2,100	1,990	806	166	5,750	5,930	2,600	1,420
14	1,740	295	2,530	718	2,080	1,870	806	49	5,290	6,050	2,660	1,490
15	1,850	656	2,550	722	1,900	1,970	813	157	7,120	6,030	2,800	1,390
16	1,600	765	2,460	717	2,060	2,350	811	163	8,460	5,990	2,870	1,430
17	1,780	817	2,460	711	2,030	2,290	806	166	8,630	6,190	2,950	1,240
18	1,820	699	2,410	715	2,160	2,170	806	168	8,710	6,260	2,900	1,310
19	1,820	721	2,410	709	1,870	2,110	806	169	8,630	6,200	3,170	1,400
20	1,960	639	2,410	713	2,160	2,310	833	983	8,690	5,170	3,130	1,390
21	2,240	705	2,400	720	2,250	2,410	773	2,070	8,620	4,550	2,630	1,400
22	2,150	775	2,370	717	2,190	2,290	410	2,190	8,540	4,550	2,110	1,280
23	1,280	767	2,350	710	2,090	2,120	407	2,250	6,980	4,340	1,480	1,180
24	1,530	615	2,360	709	2,090	2,050	402	2,310	4,570	4,510	1,290	1,120
25	1,960	623	2,010	703	1,980	1,930	402	2,310	3,550	4,650	1,250	1,340
26	1,930	621	1,990	714	1,820	1,870	407	517	3,570	4,710	1,130	1,340
27	1,840	611	2,080	707	2,020	2,020	406	4,580	3,710	4,730	1,090	1,390
28	2,070	621	2,140	710	2,090	1,060	405	4,460	3,940	4,610	1,290	1,370
29	1,750	693	2,140	709	-------	211	405	4,660	3,920	4,370	1,400	1,340
30	1,260	895	2,100	708	-------	157	393	4,600	3,970	4,350	1,410	1,260
31	1,280	-------	2,100	703	-------	152	-------	4,790	-------	2,490	1,390	-------

Month	Observed				Gain or loss in storage in Chelan Lake (acre-feet)	Corrected for storage			
	Discharge in second-feet			Run-off in acre-feet		Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October	2,240	1,260	1,790	110,000	−72,800	37,200	605	0.637	0.73
November	1,230	254	764	45,500	+74,500	120,000	2,020	2.13	2.38
December	2,580	1,700	2,270	140,000	−67,300	72,700	1,180	1.24	1.43
January	2,100	703	1,160	71,300	−20,500	50,800	826	.869	1.00
February	2,480	702	1,820	101,000	−81,400	19,600	353	.372	.39
March	2,410	152	1,850	114,000	−82,000	32,000	520	.547	.63
April	894	292	588	35,000	+75,500	110,000	1,850	1.95	2.18
May	4,790	46	1,240	76,200	+139,000	215,000	3,500	3.68	4.24
June	8,710	3,550	6,520	388,000	+57,000	445,000	7,480	7.87	8.78
July	7,210	2,490	5,290	325,000	+25,300	350,000	5,690	5.99	6.91
August	4,570	1,090	2,300	141,000	+7,210	148,000	2,410	2.54	2.93
September	1,490	1,120	1,350	80,300	−17,000	63,300	1,060	1.12	1.25
The year	8,710	46	2,250	1,630,000	+37,500	1,660,000	2,290	2.41	32.85

RAILROAD CREEK AT LUCERNE, WASH.

LOCATION.—Water-stage recorder in sec. 9, T. 31 N., R. 18 E., half a mile above mouth and half a mile southwest of Lucerne.

DRAINAGE AREA.—64 square miles.

RECORDS AVAILABLE.—December 1910 to June 1913; January 1927 to September 1933.

DISCHARGE.—Maximum during year, 1,460 second-feet June 15 (gage height, 4.95 feet); minimum not determined, occurred during winter, when stage-discharge relation was affected by ice.

1910–13, 1927–33: Maximum, 1,910 second-feet June 8, 1927 (gage height, 5.3 feet); minimum not determined, occurred during period Jan. 15–25, 1930, when stage-discharge relation was affected by ice.

REMARKS.—Records excellent except those represented by braced figures and those for Jan. 12–31, Sept. 25–30, which were estimated. No diversions or regulation. Gage-height record and several discharge measurements furnished by Chelan Electric Co.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	59	77	129	67	46	49	39	404	528	750	349	167
2	66	75	189	67	44	46	44	364	520	848	354	157
3	70	70	202	62	44	46	69	321	635	694	360	145
4	68	63	179	64	44	42	71	290	910	673	360	140
5	61	72	158	71	44	40	73	270	844	680	439	140
6	56	72	139	64		40	75	258	788	708	387	154
7	54	61	126	88		37	75	246	662	757	365	140
8	51	59	120	91		35	75	230	581	832	365	121
9	47	56		88		35	73	224	487	743	360	117
10	47	54		78		33	73	220	418	722	344	117
11	46	54		71		35	71	224	455	708	328	117
12	47	100	90	70	35	36	71	250	418	729	328	115
13	49	469		70		36	71	300	761	736	323	101
14	56	273		70		36	78	339	1,170	856	328	99
15	79	182		70		36	88	326	1,310	904	323	101
16	77	175		65		37	88	305	1,220	912	354	103
17	61	550		65		37	91	300	1,100	810	365	95
18	52	815		65	40	37	94	284	832	687	371	91
19	49	440	80	60	42	37	94	274	708	666	365	
20	46	305		60	42	37	108	266	701	596	312	
21	96	250		60	42	37	126	274	708	502	264	80
22	137	202	86	60	44	37	148	270	701	482	225	
23	101	179	94	60	42	37	179	270	687	502	221	
24	82	162	91	55	44	37	210	274	666	554	225	
25	77	145	86	55	44	36	258	345	687	596	218	55
26	94	132	80	55	52	36	316	495	694	554	199	55
27	137	129	75	55	49	37	418	462	701	514	196	55
28	116	123	73	50	51	39	545	462	729	433	199	85
29	94	145	69	50	------	39	537	528	750	415	218	85
30	79	142	67	50	------	39	470	680	736	421	196	80
31	77	------	67	50	------	39	------	608	------	365	177	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	137	46	72.0	1.12	1.29	4,430
November	815	54	188	2.94	3.28	11,200
December	202	67	101	1.58	1.82	6,210
January	91	50	64.7	1.01	1.16	3,980
February	52	----------	40.5	.633	.66	2,250
March	49	33	38.1	.595	.69	2,340
April	545	39	158	2.47	2.76	9,400
May	680	220	334	5.22	6.02	20,500
June	1,310	418	737	11.5	12.83	43,900
July	912	365	656	10.2	11.76	40,300
August	439	177	304	4.75	5.48	18,700
September	167	55	104	1.62	1.81	6,190
The year	1,310	----------	234	3.66	49.56	169,000

WENATCHEE RIVER BASIN

WENATCHEE LAKE NEAR PLAIN, WASH.

LOCATION.—Staff gage in sec. 19, T. 27 N., R. 17 E., on north shore of lake, 7½ miles northwest of Plain. Datum of published gage heights is mean sea level.
DRAINAGE AREA.—277 square miles.
RECORDS AVAILABLE.—January 1932 to September 1933.
EXTREMES.—Maximum water-surface elevation during period Jan. 23 to Sept. 30, 1932, 1,876.14 feet Feb. 28; minimum, 1,869.64 feet Feb. 16.

Maximum water-surface elevation during year ending Sept. 30, 1933, 1,876.57 feet June 16; minimum, 1,869.49 feet Oct. 12.

1932–33: Maximum water-surface elevation, that of June 16, 1933; minimum, that of Oct. 12, 1932.
REMARKS.—Records good. No diversions or regulation.

Gage height, in feet, 1932–33

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1932									
1	------	69.76	73.64	71.16	72.79	72.41	72.76	70.68	70.06
2	------	69.74	72.64	71.42	72.77	72.52	72.59	70.57	69.97
3	------	69.74	71.82	71.48	72.93	72.59	72.43	70.50	69.93
4	------	69.74	71.22	71.25	73.00	72.76	72.29	70.51	69.89
5	------	69.74	70.57	71.26	73.10	72.64	72.11	70.51	69.81
6	------	69.72	70.52	71.20	73.13	72.42	71.76	70.50	69.81
7	------	69.72	70.32	71.14	73.21	72.35	71.46	70.47	69.79
8	------	69.72	70.32	71.08	73.23	72.44	71.42	70.44	69.79
9	------	69.72	70.32	70.98	73.43	72.77	71.58	70.34	69.77
10	------	69.72	70.32	70.96	73.46	73.38	71.86	70.29	69.77
11	------	69.72	70.28	71.00	73.49	73.99	72.14	70.29	69.77
12	------	69.72	70.28	71.08	73.56	74.39	71.98	70.29	69.75
13	------	69.72	70.30	71.34	73.60	74.43	71.83	70.29	69.73
14	------	69.70	70.32	71.73	73.54	74.27	71.80	70.19	69.74
15	------	69.68	70.32	71.87	73.37	74.97	71.76	70.19	69.75
16	------	69.64	70.37	72.20	73.07	74.40	71.74	70.19	69.75
17	------	69.68	70.56	72.22	72.90	73.40	71.68	70.29	69.75
18	------	69.70	70.72	72.10	72.98	72.96	71.55	70.39	69.73
19	------	69.70	71.28	71.92	73.05	72.54	71.44	70.39	69.71
20	------	69.74	71.34	71.81	73.01	72.53	71.23	70.29	69.71
21	------	69.81	71.42	71.71	72.99	72.74	71.15	70.29	69.69
22	------	69.78	71.32	71.51	72.96	73.34	71.02	70.27	69.69
23	69.91	69.80	71.24	71.41	72.72	73.42	71.02	70.26	69.67
24	69.88	69.84	71.22	71.40	72.32	73.29	70.99	70.27	69.67
25	69.91	69.88	71.12	71.45	72.02	72.87	70.94	70.24	69.69
26	69.86	70.42	71.10	71.58	72.02	72.75	70.93	70.19	69.69
27	69.86	74.42	71.16	71.61	72.10	72.64	70.92	70.21	69.69
28	69.86	76.14	71.12	71.92	72.13	72.68	70.95	70.19	69.69
29	69.80	75.14	71.08	72.33	72.08	72.73	70.92	70.17	69.67
30	69.80	------	71.02	72.54	72.02	72.75	70.87	70.15	69.67
31	69.78	------	71.00	------	72.13	------	70.86	70.09	------

Gage height, in feet, of Wenatchee Lake near Plain, Wash., 1932–33—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1932–33												
1	69.67	70.34	71.37	70.21	70.11	70.11	70.37	72.79	72.08	73.76	71.84	70.24
2	69.66	70.34	72.07	70.13	70.11	70.11	70.37	72.64	72.01	73.70	71.78	70.18
3	69.67	70.27	73.42	70.11	70.11	70.11	70.38	72.28	73.01	73.58	71.65	70.13
4	69.67	70.24	73.03	70.15	70.11	70.11	70.41	72.05	73.71	73.51	71.58	70.13
5	69.67	70.23	72.58	70.19	70.11	70.11	70.44	71.83	73.98	73.50	71.91	70.11
6	69.65	70.21	72.01	70.21	70.11	70.11	70.43	71.64	74.09	73.64	71.83	70.12
7	69.63	70.22	71.77	70.24	70.11	70.11	70.43	71.51	74.26	73.87	71.72	70.14
8	69.63	70.26	71.42	70.29	70.11	70.13	70.44	71.44	74.17	74.14	71.57	70.12
9	69.60	70.29	71.17	70.44	70.11	70.13	70.45	71.36	73.41	74.10	71.50	70.11
10	69.57	70.25	70.99	70.55	70.11	70.13	70.45	71.31	73.10	73.64	71.45	70.08
11	69.53	70.28	70.81	70.71	70.11	70.15	70.47	71.25	72.81	73.47	71.41	70.06
12	69.50	70.55	70.74	70.78	70.11	70.17	70.49	71.22	72.77	73.46	71.33	70.02
13	69.63	74.49	70.73	70.63	70.09	70.17	70.49	71.21	73.50	73.59	71.23	69.97
14	69.83	75.09	70.64	70.62	70.07	70.15	70.49	71.19	74.73	73.95	71.24	69.97
15	70.19	73.70	70.59	70.57	70.09	70.16	70.51	71.19	75.92	74.30	71.18	70.08
16	70.14	72.91	70.53	70.56	70.09	70.18	70.51	71.17	76.36	74.43	71.14	70.18
17	70.08	73.62	70.47	70.53	70.09	70.19	70.52	71.16	76.40	74.37	71.10	70.20
18	69.98	75.07	70.45	70.50	70.07	70.21	70.54	71.48	75.29	73.97	71.04	70.17
19	69.91	74.77	70.45	70.49	70.07	70.21	70.58	71.97	74.25	73.50	70.98	70.11
20	69.95	74.17	70.42	70.44	70.07	70.21	70.67	71.97	74.04	73.17	70.92	70.07
21	70.01	73.15	70.39	70.34	70.07	70.21	70.80	71.99	73.94	72.83	70.86	70.10
22	70.17	72.61	70.36	70.27	70.07	70.21	70.85	72.01	73.87	72.65	70.79	70.21
23	70.42	71.95	70.33	70.22	70.07	70.24	70.88	72.02	73.77	72.69	70.75	70.33
24	70.43	71.65	70.33	70.20	70.07	70.27	70.92	72.05	73.63	72.82	70.69	70.33
25	70.34	71.51	70.31	70.18	70.07	70.29	71.09	72.06	73.76	72.80	70.61	70.32
26	70.35	71.27	70.31	70.11	70.09	70.30	71.37	72.07	73.93	72.80	70.53	70.31
27	70.38	71.16	70.31	70.11	70.09	70.33	71.87	72.09	74.05	72.58	70.45	70.32
28	70.26	71.09	70.28	70.11	70.11	70.36	72.45	72.09	74.12	72.24	70.38	70.54
29	70.27	71.11	70.25	70.11	-------	70.37	72.91	72.11	74.07	72.01	70.35	71 42
30	70.30	71.26	70.27	70.11	-------	70.37	72.88	72.07	73.82	71.94	70.32	71.33
31	70.34	-------	70.27	70.11	-------	70.37	-------	72.18	-------	71.88	70.28	------

NOTE.—Add 1,800 feet to obtain elevations above mean sea level.

WENATCHEE RIVER AT PLAIN, WASH.

LOCATION.—Water-stage recorder in lot 8, sec. 12, T. 26 N., R. 17 E., a quarter of a mile below Beaver Creek at Plain.

DRAINAGE AREA.—591 square miles.

RECORDS AVAILABLE.—November 1910 to September 1929, August 1931 to September 1933.

DISCHARGE.—Maximum during year, 13,800 second-feet June 16 (gage height, 9.7 feet); minimum, 370 second-feet Oct. 11, 12 (gage height, 1.66 feet).

1910–29, 1931–33: Maximum, 20,800 second-feet Dec. 13, 1921 (gage height, 11.8 feet); minimum, 250 second-feet Oct. 18, 19, 1925. Average 21 years (1910–29, 1931–33), 2,200 second-feet.

REMARKS.—Records excellent except those estimated because of ice, Feb. 10–14. Wenatchee Park Land & Irrigation Co. diverts a maximum of about 12 second-feet from Chiwawa River during irrigation seasons. No regulation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	431	908	2,390	942	860	695	780	4,960	6,380	7,120	3,030	968
2	427	917	4,070	942	820	672	828	4,620	6,020	7,510	3,030	917
3	435	892	5,660	926	788	665	1,040	4,130	6,560	6,930	2,890	868
4	435	828	4,790	934	772	632	1,200	3,810	7,910	6,740	2,820	836
5	427	934	4,290	1,040	764	626	1,250	3,570	8,750	6,560	3,410	828
6	419	1,010	3,570	1,160	732	632	1,300	3,330	8,750	6,740	3,260	934
7	412	976	2,960	1,250	695	646	1,340	3,100	8,120	7,120	2,960	934
8	401	951	2,440	1,780	665	620	1,300	2,960	7,710	7,710	2,890	828
9	387	934	2,120	2,060	594	606	1,250	2,820	6,930	7,310	2,750	780
10	376	868	1,900	2,060		600	1,200	2,750	6,020	6,930	2,620	764
11	373	796	1,730	1,900	600	620	1,250	2,750	5,480	6,560	2,440	732
12	373	1,120	1,630	1,680		626	1,250	3,260	5,480	6,380	2,390	725
13	383	6,680	1,580	1,580		626	1,200	3,810	6,930	6,560	2,340	695
14	412	8,120	1,430	1,530		613	1,250	4,290	9,640	7,310	2,280	725
15	592	5,660	1,340	1,430	632	613	1,340	4,450	12,400	7,710	2,170	804
16	772	4,620	1,380	1,380	639	626	1,380	4,290	13,800	8,120	2,170	917
17	695	6,200	1,340	1,300	632	646	1,380	4,290	12,400	7,910	2,170	917
18	620	8,330	1,340	1,200	626	639	1,380	4,130	10,100	6,930	2,170	860
19	562	7,510	1,340	1,200	632	646	1,380	3,970	8,540	6,200	2,120	820
20	527	6,560	1,300	1,140	632	658	1,430	3,810	7,910	5,660	1,900	764
21	621	5,300	1,250	1,120	646	680	1,630	3,810	7,710	4,960	1,630	748
22	1,090	4,290	1,250	1,100	695	672	1,900	3,810	7,710	4,770	1,480	942
23	1,040	3,570	1,200	1,060	688	665	2,280	3,810	7,510	4,620	1,380	1,110
24	926	2,960	1,150	1,040	658	658	2,680	3,890	7,120	4,960	1,340	1,070
25	828	2,620	1,130	1,000	652	652	3,180	4,450	7,120	5,130	1,300	976
26	994	2,340	1,160	968	725	658	3,650	6,200	7,510	4,960	1,200	917
27	1,200	2,170	1,120	951	748	680	4,450	6,380	7,710	4,620	1,160	1,040
28	1,140	2,060	1,060	926	732	702	5,480	6,020	7,710	4,050	1,160	1,430
29	1,040	2,170	1,010	900	-------	732	5,840	6,380	7,710	3,650	1,200	2,560
30	942	2,390	960	868	-------	756	5,480	7,120	7,510	3,650	1,120	2,220
31	908	-------	934	868	-------	772	-------	6,930	-------	3,260	1,040	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,200	373	651	1.10	1.27	40,000
November	8,330	796	3,160	5.35	5.97	188,000
December	5,660	934	1,960	3.32	3.83	121,000
January	2,060	868	1,230	2.08	2.40	75,600
February	860	594	680	1.15	1.20	37,800
March	772	600	656	1.11	1.28	40,300
April	5,840	780	2,040	3.45	3.85	121,000
May	7,120	2,750	4,320	7.31	8.43	266,000
June	13,800	5,480	8,040	13.6	15.17	478,000
July	8,120	3,260	6,090	10.3	11.87	374,000
August	3,410	1,040	2,120	3.59	4.14	130,000
September	2,560	695	988	1.67	1.86	58,800
The year	13,800	373	2,670	4.52	61.27	1,930,000

WENATCHEE RIVER AT PESHASTIN, WASH.

LOCATION.—Water-stage recorder in SE¼SW¼ sec. 8, T. 24 N., R. 18 E., 1 mile northwest of Peshastin.

DRAINAGE AREA.—1,000 square miles.

RECORDS AVAILABLE.—February 1929 to September 1933.

DISCHARGE.—Maximum during year, 20,400 second-feet June 16 (gage height, 11.82 feet); minimum, 459 second-feet Oct. 10 (gage height, 1.81 feet).

1929–33: Maximum, that of June 16, 1933; minimum, 270 second-feet Oct. 2, 1929 (gage height, 0.50 foot, former staff-gage datum).

REMARKS.—Records excellent except those for Dec. 12–16, Jan. 18–23, Feb. 8–17, which were estimated because of ice. Discharge estimated Mar. 12. Several diversions for irrigation above station. Slight regulation at mill pond at Leavenworth.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	545	1,240	3,420	1,300	1,180	998	1,190	6,830	9,010	10,700	4,080	1,190
2	545	1,250	5,200	1,320	1,120	952	1,270	6,230	8,780	11,100	4,080	1,120
3	550	1,240	7,670	1,280	1,110	938	1,620	5,630	9,470	10,400	3,930	1,050
4	555	1,160	6,430	1,290	1,080	900	1,840	5,040	11,900	9,700	3,930	1,010
5	550	1,240	5,630	1,400	1,090	885	1,840	4,690	12,900	9,470	4,530	982
6	540	1,400	4,690	1,620	1,040	878	1,900	4,530	12,600	9,940	4,380	1,110
7	531	1,350	4,080	1,670	982	915	1,960	4,230	11,600	10,400	4,080	1,160
8	518	1,290	3,420	2,460		885	1,900	4,080	10,900	11,100	3,930	1,020
9	500	1,250	2,930	2,790		848	1,840	3,930	9,940	10,400	3,780	968
10	479	1,200	2,790	2,860	780	840	1,720	3,780	8,550	9,700	3,560	938
11	483	1,120	2,460	2,600		862	1,720	3,780	7,670	9,470	3,350	922
12	483	1,370		2,400		877	1,720	4,230	7,890	9,240	3,210	908
13	491	9,580		2,200		892	1,670	5,040	10,700	9,470	3,140	885
14	531	11,100	2,100	2,080		892	1,780	5,830	15,400	10,400	3,000	892
15	757	7,890		2,020	940	885	1,960	5,830	19,100	11,100	2,860	998
16	1,040	6,430		1,900		922	1,960	5,830	20,000	11,400	2,860	1,160
17	990	9,120	1,960	1,670		968	1,960	5,630	17,800	10,900	2,790	1,170
18	878	12,100	1,900		1,020	990	1,960	5,630	14,800	9,470	2,860	1,100
19	784	10,700	1,840		1,010	990	1,960	5,230	12,400	8,550	2,790	1,060
20	724	9,010	1,840		960	1,020	2,020	5,040	11,400	7,670	2,530	1,010
21	770	7,240	1,780	1,500	930	1,050	2,270	5,040	11,100	6,830	2,200	975
22	1,300	6,030	1,720		952	1,030	2,720	5,040	11,100	6,430	1,900	1,150
23	1,400	5,040	1,670		982	1,010	3,280	5,040	10,900	6,230	1,780	1,400
24	1,210	4,230	1,620	1,400	930	998	3,780	5,230	10,200	6,630	1,670	1,450
25	1,090	3,780	1,620	1,350	908	998	4,380	6,430	10,400	6,830	1,620	1,290
26	1,340	3,420	1,620	1,340	982	990	5,040	9,010	10,900	6,630	1,500	1,200
27	1,720	3,210	1,620	1,310	1,030	1,050	6,230	8,780	11,100	6,230	1,450	1,340
28	1,620	3,070	1,500	1,260	1,040	1,120	7,670	8,550	11,100	5,430	1,400	1,750
29	1,450	3,140	1,450	1,230	-------	1,150	8,110	9,010	11,100	4,860	1,450	3,350
30	1,290	3,560	1,350	1,190	-------	1,180	7,670	10,400	10,700	5,040	1,400	3,070
31	1,210	-------	1,310	1,150	-------	1,180	-------	9,940	--------	4,380	1,290	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,720	479	867	53,300
November	12,100	1,120	4,460	265,000
December	7,670	1,310	2,710	167,000
January	2,860	1,150	1,680	103,000
February	1,180	----------	961	53,400
March	1,180	840	971	59,700
April	8,110	1,190	2,900	173,000
May	10,400	3,780	5,920	364,000
June	20,000	7,670	11,700	696,000
July	11,400	4,380	8,580	528,000
August	4,530	1,290	2,820	173,000
September	3,350	885	1,250	74,400
The year	20,000	479	3,740	2,710,000

YAKIMA RIVER BASIN

YAKIMA RIVER NEAR MARTIN, WASH.

LOCATION.—Water-stage recorder below dam at outlet of Keechelus Lake, 3½ miles northwest of Martin.

DRAINAGE AREA.—55 square miles.

RECORDS AVAILABLE.—October 1903 to September 1933.

DISCHARGE.—Maximum during year, 1,890 second-feet June 15, while most of flow was being diverted from gage channel over reservoir spillway; minimum, probably less than 1 second-foot sometime Oct. 21 to Nov. 5, result of regulation; minimum gage height, 0.51 foot Oct. 21 to Nov. 5.

1903–33: Maximum, 7,370 second-feet Mar. 25, 1915, when temporary crib dam was washed out; practically no flow when gates in Keechelus Reservoir Dam are closed. Average discharge, 29 years (1904–33), 328 second-feet.

REMARKS.—Records excellent except those for extremely low flow. Flow over Keechelus Reservoir spillway June 4 to July 21. Records include water diverted by way of spillway. Flow partly controlled by storage and release of water at Keechelus Reservoir. Records furnished by United States Bureau of Reclamation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	123	1	1	1	3	142	142	486	486	817	512	721
2	112	1	1	1	3	142	142	486	486	857	512	689
3	103	1	1	1	3	142	142	486	486	847	512	689
4	100	1	1	1	3	142	142	486	501	797	512	689
5	120	1	1	1	3	142	142	486	731	787	512	689
6	126	1	1	1	3	142	142	486	931	807	512	689
7	113	1	1	1	3	142	142	486	979	837	512	689
8	104	1	1	1	3	142	142	486	1,130	857	696	689
9	96	1	1	1	3	142	142	486	1,340	827	1,180	689
10	88	1	1	1	3	142	142	486	1,080	748	1,150	689
11	42	1	1	1	3	142	142	486	886	698	1,150	689
12	3	1	1	2	3	142	142	486	864	689	1,150	689
13	1	2	1	2	3	142	142	486	1,210	698	1,150	689
14	1	1	1	2	3	142	142	486	1,720	723	992	689
15	1	1	1	3	3	142	142	486	1,890	767	787	689
16	1	1	1	3	3	142	142	486	1,840	797	1,010	689
17	1	2	1	3	4	142	142	486	1,540	748	1,150	689
18	1	2	1	3	96	142	142	486	1,240	672	1,150	689
19	1	1	1	3	142	142	142	486	1,030	616	1,180	689
20	1	1	1	3	142	142	142	486	957	563	1,220	689
21	1	1	1	3	142	142	142	486	924	523	1,220	689
22	1	1	1	3	142	142	142	486	912	512	1,220	689
23	1	1	1	3	139	142	142	486	890	512	1,220	689
24	1	1	1	3	142	142	142	486	857	512	1,220	689
25	1	1	1	3	142	142	142	486	901	512	1,220	689
26	1	1	1	3	142	142	142	486	957	512	1,220	689
27	1	1	1	3	142	142	343	486	980	512	1,180	689
28	1	1	1	3	142	142	486	486	980	512	1,180	689
29	1	1	1	3	------	142	486	486	912	512	1,150	689
30	1	1	1	3	------	142	486	486	847	512	1,150	484
31	1	------	1	3	------	142	------	486	------	512	1,030	------

Month	Observed				Gain or loss in storage in Lake Keechelus (acre-feet)	Corrected for storage			
	Discharge in second-feet			Run-off in acre-feet		Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October	126	1	37.1	2,280	+9,460	11,700	190	3.45	3.98
November	2	1	1.10	65.5	+61,300	61,400	1,030	18.7	20.86
December	1	1	1.00	61.5	+27,800	27,900	454	8.25	9.51
January	3	1	2.19	135	+25,600	25,700	418	7.60	8.76
February	142	3	55.9	3,100	+4,690	7,790	140	2.55	2.66
March	142	142	142	8,730	−308	8,420	137	2.49	2.87
April	486	142	183	10,900	+7,290	18,200	306	5.56	6.20
May	486	486	486	29,900	+7,400	37,300	607	11.0	12.68
June	1,890	486	1,020	60,500	+4,480	65,000	1,090	19.8	22.09
July	857	512	671	41,200	−4,240	37,000	602	10.9	12.57
August	1,220	512	986	60,600	−51,700	8,900	145	2.64	3.04
September	721	484	683	40,700	−29,400	11,300	190	3.45	3.85
The year	1,890	1	357	258,000	+62,400	321,000	443	8.05	109.07

YAKIMA RIVER AT CLE ELUM, WASH.

LOCATION.—Water-stage recorder in sec. 27, T. 20 N., R. 15 E., at highway bridge at Cle Elum, just above Roslyn Creek.

DRAINAGE AREA.—500 square miles.

RECORDS AVAILABLE.—August 1906 to September 1933.

DISCHARGE.—Maximum during year, 5,690 second-feet June 16 (gage height, 6.97 feet); minimum, 262 second-feet Oct. 16 (gage height, 2.32 feet).

1906–33: Maximum, about 25,600 second-feet Nov. 14, 1906 (gage height, 12.5 feet, from high-water marks); minimum, 64 second-feet Nov. 16, 17, 1929 (gage height, −0.31 foot). Average, 27 years (1906–33), 1,950 second-feet.

REMARKS.—Records excellent. Kittitas Canal diverts above gage. Diversions included in monthly discharge table. Flow partly regulated by several reservoirs upstream. Records furnished by United States Bureau of Reclamation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,050	609	539	3,010	1,350	1,010	1,220	3,880	4,410	4,230	2,730	1,800
2	971	628	859	2,940	1,300	1,010	932	3,800	3,880	4,330	2,730	1,640
3	932	742	1,490	2,870	1,260	1,010	1,400	3,800	3,970	4,230	2,800	1,640
4	859	769	1,490	2,870	1,300	971	1,220	3,720	4,230	4,230	2,800	1,640
5	824	789	1,400	2,940	1,260	932	1,490	3,720	4,410	4,140	2,800	1,640
6	789	796	1,170	3,010	1,220	971	1,800	3,630	4,500	4,060	2,800	1,640
7	782	896	896	3,390	1,130	971	1,800	3,550	4,600	3,800	2,730	1,640
8	729	932	831	5,080	1,090	896	1,690	3,470	4,880	3,390	2,800	1,640
9	716	896	1,740	5,680	971	817	1,540	3,470	5,280	3,310	2,320	1,640
10	684	628	1,740	5,080	1,090	580	1,490	3,550	4,880	2,180	1,740	1,640
11	640	568	1,690	4,500	1,050	556	1,490	3,470	4,320	1,990	1,850	1,640
12	551	722	1,640	4,140	971	551	1,540	3,630	4,060	3,630	1,960	1,640
13	408	703	1,640	3,720	896	658	1,490	3,880	4,410	4,060	2,070	1,690
14	316	1,090	1,640	3,630	859	1,440	1,440	3,970	5,280	4,060	2,070	1,640
15	274	2,190	1,590	3,470	838	1,300	1,170	3,970	5,680	4,060	2,130	1,690
16	266	1,850	1,540	3,310	803	1,300	1,300	3,880	5,680	4,060	2,190	1,690
17	378	4,060	1,540	3,240	782	1,260	1,300	3,800	5,280	3,970	2,190	1,640
18	500	3,470	1,540	3,080	782	1,220	1,400	3,800	4,600	3,880	2,130	1,690
19	551	2,190	2,270	2,940	859	1,130	1,540	3,720	4,230	3,720	2,190	1,690
20	551	1,690	3,720	2,660	932	1,170	1,590	3,630	4,060	3,550	2,260	1,690
21	551	1,490	3,630	2,380	932	1,170	1,690	3,720	3,970	3,310	2,190	2,130
22	556	1,400	3,550	2,190	1,010	1,130	1,850	3,720	3,880	3,160	2,190	2,380
23	556	1,170	3,470	2,070	1,050	1,090	2,190	3,720	3,800	3,010	2,130	2,450
24	495	896	3,390	1,900	971	1,090	2,450	3,800	3,880	2,940	2,130	2,450
25	474	769	3,390	1,800	971	1,090	2,730	4,060	4,410	2,940	2,070	2,380
26	479	782	3,390	1,690	756	1,130	2,870	4,600	4,500	2,870	2,130	2,380
27	500	609	3,310	1,640	716	1,170	3,310	4,500	4,500	2,870	2,070	2,320
28	591	562	3,240	1,540	896	1,170	4,410	4,410	4,500	2,870	2,020	2,380
29	597	539	3,160	1,490	------	1,170	4,500	4,410	4,500	2,870	2,070	2,450
30	574	551	3,010	1,440	------	1,090	4,140	4,780	4,320	2,800	2,020	2,380
31	597	------	3,080	1,400	------	1,170	------	4,690	------	2,730	2,020	------

Month	Observed				Gain or loss in storage in Lakes Keechelus, Kachess, and Cle Elum (acre-feet)	Diverted by Kittitas Canal (acre-feet)	Corrected for storage and diversions			
	Discharge in second-feet			Run-off in acre-feet			Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean					Mean	Per square mile	
October	1,050	266	605	37,200	+440	9,960	47,600	774	1.55	1.79
November	4,060	539	1,170	69,400	+213,000	------	282,000	4,740	9.48	10.58
December	3,720	539	2,180	134,000	+19,900	------	154,000	2,500	5.00	5.76
January	5,680	1,400	2,940	181,000	−40,800	------	140,000	2,280	4.56	5.26
February	1,350	716	1,000	55,600	−10,700	------	44,900	808	1.62	1.69
March	1,440	551	1,040	63,900	−9,860	------	54,000	878	1.76	2.03
April	4,500	932	1,970	117,000	+37,600	------	155,000	2,600	5.20	5.80
May	4,780	3,470	3,900	240,000	+40,100	5,830	286,000	4,650	9.30	10.72
June	5,680	3,800	4,500	268,000	+112,000	22,300	402,000	6,760	13.5	15.06
July	4,230	1,990	3,460	213,000	−38,400	41,700	216,000	3,510	7.02	8.09
August	2,800	1,740	2,270	139,000	−105,000	33,300	67,300	1,090	2.18	2.51
September	2,450	1,640	1,900	113,000	−77,100	19,100	55,000	924	1.85	2.06
The year	5,680	266	2,250	1,630,000	+141,000	132,000	1,900,000	2,620	5.24	71.35

YAKIMA RIVER NEAR PARKER, WASH.

LOCATION.—Water-stage recorder in sec. 28, T. 12 N., R. 19 E., below Sunnyside diversion dam 1½ miles east of Parker.

DRAINAGE AREA.—3,560 square miles.

RECORDS AVAILABLE.—April 1908 to September 1921; October 1931 to September 1933.

DISCHARGE.—Maximum during year, 14,500 second-feet June 16 (gage height, 9.45 feet); minimum, 7 second-feet Oct. 17 (gage height, 0.95 foot).

1908–21, 1931–33: Maximum, 52,900 second-feet Dec. 30, 1917 (gage height, 15.0 feet); practically no flow on several days during latter part of irrigation seasons as result of diversion.

REMARKS.—Records excellent. Water diverted above gage for irrigation of a large area. Flow partly regulated by diversions and by several reservoirs upstream. Gage-height record and most of discharge measurements furnished by United States Bureau of Reclamation. Records of monthly discharge of canals furnished by United States Office of Indian Affairs and by United States Bureau of Reclamation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	306	1,610	3,520	4,400	2,870	2,290	2,640	6,690	8,520	6,440	810	501
2	270	1,610	3,600	4,490	2,720	2,360	2,570	5,950	7,190	6,190	826	410
3	125	1,610	5,180	4,300	2,640	2,500	3,110	5,080	6,690	6,190	794	250
4	41	1,720	5,500	4,120	2,570	2,500	4,680	4,400	8,520	5,950	770	198
5	16	1,780	5,080	4,300	2,500	2,360	4,490	3,860	9,660	5,720	1,050	198
6	23	2,020	4,680	4,680	2,500	2,290	4,490	3,600	9,950	5,500	1,140	416
7	64	2,140	4,210	4,680	2,290	2,360	4,400	3,770	9,660	5,080	1,050	525
8	186	2,200	3,600	6,190	2,290	2,360	3,860	2,950	9,080	4,680	898	538
9	169	2,330	3,270	8,250	2,080	2,360	3,430	2,640	9,950	4,680	890	544
10	162	2,330	3,940	8,520	1,950	2,080	2,950	2,290	9,950	4,490	471	667
11	190	1,960	4,120	7,190	2,360	1,950	2,500	2,220	8,520	2,950	155	810
12	230	1,840	3,940	6,690	2,640	1,890	2,360	2,360	7,710	3,520	129	858
13	166	2,330	3,680	6,190	2,220	2,080	2,080	3,190	8,250	4,400	122	930
14	122	6,360	3,520	5,720	2,290	2,220	2,080	4,120	10,800	4,580	117	978
15	68	5,410	3,520	5,720	3,110	2,870	2,150	4,400	13,700	4,780	114	1,030
16	23	4,970	3,600	5,290	3,030	2,870	2,080	4,120	14,300	4,880	66	1,100
17	8	6,880	3,770	5,290	2,640	3,030	1,890	3,770	13,300	4,780	66	1,140
18	11	10,500	3,680	5,290	2,570	3,030	1,510	3,600	11,400	4,120	25	1,140
19	72	8,520	3,680	5,080	2,570	2,950	1,460	3,430	9,370	3,430	74	1,180
20	222	6,690	4,030	4,980	2,790	2,790	1,320	3,270	7,710	2,950	250	1,230
21	740	5,720	5,180	4,880	2,790	2,720	1,510	3,430	7,190	2,430	292	1,280
22	822	5,290	5,080	4,210	2,790	2,570	1,950	3,600	6,690	2,150	250	1,780
23	822	4,880	5,080	4,030	3,270	2,360	3,110	3,430	6,440	1,780	210	2,150
24	857	4,300	4,880	3,860	2,640	2,220	4,300	3,430	5,950	1,660	142	2,290
25	1,190	3,860	4,780	3,680	2,360	2,080	4,980	5,080	6,440	1,560	114	2,360
26	1,390	3,600	4,780	3,520	2,430	2,080	5,500	6,690	7,190	1,460	106	2,500
27	1,500	3,430	4,780	3,350	2,290	2,080	6,190	7,190	7,450	1,280	119	2,640
28	1,440	3,350	4,780	3,270	2,220	2,500	7,980	6,190	7,450	1,140	119	2,640
29	1,500	3,190	4,680	3,190	------	2,640	9,370	6,440	7,450	1,050	135	2,640
30	1,540	3,430	4,580	3,110	------	2,640	8,520	7,710	6,690	1,020	242	2,570
31	1,570	------	4,490	2,950	------	2,640	------	9,080	------	962	310	------

Discharge, in second-feet, of Yakima River near Parker, Wash., 1932–33—Contd.

Month	Mean discharge in second-feet						Gain or loss by upstream storage (second-feet)	Combined flow of Yakima River and canals corrected for upstream storage	
	Yakima River near Parker	Union Gap Canal (estimated)	New Reservation Canal	Old Reservation Canal	Sunnyside Canal	Combined flow, Yakima River and canals		Second-feet	Run-off in acre-feet [a]
October	511	19	504	----	477	1,510	−110	1,400	86,100
November	3,860	----	----	----	----	3,860	+4,220	8,080	481,000
December	4,300	----	----	----	----	4,300	+351	4,650	286,000
January	4,880	----	----	----	----	4,880	−742	4,140	255,000
February	2,550	----	----	----	----	2,550	−517	2,030	113,000
March	2,440	----	71.5	6.74	207	2,730	−270	2,460	151,000
April	3,650	26	1,010	111	906	5,700	+1,210	6,910	411,000
May	4,450	43	1,980	136	1,260	7,870	+1,680	9,550	587,000
June	8,770	45	1,780	48.2	1,290	11,900	+1,850	13,800	821,000
July	3,610	46	1,770	53.3	1,310	6,790	−634	6,160	379,000
August	382	47	1,700	66.1	1,300	3,500	−2,410	1,090	67,000
September	1,250	27	1,120	17.6	1,010	3,420	−2,300	1,120	66,600
The year	3,380	----	----	----	----	4,920	+188	5,110	3,700,000

[a] Totals are comparable with monthly results previously determined for Yakima River at Union Gap, near Yakima, Wash.

YAKIMA RIVER NEAR PROSSER, WASH.

LOCATION.—Water-stage recorder in SE¼ sec. 36, T. 9 N., R. 24 E., 1¼ miles northeast of Prosser.

DRAINAGE AREA.—5,340 square miles.

RECORDS AVAILABLE.—June 1904 to October 1906, August 1913 to October 1918, April 1919 to September 1922, October 1926 to February 1933 (discontinued).

DISCHARGE.—Maximum during period Oct. 1, 1932, to Feb. 6, 1933, 8,540 second-feet Nov. 19 (gage height, 7.10 feet); minimum, 138 second-feet Oct. 20 (gage height, 0.32 foot).

1904–6, 1913–22, 1926–33: Maximum, about 62,800 second-feet Nov. 17, 1906; minimum, about 40 second-feet Aug. 19, 26, 30, 31, Sept. 30, 1906.

REMARKS.—Records excellent. Water diverted above gage for irrigation of large acreage. Monthly discharge corrected for diversion through Prosser power canal which by-passes station. Flow partly regulated by diversions and by storage and release of water in several reservoirs upstream. Records furnished by United States Bureau of Reclamation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Day	Oct.	Nov.	Dec.	Jan.	Feb.
1	915	1,100	2,660	3,900	2,530	16	292	4,140	2,930	5,000	------
2	1,180	1,100	2,660	3,900	2,400	17	259	4,060	3,140	4,650	------
3	1,260	1,140	2,930	3,820	2,280	18	237	5,740	3,580	4,310	------
4	1,180	1,140	4,220	3,660	2,220	19	192	8,060	3,980	4,060	------
5	1,020	1,260	4,480	3,660	2,160	20	180	6,950	4,060	3,980	------
6	985	1,300	4,310	4,060	2,220	21	277	5,740	4,480	3,900	------
7	698	1,400	3,980	4,310	------	22	666	4,820	5,180	3,740	------
8	446	1,530	3,660	4,310	------	23	743	4,480	5,000	3,740	------
9	366	1,580	3,580	5,740	------	24	737	4,060	4,650	3,440	------
10	425	1,680	3,000	7,380	------	25	807	3,580	4,480	3,280	------
11	416	1,630	2,790	7,830	------	26	929	3,210	4,310	3,070	------
12	450	1,440	2,860	7,380	------	27	1,060	2,930	4,480	3,000	------
13	477	1,300	2,860	6,130	------	28	1,100	2,790	4,310	2,930	------
14	463	1,730	2,790	5,550	------	29	1,060	2,720	4,220	2,790	------
15	377	4,140	2,860	5,180	------	30	1,020	2,600	4,140	2,660	------
						31	1,060		3,980	2,660	------

Month	Observed discharge in second-feet				Combined river and power canal [a]	
	River			Prosser Power Canal (mean)	Mean in second-feet	Run-off in acre-feet
	Maximum	Minimum	Mean			
October	1,260	180	686	751	1,440	88,400
November	8,060	1,100	2,980	928	3,910	232,000
December	5,180	2,660	3,760	684	4,440	273,000
January	7,830	2,660	4,320	836	5,160	317,000
February 1–6	2,530	2,160	2,300	843	3,140	37,400
The period						948,000

[a] Small percentage of flow escaping from power canal through siphon spillway not accounted for in these totals.

YAKIMA RIVER AT KIONA, WASH.

LOCATION.—Chain gage in sec. 19, T. 9 N., R. 27 E., at highway bridge at Kiona, 3½ miles below intake of Kiona Canal and 25 miles above mouth.
DRAINAGE AREA.—5,520 square miles.
RECORDS AVAILABLE.—August 1896 to March 1915, February to September 1933.
DISCHARGE.—Maximum during period Feb. 6 to Sept. 30, 1933, 15,800 second-feet June 18 (gage height, 12.3 feet); minimum, 1,160 second-feet Aug. 17 (gage height, 4.32 feet).

1896–1915, 1933: Maximum, 63,500 second-feet Nov. 17, 1906 (gage height, 19.78 feet); minimum, 105 second-feet Sept. 11, 1906 (gage height, 2.35 feet). Average, 18 years (1896–1914), 4,580 second-feet.

REMARKS.—Records good. Water diverted above gage for irrigation of large acreage. Flow partly regulated by diversions and by storage and release of water in several reservoirs upstream. Records furnished by United States Bureau of Reclamation.

Discharge, in second-feet, 1932–33

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		2,750	4,000	9,600	10,200	8,200	2,290	1,500
2		2,890	4,000	8,400	9,800	7,800	2,160	1,600
3		2,890	3,850	7,400	8,800	7,800	2,040	1,700
4		2,960	4,450	6,640	8,400	7,600	1,920	1,600
5		3,030	5,770	5,940	9,600	7,400	2,040	1,550
6	3,180	2,960	5,430	5,600	10,800	7,200	2,160	1,600
7	3,100	2,890	5,430	5,260	11,300	6,820	2,360	1,760
8	2,890	3,030	5,430	4,930	11,100	6,460	2,290	1,920
9	2,480	3,100	4,930	4,610	10,800	6,110	2,160	2,040
10	1,500	3,030	4,610	4,300	12,000	5,940	2,100	2,220
11	2,040	2,890	4,150	4,150	12,000	5,770	1,920	2,290
12	2,680	2,680	3,620	4,000	11,100	4,300	1,400	2,360
13	2,820	2,680	3,480	4,150	10,000	4,930	1,400	2,420
14	2,750	2,890	3,250	4,770	10,200	5,600	1,310	2,420
15	2,420	3,030	3,180	5,600	12,000	5,770	1,310	2,420
16	3,320	3,620	3,250	5,770	14,000	5,940	1,260	2,480
17	3,180	3,780	3,250	5,600	15,500	5,940	1,220	2,550
18	3,030	3,850	3,030	5,260	15,800	5,940	1,260	2,680
19	2,890	3,850	2,620	5,090	14,200	5,260	1,220	2,620
20	3,100	3,850	2,550	5,090	11,500	4,610	1,220	2,620
21	3,320	3,780	2,360	4,930	9,400	4,150	1,220	2,620
22	3,250	3,620	2,550	5,090	8,800	3,700	1,310	2,890
23	3,250	3,480	2,960	5,090	8,200	3,320	1,450	3,100
24	3,550	3,400	4,000	5,090	7,800	2,960	1,360	3,550
25	3,100	3,250	4,930	5,090	7,400	2,960	1,310	3,700
26	2,960	3,180	5,770	5,940	8,200	2,890	1,310	3,780
27	3,030	3,250	6,110	7,800	8,800	2,890	1,260	3,850
28	2,960	3,320	6,820	8,400	8,800	2,750	1,310	4,000
29		3,780	8,600	7,800	9,000	2,620	1,360	3,850
30		4,000	10,000	7,800	8,600	2,480	1,360	3,780
31		3,850		9,000		2,420	1,400	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
February 6-28	3,550	1,500	2,900	132,000
March	4,000	2,680	3,280	201,000
April	10,000	2,360	4,480	267,000
May	9,600	4,000	5,940	365,000
June	15,800	7,400	10,500	623,000
July	8,200	2,420	5,110	314,000
August	2,360	1,220	1,600	98,600
September	4,000	1,500	2,580	154,000
The period				2,150,000

KACHESS RIVER NEAR EASTON, WASH.

LOCATION.—Water stage recorder in sec. 3, T. 20 N., R. 13 E., three-quarters of a mile below Kachess Lake and 2 miles northwest of Easton.

DRAINAGE AREA.—64 square miles.

RECORDS AVAILABLE.—November 1903 to September 1933.

DISCHARGE.—Maximum during year, 1,590 second-feet Aug. 14 (gage height, 5.90 feet); minimum, 0.6 second-foot Oct. 17 (gage height, 0.64 foot).

1903–33: Maximum, 2,240 second-feet Aug. 27, 1920 (computed from gate opening); practically no flow when gates in dam are closed. Average, 30 years (1903–33), 284 second-feet.

REMARKS.—Records excellent except those for extremely low flow. Leakage, when gates are closed, based on current-meter measurements. No diversions. Flow regulated by Kachess Lake Reservoir. Records furnished by United States Bureau of Reclamation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,060	1	2	193	319	259	256	504	191	732	424	1,190
2	1,010	1	6	193	319	259	256	504	3	732	424	1,190
3	959	1	5	193	319	259	256	504	2	732	424	1,190
4	934	1	3	200	285	259	256	504	2	732	424	1,190
5	934	1	2	248	259	259	256	504	2	732	424	1,190
6	934	1	2	506	259	259	256	504	2	603	424	1,190
7	857	1	2	636	259	259	256	504	2	200	424	1,190
8	806	1	1	636	259	259	256	504	2	5	424	1,190
9	732	1	1	636	259	259	256	504	2	5	1,040	1,190
10	613	1	1	707	259	259	256	504	2	5	1,120	1,190
11	525	1	1	756	259	259	256	504	2	5	1,120	1,190
12	374	1	1	756	259	259	256	504	2	320	1,140	1,190
13	245	5	1	756	259	259	256	504	2	546	1,170	1,190
14	145	6	1	756	259	259	256	504	2	546	1,270	1,190
15	14	3	1	756	259	259	256	504	2	546	1,540	1,190
16	1	5	1	756	259	259	256	504	2	546	1,430	1,190
17	1	8	1	756	259	259	256	504	2	546	1,170	1,190
18	1	5	1	756	259	259	256	504	2	546	1,190	1,190
19	1	3	1	552	259	259	256	504	1	504	1,240	1,190
20	1	3	1	424	259	259	256	504	1	394	1,240	1,190
21	1	3	1	424	259	259	256	504	1	349	1,240	1,190
22	1	4	1	424	259	259	256	504	1	349	1,220	1,190
23	1	3	1	355	259	259	256	504	1	349	1,220	1,190
24	1	2	1	319	259	259	256	504	435	349	1,190	1,170
25	1	2	1	319	259	259	256	504	732	349	1,190	1,170
26	1	2	1	319	259	256	256	504	732	398	1,190	1,170
27	1	2	1	319	259	256	401	504	732	424	1,190	1,140
28	1	2	1	319	259	256	504	504	732	424	1,190	1,140
29	1	2	1	319	-------	256	504	504	732	424	1,190	1,170
30	1	2	34	319	-------	256	504	504	732	424	1,190	1,170
31	1	-------	193	319	-------	256	-------	504	-------	424	1,190	-------

Month	Observed				Gain or loss in storage in Lake Kachess (acre-feet)	Corrected for storage			
	Discharge in second-feet			Run-off in acre-feet		Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October	1,060	1	328	20,100	−13,600	6,500	106	1.66	1.91
November	8	1	2.47	147	+48,000	48,100	808	12.6	14.06
December	193	1	8.74	538	+26,800	27,300	444	6.94	8.00
January	756	193	482	29,600	−5,080	24,500	398	6.22	7.17
February	319	259	266	14,800	−6,780	8,020	144	2.25	2.34
March	259	256	258	15,900	−8,500	7,400	120	1.88	2.17
April	504	256	286	17,000	+2,990	20,000	336	5.25	5.86
May	504	504	504	31,000	+7,870	38,900	633	9.89	11.40
June	732	1	169	10,000	+47,900	57,900	973	15.2	16.96
July	732	5	427	26,300	+2,110	28,400	462	7.22	8.32
August	1,540	424	1,010	62,000	−55,000	7,000	114	1.78	2.05
September	1,190	1,140	1,180	70,400	−62,000	8,400	141	2.20	2.46
The year	1,540	1	411	298,000	−15,300	282,000	390	6.09	82.70

CLE ELUM RIVER NEAR ROSLYN, WASH.

LOCATION.—Water-stage recorder in SW¼ sec. 11, T. 20 N., R. 14 E., below Cle Elum Lake and 4 miles northwest of Roslyn. Prior to Apr. 20, 1933, staff gage in sec. 10, T. 20 N., R. 14 E., was used.

DRAINAGE AREA.—202 square miles.

RECORDS AVAILABLE.—October 1903 to September 1933.

DISCHARGE.—Maximum during year, 3,260 second-feet Dec. 19, 20 (gage height, 4.47 feet); no flow Nov. 10 to Dec. 6, Feb. 26, 27, Aug. 10–19.

1903–33: Maximum, 18,700 second-feet Nov. 15, 1906 (gage height, 14.05 feet; no flow Sept. 28, 1914, Nov. 10 to Dec. 6, 1932, Feb. 26, 27, Aug. 10–19, 1933. Average, 30 years (1903–33), 900 second-feet.

REMARKS.—Records excellent. No diversions above station. Flow partly controlled at Cle Elum Lake Reservoir. Records furnished by United States Bureau of Reclamation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	198	447	0	2,550	783	362	346	1,680	2,180	2,480	2,480	11
2	192	437	0	2,440	754	350	375	1,680	2,180	2,480	2,380	11
3	189	437	0	2,390	714	346	419	1,680	2,180	2,480	2,380	11
4	186	447	0	2,330	647	337	465	1,680	2,280	2,480	2,330	11
5	180	460	0	2,220	610	325	528	1,640	2,330	2,480	2,280	11
6	178	484	0	2,170	563	317	610	1,640	2,380	2,480	2,230	11
7	175	484	268	2,120	523	314	675	1,600	2,430	2,480	2,180	11
8	169	503	475	2,120	499	306	754	1,560	2,430	2,530	2,140	11
9	163	318	1,140	2,120	470	298	754	1,560	2,480	2,480	763	11
10	163	0	1,140	2,120	437	294	783	1,520	2,480	1,200	0	11
11	158	0	1,140	2,070	419	290	783	1,520	2,380	1,810	0	12
12	158	0	1,140	2,020	410	290	783	1,520	2,330	3,080	0	12
13	152	0	1,140	1,970	397	283	783	1,560	2,330	3,080	0	12
14	158	0	1,140	1,920	375	283	783	1,640	2,380	3,080	0	12
15	163	0	1,140	1,870	367	276	813	1,680	2,430	3,080	0	12
16	186	0	1,140	1,780	358	272	783	1,680	2,480	3,080	0	12
17	208	0	1,100	1,730	341	272	813	1,680	2,530	3,080	0	12
18	218	0	1,100	1,650	329	272	813	1,680	2,530	3,080	0	12
19	224	0	2,250	1,600	325	272	813	1,680	2,580	3,080	0	12
20	231	0	3,230	1,520	314	276	843	1,680	2,580	2,970	6	12
21	234	0	3,160	1,440	314	280	845	1,680	2,580	2,970	11	463
22	251	0	3,160	1,400	317	283	872	1,680	2,580	2,880	11	695
23	280	0	3,160	1,320	321	287	928	1,680	2,530	2,880	11	695
24	294	0	3,100	1,240	321	290	1,010	1,720	2,480	2,880	11	695
25	302	0	3,100	1,170	186	290	1,100	1,760	2,480	2,750	6	672
26	321	0	3,040	1,140	0	290	1,200	1,840	2,480	2,750	6	610
27	350	0	2,970	1,070	0	290	1,300	1,920	2,480	2,700	6	550
28	367	0	2,850	1,000	317	298	1,480	1,960	2,480	2,700	6	550
29	428	0	2,790	937	------	298	1,560	2,000	2,480	2,640	6	550
30	437	0	2,670	874	------	306	1,640	2,100	2,480	2,590	6	550
31	442	------	2,610	843	------	314	------	2,140	------	2,530	6	------

Month	Observed				Gain or loss in storage in Lake Cle Elum (acre-feet)	Corrected for storage			
	Discharge in second-feet			Run-off in acre-feet		Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October	442	152	237	14,600	+4,580	19,200	312	1.54	1.78
November	503	0	134	7,970	+104,000	112,000	1,880	9.31	10.39
December	3,230	0	1,620	99,500	−34,700	64,800	1,050	5.20	6.00
January	2,550	843	1,710	105,000	−61,300	43,700	711	3.52	4.06
February	783	0	408	22,600	−8,640	14,000	252	1.25	1.30
March	362	272	299	18,400	−1,050	17,400	283	1.40	1.61
April	1,640	346	855	50,900	+27,300	78,200	1,310	6.49	7.24
May	2,140	1,520	1,710	105,000	+24,800	130,000	2,110	10.4	11.99
June	2,580	2,180	2,430	145,000	+59,800	205,000	3,450	17.1	19.08
July	3,080	1,200	2,680	165,000	−36,300	129,000	2,100	10.4	11.99
August	2,480	0	621	38,200	+1,680	39,900	649	3.21	3.70
September	695	11	209	12,400	+14,300	26,700	449	2.22	2.48
The year	3,230	0	1,080	785,000	+94,500	880,000	1,220	6.04	81.62

BUMPING RIVER NEAR NILE, WASH.

LOCATION.—Water-stage recorder a quarter of a mile below spillway of Bumping Lake Dam and 19 miles west of Nile.

DRAINAGE AREA.—68 square miles.

RECORDS AVAILABLE.—June to July 1906, April 1909 to September 1933.

DISCHARGE.—Maximum during year, 2,140 second-feet June 15 (gage height, 5.57 feet); minimum, about 1 second-foot Oct. 19–21; minimum gage height, 0.93 foot Oct. 21.

1906, 1909–33: Maximum, 5,180 second-feet Dec. 29, 1917 (gage height, 9.33 feet); practically no flow when gates in outlet conduit are closed. Average, 24 years (1909–33), 289 second-feet.

REMARKS.—Records excellent. No diversions above station. Flow partly regulated by Bumping Lake Reservoir. Records furnished by United States Bureau of Reclamation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	160	2	296	296	260	210	93	158	908	1,040	394	371
2	71	3	315	296	260	210	93	158	841	1,110	371	371
3	65	2	315	296	260	207	95	158	978	1,110	371	371
4	55	2	315	296	260	207	95	158	1,190	1,110	371	371
5	55	4	315	296	260	204	97	158	1,340	1,040	418	371
6	55	4	315	296	260	201	97	158	1,410	1,110	371	371
7	31	3	315	296	260	198	97	158	1,260	1,110	349	371
8	10	3	315	296	242	196	97	155	1,410	1,180	371	371
9	2	3	315	296	242	193	97	155	1,550	1,180	371	371
10	2	2	315	296	242	190	97	155	1,260	1,040	371	371
11	2	2	315	296	242	187	99	158	1,050	1,040	371	371
12	2	3	315	296	242	184	99	158	1,050	1,110	371	371
13	2	12	315	296	242	184	99	163	1,410	1,180	371	371
14	2	7	315	296	226	181	99	165	1,910	1,180	371	371
15	2	6	315	277	226	91	101	168	2,070	1,250	371	371
16	2	126	315	277	226	91	101	171	2,010	1,250	371	371
17	2	260	315	277	226	91	101	171	1,740	1,110	371	371
18	2	296	315	277	226	91	101	173	1,530	1,040	371	371
19	1	296	315	277	226	91	101	173	1,320	900	371	371
20	1	296	315	277	226	91	101	173	1,250	830	371	371
21	1	296	315	277	226	91	103	176	1,180	763	371	371
22	2	296	315	277	226	89	105	178	1,180	698	371	371
23	2	296	315	277	210	91	109	181	1,180	667	371	371
24	2	296	315	277	210	91	113	184	1,180	667	371	371
25	146	296	296	277	210	91	118	190	1,180	667	371	371
26	220	296	296	277	210	91	122	204	1,250	636	371	371
27	2	296	296	277	210	93	129	210	1,250	577	371	371
28	2	296	296	277	210	93	143	210	1,250	52[illegible]	371	234
29	2	296	296	260	------	95	153	226	1,180	49[illegible]	371	108
30	2	296	296	260	------	93	155	277	1,110	468	371	114
31	2	------	296	260	------	93	------	746	------	418	371	------

Month	Observed				Gain or loss in storage in Bumping Lake (acre-feet)	Corrected for storage			
	Discharge in second-feet			Run-off in acre-feet		Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October	220	1	29.3	1,800	+1,920	3,720	60.5	0.890	1.03
November	296	2	143	8,510	+18,900	27,400	460	6.76	7.54
December	315	296	310	19,100	−1,360	17,700	288	4.24	4.89
January	296	260	284	17,500	−5,840	11,700	190	2.79	3.22
February	260	210	234	13,000	−7,380	5,620	101	1.49	1.55
March	210	89	139	8,550	−2,630	5,920	96.3	1.42	1.64
April	155	93	107	6,370	+5,980	12,400	208	3.06	3.41
May	746	155	194	12,000	+20,700	32,700	532	7.82	9.02
June	2,070	841	1,310	78,200	+638	78,800	1,320	19.4	21.64
July	1,250	418	919	56,500	−851	55,600	904	13.3	15.33
August	418	349	373	22,900	−8,980	13,900	226	3.32	3.83
September	371	108	349	20,800	−12,500	8,300	139	2.04	2.28
The year	2,070	1	366	265,000	+8,600	274,000	378	5.56	75.38

TIETON RIVER AT TIETON DAM, NEAR NACHES, WASH.

LOCATION.—Water-stage recorder 800 feet above Wild Cat Creek, 1,900 feet below Tieton Dam, and 22 miles southwest of Naches. Prior to Apr. 24, 1933, water-stage recorder 700 feet downstream was used.

DRAINAGE AREA.—187 square miles.

RECORDS AVAILABLE.—August 1908 to September 1914 (fragmentary); October 1918 to March 1919; April 1925 to September 1933.

DISCHARGE.—Maximum during year, 6,180 second-feet (estimated) June 10 (gage height, 8.10 feet); minimum, 5 second-feet Apr. 19, 24 (gage height, 0.95 foot Apr. 19; 0.60 foot Apr. 24, new datum).

1908–14, 1918–19, 1925–33: Maximum, that of June 10, 1933; no flow Apr. 4–6, 10, 1930.

Gage height, 9.5 feet (datum used prior to Apr. 24, 1933) Dec. 18, 19, 1917 (discharge, 8,400 second-feet), reported by Bureau of Reclamation engineers.

REMARKS.—Records excellent except those for extremely low stages. No diversions. Flow regulated at Tieton Reservoir. Records furnished by United States Bureau of Reclamation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	428	249	498	282	292	285	292	6	1,240	1,340	815	1,090
2	428	230	498	279	292	285	301	8	1,110	1,290	808	1,090
3	424	230	498	279	292	285	318	70	1,290	1,290	808	1,080
4	424	230	498	285	292	285	321	71	1,490	1,290	808	1,080
5	424	238	498	285	292	285	314	81	1,540	1,290	792	1,080
6	456	241	522	285	292	285	135	88	1,700	1,240	792	1,080
7	474	235	517	292	292	285	25	93	1,640	1,070	800	1,080
8	474	238	512	304	292	285	19	100	1,700	1,070	800	1,080
9	474	241	508	304	418	285	15	108	1,920	1,200	800	1,090
10	474	238	493	301	522	285	11	122	2,040	1,200	900	1,090
11	474	238	503	298	522	285	8	130	1,900	1,160	1,080	1,090
12	424	249	388	295	522	285	6	132	2,000	1,240	1,070	1,090
13	373	308	270	298	522	285	7	134	2,300	1,290	1,050	1,080
14	373	270	282	311	522	285	15	134	3,100	1,390	1,000	1,090
15	373	273	282	308	522	285	16	134	3,180	1,440	1,000	1,090
16	373	318	282	304	522	285	9	134	2,820	1,440	1,000	1,090
17	373	361	285	304	522	285	7	139	2,640	1,290	1,030	1,090
18	350	336	285	304	522	285	7	139	2,300	1,160	1,090	1,070
19	314	426	261	282	522	285	6	152	1,700	1,060	1,200	1,070
20	314	527	255	270	522	285	10	174	1,340	1,030	1,200	1,070
21	292	594	258	298	424	285	18	174	1,390	1,000	1,200	1,070
22	270	739	267	298	285	285	36	174	1,200	932	1,160	1,070
23	270	733	261	298	282	285	48	174	1,160	908	1,100	1,080
24	267	727	267	301	285	288	5	176	1,200	916	1,060	1,080
25	270	727	267	301	282	288	6	195	1,390	908	1,060	1,070
26	172	722	267	304	285	288	6	230	1,440	908	1,090	1,070
27	270	722	273	304	285	288	6	230	1,540	884	1,100	1,070
28	273	586	279	273	285	285	6	233	1,540	852	1,100	1,070
29	273	479	279	292	------	288	6	266	1,490	838	1,100	1,070
30	273	451	279	292	------	288	6	800	1,390	822	1,100	1,060
31	273	------	279	292	------	292	------	1,390	------	822	1,090	------

Month	Observed				Gain or loss in storage in Tieton Reservoir (acre-feet)	Corrected for storage			
	Discharge in second-feet			Run-off in acre-feet		Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean				Mean	Per square mile	
October	474	172	359	22,100	−9,110	13,000	211	1.13	1.30
November	739	230	405	24,100	+18,700	42,800	719	3.84	4.28
December	522	255	358	22,000	+3,100	25,100	408	2.18	2.51
January	311	270	294	18,100	+1,000	19,100	311	1.66	1.91
February	522	282	390	21,600	−10,600	11,000	198	1.06	1.10
March	292	285	286	17,600	−4,150	13,400	218	1.17	1.35
April	321	5	66.2	3,940	+28,300	32,200	541	2.89	3.22
May	1,390	6	200	12,300	+42,200	54,500	886	4.74	5.46
June	3,180	1,110	1,760	105,000	−2,760	102,000	1,710	9.14	10.20
July	1,440	822	1,120	68,600	+201	68,800	1,120	5.99	6.91
August	1,200	792	1,000	61,500	−34,000	27,500	447	2.39	2.76
September	1,090	1,060	1,080	64,200	−47,700	16,500	277	1.48	1.65
The year	3,180	5	608	441,000	−14,800	426,000	588	3.14	42.65

TIETON RIVER AT HEADWORKS OF TIETON CANAL, NEAR NACHES WASH.

LOCATION.—Water-stage recorder in sec. 30, T. 14 N., R. 15 E. (unsurveyed), below intake of Tieton Canal and 16 miles southwest of Naches.

DRAINAGE AREA.—240 square miles.

RECORDS AVAILABLE.—April to September 1906 (fragmentary gage-height records); July 1907 to September 1933.

DISCHARGE.—Maximum during year, 6,120 second-feet June 10 (gage height, 8.10 feet); minimum, 4.5 second-feet May 8 (gage height, 1.60 feet).

1907–33: Maximum, 6,150 second-feet Dec. 13, 1921 (gage height, 8.15 feet); no flow Mar. 27, 28, Nov. 25–28, 1926, Apr. 9, 1929, Apr. 14–23, Nov. 20, 21, 1931, Apr. 23, 1932. Average, 22 years (1907–16, 1918–24, 1925–26, 1927–33), 541 second-feet.

REMARKS.—Records good except those for Oct. 2, 3, Dec. 25, Jan. 15–29, Feb. 16, 18–20, Mar. 10–12, which were estimated, and those for periods of extremely low flow. Diversions by Tieton Canal included in monthly discharge table. Flow regulated by Tieton Reservoir, 7 miles above gage. Records furnished by United States Bureau of Reclamation.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	450	269	544	341	328	237	390	41	1,130	1,170	508	853
2	447	245	566	341	328	265	425	28	974	1,100	508	846
3	443	245	560	336	328	314	494	41	1,230	1,080	508	846
4	440	245	549	332	328	314	466	21	1,600	1,080	508	846
5	440	253	554	336	328	318	440	14	1,710	1,080	518	846
6	461	249	578	350	328	318	288	12	1,660	1,020	513	846
7	483	241	560	370	328	318	112	12	1,540	884	513	846
8	483	249	522	415	328	318	86	8	1,770	846	502	846
9	488	249	522	415	478	318	74	10	2,190	1,000	496	846
10	488	245	544	395	608	320	64	18	1,780	967	620	846
11	488	245	544	370	560	323	64	21	1,640	1,120	825	846
12	440	277	415	360	560	325	60	26	1,760	1,320	804	846
13	385	323	293	350	560	328	66	40	2,060	1,190	790	846
14	385	281	301	370	560	328	92	51	2,840	1,170	762	846
15	390	281	293	367	560	328	120	39	2,960	1,270	734	846
16	385	350	293	365	560	332	88	34	2,780	1,320	748	846
17	385	415	297	362	560	355	77	22	2,480	1,140	783	853
18	360	365	305	360	560	365	75	14	2,240	876	860	853
19	323	415	293	357	560	370	60	16	1,660	769	1,010	853
20	323	483	277	354	560	370	48	38	1,180	734	1,050	853
21	314	549	293	352	410	370	61	40	1,270	671	994	853
22	285	706	301	349	285	360	100	46	976	614	924	853
23	285	692	265	346	265	360	125	49	940	584	892	853
24	293	685	265	344	237	360	140	50	976	590	804	860
25	289	685	281	341	237	360	155	105	1,220	590	825	860
26	212	685	297	339	237	360	155	143	1,270	590	860	376
27	305	685	314	336	237	365	194	108	1,370	568	860	900
28	305	530	332	333	237	380	218	125	1,370	535	860	908
29	305	390	341	331	------	380	180	183	1,270	524	860	916
30	305	483	341	328	------	380	84	655	1,220	513	860	967
31	305	------	336	328	------	385	------	1,280	------	502	869	------

Month	Observed				Gain or loss in storage in Tieton Reservoir (acre-feet)	Diverted by Tieton Canal (acre-feet)	Corrected for storage and diversions			
	Discharge in second-feet			Run-off in acre-feet			Run-off in acre-feet	Discharge in second-feet		Run-off in inches
	Maximum	Minimum	Mean					Mean	Per square mile	
October	488	212	377	23,200	−9,110	----------	14,100	229	0.954	1.10
November	706	241	400	23,800	+18,700	1,110	43,600	733	3.05	3.40
December	578	265	393	24,200	+3,100	----------	27,300	444	1.85	2.13
January	415	328	354	21,800	+1,000	----------	22,800	371	1.55	1.79
February	603	237	409	22,700	−10,600	749	12,300	230	.958	1.00
March	385	237	339	20,900	−4,150	227	17,000	276	1.15	1.33
April	494	48	167	9,920	+28,300	2,230	40,400	679	2.83	3.16
May	1,280	8	106	6,530	+42,200	13,300	62,000	1,010	4.21	4.85
June	2,960	940	1,640	97,300	−2,760	17,300	112,000	1,880	7.83	8.74
July	1,320	502	884	54,400	+201	17,900	72,500	1,180	4.92	5.67
August	1,050	496	747	45,900	−34,000	18,800	30,700	499	2.08	2.40
September	967	846	860	51,200	−47,700	16,200	19,700	331	1.38	1.54
The year	2,960	8	555	402,000	−14,800	87,800	475,000	656	2.73	37.11

NORTH FORK OF AHTANUM CREEK NEAR TAMPICO, WASH.

LOCATION.—Water-stage recorder in NW¼ sec. 2, T. 12 N., R. 15 E., 100 feet below Nasty Creek and 3½ miles northwest of Tampico.

DRAINAGE AREA.—69 square miles.

RECORDS AVAILABLE.—August 1907 to September 1924, March 1931 to September 1933.

DISCHARGE.—Maximum during year, 433 second-feet June 14 (gage height, 3.76 feet); minimum, 9.0 second-feet Jan. 16, 17 (gage height, 1.64 feet).

1907–24, 1931–33: Maximum, 728 second-feet June 18, 1916 (gage height, 4.6 feet); minimum, 5.9 second-feet Nov. 22, 1931 (gage height, 1.55 feet).

REMARKS.—Records good except those estimated Dec. 8–19, Jan. 20 to Feb. 2, Feb. 6–28, which are fair. No diversions of importance. No regulation. Gage-height record and most of discharge measurements furnished by United States Office of Indian Affairs.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	18	44	17	15	14	44	184	241	202	48	24
2	14	23	43	17	15	14	52	160	236	200	45	24
3	13	18	40	16	14	14	84	144	266	182	44	23
4	13	18	38	18	15	13	88	136	321	176	47	22
5	13	26	34	20	16	13	79	127	324	166	51	24
6	14	30	29	20		14	78	119	316	162	45	26
7	14	20	18	20		15	69	111	292	162	43	24
8	14	24		22		15	63	103	310	157	40	23
9	14	22		21		15	56	95	304	149	39	24
10	15	16		20		15	47	90	278	138	38	24
11	15	18		19		16	50	86	261	136	36	23
12	16	19		19		17	49	92	275	132	34	22
13	18	39		18		18	50	115	330	127	34	22
14	13	31	25	18		19	59	140	388	125	33	22
15	18	28		14		20	73	138	403	117	32	22
16	16	39		9.4		24	70	136	388	113	32	22
17	16	63		11	15	26	64	134	350	103	31	21
18	16	54		18		30	62	136	304	95	30	21
19	16	43		13		32	59	136	278	88	31	21
20	16	38	31			35	64	134	264	79	30	20
21	16	37	25			34	72	138	255	73	29	21
22	16	32	24			32	101	149	247	70	29	25
23	16	30	24			32	136	151	233	66	27	24
24	16	29	23			30	157	166	227	64	26	24
25	16	27	22			30	174	227	236	61	26	23
26	16	27	23	15		30	197	258	233	57	26	24
27	16	32	22			36	244	230	222	56	25	24
28	16	31	21			45	286	238	211	54	26	24
29	16	56	20		------	44	261	278	205	53	26	24
30	15	52	20		------	45	208	313	200	52	27	23
31	16	------	17		------	45	------	266	------	49	26	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	18	13	15.4	0.223	0.26	947
November	63	16	31.3	.454	.51	1,860
December	44	17	26.4	.383	.44	1,620
January	22	9.4	16.5	.239	.28	1,010
February	----------	----------	15.0	.217	.23	833
March	45	13	25.2	.365	.42	1,550
April	286	44	103	1.49	1.66	6,130
May	313	86	159	2.30	2.65	9,780
June	403	200	280	4.06	4.53	16,700
July	202	49	112	1.62	1.87	6,890
August	51	25	34.1	.494	.57	2,100
September	26	20	23.0	.333	.37	1,370
The year	403	9.4	70.1	1.02	13.79	50,800

SOUTH FORK OF AHTANUM CREEK AT CONRAD RANCH, NEAR TAMPICO, WASH.

LOCATION.—Staff gage in W½ sec. 23, T. 12 N., R. 15 E., at Conrad ranch, 2½ miles above North Fork and 2¾ miles southwest of Tampico.

DRAINAGE AREA.—26 square miles.

RECORDS AVAILABLE.—March 1915 to September 1924, March 1931 to September 1933.

DISCHARGE.—Maximum during year, 110 second-feet June 16 (gage height, 1.43 feet); minimum occurred during winter.

1915–24, 1931–33: Maximum, 216 second-feet June 19, 1916 (gage height, 3.1 feet); minimum, 2.6 second-feet Aug. 23, 25, 1931 (gage height, 0.35 foot).

REMARKS.—Records good except those estimated because of ice Dec. 7–22, Jan. 18–20, Feb. 10–17. Small irrigation diversion above gage. Gage-height record and most of discharge measurements furnished by United States Office of Indian Affairs.

Discharge, in second-feet, 1932–33

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.9	6.5	9.7	5.3	5.3	5.6	18	48	62	39	13	8.1
2	5.9	7.3	9.3	5.3	5.3	5.6	22	41	64	36	13	8.5
3	5.9	6.5	8.9	5.3	5.3	5.6	29	36	65	35	13	8.1
4	5.3	5.9	8.9	5.9	5.3	5.6	31	34	72	34	13	8.1
5	5.3	9.3	8.5	6.5	5.3	5.6	29	32	79	32	14	8.9
6	5.6	8.9	8.1	6.5	4.7	5.6	27	31	78	32	14	8.9
7	5.6	6.5		6.2	4.7	5.9	26	30	75	32	13	8.9
8	5.6	8.1		6.5	4.7	5.9	22	27	77	30	13	8.9
9	5.6	7.3	7.0	6.5	4.7	5.9	20	26	74	27	12	8.9
10	5.9	6.5		5.9		6.2	17	26	72	27	12	8.9
11	5.9	6.5		6.2		6.5	15	24	71	26	11	8.1
12	5.9	6.5		6.2		7.3	17	24	71	25	11	8.1
13	6.2	12		5.9	4.5	8.1	17	26	81	23	11	7.7
14	6.5	8.9	6.0	5.9		8.1	19	30	91	22	11	8.1
15	6.2	8.1		5.9		9.7	23	31	102	21	11	8.1
16	6.2	9.7		5.9		11	26	31	110	19	11	8.1
17	6.2	11		5.9		12	22	29	98	18	9.7	7.7
18	6.2	9.7			4.7	12	21	29	88	18	9.7	7.3
19	6.2	9.7		6.0	4.7	13	19	31	82	19	9.7	7.3
20	5.9	8.5	6.5		4.7	14	21	31	71	18	9.7	7.3
21	5.9	8.1		5.9	4.7	14	23	31	71	17	9.7	7.3
22	5.6	8.1		5.9	5.0	14	27	32	67	17	9.3	8.1
23	5.9	7.3	6.5	5.9	5.0	12	34	33	64	17	8.9	7.7
24	5.9	7.3	6.5	5.9	4.7	12	39	35	58	17	8.9	7.3
25	5.9	7.3	6.5	5.9	5.0	12	46	44	60	17	8.9	7.7
26	5.9	7.3	6.5	5.9	5.6	12	48	53	60	15	8.9	7.3
27	5.9	8.1	5.9	5.9	5.6	18	54	50	57	15	8.9	7.3
28	5.9	8.1	5.3	5.6	5.9	23	60	52	50	14	8.9	7.3
29	5.9	9.7	5.3	5.6	-------	20	62	61	48	14	8.9	7.7
30	5.9	11	5.6	5.3	-------	21	54	72	44	14	8.9	7.3
31	5.9	-------	5.3	5.3	-------	19	-------	71	-------	13	8.9	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	6.5	5.3	5.89	362
November	12	5.9	8.19	487
December	9.7	5.3	6.80	418
January	6.5	5.3	5.90	363
February	5.9	----------	4.89	272
March	23	5.6	10.8	664
April	62	15	29.6	1,760
May	72	24	37.1	2,280
June	110	44	72.1	4,290
July	39	13	22.7	1,400
August	14	8.9	10.8	664
September	8.9	7.3	7.97	474
The year	110	----------	18.6	13,400

MISCELLANEOUS DISCHARGE MEASUREMENTS

In addition to the records of stream flow obtained at gaging stations and reported in the preceding pages, measurements of flow were made at other points as shown by the following table:

Miscellaneous discharge measurements in Pacific slope basins in Washington and Upper Columbia River Basin during the year ending Sept. 30, 1933

Willapa River Basin

Date	Stream	Tributary to or diverting from—	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
Aug. 1	Willapa River	Willapa Bay	SW ¼ sec. 35, T. 14 N., R. 8 W., 2 miles south of Willapa, Wash.		51.7
30	do	do	do		47.6
1	Fairchild Creek	Willapa River	SW ¼ sec. 14, T. 14 N., R. 8 W., ⅛ mile north of Willapa Wash.		8.1

Queets River Basin

May 22	Queets River	Pacific Ocean	Kilea ranger station near Clearwater, Wash.	2.60	1,390

Skokomish River Basin

June 30	Cushman Lake spillway.	North Fork of Skokomish River.	Outlet of Lake Cushman, 4 miles west of Hoodsport, Wash.		664
Oct. 18	South Fork of Skokomish River.	Skokomish River	Former gaging station near Potlatch, Wash.	2.11	225

Nisqually River Basin

Oct. 12	Tacoma power conduit.	Left side of Nisqually River.	Former gaging station near La Grande, Wash.	7.36	570
Jan. 24	do	do	do	2.20	93.3
Oct. 7	Ohop Creek	do	Former gaging station near Eatonville, Wash.	.56	3.9

Skagit River Basin

Apr. 22 [a]	Skagit River	Skagit Bay	Former station below Ruby Creek, near Marblemount, Wash.	6.39	3,430
Aug. 11 [a]	do	do	Ferry Bar, 5 miles above Newhalem, Wash.	8.75	2,660
Oct. 13 [a]	do	do	do	8.34	2,310
Apr. 26 [a]	do	do	do	12.70	7,650

Nooksack River Basin

Sept. 10	South Fork of Nooksack River.	Nooksack River	¼ mile above Lyman Timber Co.'s railroad bridge, sec. 24, T. 36 N., R. 6 E., near Hamilton, Wash.		135
13	do	do	1,000 feet above Edfro Creek, near Wickersham, Wash.		135
Aug. 17	Skookum Creek	South Fork of Nooksack River.	300 feet above mouth, near Wickersham, Wash.		51.8
Sept. 13	do	do	do		29.6

Kootenai River Basin

Dec. 21	Kootenai River	Columbia River	Grohman Narrows, 2 miles below Nelson, British Columbia. Measurements referred to gage 10 at Nelson. Gage is station 8NJ9 of the Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.	41.03	11,100
Feb. 7	do	do	do	40.01	7,790
8	do	do	do	39.99	7,710
Mar. 28	do	do	do	39.90	7,560
Apr. 18	do	do	do	40.94	11,200
May 1	do	do	do	45.18	30,200
31	do	do	do	51.62	72,800
June 6	do	do	do	54.17	90,100
9	do	do	do	55.15	102,000
12	do	do	do	55.36	104,000
15	do	do	do	55.86	108,000
21	do	do	do	58.33	130,000

[a] Furnished by city of Seattle.

Miscellaneous discharge measurements in Pacific slope basins in Washington and Upper Columbia River Basin during the year ending Sept. 30, 1923—Contd.

Kootenai River Basin—Continued

Date	Stream	Tributary to or diverting from—	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
June 24	Kootenai River	Columbia River	Grohman Narrows, 2 miles below Nelson, British Columbia. Measurements referred to gage 10 at Nelson. Gage is station 8NJ9 of the Dominion Water Power and Hydrometric Bureau, Department of the Interior Canada.	58.32	131,000
26	do	do	do	58.04	125,000
28	do	do	do	57.69	125,000
July 1	do	do	do	57.04	121,000
5	do	do	do	56.19	111,000
10	do	do	do	55.14	102,000
12	do	do	do	54.71	98,700
15	do	do	do	54.12	94,100
19	do	do	do	53.06	83,800
Aug. 2	do	do	do	48.89	54,700
16	do	do	do	46.15	37,700
Sept. 14	do	do	do	[b] 43.20	21,100
27	do	do	do	42.51	17,900
June 8	do	do	Taghum Bridge, near Nelson, British Columbia.	[c] 54.94	107,000
July 8	do	do	do	[c] 55.51	109,000
Feb. 9	do	do	Glade, British Columbia (station of Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada).	1.67	8,000
Mar. 29	do	do	do	1.88	8,470
Apr. 19	do	do	do	3.21	12,900
May 2	do	do	do	8.28	37,900
18	do	do	do	10.80	57,300
30	do	do	do	13.82	85,200
June 5	do	do	do	15.91	107,000
13	do	do	do	16.86	117,000
16	do	do	do	18.86	136,000
20	do	do	do	19.70	146,000
23	do	do	do	19.94	149,000
27	do	do	do	19.25	144,000
30	do	do	do	18.74	136,000
July 7	do	do	do	17.37	121,000
11	do	do	do	16.70	114,000
20	do	do	do	14.68	92,300
Aug. 3	do	do	do	10.92	58,100
17	do	do	do	8.60	39,600
Sept. 14	do	do	do	5.52	22,400
27	do	do	do	4.93	19,400
May 18	Sproule Creek	Kootenai River	150 yards above mouth, near Granite, British Columbia.	------	149
18	Fortynine Creek	do	Upper bridge a quarter of a mile above mouth, near Bonnington Falls, British Columbia.	------	39.1
Dec. 22	Slocan River	do	Near Crescent Valley, British Columbia, station of Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.	3.26	1,190
Feb. 9	do	do	do	2.06	424
May 16	do	do	do	7.68	6,790
30	do	do	do	10.20	11,900
June 17	do	do	do	13.56	20,300
July 3	do	do	do	10.84	13,600
14	do	do	do	9.81	11,100
18	do	do	do	9.20	9,770
Aug. 3	do	do	do	6.28	4,470
17	do	do	do	5.10	3,020
Sept. 15	do	do	do	4.26	2,080
28	do	do	do	3.86	1,710
Mar. 29	do	do	Near Shoreacres, British Columbia, station of Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.	.81	1,000
Apr. 19	do	do	do	1.37	1,410
May 2	do	do	do	3.58	4,810
May 16	Goose Creek	Slocan River	Quarter of a mile above mouth, near Crescent Valley, British Columbia.	------	193

[b] From W. K. P. & L. Co. gage. Gage 10 not in operation. [c] Referred to gage 1.

Miscellaneous discharge measurements in Pacific slope basins in Washington and Upper Columbia River Basin during the year ending Sept. 30, 1933—Contd.

Clark Fork Basin

Date	Stream	Tributary to or diverting from—	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
Oct. 30	Sullivan Creek	Clark Fork	¼ mile above mouth, at Metaline Falls, Wash.		48.6
June 8	do	do	do		900
13	do	do	do		961
16	do	do	do		1,500
23	do	do	do		670

Sheep Creek Basin

June 19[d]	Big Sheep Creek	Sheep Creek	Canadian gaging station near Rossland, British Columbia.	2.80	527
July 18[d]	do	do	do	1.42	67
Sept. 9[d]	do	do	do	.97	26

Kettle River Basin

Apr. 19	Deep Creek	Kettle River	50 feet above road bridge near mouth, near Laurier, Wash.		17.6
Oct. 26[d]	Christina Creek	do	Highway crossing near Cascade, British Columbia.		(*)
May 14[d]	do	do	do		949
June 17	do	do	do		237
19[d]	do	do	do		985
July 19[d]	do	do	do		242

Similkameen River Basin

June 5	Palmer Creek	Similkameen River	Highway crossing near Nighthawk, Wash.	6.72	536

Wenatchee River Basin

June 27	Wenatchee River	Columbia River	Bridge at outlet of Lake Wenatchee, near Telma, Wash.	4.74	4,490
28	Nason Creek	Wenatchee River	Highway crossing in sec. 33, T. 27 N., R. 17 E., near Merrit, Wash.		1,290
28	Chiwawa River	do	Highway crossing near Plain, Wash.		2,140

Yakima River Basin

Oct. 10	Union Gap Canal	Left side Yakima River.	1 mile above inland Empire Highway crossing of Yakima, near Union Gap, Wash.		21.3
Apr. 27	do	do	do		39.2
29	do	do	do		42.3
May 13	do	do	do		41.6
June 3	do	do	do		38.9
Sept. 30	do	do	do		24.1
Oct. 11	Toppenish Creek	Yakima River	Northern Pacific Railway crossing 5 miles southeast of Toppenish, Wash.	2.30	93.2
Sept. 29	do	do	do	2.45	128
Oct. 11	Reservation Drain	do	Former gaging station at Alfalfa, Wash.	4.37	421
Sept. 29	do	do	do	4.84	559
Oct. 11	Satus Creek	do	At Satus, Wash	1.29	35.3
Sept. 29	do	do	do	1.37	36.7
Dec. 5	Prosser power canal	Left side Yakima River.	At bridge above spillway near Prosser, Wash.		1,130

[d] Furnished by Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.
* No flow.

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