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

Water-Supply Paper 902

SURFACE WATER SUPPLY *of the* UNITED STATES

1940

PART 12

PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN

Prepared under the direction of
GLENN L. PARKER, Chief Hydraulic Engineer
AND OF T. R. NEWELL, A. H. TUTTLE, AND F. M. VEATCH, District Engineers

In cooperation with the States of
IDAHO, MONTANA, AND WASHINGTON
and other agencies

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1941

For sale by the Superintendent of Documents, Washington, D. C. - - - Price 30 cents (paper cover)

Some of the pages of this report carry at the bottom a form number and other matter that should have been masked out before the pages were photographed for printing by the offset method. Although this mars the appearance, it does not impair the integrity of the tables. As withholding for change would involve considerable delay and added expense to the Government, the Geological Survey is releasing the report with regret for its appearance.

DECEMBER 1941.

CONTENTS

Gaging-station records--Continued.

ILLUSTRATION

SURFACE WATER SUPPLY OF PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER BASIN, 1940

SCOPE OF WORK

This volume is one of a series of 14 reports presenting results of measurements of stage and flow made on streams, lakes, and reservoirs in the United States during the water year ending September 30, 1940. The work was begun in 1888 in connection with special studies relating to irrigation. Measurements of the flow of streams and of the stage and contents of lakes and reservoirs have been made at about 8,800 gaging stations in the United States and also at many gaging stations in Alaska and Hawaii. In July 1940, 4,760 gaging stations were being maintained by the Geological Survey and cooperating organizations. Miscellaneous discharge measurements were made at many other points.

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

DEFINITION OF TERMS

The units in which stream-flow data are presented in this report and other terms used herein are defined as follows:

"Second-feet" is an abbreviation for "cubic feet per second." A second-foot is the rate of discharge of a stream whose channel is 1 square foot in cross-sectional area and whose average velocity is 1 foot per second.

"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 draining from it in a given period were uniformly distributed on its surface. It is used for comparing run-off with rainfall, which is usually expressed in inches.

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

"Second-foot-day" is the volume of water represented by a flow of 1 second-foot for 24 hours. It is equivalent to 86,400 cubic feet, 1.983471 acre-feet, or 646.317 gallons and represents a run-off of 0.0372 inch from one square mile.

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

"Control" is a term used to designate a feature below the gage that defines the stage-discharge relation at the gage. This feature may be a natural section, a reach of the channel, or an artificial structure.

EXPLANATION OF DATA

The base data collected at gaging stations consist of records of stage, measurements of discharge, and general information used to supplement the records of stage and discharge

measurements in determining the daily flow. The records of stage are obtained either from direct readings on a nonrecording 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. Typical structures in use at gaging stations are shown on plate 1.

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

For most of the gaging stations in the area covered by this report the data presented 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. Skeleton rating tables are published except for those stations whose daily discharge for the greater part of the year was determined by the shifting-control method, the slope method, or other special methods.

The description of the station gives the type of gage, its latitude and longitude determined from the best available maps, and information in regard to diversions that decrease the flow at the gage, artificial regulation from pondage or storage, and the accuracy of the records. Under "Average discharge" is given the average discharge for the number of years indicated. It is given only for stations for which there are 10 or more complete years of record. Under "Extremes" are given the maximum discharge and gage height; the minimum discharge if there is little or no regulation; the minimum daily discharge if there is extensive regulation (also the minimum discharge if useful); and the minimum gage height (unless it is of no importance). Unless otherwise qualified, the maximum discharge corresponds to the crest stage, obtained by use of a water-stage recorder or a nonrecording gage read at the time of the crest. Likewise the minimum discharge represents the lowest stage, unless otherwise qualified. The peak discharge for the year with the time of its occurrence is given below the table of monthly discharge for some stations. Selected lower peaks are also given if the peak discharge exceeded the mean discharge for that day by more than 10 percent. This supplementary information is generally not given for stations having drainage areas of less than 10 square miles or more than 10,000 square miles.

The table of daily discharge gives, for stations equipped with nonrecording gages, the discharge in second-feet corresponding to once-daily readings of the gage or the mean of twice-daily readings. For flashy floods the mean daily discharge is determined from gage-height graphs based on gage readings made once or twice daily or oftener, as stated in the station description. For stations equipped with water-stage recorders, except those on streams subject to sudden or rapid fluctuation, the table gives the discharge corresponding to the mean daily gage height. For stations subject to such fluctuation the mean daily gage height may not indicate the true mean daily discharge, which must be obtained by averaging the discharge for intervals of the day or by using the discharge integrator, an instrument for obtaining the mean daily discharge from a continuous gage-height graph and containing as an essential element the rating curve of the station.

At some gaging stations the stage-discharge relation is affected by backwater from reservoirs, tributary streams, or other sources, which necessitates the use of the slope or fall in a reach of the stream as a factor in the determination of discharge. Information requisite for determining the slope or fall is obtained by means of an auxiliary

A. PUYALLUP RIVER AT PUYALLUP, WASH.

B. COLUMBIA RIVER AT GRAND COULEE, WASH.

GAGING-STATION STRUCTURES.

gage set at some distance from the base gage. The auxiliary gage, if one is used, is described under "Location." At some stations the stage-discharge relation is affected by changing stage, and for them the rate of change of stage is used as a factor in the determination of discharge.

At most gaging stations in the northern part of the United States and at some in the mountainous regions of other parts the stage-discharge relation is affected by ice during the winter, which makes it impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of occasional winter discharge measurements and gage heights, consideration being given to the available information on temperature and precipitation, notes by gage observers and engineers, and comparable records of discharge for stations in the same or nearby basins. The days included in the periods of ice effect and the days during the winter period on which discharge measurements were made are indicated in the table by symbols referring to footnotes.

In the table of monthly discharge the column headed "Second-foot-days" gives the sum for each month of the figures for that month given in the table of daily discharge. The column headed "Maximum" gives the maximum daily discharge and not the instantaneous discharge when the water surface was at crest stage. Likewise, in the column headed "Minimum" the quantity given is the minimum daily discharge. The column headed "Mean" gives the average flow in cubic feet per second during the month.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of stream-flow data depends primarily on (1) the permanency of the stage-discharge relation and (2) 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 or a higher percent.

Yield at some stations as indicated by monthly means may vary widely from natural yield, owing to diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or other factors. For such stations figures of "second-feet per square mile" and "run-off in inches" are not published unless storage or diversion records are included indicating the extent of the regulation or diversion or unless satisfactory adjustments can be made for changes in contents of reservoirs or for other changes incident to use and control. Figures of second-feet per square mile and run-off in inches are also omitted if the drainage area includes large noncontributing areas or if the average annual rainfall over the drainage area is less than 20 inches.

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

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, and that greater degrees of refinement in computations and records may be warranted with the increase in data and the use of improved equipment.

PUBLICATIONS

The results of stream-flow measurements are now published annually in 14 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. Pacific slope basins in Washington and upper Columbia River Basin.
13. Snake River Basin.
14. Pacific slope basins in Oregon and lower Columbia River Basin.

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

East of the Mississippi River:
Albany. N. Y., 526 Federal Building.
Asheville, N. C., 220 Post Office Building.
Atlanta, Ga., 5 North Rhodes Center.
Augusta, Maine, Statehouse.
Boston, Mass., 945 Post Office Building.
Charlottesville, Va., House G, Dawson Row, University of Virginia.
Chattanooga, Tenn., 442 Post Office Building.
College Park, Md., Engineering Building, University of Maryland.
Columbia, S. C., 119 United States Courthouse.
Columbus, Ohio, 404 Engineering Experiment Station, Ohio State University.
Harrisburg, Pa., 490 Education Building.
Hartford, Conn., 225 Capitol Building, 410 Asylum Street.
Indianapolis, Ind., 316 Federal Building.
Louisville, Ky., 652 Federal Building.
Madison, Wis., 666 State Office Building.
Montgomery, Ala., 507 Post Office Building.
Ocala, Fla., 302 Post Office Building.
St. Paul, Minn., 808 New Post Office Building.
South Charleston, W. Va., Armor Park School Building.
Trenton, N. J., 228 Federal Building.
Urbana, Ill., 14 Post Office Annex, Elm Street.

West of the Mississippi River:
Austin, Tex., 300 State Highway Building.
Boise, Idaho, 429 Federal Building.
Denver, Colo., 230 Customhouse.
Fort Smith, Ark., 6 Post Office Building.
Helena, Mont., 408 Federal Building.
Honolulu, Hawaii, 225 Federal Building.
Idaho Falls, Idaho, 204 Federal Building.
Iowa City, Iowa, 508 Hydraulic Laboratory, University of Iowa.
Los Angeles, Calif., G-31 United States Post Office and Courthouse.
Portland, Oreg., 606 Post Office Building.

Rolla, Mo., Missouri Geological Survey Building, Missouri School of Mines and Metallurgy.
St. Louis, Mo., 926 New Federal Building.
Salt Lake City, Utah, 303 Federal Building.
San Francisco, Calif., 465 Federal Office Building.
Santa Fe, N. Mex., 204 United States Courthouse.
Tacoma, Wash., 1100 Washington Building.
Topeka, Kans., 305 Federal Building.
Tucson, Ariz., 210 Post Office Building.

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

Records of flow of streams in the United States have been published in the reports tabulated as follows:

Stream-flow data in reports of the 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	....do.....	1884 to Dec. 31, 1892.
14th A, pt. 2	Monthly discharge (long-time records, 1871-93)..	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 of streams east of the Mississippi River and Missouri River and tributaries above Kansas River.	1897.
W 16.....	Descriptions, measurements, and gage heights of streams west of the Mississippi River except Missouri River and tributaries above Kansas River.	1897.
19th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also some long-time records).	1897.
W 27.....	Measurements, ratings, and gage heights of streams east of the Mississippi River and Missouri River and tributaries.	
W 28.....	Measurements, ratings, and gage heights of streams west of the Mississippi River except Missouri River and tributaries.	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.

Note.- Reports containing records for years after 1901 are given in table on page 6.

The table on the following page gives, by years and drainage basins, the numbers of the papers on surface water supply published from 1899 to 1940. The data for any particular station will, in general, be found in the reports covering the years during which the station was maintained. For example, the data for 1910 to 1920 for any station in the area covered by part 3 are published in Water-Supply Papers 283, 303, 323, 353, 403, 433, 453, 473, 503, which contain records for the Ohio River Basin for those years.

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, the streams and points of measurement listed appearing in the same relative order as the streams and gaging stations in the body of the report. An index of the records obtained prior to 1904 has been published in Water-Supply Paper 119.

Numbers of water-supply papers containing results of stream measurements, 1899-1940

(For basins included see p. 4)

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1899 a...	35	b35, 36	36	36	36	c36, 37	37	37	d37, 38	38, e39	38, f39	38	38	38
1900 g...	47, h48	48	48, 149	49	49	49, j50	50	50	50	51	51	51	51	51
1901.....	65, 75	65, 75	65, 75	65, 75	k65, 66, 75	66, 75	k65, 66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75
1902.....	82	b82, 83	83	m82, 83	k83, 85	84	k83, 84	84	85	85	85	85	85	85
1903.....	97	b97, 98	98	97	k98, 99, n100	99	k98, 99	99	100	100	100	100	100	100
1904.....	o124, p125, q126	q126, 127	128	129	k128, 130	130, r131	k128, 131	132	133	133, s134	134	135	135	135
1905.....	o165, p166, q167	q167, 168	169	170	171	172	k169, 173	174	175, t177	176, s177	177	178	178	u177, 178
1906.....	o201, p202, q203	q203, 204	205	206	207	208	k205, 209	210	211, t213	212, s213	213	214	214	214
1907-8...	241	242	243	244	245	246	247	248	249	250, s251	251	252	252	252
1909.....	261	262	263	264	265	266	267	268	269	270, s271	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
1934.....	756	757	758	759	760	761	762	763	764	765	766	767	768	769
1935.....	781	782	783	784	785	786	787	788	789	790	791	792	793	794
1936.....	801	802	803	804	805	806	807	808	809	810	811	812	813	814
1937.....	821	822	823	824	825	826	827	828	829	830	831	832	833	834
1938.....	851	852	853	854	855	856	857	858	859	860	861	862	863	864
1939.....	871	872	873	874	875	876	877	878	879	880	881	882	883	884
1940.....	891	892	893	894	895	896	897	898	899	900	901	902	903	904

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 Mojave 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. Monthly discharge for 1900 in 22d Annual Report, part 4.
h Wissahickon and Schuylkill Rivers to James River.
i Scioto River.
j Loup, Platte, and Elkhorn Rivers and tributaries below Platte River.
k Tributaries of Mississippi River from east.
m Lake Ontario and tributaries to St. Lawrence River proper.
n Hudson Bay only.
o New England rivers only.
p Hudson River to Delaware River, inclusive.
q Susquehanna River to Yadkin River, inclusive.
r Platte and Kansas Rivers.
s The Great Basin in California, except Truckee and Carson River Basins.
t Below mouth of Gila River.
u Rogue, Umpqua, and Siletz Rivers only.

From time to time reports have been published that are compilations of records for various areas, usually a single State or drainage basin. These reports contain records previously published (some of which have been revised), as well as some records not contained in the annual series of water-supply papers. The following table gives the numbers and titles of these reports, arranged in alphabetical order by States and drainage basins.

Reports containing compilation of discharge by States and drainage basins

Water-Supply Paper	Year ending	State or drainage basin and title
		STATE
107	1903	Alabama, Water powers of, with an appendix on stream measurements in Mississippi.
298	1912	California, Water resources of, part 1, Stream measurements in Sacramento River Basin.
299	1912	California, Water resources of, part 2, Stream measurements in San Joaquin River Basin.
300	1912	California, Water resources of, part 3, Stream measurements in the Great Basin and Pacific coast river basins.
447	1918	California, southern, Surface water supply of Pacific slope of.
597-E	1927	California, Surface water supply of Sacramento River Basin.
636-D	1927	California, Surface water supply of San Joaquin River Basin.
636-E	1927	California, southern, Surface water supply of Pacific slope basins in.
637-A	1927	California, Surface water supply of minor San Francisco Bay, northern Pacific, and Great basins in.
74	1900	Colorado, Water resources of.
197	1905	Georgia, Water resources of.
415	1915	Massachusetts, Surface waters of.
230	1906	Nebraska, Surface water supply of.
370	1910	Oregon, Surface water supply of.
850	1937	Texas, Summary of records of surface waters of.
424	1916	Vermont, Surface waters of.
492	1919	Washington, Summary of hydrometric data in.
870	1935	Washington, Summary of records of surface waters of.
469	1921	Wyoming, Surface waters of, and their utilization.
		DRAINAGE BASIN
395	1914	Colorado River (Ariz., Colo., N. Mex., Utah, Wyo.) and its utilization.
617	1927	Colorado River, upper (Colo., Utah), and its utilization.
517	1920	Great Salt Lake Basin, Water powers of.
618	1926	Green River (Utah, Wyo.) and its utilization.
198	1906	Kennebec River Basin (Maine), Water resources of.
491	1917	Milk River. (See St. Mary and Milk Rivers.)
536	1920	New-Kanawha River Basin (N. C., Va., W. Va.), Surface water supply of.
279	1909	Penobscot River Basin (Maine), Water resources of.
192	1906	Potomac River Basin (D. C., Md., W. Va.)
358	1913	Rio Grande Basin (Colo., N. Mex., Tex.), Water resources of, 1888-1913.
491	1917	St. Mary and Milk Rivers (Mont., Canada), Water supply of.
109	1904	Susquehanna River Basin (Pa., Md.), Hydrography of.

Records of discharge have been published also in State reports. Some of these are not contained in the publications of the Geological Survey or are revisions of records previously published in its water-supply papers. The following table contains a list of these reports.

State reports containing compilation of records of discharge

State	Year ending	Report	Issued by
Alabama.....	1915	Bull. 17, Water powers of Alabama....	Geological Survey of Alabama.
Arkansas....	1928	Stream-gaging report 1.....	Arkansas Geological Survey.
Connecticut:	1926	Bull. 44, Water resources of Connecticut.	State Geological and Natural History Survey.
Do.....	1933[a]	5th biennial report.....	Connecticut State Water Commission.
Georgia.....	1907	Bull. 16, Water powers of Georgia....	Geological Survey of Georgia.
Do.....	1920[b]	Bull. 38, Water powers of Georgia....	Do.

a Includes records of monthly discharge in second-feet per square mile for years 1912-33.
b Includes records for years 1907-18.

State reports containing compilation of records of discharge--Continued

State	Year ending	Report	Issued by
Illinois....	1911	Water resources of Illinois.....	Rivers and Lakes Commission.
Do.....	1934	Stream-flow data of Illinois.....	Division of Waterways.
Indiana.....	1927	Pub. 72, Surface water supply of Indiana.	Department of Conservation.
Do.....	1930[c]	Pub. 112, Surface water supply of Indiana.	Do.
Iowa.....	1932	Stream-flow records of Iowa.....	Iowa State Planning Board.
Kansas.....	1919	Surface waters of Kansas.....	Kansas Water Commission.
Do.....	1924[d]	....do.....	Do.
Do.....	1928[e]	....do.....	Kansas State Board of Agriculture.
Do.....	1935[f]	Stream-flow data of Kansas.....	Do.
Do.....	1939[g]	....do.....	Do.
Kentucky....	1920	Surface waters of Kentucky.....	Kentucky Geological Survey.
Minnesota...	1912	Water-resources investigation of Minnesota.	State Drainage Commission.
Missouri....	1926	Vol. 20, 2d series, Water Resources of Missouri.	Missouri Geological Survey and Water Resources.
Do.....	1939[h]	Vol. 26, 2d series, Surface waters of Missouri.	Do.
Nebraska....	1914	1st hydrographic report.....	Bureau of Water Power, Irrigation, and Drainage.
Do.....	1928[i]	2d hydrographic report.....	Do.
New Jersey..	1928	Bull. 33, Surface water supply of New Jersey.	Department of Conservation and Development.
Do.....	1934[j]	Special Report 5, Surface Water Supply of New Jersey.	State Water Policy Commission.
New Mexico..	1925	Surface water supply of New Mexico...	Office of the State Engineer.
North Carolina.	1923	Bull. 34, Discharge records of North Carolina Streams.	Department of Conservation and Development.
Do.....	1936[k]	Bull. 39, Discharge records of North Carolina streams.	Do.
Ohio.....	1921[l]	Bull. 73, Ohio stream flow.....	Engineering Experiment Station, Ohio State University.
Do.....	1939[m]	Bull. 200, Compilation of stream-flow records of Ohio.	Department of Agriculture, Division of Conservation and Natural Resources.
Oregon.....	1914	Bull. 4, Water resources of the State of Oregon.	Office of the State Engineer.
Do.....	1924[n]	Bull. 7, Water resources of the State of Oregon.	Do.
Do.....	1930[o]	Bull. 8, Water resources of the State of Oregon.	Do.
Do.....	1936[p]	Bull. 9, Water resources of the State of Oregon.	Do.
Pennsylvania	1911	Report of the Water Supply Commission of Pennsylvania.	Water Supply Commission of Pennsylvania.
Do.....	1932[q]	Stream-flow records of Pennsylvania..	Department of Forests and Waters.
Tennessee...	1924	Bull. 34, Water resources of Tennessee.	Department of Education.
Do.....	1930[r]	Bull. 40, Surface waters of Tennessee.	Do.
Utah.....	1905	5th biennial report, State Engineer..	Office of the State Engineer.
Virginia....	1927	Bull. 31, Water resources of Virginia.	Conservation and Development Commission.
Washington..	1933	Bull. 5, Monthly and yearly summaries of hydrometric data.	Department of Conservation and Development.
Wisconsin...	1914	1st report of Railroad Commission of Wisconsin to Legislature on water powers.	Railroad Commission of Wisconsin.
Do.....	1923[s]	2d report of Railroad Commission of Wisconsin to Legislature on water powers.	Do.

c Includes records for years 1927-30.
d Includes records for years 1919-24.
e Includes records for years 1924-28.
f Includes records for years 1928-35.
g Includes records for years 1935-39.
h Includes records for years 1927-39.
i Includes records for years 1914-28.
j Includes records for years 1928-34.
k Includes records for years 1889-1936; records of daily and monthly discharge are not included.
l Includes all available records prior to 1921.
m Includes records for years 1902-39.
n Includes records for years 1914-24.
o Includes records for years 1924-30.
p Includes records for years 1930-36.
q Includes records for years 1928-32.
r Includes average weekly discharge for years 1920-30.
s Includes records for years 1914-23.

Note.- In addition to the records contained in the reports listed above, the following States have issued annual or biennial reports in which are contained records of discharge: California, Colorado, Connecticut, Idaho, Indiana, Missouri, Montana, Nebraska, New Mexico, New York (also New York City Board of Water Supply), North Dakota, Oregon, Pennsylvania, Utah, Washington, and Wyoming.

The reports listed in the foregoing tables contain the customary records of discharge collected during the systematic operation of gaging stations. Detailed information on the stage and discharge of many streams during major floods has been included in special reports on these floods published by the Geological Survey. The more recent of these reports also contain other pertinent hydrologic information and analyses and compilations of data relating to earlier noteworthy floods. The following list gives the numbers and titles of these reports.

Water-Supply Paper	Title
88	The Passaic flood of 1902.
92	The Passaic flood of 1903.
96	Destructive floods in the United States in 1903.
147	Destructive floods in the United States in 1904.
162	Destructive floods in the United States in 1905.
334	The Ohio Valley flood of March-April 1913.
426	Southern California floods of January 1916.
487	The Arkansas River flood of June 3-5, 1921.
488	The floods in central Texas in September 1921.
520-G	Some floods in the Rocky Mountain region.
636-C	The New England flood of November 1927.
771	Floods in the United States, magnitude and frequency.
773-E	The New York State flood of July 1935.
796-B	Flood on Republican and Kansas Rivers, May and June 1935.
796-C	Flood in La Canada Valley, California, January 1, 1934.
798	The floods of March 1936, Part 1, New England Rivers.
799	The floods of March 1936, Part 2, Hudson River to Susquehanna River region.
800	The floods of March 1936, Part 3, Potomac, James and upper Ohio Rivers.
816	Major Texas floods of 1936.
836-A	Stages and flood discharges of the Connecticut River at Hartford, Conn.
838	Floods of Ohio and Mississippi Rivers, January-February 1937.
842	Floods in Canadian and Pecos River Basins of New Mexico, May and June 1937.
843	Floods of December 1937 in northern California.
847	Maximum discharges at stream-measurement stations through September 1938.
867	Hurricane floods of September 1938.
869	Flood of August 1935 in Muskingum River Basin, Ohio.

RECORDS OF DISCHARGE COLLECTED BY AGENCIES OTHER THAN THE GEOLOGICAL SURVEY

The following table contains a list of gaging stations for the area covered by this report at which records of daily discharge were collected during the water year October 1939 to September 1940 by agencies other than the Geological Survey. The records for these stations are not contained in the publications of the Geological Survey except as noted.

Records of discharge collected by agencies other than the Geological Survey

Stream	Location	Period	Collected by	Remarks
Reservation drain	Alfalfa, Wash.....	1912-40	Office of Indian Affairs	*Unpublished since 1923.
Satus Creek.....	Downstream from Dry Creek, near Toppenish, Wash.	1913-40	....do.....	*Unpublished since 1924.
Do.....	Near Satus, Wash.....	1932-40	....do.....	Unpublished.
Toppenish Creek..	Near Fort Simcoe, Wash..	1909-40	....do.....	*Unpublished since 1924.
Do.....	Near Alfalfa, Wash.....	1932-40	....do.....	Unpublished.

*Records for earlier years published in water-supply papers of the Geological Survey.

Note.- Records of daily discharge for many canals and drains in Washington for 1939 and earlier years have been collected by the Bureau of Reclamation and the Office of Indian Affairs in connection with irrigation and drainage projects. These records have not been published. The Soil Conservation Service began in 1932 to make studies of run-off from one area of 782 acres and three areas of less than 70 acres each in the vicinity of Pullman, Wash., and in 1939 from one area of less than 30 acres in the vicinity of Dayton, Wash. The records are in the files of that organization.

The work in the several States was done under cooperative agreements with the organizations listed below:

Idaho: Department of Reclamation, James Spofford, commissioner.

Montana: Office of State engineer, E. B. Donohue; State Water Conservation Board.

Washington: Department of Conservation and Development, John Brooke Firk, director, and C. J. Bartholet, supervisor of hydraulics, division of water resources; cities of Aberdeen, Bellingham, Everett, Seattle, and Tacoma; King and Pierce Counties, through the Intercounty River Improvement Commission; and Skagit and Whatcom Counties.

Funds were furnished by the Corps of Engineers, United States Army, for the construction and maintenance of one gaging station in Idaho, five in Montana, and eight in Washington.

Acknowledgment of financial assistance in collecting records published herein is due also to the United States Department of State; the Bureau of Reclamation and Office of Indian Affairs of the United States Department of the Interior; the Forest Service, Soil Conservation Service, and Weather Bureau of the United States Department of Commerce; and the Federal Power Commission.

Full cooperation exists between this organization and the Dominion Water and Power Bureau, Department of Mines and Resources, 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:

Idaho: Washington Water Power Co.

Montana: Montana Power Co. and Glacier Silver Lead Mining Co.

Washington: Crown Zellerbach Corporation; Hugh L. Cooper Co.; R. G. Hall; Puget Sound Power & Light Co.; Washington Water Power Co.; and Western Washington Electric Light & Power Co.

DIVISION OF WORK

The stream-gaging work was conducted by the water resources branch of the Geological Survey, Glenn L. Parker, chief hydraulic engineer, Carl G. Paulsen, assistant chief hydraulic engineer, and Rudolph G. Kasel, chief of the division of surface waters. The data for the stations in the several States were collected and prepared for publication under supervision of district engineers as follows: In Idaho (except for Pend Oreille River at Priest River) and for Clark Fork near Heron, Mont., Flathead River at Flathead, British Columbia, and Kootenai River near Rexford, Mont., T. R. Newell; in Montana (except for the two stations noted above), A. H. Tuttle; in Washington and for Pend Oreille River at Priest River, Idaho, G. L. Parker until October 17, 1939, succeeded by F. M. Veatch.

The records were reviewed and the manuscript prepared for publication under the direction of B. J. Peterson, engineer in charge, and M. C. Boyer, associate engineer, section of reports.

Basins between Columbia River and Puget Sound

NASELLE RIVER BASIN

Naselle River near Naselle, Wash.

Location.- Staff gage, lat. 46°22', long. 123°44', in SW¼ sec. 1, T. 10 N., R. 9 W., 1⅞ miles upstream from Salmon Creek and 3½ miles east of Naselle.
Drainage area.- 66 square miles.
Records available.- May 1929 to September 1940.
Average discharge.- 11 years, 434 second-feet.
Extremes.- Maximum discharge observed during year, 5,670 second-feet Dec. 16 (gage height, 11.32 feet); minimum observed, 27 second-feet Oct. 1; minimum gage height observed, 2.00 feet July 24, 25, Aug. 11-26.
1929-40: Maximum discharge observed, 10,400 second-feet Jan. 22, 1935 (gage height, 15.9 feet, from floodmarks), from rating curve extended above 3,000 second-feet; minimum observed, 22 second-feet Oct. 6, 7, 1929; minimum gage height observed, 1.72 feet Aug. 29, 1935.
Remarks.- Records good except those above 3,000 second-feet, which are poor. Gage read twice daily. No diversion or regulation.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 15				Dec. 16 to Sept. 30			
2.2	54	4.0	625	2.2	62	4.0	650
2.4	89	5.0	1,120	2.4	104	5.0	1,140
2.6	131	6.0	1,720	2.6	152	6.0	1,720
2.8	181	7.0	2,370	2.8	205	7.0	2,370
3.0	237	8.0	3,070	3.0	265	8.0	3,070
3.5	405	9.0	3,790	3.5	440	10.0	4,590

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	29	150	490	1,420	367	1,660	837	1,250	91	44	48	39
2	29	141	720	1,480	332	1,660	650	739	91	44	59	36
3	29	141	580	1,200	385	1,040	520	605	86	42	45	39
4	237	129	580	1,140	886	886	460	650	82	42	42	39
5	208	120	490	1,200	1,480	742	385	936	78	42	39	36
6	145	150	535	936	3,490	605	350	742	78	41	36	33
7	95	468	820	742	2,230	936	479	605	82	39	33	32
8	75	820	2,020	605	1,720	986	422	500	78	39	32	32
9	66	445	1,840	520	2,790	837	742	422	74	38	32	33
10	59	405	1,780	479	2,860	742	562	367	70	38	32	62
11	54	625	1,240	403	1,660	605	479	315	66	38	30	44
12	51	490	870	367	1,140	541	422	265	62	38	30	42
13	51	468	720	332	1,600	460	367	250	66	38	30	42
14	48	425	2,150	315	1,200	422	315	234	62	38	30	44
15	46	352	4,270	298	886	385	298	220	62	36	30	42
16	50	301	5,070	265	936	403	265	205	60	36	30	39
17	131	284	2,650	250	986	350	234	178	59	36	30	39
18	101	268	1,600	234	837	298	234	168	57	35	30	91
19	194	222	1,090	220	696	265	205	157	57	33	30	54
20	178	222	1,040	205	562	250	192	152	55	33	30	45
21	131	222	886	192	500	234	178	142	52	33	30	42
22	120	335	742	178	440	220	168	132	54	32	30	39
23	122	252	605	173	479	205	220	127	52	32	30	38
24	136	222	520	168	479	220	234	122	48	30	30	36
25	122	208	440	175	837	192	205	118	47	33	30	36
26	352	222	385	265	986	500	178	109	47	86	30	39
27	301	208	350	1,200	936	742	178	104	45	100	104	54
28	268	181	460	742	886	837	315	100	45	64	120	48
29	208	194	886	605	886	1,040	265	97	45	62	62	42
30	181	536	886	479	-	1,960	460	95	45	60	47	41
31	171	-	1,300	422	-	1,250	-	95	-	52	42	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	3,988	352	29	129	1.95	2.25	7,910
November	9,205	820	120	307	4.65	5.19	18,260
December	38,015	5,070	350	1,226	18.6	21.42	75,400
Calendar year 1939	143,730	5,070	27	394	5.97	81.06	285,100
January	17,210	1,480	168	555	8.41	9.70	34,140
February	33,472	3,490	332	1,154	17.5	18.86	66,390
March	21,473	1,960	192	693	10.5	12.10	42,590
April	10,819	837	168	361	5.47	6.10	21,460
May	10,251	1,250	95	331	5.02	5.78	20,330
June	1,896	91	45	63.2	.958	1.07	3,760
July	1,354	100	30	43.7	.662	.76	2,690
August	1,253	120	30	40.4	.612	.71	2,490
September	1,278	91	32	42.6	.645	.72	2,530
Water year 1939-40	150,214	5,070	29	410	6.21	84.66	298,000

400455 O - 41 - 2

North River near Raymond, Wash.

Location.- Water-stage recorder, lat 46°49', long. 123°51', in sec. 6, T. 15 N., R. 9 W., 1¼ miles upstream from Salmon Creek and 10 miles northwest of Raymond.

Records available.- August 1927 to September 1940.

Average discharge.- 13 years, 981 second-feet.

Extremes.- Maximum discharge during year, 7,360 second-feet Dec. 16 (gage height, 7.20 feet); minimum, 41 second-feet Aug. 17 (gage height, 1.26 feet).
1927-40: Maximum discharge, 35,000 second-feet Dec. 10, 1933 (gage height, 15.8 feet, from floodmarks), from rating curve extended above 6,300 second-feet; minimum, 24 second-feet Sept. 17, 1938 (gage height, 1.18 feet).

Remarks.- Records good except those for periods of no gage-height record, which are poor. Splash dam 800 feet above gage no longer operating.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

1.4	60	2.3	268	4.0	1,600
1.6	93	2.6	390	5.0	2,870
1.8	131	3.0	635	6.0	4,600
2.0	177	3.5	1,060	7.0	6,850

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46	153	610	2,730	902	2,520	2,730	3,240	241	83	111	50
2	47	149	f790	3,080	798	3,080	2,080	3,580	231	81	146	47
3	49	140	816	3,010	758	2,730	1,660	2,140	225	78	127	f49
4	140	138	866	2,590	1,150	2,200	1,370	1,660	210	76	93	55
5	140	140	816	2,590	2,320	2,080	1,170	1,840	200	74	74	55
6	268	138	911	2,400	4,020	1,840	1,030	2,080	190	73	63	50
7	185	321	1,110	1,900	5,550	2,020	f1,080	1,780	180	71	56	50
8	151	620	2,020	1,550	5,220	2,660	1,580	1,440	175	70	52	50
9	115	680	2,730	1,290	5,010	2,520	1,630	1,200	175	68	50	55
10	95	552	2,660	1,120	5,550	2,200	1,680	1,020	170	68	47	60
11	84	734	2,400	965	5,010	1,900	1,380	893	160	68	47	70
12	78	658	1,720	858	3,320	1,590	1,190	782	155	70	46	70
13	73	565	1,240	782	2,800	1,350	1,010	695	150	70	45	70
14	68	470	2,040	726	2,590	1,230	890	635	145	70	46	75
15	66	400	5,300	658	2,200	1,150	800	607	140	70	46	75
16	65	f345	7,100	642	1,900	1,150	710	558	135	65	45	80
17	126	310	6,600	610	1,960	1,050	640	500	130	65	45	90
18	121	290	4,800	580	2,020	920	600	458	120	65	45	f115
19	249	260	3,160	540	1,960	832	560	425	115	f65	45	127
20	237	240	2,590	510	1,780	766	520	395	f113	62	44	125
21	237	230	2,200	480	1,530	702	490	372	111	60	44	95
22	170	400	1,840	440	1,330	650	460	354	107	58	46	78
23	153	580	1,500	f415	1,330	607	520	333	106	54	46	68
24	144	500	1,250	405	1,600	593	640	313	102	54	46	63
25	140	400	1,050	405	1,840	586	600	301	98	56	47	60
26	352	310	911	487	2,520	628	600	286	95	88	47	62
27	301	260	824	1,880	2,800	1,080	540	275	91	88	57	76
28	298	250	1,010	2,260	2,520	1,600	560	265	88	113	54	74
29	231	250	1,660	1,600	2,400	1,840	800	251	88	106	53	97
30	201	340	2,020	1,290	-	3,240	f1,110	241	86	88	60	98
31	175	-	2,330	1,060	-	3,580	-	231	-	81	54	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	4,805	352	46	155	9,530
November	10,823	734	138	361	21,470
December	66,874	7,100	610	2,157	132,600
Calendar year 1939	295,106	7,100	45	809	585,300
January	39,853	3,080	405	1,286	79,050
February	74,688	5,550	758	2,575	148,100
March	50,894	3,580	586	1,642	100,900
April	30,630	2,730	460	1,021	60,750
May	29,150	3,580	231	940	57,820
June	4,332	241	86	144	8,590
July	2,256	113	54	72.8	4,470
August	1,827	146	44	58.9	3,620
September	2,189	127	47	73.0	4,340
Water year 1939-40	318,321	7,100	44	870	631,200

f Fragmentary gage-height record; discharge computed from partly estimated gage-height record.
Note.- Discharge for periods of no gage-height record, Nov. 17 to Dec. 1, Jan. 17-22, Apr. 8-29, June 4-19, July 12-18, Sept. 4-17, computed on basis of records for Chehalis River near Grand Mound.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Chehalis River near Doty, Wash.

Location.- Staff gage, lat. 46°37', long. 123°17', in NW¼ sec. 14, T. 13 N., R. 5 W., 1½ miles upstream from Elk Creek, 1½ miles south of Doty, and 3½ miles north of Pe Ell.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge observed during year, 15,100 second-feet Dec. 15 (gage height, 15.76 feet); minimum observed, 22 second-feet Aug. 18, 19, 20, 21, 26 (gage height, 0.99 foot); discharge may have been less during period Oct. 1-3, before gage was installed.

Remarks.- Records good except those for period of no gage-height record, which are poor. No diversion or regulation. Gage read twice daily.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

1.0	23	2.5	458	5.0	2,080
1.2	45	3.0	742	6.0	2,850
1.4	78	3.5	1,060	8.0	4,650
1.7	146	4.0	1,380	10.0	6,880
2.0	239	4.5	1,730	12.0	9,560

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a25	76	682	2,290	484	2,930	1,380	3,010	121	46	43	26
2	a25	72	1,060	2,610	433	2,850	991	1,320	119	45	41	26
3	a25	88	652	1,940	484	1,730	803	928	116	43	41	31
4	a50	67	384	2,220	928	1,380	652	1,060	109	43	38	34
5	a150	63	317	2,010	1,450	1,120	566	1,660	105	42	34	31
6	a90	60	317	1,520	4,350	928	538	1,380	100	41	32	28
7	a70	105	339	1,180	3,340	1,180	803	991	105	39	31	26
8	a55	232	1,520	865	2,220	1,250	865	742	100	38	31	24
9	a50	258	1,660	742	3,090	1,120	1,120	594	98	41	29	26
10	a40	189	2,770	623	3,430	928	928	511	94	43	29	43
11	a35	239	1,320	538	2,220	803	712	433	86	42	29	41
12	32	199	803	484	1,660	682	594	408	80	39	29	34
13	30	174	623	458	2,690	623	538	339	80	38	29	38
14	29	171	2,420	433	2,150	538	458	317	78	38	27	41
15	28	144	9,780	408	1,520	538	408	296	76	36	27	37
16	28	128	7,390	361	1,590	566	361	276	72	36	26	32
17	43	116	3,880	339	1,870	484	339	258	72	36	24	29
18	62	114	2,290	317	1,380	433	317	225	69	33	23	55
19	138	98	1,590	296	1,120	408	296	212	69	33	22	43
20	144	90	1,660	276	928	361	258	202	65	33	22	33
21	103	98	1,250	258	772	339	239	186	63	33	23	31
22	69	232	991	239	682	317	258	177	60	33	24	30
23	58	212	803	232	772	296	296	168	58	32	26	28
24	107	165	652	221	865	276	276	157	55	32	25	26
25	78	131	566	215	1,870	276	276	152	52	31	24	26
26	146	128	458	258	2,150	586	258	146	52	39	23	30
27	165	123	408	2,050	2,080	1,250	258	141	49	69	34	41
28	116	116	652	1,730	2,290	1,450	361	136	49	55	46	52
29	94	105	1,180	865	2,530	1,660	361	131	46	46	33	39
30	96	317	1,380	682	-	3,430	956	123	46	46	29	36
31	86	-	1,870	566	-	2,290	-	121	-	43	27	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,267	165	25	73.1	4,500
November	4,310	317	60	144	8,550
December	51,667	9,780	317	1,667	102,500
Calendar year	-	-	-	-	-
January	27,226	2,610	215	878	54,000
February	51,348	4,350	433	1,771	101,800
March	33,022	3,430	276	1,065	65,500
April	16,466	1,380	239	549	32,660
May	16,800	3,010	121	542	33,320
June	2,344	121	46	78.1	4,650
July	1,244	69	31	40.1	2,470
August	921	46	22	29.7	1,830
September	1,017	55	24	33.9	2,020
Water year 1939-40	208,632	9,780	22	570	413,800

a No gage-height record; discharge computed on basis of records for North River near Raymond and Naselle River near Naselle.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Chehalis River near Grand Mound, Wash.

Location.- Water-stage recorder, lat. 46°47', long. 123°02', in NE¼ sec. 22, T. 15 N., R. 3 W., at Meadow, 1½ miles southwest of Grand Mound and about 6 miles downstream from Skookumchuck River. Datum of gage is 123.27 feet above mean sea level (general adjustment of 1929).

Drainage area.- 928 square miles.

Records available.- October 1928 to September 1940.

Average discharge.- 12 years, 2,691 second-feet.

Extremes.- Maximum discharge during year, 22,700 second-feet Dec. 17 (gage height, 13.90 feet); minimum, 117 second-feet Aug. 21.
1928-40: Maximum discharge, 48,400 second-feet Dec. 29, 1937 (gage height, 18.39 feet); minimum, 108 second-feet Sept. 24, 1938.

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

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	144	341	1,230	8,450	2,390	11,200	10,300	8,500	759	331	249	150
2	144	326	1,520	9,890	2,120	11,900	7,670	9,260	716	326	230	144
3	144	331	1,930	9,470	2,320	10,300	5,670	6,010	683	312	222	156
4	159	352	1,420	7,670	3,020	8,050	4,590	4,740	635	307	197	181
5	296	326	1,130	8,250	5,190	8,250	3,860	6,290	588	298	187	168
6	463	293	990	7,100	12,800	6,550	3,300	9,260	574	275	181	168
7	396	317	1,030	5,510	19,100	5,670	3,440	7,100	566	271	165	156
8	331	444	2,740	4,440	17,900	7,290	4,740	5,190	574	258	165	156
9	266	849	5,510	3,720	14,800	7,100	4,890	3,860	559	258	165	162
10	237	804	5,670	3,300	15,700	6,550	5,040	3,160	530	258	162	177
11	218	658	5,670	2,880	15,700	5,510	4,140	2,670	516	245	153	215
12	218	658	3,580	2,600	11,900	4,740	3,580	2,260	503	241	150	241
13	200	574	2,600	2,390	10,500	4,000	3,020	2,000	496	254	144	241
14	197	559	2,260	2,390	11,200	3,510	2,670	1,810	490	258	144	254
15	184	581	6,500	2,190	8,850	3,230	2,390	1,630	490	241	141	237
16	187	516	17,100	2,060	6,910	3,230	2,120	1,490	463	230	141	226
17	190	483	21,900	1,930	9,260	2,810	1,930	1,370	457	218	138	226
18	197	463	20,000	1,810	9,260	2,460	1,810	1,250	444	218	130	234
19	226	444	14,300	1,690	7,480	2,320	1,690	1,180	432	215	127	284
20	344	414	9,890	1,630	5,840	2,120	1,560	1,090	426	226	127	266
21	402	396	9,050	1,520	4,740	2,000	1,470	1,030	414	222	124	230
22	307	457	6,910	1,440	4,140	1,870	1,380	960	414	230	136	211
23	271	733	5,350	1,380	3,860	1,750	1,570	903	402	241	136	197
24	279	619	4,140	1,310	5,190	1,750	1,930	858	396	204	136	207
25	368	545	3,440	1,280	6,780	1,690	1,810	813	374	200	130	190
26	336	509	2,880	1,360	11,400	1,870	1,810	777	358	230	130	197
27	472	476	2,530	3,680	11,400	4,590	1,630	759	358	317	144	226
28	566	476	2,600	6,010	11,000	6,010	1,690	700	347	352	171	298
29	490	457	3,440	4,290	12,200	6,550	2,190	683	368	284	197	331
30	414	503	5,190	3,440	-	10,800	2,260	666	347	249	174	279
31	385	-	5,670	2,810	-	12,400	-	708	-	262	156	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	9,031	566	144	291	0.314	0.36	17,910
November	14,904	849	293	497	.536	.60	29,560
December	180,170	21,900	990	5,812	6.26	7.22	357,400
Calendar year 1939	835,337	22,700	133	2,289	2.47	33.48	1,657,000
January	117,890	9,890	1,280	3,803	4.10	4.72	233,800
February	262,950	19,100	2,120	9,067	9.77	10.54	521,600
March	168,070	12,400	1,690	5,422	5.84	6.74	333,400
April	96,150	10,300	1,380	3,205	3.45	3.85	190,700
May	88,977	9,260	666	2,870	3.09	3.57	176,500
June	14,679	759	347	489	.527	.59	29,120
July	8,031	352	200	259	.279	.32	15,930
August	4,952	249	124	160	.172	.20	9,820
September	6,408	331	144	214	.231	.26	12,710
Water year 1939-40	972,212	21,900	124	2,656	2.86	38.97	1,928,000

9-233 April 1936

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

101804-0 U.S. GOVERNMENT PRINTING OFFICE 1936

Skookumchuck River near Centralia, Wash.

Location.- Water-stage recorder, lat. 46°47'15", long. 122°42'45", in SW¼NW¼ sec. 17, T. 15 N., R. 1 E., half a mile upstream from Bloody Run Creek, 4½ miles upstream from Thompson Creek, and 12 miles northeast of Centralia. Datum of gage is 300.0 feet above mean sea level (river-profile survey). Prior to Nov. 30, 1939, staff gage at same site but at datum 39.02 feet higher. April 1929 to September 1931, staff gage at site 1,000 feet downstream, at different datum.

Drainage area.- 60 square miles.

Records Available.- April 1929 to September 1931, October 1939 to September 1940.

Extremes.- Maximum discharge during year, 2,740 second-feet Dec. 15 (gage height, 44.72 feet); minimum, 21 second-feet Sept. 8, 9, 23-26; minimum gage height, 39.38 feet Sept. 9, 26.

1929-31, 1939-40: Maximum discharge, 3,240 second-feet Mar. 31, 1931 (gage height, 7.50 feet, site and datum then in use); minimum, 21 second-feet Sept. 23, 24, 1930, Sept. 8, 9, 23-26, 1940.

Remarks.- Records excellent except those for October and November, and those above 2,000 second-feet, which are fair. No diversion or regulation.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 9 to Nov. 29)

39.4	22	40.0	73	40.6	190	41.3	444	42.5	1,140
39.6	35	40.2	101	40.8	248	41.6	588	43.0	1,470
39.8	52	40.4	141	41.0	318	42.0	817	44.0	2,180

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a25	g34	162	426	132	721	588	732	77	36	32	23
2	a25	g34	267	426	128	846	444	490	84	36	31	23
3	a25	g40	203	374	143	609	362	356	71	36	30	27
4	a65	g35	157	346	214	563	307	318	67	34	28	24
5	a70	a31	136	334	363	573	260	677	64	33	27	22
6	a55	g28	141	288	1,710	449	232	647	63	33	27	22
7	a45	g55	240	254	1,270	563	285	453	66	33	26	22
8	a35	g111	756	229	817	647	334	346	61	32	25	22
9	g29	g130	630	206	974	543	379	274	59	31	25	22
10	g28	g99	732	203	1,200	453	350	238	55	31	25	32
11	g31	g93	529	177	756	367	296	209	53	31	25	25
12	g31	a90	366	167	563	334	254	185	52	f31	25	25
13	g30	g88	281	164	750	299	226	167	51	a31	25	29
14	g29	g99	402	164	614	278	206	155	51	a30	25	25
15	a29	g84	1,660	155	481	271	190	141	50	a30	25	23
16	g29	g73	1,880	145	462	278	172	134	50	a29	24	22
17	g33	g66	1,810	138	786	251	160	123	47	a29	24	23
18	g34	g68	1,040	132	588	235	148	117	46	a28	24	40
19	g49	g59	697	125	458	217	138	111	44	f28	24	29
20	g47	g54	879	121	383	203	132	104	44	28	24	24
21	g33	g59	756	115	326	187	123	101	43	48	25	23
22	g31	a125	533	111	292	172	119	96	42	34	25	22
23	a35	a90	408	106	314	164	164	91	41	31	24	22
24	a55	a75	322	101	342	180	201	86	39	30	24	21
25	a50	a70	267	101	803	157	180	84	39	f29	22	21
26	g108	a65	235	113	879	282	174	81	37	f52	23	21
27	g88	a60	212	278	709	533	164	79	36	52	36	32
28	g90	a55	217	251	817	548	226	76	38	38	34	37
29	a67	g54	267	192	744	606	235	73	38	34	27	28
30	g46	f155	330	169	-	1,010	329	73	36	37	24	25
31	g40	-	366	148	-	750	-	91	-	36	24	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	1,387	108	25	44.7	0.745	0.86	2,750
November	2,181	155	28	72.7	1.21	1.35	4,330
December	16,881	1,880	136	545	9.08	10.46	33,480
Calendar year	-	-	-	-	-	-	-
January	6,259	426	101	202	3.37	3.88	12,410
February	18,018	1,710	128	621	10.4	11.17	35,740
March	13,311	1,010	157	429	7.15	8.25	26,400
April	7,378	588	119	246	4.10	4.57	14,630
May	6,910	732	73	223	3.72	4.28	13,710
June	1,546	84	36	51.5	.858	.96	3,070
July	1,051	52	28	33.9	.565	.65	2,080
August	809	36	22	26.1	.435	.50	1,600
September	756	40	21	25.2	.420	.47	1,500
Water year 1939-40	76,487	1,880	21	209	3.48	47.40	151,700

Peak discharge.- Dec. 15 (4:30 p.m.) 2,740 sec.-ft.; Dec. 16 (9 to 9:30 a.m.) 2,420 sec.-ft.; Dec. 17 (9:15 a.m.) 2,020 sec.-ft.; Feb. 6 (11 a.m., 12:30 p.m.) 2,100 sec.-ft.

a No gage-height record; discharge interpolated or computed on basis of records for Little Nisqually River near Alder and Chehalis River near Grand Mound.

f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

g Discharge computed on basis of once or twice-daily staff-gage readings.

Satsop River near Satsop, Wash.

Location.- Water-stage recorder, lat. 47°00', long. 123°30', in sec. 36, T. 18 N., R. 7 W., 1 mile west of Satsop and 1½ miles upstream from mouth. Datum of gage is at mean sea level (general adjustment of 1929).

Drainage area.- 315 square miles.

Records available.- March 1929 to September 1940.

Average discharge.- 11 years, 1,971 second-feet.

Extremes.- Maximum discharge during year, 18,700 second-feet Dec. 15 (elevation, 32.14 feet), from rating curve extended above 10,000 second-feet; minimum, 222 second-feet Sept. 8, 9 (elevation, 22.47 feet).
1929-40: Maximum discharge observed, 52,500 second-feet Jan. 22, 1935 (elevation, 38.9 feet, from floodmarks), from rating curve extended above 17,000 second-feet; minimum discharge, 166 second-feet Sept. 21, 1938.

Remarks.- Records excellent except those above 12,000 second-feet, which are fair. No diversions or regulation.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 14				Dec. 15 to Sept. 30					
22.9	240	25.0	1,860	22.5	229	24.5	1,490	29.0	9,800
23.2	331	25.5	2,610	22.7	285	25.0	2,080	30.0	12,400
23.5	475	26.0	3,440	23.0	390	25.5	2,810	31.0	15,300
24.0	800	27.0	5,270	23.3	525	26.0	3,600	32.0	18,400
24.5	1,250	28.0	7,350	23.6	690	27.0	5,480		
				24.0	1,000	28.0	7,550		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	232	674	2,850	6,710	2,020	6,840	3,190	5,620	581	331	403	240
2	232	647	3,440	8,210	1,830	7,990	2,740	3,860	576	328	424	234
3	230	621	2,690	7,550	1,770	5,080	2,440	2,810	556	328	352	234
4	549	577	3,440	5,680	2,880	4,400	2,080	2,440	535	320	320	237
5	1,100	571	3,360	5,080	5,680	3,940	1,950	2,440	520	317	301	234
6	942	634	3,180	4,400	9,110	3,350	1,770	2,220	515	314	288	229
7	793	1,280	3,270	3,680	7,550	4,210	2,220	1,950	525	314	285	226
8	628	2,690	7,570	3,110	5,680	4,580	2,740	1,770	511	311	279	224
9	529	2,000	7,350	2,740	9,900	3,770	3,190	1,660	491	311	273	224
10	453	1,920	6,930	2,440	11,800	3,270	2,960	1,490	477	311	270	237
11	402	4,140	5,270	2,150	6,500	2,880	2,510	1,380	464	317	265	234
12	369	3,960	3,870	1,950	4,780	2,510	2,150	1,280	454	314	259	262
13	348	3,020	3,270	1,830	5,680	2,290	1,950	1,200	464	311	256	304
14	331	2,530	7,420	1,710	5,280	2,290	1,770	1,140	450	304	253	298
15	320	2,070	15,600	1,600	4,300	2,360	1,600	1,120	432	298	251	342
16	309	1,690	13,000	1,660	4,210	3,040	1,490	1,040	424	298	248	331
17	380	1,470	9,340	1,600	4,880	2,580	1,380	973	415	295	248	301
18	407	1,370	6,500	1,490	4,400	2,220	1,380	910	407	295	240	331
19	760	1,180	5,680	1,380	3,860	2,020	1,270	870	398	288	240	307
20	959	1,060	5,480	1,330	3,350	1,830	1,190	830	386	285	242	285
21	1,550	1,160	4,490	1,280	2,960	1,710	1,130	809	382	288	248	270
22	1,280	2,140	3,680	1,220	2,580	1,600	1,080	767	379	285	253	259
23	977	1,700	3,110	1,180	2,740	1,490	1,100	739	371	282	245	253
24	814	1,420	2,660	1,130	2,660	1,490	1,070	704	360	279	242	245
25	702	1,230	2,360	1,130	2,810	1,380	1,010	684	356	279	234	240
26	1,130	1,110	2,080	1,260	4,210	1,660	973	666	348	352	237	242
27	1,220	1,080	1,890	5,680	4,980	2,360	937	648	345	382	259	256
28	1,040	977	2,810	4,680	4,030	2,960	1,270	630	342	334	270	259
29	902	977	4,480	3,350	4,680	2,960	1,220	619	338	331	253	248
30	807	3,220	5,080	2,660	-	3,520	1,340	603	334	345	242	237
31	737	-	4,980	2,290	-	3,430	-	598	-	348	237	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	21,432	1,550	230	691	2.19	2.53	42,510
November	49,118	4,140	571	1,637	5.20	5.80	97,420
December	157,130	15,600	1,890	5,069	16.1	18.56	311,700
Calendar year 1939	640,984	19,000	225	1,756	5.57	75.72	1,271,000
January	92,160	8,210	1,130	2,973	9.44	10.88	182,800
February	137,110	11,800	1,770	4,728	15.0	16.18	272,000
March	96,010	7,990	1,380	3,097	9.83	11.33	190,400
April	53,100	3,190	937	1,770	5.62	6.27	105,300
May	44,470	5,620	598	1,435	4.56	5.23	88,200
June	13,136	581	334	438	1.39	1.55	26,050
July	9,695	382	279	313	.994	1.15	19,230
August	8,417	424	234	272	.863	.99	16,690
September	7,823	342	224	261	.829	.92	15,520
Water year 1939-40	689,601	15,600	224	1,884	5.98	81.41	1,368,000

Peak discharge.- Dec. 15 (6:50 p.m.) 18,700 sec.-ft.; Feb. 10 (1:00 a.m.) 16,800 sec.-ft.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

101604-O U S GOVERNMENT PRINTING OFFICE 1936

Wynoochee River at Oxbow, near Aberdeen, Wash.

Location.- Water-stage recorder, lat. 47°19'30", long. 123°38'20", in sec. 12, T. 21 N., R. 8 W., 1 mile downstream from Oxbow and 24 miles northeast of Aberdeen. Discharge measurements made 1½ miles upstream.

Drainage area.- About 65 square miles above discharge measuring section (uncertain because of inadequate maps).

Records available.- May 1925 to September 1940.

Average discharge.- 15 years, 770 second-feet.

Extremes.- Maximum discharge during year, 11,400 second-feet Dec. 15 (gage height, 24.6 feet), from rating curve extended above 7,500 second-feet; minimum, 94 second-feet Sept. 8, 9.

1925-40: Maximum discharge, 18,000 second-feet Jan. 22, 1935 (gage height, 30.3 feet, from floodmarks), from rating curve extended above 5,300 second-feet; minimum, 76 second-feet Sept. 23, 1930.

Remarks.- Records excellent. No diversion or regulation.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

2.1	100	3.5	234	6.0	750	12.0	2,810
2.3	116	4.0	304	7.0	1,020	14.0	3,930
2.5	134	4.5	398	8.0	1,320	16.0	5,130
2.8	161	5.0	505	9.0	1,620	18.0	6,400
3.0	180	5.5	625	10.0	1,970		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	112	304	1,740	3,330	750	4,090	885	3,190	259	138	180	104
2	a112	296	2,780	4,860	650	2,750	776	1,470	246	134	161	100
3	a112	280	1,500	2,950	675	1,680	675	1,080	240	134	143	104
4	a292	280	2,410	2,130	2,170	1,720	612	1,020	234	134	130	104
5	472	296	1,680	1,970	3,040	1,500	564	1,140	222	130	125	100
6	398	312	1,650	1,560	3,330	1,200	540	885	222	130	120	98
7	312	871	2,580	1,320	2,190	1,590	941	725	222	130	116	96
8	259	1,600	4,830	1,110	1,720	1,440	913	725	211	125	112	94
9	228	913	3,870	997	4,860	1,140	1,110	700	206	125	112	94
10	211	1,700	3,750	885	3,430	997	885	625	206	134	112	100
11	195	2,370	2,210	776	1,890	857	725	564	200	134	108	97
12	180	2,010	1,720	700	1,500	776	650	516	195	125	108	119
13	175	1,680	1,500	650	1,780	700	600	483	195	125	108	148
14	166	1,530	5,090	588	1,500	802	552	472	190	120	108	180
15	161	1,410	7,120	564	1,260	1,050	505	472	185	116	108	252
16	152	1,050	4,650	600	1,380	1,690	461	440	180	116	108	170
17	250	913	3,500	552	1,380	1,080	440	408	180	116	104	152
18	216	857	2,250	505	1,200	885	461	398	175	116	104	166
19	1,180	750	2,210	472	1,050	750	419	378	170	112	104	143
20	675	650	2,570	440	913	700	398	358	166	112	104	134
21	802	1,140	1,780	419	802	650	368	348	161	112	104	125
22	552	1,410	1,440	398	750	600	358	330	161	112	104	116
23	450	941	1,200	388	725	576	368	321	156	108	100	112
24	388	776	1,020	368	675	725	358	312	152	108	98	108
25	339	650	913	368	802	588	348	304	152	112	97	104
26	580	625	802	784	1,970	902	339	296	148	143	100	104
27	494	576	750	4,180	1,590	1,720	348	288	148	148	128	120
28	472	516	1,380	1,860	1,380	1,440	625	273	148	130	138	116
29	408	794	2,760	1,530	2,860	1,140	505	266	143	152	112	104
30	358	2,460	1,750	1,080	-	1,230	656	259	138	161	104	100
31	330	-	2,620	885	-	1,020	-	259	-	156	108	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	11,031	1,180	112	356	21,880
November	29,960	2,460	280	999	59,420
December	76,025	7,120	750	2,452	150,800
Calendar year 1939	279,774	9,960	105	767	554,900
January	39,219	4,860	368	1,265	77,790
February	48,222	4,860	650	1,663	95,650
March	37,988	4,090	576	1,225	75,350
April	17,385	1,110	339	580	34,480
May	19,305	3,190	259	623	38,290
June	5,611	259	138	187	11,130
July	3,948	161	108	127	7,830
August	3,568	180	97	115	7,080
September	3,664	252	94	122	7,270
Water year 1939-40	295,926	7,120	94	809	587,000

Peak discharge.- Dec. 8 (12:30 a.m.) 5,670 sec.-ft.; Dec. 15 (12:35 p.m.) 11,400 sec.-ft.; Jan. 2 (1:30 p.m.) 5,980 sec.-ft.; Feb. 9 (7:15 p.m.) 6,820 sec.-ft.

a No gage-height record; discharge computed on basis of records for Chehalis River near Grand Mound and Satsop River near Satsop.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Quinault River at Quinault Lake, Wash.

Location.- Water-stage recorder, lat. 47°27'30", long. 123°53'30", 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, and May 1933 to September 1940 in reports of Geological Survey. October 1911 to September 1933 (monthly discharge), in State Water-Supply Bulletin 5.

Average discharge.- 29 years (1911-40), 2,712 second-feet.

Extremes.- Maximum discharge during year, 21,500 second-feet Dec. 15 (gage height, 12.91 feet); minimum, 369 second-feet Sept. 9 (gage height, 2.13 feet).
1911-22, 1924-32, 1933-40: Maximum discharge, 37,000 second-feet Dec. 12, 1921 (gage height, 16.3 feet, former datum), from rating curve extended above 25,000 second-feet; minimum, 285 second-feet Sept. 20, 1924 (gage height, 0.74 foot, former datum).

Remarks.- Records excellent. No diversion. Slight regulation caused by natural storage in lake.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

2.3	454	4.0	1,910	8.0	8,700
2.5	565	4.5	2,500	9.0	10,800
2.7	697	5.0	3,210	10.0	13,100
3.0	945	6.0	4,800	11.0	15,700
3.5	1,400	7.0	6,700	12.0	18,600

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	449	1,500	5,720	8,500	3,740	7,900	3,210	6,140	1,650	823	806	454
2	439	1,400	8,100	12,400	3,140	8,910	2,910	7,100	1,650	806	790	444
3	434	1,350	6,900	12,900	2,840	6,900	2,560	6,100	1,600	781	727	444
4	682	1,300	7,300	9,540	3,820	5,910	2,370	4,980	1,550	758	676	434
5	1,170	1,300	6,900	8,300	6,100	5,910	2,190	4,460	1,450	735	628	413
6	1,260	1,300	6,300	6,700	7,900	4,800	2,080	3,900	1,400	712	596	403
7	1,220	1,900	6,500	5,340	8,100	4,630	2,190	3,440	1,400	690	565	393
8	1,080	3,580	13,100	4,460	6,900	5,160	2,500	3,210	1,400	676	548	379
9	963	3,820	14,400	3,820	9,350	4,460	2,840	3,580	1,350	656	531	374
10	874	4,140	13,100	3,360	11,200	3,820	2,910	3,580	1,350	676	514	384
11	798	6,300	10,800	2,980	8,300	3,280	2,700	3,440	1,400	697	503	379
12	743	6,900	8,100	2,700	6,300	2,840	2,500	3,060	1,400	690	486	403
13	690	6,500	6,500	2,440	5,910	2,560	2,560	2,700	1,450	676	465	481
14	649	6,100	8,650	2,310	5,340	2,500	2,500	2,560	1,400	649	454	536
15	615	6,100	17,400	2,130	4,460	2,770	2,370	2,630	1,350	628	444	649
16	584	5,160	17,700	2,190	4,060	4,460	2,190	2,560	1,300	609	434	662
17	628	4,300	14,100	2,080	3,900	4,300	2,020	2,440	1,260	596	423	662
18	697	3,900	10,400	1,960	3,660	3,660	2,020	2,370	1,220	578	418	727
19	1,650	3,440	8,500	1,910	3,510	3,140	1,960	2,370	1,220	559	408	706
20	2,130	2,910	9,120	1,800	2,980	2,770	1,860	2,310	1,220	548	403	662
21	2,630	3,060	7,900	1,700	2,630	2,500	1,800	2,250	1,120	536	408	609
22	2,500	4,630	6,300	1,650	2,440	2,370	1,750	2,250	1,090	519	403	565
23	2,250	4,300	4,980	1,600	2,370	2,250	1,800	2,250	1,040	514	398	536
24	2,080	3,580	4,140	1,550	2,250	2,440	1,910	2,310	1,010	508	393	508
25	1,860	2,980	3,580	1,500	2,190	2,500	1,910	2,130	1,010	514	379	497
26	1,860	2,630	3,210	1,650	3,280	2,560	1,910	2,020	981	554	389	481
27	1,910	2,370	2,910	5,160	4,300	3,440	1,860	1,860	945	615	428	497
28	2,080	2,190	3,280	7,700	4,060	4,060	2,130	1,700	900	635	476	497
29	2,020	2,250	4,860	7,300	5,530	3,820	2,250	1,650	865	683	481	476
30	1,860	5,160	6,300	5,910	-	3,740	2,250	1,650	839	727	465	470
31	1,700	-	6,300	4,630	-	3,580	-	1,650	-	758	459	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	40,505	2,630	434	1,307	4.95	5.71	80,340
November	106,350	6,900	1,300	3,545	13.4	14.98	210,900
December	253,350	17,700	2,910	8,173	31.0	35.69	502,500
Calendar year 1939	1,025,768	24,500	434	2,810	10.6	144.49	2,035,000
January	138,170	12,900	1,500	4,457	16.9	19.46	274,100
February	140,560	11,200	2,190	4,847	18.4	19.80	278,800
March	123,940	8,910	2,250	3,998	15.1	17.46	245,800
April	68,010	3,210	1,750	2,267	8.59	9.58	134,900
May	94,650	7,100	1,650	3,053	11.6	13.33	187,700
June	37,820	1,650	839	1,261	4.78	5.33	75,010
July	20,106	823	508	649	2.46	2.83	39,880
August	15,498	806	379	500	1.89	2.18	30,740
September	15,124	727	374	504	1.91	2.13	30,000
Water year 1939-40	1,054,083	17,700	374	2,880	10.9	148.48	2,091,000

Peak discharge.- Dec. 8 (10 p.m.) 15,400 sec.-ft.; Dec. 15 (5 p.m.) 21,500 sec.-ft.; Jan. 2 (10 to 11 p.m.) 14,600 sec.-ft.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Queets River near Clearwater, Wash.

Location.- Water-stage recorder, lat. 47°32', long. 124°19', in SW¼ sec. 36, T. 24 N., R. 13 W., on Quinault Indian Reservation, 2 miles downstream from Clearwater River and 4 miles southwest of Clearwater. Datum of gage is 14.5 feet above mean sea level (river-profile survey).
Drainage area.- 454 square miles.
Records available.- September 1930 to September 1940.
Average discharge.- 10 years, 4,362 second-feet.
Extremes.- Maximum discharge during year, 50,800 second-feet Dec. 15 (gage height, 19.19 feet), from rating curve extended above 30,000 second-feet; minimum, 452 second-feet Sept. 9.
1930-40: Maximum discharge, 100,000 second-feet Jan. 22, 1935 (gage height, 27.0 feet, present datum, from floodmarks), from rating curve extended above 31,000 second-feet; minimum, 384 second-feet Aug. 31, 1938; minimum gage height, 3.58 feet, present datum, Oct. 11, 1932.
Remarks.- Records excellent except those above 30,000 second-feet, which are fair. No diversion or regulation.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Feb. 9

5.0	655	8.0	4,780
5.3	880	9.0	6,860
5.6	1,160	10.0	9,310
6.0	1,600	11.0	12,200
6.5	2,250	12.0	15,600
7.0	2,980	13.0	19,300
7.5	3,820	15.0	27,900

Feb. 10 to Sept. 30

5.0	470	7.0	2,750
5.3	710	8.0	4,410
5.6	1,010	9.0	6,700
6.0	1,460	10.0	9,310
6.5	2,080		

Note.- Same as preceding table above 10 feet.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	552	2,110	8,080	11,900	4,000	20,000	3,500	17,900	1,380	740	2,280	620
2	533	2,180	12,800	20,400	3,470	13,600	3,040	9,310	1,400	760	1,520	533
3	540	2,250	6,860	14,700	3,470	7,980	2,750	6,090	1,270	730	1,090	512
4	3,450	2,180	12,500	10,400	11,200	9,400	2,540	5,970	1,200	701	910	588
5	2,900	2,110	8,520	10,400	13,900	7,980	2,400	6,090	1,120	683	830	512
6	2,460	2,320	9,850	8,270	14,200	5,730	2,280	4,610	1,110	647	780	477
7	1,660	7,760	12,800	6,420	12,200	9,160	3,440	3,850	1,340	638	740	470
8	1,290	11,400	23,400	5,380	11,000	8,240	3,190	4,220	1,200	638	701	470
9	1,110	6,860	19,700	4,680	26,200	6,450	4,320	4,720	1,130	629	692	470
10	1,010	12,800	17,100	4,190	17,000	5,380	3,580	3,940	1,150	701	656	484
11	907	13,600	11,600	3,730	10,100	4,510	2,960	3,420	1,200	930	612	498
12	864	12,200	8,520	3,380	7,460	3,850	2,680	2,890	1,190	770	604	533
13	816	10,400	7,540	3,220	9,850	3,500	2,820	2,610	1,230	710	572	900
14	778	9,310	26,600	3,060	7,460	5,970	2,540	2,610	1,140	674	540	850
15	740	8,780	32,400	2,980	5,970	7,780	2,210	2,960	1,040	638	526	1,390
16	718	7,310	18,900	4,280	5,620	10,500	2,020	2,610	1,030	629	519	860
17	2,030	6,210	14,900	3,470	5,380	6,210	1,880	2,340	980	604	519	830
18	1,550	5,790	10,400	3,060	5,730	4,610	2,340	2,280	970	572	526	1,440
19	10,600	4,580	10,700	2,760	5,270	3,850	2,080	2,140	1,020	548	526	900
20	5,890	3,820	13,900	2,530	4,320	3,420	1,880	2,080	1,000	556	533	730
21	8,860	5,790	9,580	2,320	3,760	3,120	1,760	1,950	920	564	540	638
22	5,080	7,010	7,310	2,180	3,340	2,820	1,700	1,950	850	556	540	604
23	4,280	4,780	6,000	2,110	3,580	2,610	2,080	1,950	840	548	505	588
24	3,640	3,820	4,980	1,980	3,340	3,500	2,540	1,880	890	540	491	556
25	2,830	3,300	4,380	2,110	3,340	2,750	2,210	1,700	940	540	484	540
26	4,810	2,980	3,820	3,180	7,180	3,190	2,020	1,560	870	872	484	564
27	3,820	2,680	3,470	17,100	6,090	6,210	2,080	1,410	790	1,130	683	900
28	4,480	2,390	6,220	9,850	5,380	5,730	5,160	1,340	760	900	850	740
29	3,300	4,840	10,400	9,850	11,000	4,410	3,940	1,340	770	1,550	604	612
30	2,760	12,400	7,780	6,210	-	5,040	3,640	1,410	760	1,540	540	564
31	2,320	-	9,150	4,780	-	4,030	-	1,440	-	1,570	564	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	86,578	10,600	533	2,793	6.15	7.09	171,700
November	183,960	13,600	2,110	6,132	13.5	15.07	364,900
December	360,160	32,400	3,470	11,620	25.6	29.50	714,400
Calendar year 1939	1,541,384	46,400	514	4,223	9.30	126.27	3,057,000
January	190,880	20,400	1,980	6,157	13.6	15.64	378,600
February	230,810	26,200	3,340	7,959	17.5	18.91	457,800
March	191,530	20,000	2,610	6,178	13.6	15.69	379,900
April	81,580	5,160	1,700	2,719	5.99	6.68	161,800
May	110,570	17,900	1,340	3,567	7.86	9.06	219,300
June	31,490	1,400	760	1,050	2.31	2.58	62,460
July	23,808	1,570	540	768	1.69	1.95	47,220
August	21,961	2,280	484	708	1.56	1.80	43,560
September	20,373	1,440	470	679	1.50	1.67	40,410
Water year 1939-40	1,533,700	32,400	470	4,190	9.23	125.64	3,042,000

UNITED STATES DEPARTMENT OF THE INTERIOR
Geolog al Survey

Clearwater River near Clearwater, Wash.

Location.- Water-stage recorder, lat. 47°35', long. 124°18', in lot 4, sec. 18, T. 24 N., R. 12 W., 1½ miles north of Clearwater and 3 miles upstream from mouth.

Records available.- July 1937 to September 1940. October 1931 to September 1932, at site a quarter of a mile upstream.

Extremes.- Maximum discharge during year, 23,500 second-feet Dec. 14 (gage height, 13.88 feet), from rating curve extended above 6,000 second-feet by velocity-area method; minimum, 96 second-feet July 14, 23, 24, 25.

1931-32, 1937-40: Maximum discharge, 29,200 second-feet Oct. 28, 1937 (gage height, 14.90 feet), from rating curve extended above 6,000 second-feet by velocity-area method; minimum, 60 second-feet Sept. 15, 16, 17, 18, 1938.

Discharge known to have been greater Jan. 21 or 22, 1935 (stage and discharge not determined).

Remarks.- Records excellent except those for period of no gage-height record, and those above 8,000 second-feet, which are poor. No diversion or regulation.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Aug. 8-18)

Oct. 1 to Aug. 18						Aug. 19 to Sept. 30	
5.8	101	6.8	835	8.5	3,520	5.8	103
6.0	178	7.0	1,050	9.0	4,550	6.0	187
6.2	289	7.3	1,410	10.0	6,970	6.2	317
6.4	450	7.6	1,860	11.0	10,100	6.4	478
6.6	635	8.0	2,540			6.6	660

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	150	685	2,830	3,520	a1,300	7,050	1,070	6,120	259	120	825	140
2	146	735	3,620	5,740	a1,100	4,640	919	3,120	259	123	450	125
3	150	695	2,290	4,740	a1,000	2,640	805	2,000	235	116	304	129
4	1,250	685	4,760	3,220	a1,100	2,730	725	1,990	229	113	247	168
5	835	665	3,200	3,420	a4,000	2,510	675	2,000	219	110	214	136
6	846	705	3,520	2,730	a5,000	1,680	635	1,540	224	110	193	122
7	568	2,420	4,310	1,960	a4,400	2,960	1,000	1,260	271	107	173	114
8	442	4,140	6,310	1,490	a3,800	2,640	846	1,410	224	104	165	110
9	374	2,540	6,060	1,260	a3,000	2,070	1,290	1,340	209	104	171	103
10	335	5,380	5,220	1,100	a3,500	1,670	1,100	1,140	198	132	162	103
11	297	5,100	3,720	962	a2,700	1,360	908	962	188	183	149	107
12	271	4,880	2,640	846	a2,200	1,170	785	825	188	129	136	110
13	253	3,920	2,260	815	a3,500	1,050	755	735	219	116	130	199
14	235	3,520	11,800	765	a2,100	2,170	645	725	193	113	123	238
15	229	3,520	11,100	806	a1,600	2,870	578	825	178	104	124	348
16	224	2,820	5,570	1,270	a1,400	3,580	522	685	169	104	121	193
17	771	2,240	4,340	1,020	a1,250	2,100	486	606	164	104	118	266
18	651	1,970	3,220	877	a1,400	1,490	655	550	155	101	118	387
19	4,750	1,520	3,120	775	a1,250	1,200	531	504	150	99	114	223
20	2,420	1,240	4,440	695	a1,150	1,010	495	450	146	101	114	178
21	3,420	2,240	3,120	626	a1,050	856	450	424	146	101	125	154
22	1,960	2,420	2,210	559	a950	745	408	390	146	101	136	140
23	1,510	1,620	1,660	a510	a1,000	705	522	374	141	99	118	133
24	1,230	1,270	1,330	a470	a950	888	665	350	137	99	110	125
25	995	1,050	1,120	a500	a1,000	655	559	342	132	104	107	118
26	1,740	919	962	a900	a2,500	835	504	327	129	229	114	122
27	1,310	785	856	a6,000	1,780	2,000	625	304	129	247	217	286
28	1,320	715	1,770	a3,500	1,600	1,800	1,790	289	126	173	205	199
29	1,070	2,050	3,240	a2,500	3,340	1,370	1,360	277	123	500	136	154
30	908	4,420	2,360	a1,850	-	1,540	1,390	265	120	543	122	140
31	785	-	2,920	a1,500	-	1,260	-	259	-	495	136	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	31,445	4,750	146	1,014	62,370
November	66,869	5,380	665	2,229	132,600
December	115,878	11,800	856	3,738	229,800
Calendar year 1939	497,025	19,000	102	1,362	985,700
January	56,926	6,000	470	1,836	112,900
February	66,920	9,000	950	2,308	132,700
March	61,044	7,050	655	1,969	121,100
April	23,698	1,790	408	790	47,000
May	32,398	6,120	259	1,045	64,260
June	5,406	271	120	180	10,720
July	4,984	543	99	161	9,890
August	5,677	825	107	183	11,260
September	5,070	387	103	169	10,060
Water year 1939-40	476,315	11,800	99	1,301	944,700

Peak discharge.- Oct. 19 (4:15 a.m.) 10,100 sec.-ft.; Dec. 14 (3 p.m.) 23,500 sec.-ft.; Dec. 15 (11:15 a.m.) 19,500 sec.-ft.; Mar. 1 (2:45 p.m.) 11,600 sec.-ft.; May 1 (7 a.m.) 9,060 sec.-ft.

a No gage-height record; discharge computed on basis of records for Queets River near Clearwater.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Hoh River near Spruce, Wash.

Location.- Water-stage recorder, lat. 47°48', long. 124°06', in sec. 34, T. 27 N., R. 11 W., 2¾ miles downstream from Spruce and 5 miles downstream from South Fork.
Drainage area.- 193 square miles.
Records available.- August 1926 to September 1940.
Average discharge.- 14 years, 1,975 second-feet.
Extremes.- Maximum discharge during year, 20,700 second-feet Dec. 15 (gage height, 15.08 feet), from rating curve extended above 8,000 second-feet; minimum, 495 second-feet Oct. 3 (gage height, 1.17 feet).

1926-40: Maximum discharge, 40,000 second-feet Nov. 5, 1934 (gage height, 21.2 feet, from high-water mark in gage structure), from rating curve extended above 8,000 second-feet on basis of velocity-area studies (gage observer noted water higher on this day than at any other time during his 43 years of residence on the stream); minimum, 247 second-feet Nov. 14, 15, 1929; minimum gage height, 0.71 foot Nov. 10, 1936.

Remarks.- Records excellent except those above 10,000 second-feet, which are fair. No diversion or artificial regulation. Large diurnal fluctuation during summer months caused by melting of glaciers at source.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Jan. 27

1.3	540	4.5	2,250
1.6	635	5.0	2,690
2.0	785	6.0	3,740
2.5	995	7.0	4,960
3.0	1,240	8.0	6,360
3.5	1,500	10.0	9,700
4.0	1,850	12.0	13,500

Jan. 27 to Sept. 30

2.5	810	6.0	3,470
3.0	1,060	7.0	4,780
3.5	1,360	8.0	6,300
4.0	1,690	10.0	9,700
5.0	2,470		

Note.- Same as preceding table above 10.0 feet.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	585	928	4,670	6,510	2,060	6,260	1,620	7,680	1,390	1,040	1,240	907
2	540	995	6,510	8,980	1,800	4,780	1,460	5,080	1,360	1,150	1,040	810
3	525	995	3,970	5,220	1,760	3,140	1,330	3,140	1,270	1,010	958	787
4	1,580	885	5,640	4,700	3,730	4,970	1,240	2,560	1,180	934	958	720
5	1,230	885	3,850	4,330	4,090	3,710	1,180	2,300	1,090	934	1,010	658
6	950	1,010	3,970	3,410	4,780	2,840	1,120	2,060	1,120	832	1,060	699
7	725	3,000	6,720	2,890	4,090	3,850	1,360	1,870	1,360	832	1,040	787
8	652	3,880	10,800	2,510	3,590	3,360	1,360	2,310	1,150	907	1,090	834
9	670	2,420	8,300	2,250	6,620	2,650	1,800	2,840	1,180	977	1,040	834
10	652	3,950	7,620	2,090	5,680	2,220	1,490	2,650	1,330	1,120	882	958
11	600	4,700	5,090	1,850	3,710	1,990	1,300	2,300	1,460	1,370	882	882
12	652	4,700	3,970	1,700	3,040	1,760	1,300	1,910	1,520	1,370	958	1,180
13	652	4,090	3,520	1,630	3,710	1,620	1,590	1,730	1,520	1,270	810	1,060
14	635	3,970	8,530	1,500	3,040	2,060	1,490	1,760	1,330	1,120	764	1,100
15	600	4,090	13,000	1,500	2,560	2,990	1,270	1,990	1,240	1,120	742	1,120
16	555	3,300	8,810	1,560	2,390	3,360	1,150	1,800	1,180	1,060	742	834
17	1,080	2,790	6,970	1,440	2,220	2,300	1,060	1,660	1,120	958	858	985
18	850	2,420	5,090	1,340	2,140	1,990	1,300	1,690	1,180	882	984	992
19	3,390	2,010	6,360	1,290	1,990	1,730	1,150	1,760	1,360	858	1,040	699
20	1,940	1,700	6,360	1,240	1,760	1,590	1,060	1,760	1,240	932	984	619
21	2,420	3,560	4,700	1,190	1,660	1,460	984	1,620	1,060	958	907	658
22	1,770	3,550	3,630	1,140	1,490	1,390	1,010	1,760	958	958	858	787
23	1,700	2,330	2,990	1,120	1,490	1,330	1,270	1,910	1,040	858	858	858
24	1,340	1,930	2,600	1,090	1,390	1,910	1,420	1,730	1,180	907	882	834
25	1,060	1,630	2,330	1,120	1,390	1,560	1,300	1,490	1,300	882	882	882
26	1,220	1,500	2,090	1,610	2,300	1,620	1,210	1,270	1,120	1,190	858	1,010
27	1,300	1,340	1,930	6,520	2,140	2,560	1,270	1,150	984	1,270	1,010	958
28	1,700	1,240	2,740	5,530	2,140	2,220	1,990	1,120	984	1,120	932	720
29	1,220	2,910	5,240	5,420	4,220	1,870	1,800	1,180	1,010	1,460	932	658
30	1,060	5,400	3,850	3,040	-	1,990	1,940	1,330	1,010	1,360	1,010	638
31	1,020	-	4,970	2,390	-	1,800	-	1,460	-	1,180	1,150	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	34,873	3,390	525	1,125	5.83	6.72	69,170
November	78,108	5,400	885	2,604	13.5	15.05	154,900
December	166,820	13,000	1,930	5,381	27.9	32.15	330,900
Calendar year 1939	757,182	16,200	525	2,074	10.7	145.93	1,502,000
January	88,110	8,980	1,090	2,842	14.7	16.98	174,800
February	82,980	6,620	1,390	2,861	14.8	15.99	164,600
March	78,800	6,260	1,330	2,545	13.2	15.20	156,500
April	40,824	1,990	984	1,361	7.05	7.87	80,970
May	66,870	7,680	1,120	2,157	11.2	12.89	132,600
June	36,226	1,520	958	1,208	6.26	6.98	71,850
July	33,079	1,460	858	1,067	5.53	6.37	65,610
August	29,361	1,240	742	947	4.91	5.66	58,240
September	25,478	1,180	619	849	4.40	4.91	50,530
Water year 1939-40	761,609	13,000	525	2,081	10.8	146.77	1,511,000

Peak discharge.- Dec. 8 (2:45 p.m.) 13,100 sec.-ft.; Dec. 14 (5:30 p.m.) 13,300 sec.-ft.; Dec. 15 (11:50 a.m.) 20,700 sec.-ft.; Jan. 2 (2 p.m.) 10,400 sec.-ft.; May 1 (5:40 a.m.) 10,200 sec.-ft.

9-233 April 1936
UNITED STATES DEPARTMENT OF THE INTERIOR
Geolog. Survey
101604-0 U.S. GOVERNMENT PRINTING OFFICE 1936

Soleduck River near Fairholm, Wash.

Location.- Water-stage recorder, lat. 48°02'30", long. 123°57'30", in lot 4, sec. 35, T. 30 N., R. 10 W., 300 feet downstream from South Fork, 2.5 miles southwest of Fairholm, and 17 miles west of Beaver.
Drainage area.- 79 square miles.
Records available.- October 1917 to September 1921, October 1933 to September 1940.
Average discharge.- 11 years, 641 second-feet.
Extremes.- Maximum discharge during year, 11,200 second-feet Dec. 15 (gage height, 9.74 feet), from rating curve extended above 3,000 second-feet; minimum, 58 second-feet Sept. 9, 11, 24, 25, 26.
1917-21, 1933-40: Maximum discharge, 24,300 second-feet Dec. 21, 1933 (gage height, 14.9 feet), from rating curve extended above 5,000 second-feet; minimum, 58 second-feet Sept. 29, Oct. 2, 3, 1918, Sept. 9, 11, 24, 25, 26, 1940.
Remarks.- Records excellent except those for period of no gage-height record, and those above 5,000 second-feet, which are poor. No diversion or regulation.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 15				Dec. 16 to Sept. 30			
1.3	81	3.5	910	1.3	65	3.0	573
1.5	114	4.0	1,300	1.5	92	3.5	860
1.7	157	5.0	2,250	1.7	127	4.0	1,220
2.0	230	6.0	3,610	2.0	200	5.0	2,140
2.5	396	7.0	5,350	2.5	365	6.0	3,500
3.0	610	e.0	7,390				

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69	166	1,800	1,830	709	2,680	568	2,960	310	129	121	66
2	70	185	2,440	2,830	617	2,020	519	1,600	304	127	105	66
3	69	209	1,300	1,880	607	1,300	477	1,070	286	125	95	68
4	181	182	1,780	1,460	1,260	2,330	444	853	263	121	91	68
5	217	180	1,260	1,300	1,420	1,550	416	751	244	118	85	65
6	199	197	1,340	1,070	1,730	1,110	392	670	248	116	82	63
7	137	522	2,310	894	1,460	1,680	432	598	290	114	81	61
8	110	852	a4,500	769	1,260	1,380	428	638	254	112	78	61
9	105	528	a3,400	686	2,560	1,070	542	704	238	108	78	60
10	101	1,530	a3,300	627	1,960	860	460	670	238	123	79	62
11	93	1,300	a1,600	573	1,300	744	404	612	244	127	77	60
12	87	1,220	a1,300	528	1,030	654	408	528	235	114	75	70
13	82	1,100	a1,100	502	1,380	602	473	485	235	108	74	78
14	80	1,140	a2,500	473	1,110	769	436	477	220	105	73	73
15	77	1,040	a6,700	464	894	1,110	381	515	209	102	72	78
16	76	850	a3,500	481	894	1,300	358	485	200	98	70	69
17	122	730	a2,500	456	807	894	343	448	192	95	69	78
18	118	658	a2,000	432	721	726	420	444	186	94	69	97
19	827	528	2,310	412	643	633	369	452	186	92	68	77
20	318	465	2,370	392	583	578	339	436	181	92	68	69
21	364	827	1,640	381	542	532	321	400	173	92	69	64
22	262	1,220	1,260	369	511	502	310	416	166	89	68	62
23	291	760	1,030	361	494	489	412	424	161	88	66	61
24	272	585	894	354	456	643	444	388	156	85	65	60
25	212	502	782	381	473	528	400	361	156	86	64	58
26	275	438	698	586	854	546	384	335	149	100	65	60
27	262	396	638	2,780	801	860	381	307	147	105	74	70
28	298	367	847	2,030	806	807	648	290	142	95	77	69
29	233	1,010	1,580	1,800	1,830	670	593	286	136	116	68	63
30	202	2,010	1,260	1,140	-	709	668	293	134	129	65	61
31	182	-	1,460	860	-	622	-	310	-	127	66	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	5,991	827	69	193	2.44	2.82	11,880
November	21,697	2,010	166	723	9.15	10.21	43,040
December	61,399	6,700	638	1,981	25.1	28.90	121,800
Calendar year 1939	227,742	8,680	69	624	7.90	107.20	451,700
January	29,103	2,830	354	939	11.9	13.70	57,720
February	29,712	2,560	456	1,025	13.0	13.99	58,930
March	30,898	2,680	489	997	12.6	14.55	61,290
April	13,170	668	310	439	5.56	6.20	26,120
May	19,206	2,960	286	620	7.85	9.04	38,090
June	6,283	310	134	209	2.65	2.96	12,460
July	3,332	129	85	107	1.35	1.57	6,610
August	2,357	121	64	76.0	.962	1.11	4,680
September	2,017	97	58	67.2	.851	.95	4,000
Water year 1939-40	225,165	6,700	58	615	7.78	106.00	446,600

a No gage-height record; discharge computed on basis of records for Hoh River near Spruce and Dungeness River near Sequim.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
101804-0 U.S. GOVERNMENT PRINTING OFFICE 1936

Elwha River at McDonald Bridge, near Port Angeles, Wash.

Location.- Water-stage recorder, lat. 48°03'20", long. 123°34'55", in NE¼NW¼ sec. 33, T. 30 N., R. 7 W., at McDonald Bridge, 7 miles upstream from mouth and 8 miles southwest of Port Angeles. Datum of gage is 200.00 feet above mean sea level (general adjustment of 1929).
Drainage area.- 262 square miles.
Records available.- October 1897 to December 1901, October 1918 to September 1940.
Average discharge.- 26 years, 1,465 second-feet (adjusted for storage since April 1927).
Extremes.- Maximum discharge during year, 15,600 second-feet Dec. 15 (gage height, 18.44 feet), from rating curve extended above 4,000 second-feet; minimum, 22 second-feet (regulated) Sept. 10, 11; minimum daily, 22 second-feet (regulated) Sept. 10.
1897-1901, 1918-40: Maximum discharge, 26,700 second-feet Dec. 21, 1933 (gage height, 10.5 feet, site and datum then in use, from floodmarks) computed on basis of spillway and turbine records at Glines Canyon Reservoir; minimum daily, 10 second-feet Oct. 3, 1938.
Remarks.- Records good except those for discharges below 400 second-feet, those above 5,000 second-feet, and those for period of no gage-height record, which are poor. Flow affected by Glines Canyon Reservoir on Elwha River, lat. 48°00'05", long. 123° 41'05", 4 miles north of Elwha, which was completed in 1927 for development of power. Usable capacity, 38,650 acre-feet at elevation 610 feet. Change in contents determined from average of two staff-gage readings daily. Flow that is diverted through Glines Canyon powerhouse is returned to river above gage.
Cooperation.- Reservoir gage heights furnished by Crown-Zellerbach Corporation.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	†194	588	2,230	4,460	a1,860	3,610	1,590	4,090	1,590	902	676	†580
2	197	580	3,170	6,750	1,730	3,470	1,520	3,180	†1,520	1,000	552	34
3	322	568	†2,050	4,160	1,640	†2,290	1,420	2,110	1,530	902	575	362
4	430	547	2,930	3,550	†1,640	3,600	1,390	2,010	1,430	82	†455	494
5	448	†272	2,070	3,400	2,080	2,920	1,390	†1,840	1,360	620	394	427
6	494	426	2,070	2,430	3,120	2,460	1,360	1,630	1,200	911	544	338
7	494	780	4,120	†2,350	2,770	2,960	†1,270	1,630	1,430	†982	536	475
8	†245	930	7,550	2,140	2,310	2,510	1,200	1,790	1,310	857	606	†294
9	354	1,050	5,500	1,960	3,290	2,250	1,310	2,460	†1,300	775	640	26
10	510	980	†5,060	1,820	3,460	†2,030	1,360	2,520	1,430	770	582	22
11	618	1,080	3,470	1,700	†2,580	1,840	1,300	2,210	1,600	793	†422	88
12	676	†843	3,010	1,560	2,150	1,780	1,310	†1,930	1,580	784	416	372
13	730	1,470	2,480	1,490	2,590	1,710	1,670	1,720	1,560	803	536	384
14	715	1,540	3,960	†1,430	2,070	1,540	†1,580	1,770	1,480	†440	520	349
15	†346	1,510	8,900	1,300	2,010	2,040	1,410	1,830	1,310	440	525	†320
16	457	1,500	7,310	1,360	1,900	2,480	1,330	1,820	†1,240	694	508	441
17	595	1,470	†5,710	1,400	1,940	†1,640	1,280	1,730	1,190	631	426	422
18	502	1,360	4,380	1,310	†1,700	1,820	1,400	1,870	1,190	696	†177	445
19	508	†1,090	4,690	1,150	1,560	1,860	1,340	†1,880	1,280	742	420	498
20	580	893	4,440	a1,020	1,590	1,860	1,340	2,050	1,280	708	590	496
21	752	1,260	3,640	a†1,120	1,520	1,680	†1,260	1,770	1,200	†494	614	468
22	†398	1,440	2,010	a1,030	1,540	1,650	1,250	1,970	1,150	386	634	†272
23	452	1,160	2,010	a960	1,530	1,660	1,260	2,220	†1,080	610	622	272
24	758	1,080	†2,010	a1,040	1,380	†1,260	1,430	2,170	1,090	642	602	420
25	759	1,060	2,030	a1,060	†1,230	1,670	1,430	1,880	1,090	630	†406	457
26	706	†956	1,880	a1,500	1,630	1,630	1,450	†1,580	1,100	634	524	460
27	646	788	1,910	a4,520	1,710	2,000	1,410	1,420	1,090	700	636	544
28	676	1,360	2,140	†4,530	1,620	1,730	†1,340	1,450	1,050	†594	572	507
29	†329	932	3,360	a3,280	2,690	1,630	1,200	1,450	976	504	622	†238
30	378	1,370	2,430	a2,180	-	1,710	1,330	1,450	†917	609	704	335
31	556	-	†3,380	a2,160	-	†1,630	-	1,590	-	688	677	-

Month	Observed: Discharge in second-feet: Maximum	Minimum	Mean	Observed: Run-off in acre-feet	Change in contents in Glines Canyon Reservoir (acre-feet)	Adjusted for change in reservoir contents: Run-off in acre-feet	Discharge in second-feet: Mean	Per square mile	Run-off in inches
October	759	194	510	31,390	+40	31,430	511	1.95	2.25
November	1,540	272	1,029	61,260	+3,260	64,520	1,084	4.14	4.62
December	8,900	1,880	3,619	222,500	+600	223,100	3,628	13.8	15.91
Calendar year 1939	11,600	54	1,403	1,015,000	+250	1,016,000	1,403	5.35	72.62
January	6,750	960	2,262	139,100	+300	139,400	2,267	8.65	9.97
February	3,460	1,230	2,029	116,700	+50	116,800	2,031	7.75	8.36
March	3,610	1,260	2,094	128,800	-90	128,700	2,093	7.99	9.21
April	1,670	1,200	1,371	81,580	-260	81,320	1,367	5.22	5.82
May	4,090	1,420	1,968	121,000	+260	121,300	1,973	7.53	8.68
June	1,600	917	1,285	76,470	-1,530	74,940	1,259	4.81	5.37
July	1,000	82	675	41,500	+840	42,340	689	2.63	3.03
August	704	177	539	33,150	-2,780	30,370	494	1.89	2.18
September	580	22	361	21,500	+2,100	23,600	397	1.52	1.70
Water year 1939-40	8,900	22	1,481	1,075,000	+2,790	1,078,000	1,485	5.67	77.10

†Sunday.
a No gage-height record; discharge computed on basis of plant superintendent's report of flow at Glines Canyon.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
101605-0 U.S. GOVERNMENT PRINTING OFFICE 1936

Dungeness River near Sequim, Wash.

Location.- Water-stage recorder, lat. 48°00'40", long. 123°07'50", in SW¼SE¼ sec. 12, T. 29 N., R. 4 W., three-quarters of a mile upstream from Canyon Creek, 4½ miles southwest of Sequim, and 11½ miles upstream from mouth.
Drainage area.- 156 square miles.
Records available.- June 1937 to September 1940. July 1897 to July 1898 at site about 2 miles downstream; June 1923 to September 1930 at site half a mile downstream.
Average discharge.- 10 years (1923-30, 1937-40), 334 second-feet.
Extremes.- Maximum discharge during year, 4,010 second-feet Dec. 15 (gage height, 6.27 feet), from rating curve extended above 900 second-feet; minimum, 98 second-feet Oct. 15, 16 (gage height, 2.50 feet).
1897-98, 1923-30, 1937-40: Maximum discharge, 5,380 second-feet Dec. 28, 1937 (gage height, 6.85 feet), from rating curve extended above 900 second-feet; minimum observed, 77 second-feet Sept. 10, 1928.
Remarks.- Records excellent except those above 1,000 second-feet, which are fair. No diversion or regulation.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 15				Dec. 16 to Sept. 30			
2.6	113	4.0	674	2.8	152	4.0	674
2.8	152	4.5	1,120	3.0	204	4.5	1,120
3.0	204	5.0	1,730	3.3	306	5.0	1,730
3.3	320	5.5	2,490	3.6	436		
3.6	455	6.0	3,470				

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	101	110	382	1,100	528	478	363	1,050	647	422	220	162
2	108	110	586	1,840	483	494	338	1,050	595	422	216	154
3	101	107	410	1,380	462	417	322	732	564	380	213	152
4	139	104	428	1,070	462	545	306	588	534	355	207	152
5	144	102	401	812	472	570	291	557	516	342	210	148
6	129	106	347	667	557	478	280	534	511	326	210	142
7	117	120	545	576	511	511	288	499	534	326	213	142
8	110	154	1,320	522	472	516	288	545	511	326	210	152
9	108	137	909	488	483	472	284	796	539	318	213	148
10	106	137	928	452	499	427	276	976	595	338	198	154
11	104	177	623	422	457	389	276	855	667	368	190	150
12	102	259	496	394	431	350	310	689	710	372	193	250
13	101	251	442	372	452	330	436	588	689	338	187	216
14	100	223	830	350	412	322	446	564	595	306	179	179
15	100	201	2,320	342	385	385	398	557	564	302	176	174
16	98	184	1,940	342	376	441	355	551	551	302	174	157
17	108	187	1,370	330	363	385	334	564	516	284	174	154
18	104	169	909	314	338	355	342	595	534	269	179	159
19	196	152	1,030	299	322	338	330	696	588	259	179	144
20	150	146	957	288	310	330	314	703	570	255	182	133
21	146	176	696	280	299	326	306	634	483	269	190	129
22	133	243	588	273	299	322	318	696	436	255	179	131
23	139	190	516	269	288	322	417	804	441	259	176	131
24	133	169	467	262	280	389	417	796	488	245	171	131
25	118	152	436	259	284	376	408	710	545	238	174	131
26	120	146	403	301	291	372	412	570	499	293	171	139
27	117	137	380	829	288	368	394	511	417	330	169	222
28	142	133	422	900	306	334	376	499	394	288	166	159
29	126	154	566	1,100	412	342	350	516	408	266	159	144
30	118	419	588	732	-	359	355	557	422	252	164	135
31	113	-	694	601	-	368	-	661	-	232	171	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	3,731	196	98	120	0.769	0.89	7,400
November	5,055	419	102	168	1.08	1.21	10,030
December	22,929	2,320	347	740	4.74	5.47	45,480
Calendar year 1939	117,375	2,560	98	322	2.06	27.93	232,800
January	18,166	1,840	259	586	3.76	4.33	36,030
February	11,522	557	280	397	2.54	2.75	22,850
March	12,411	570	322	400	2.56	2.93	24,620
April	10,330	446	276	344	2.21	2.43	20,490
May	20,643	1,050	499	666	4.27	4.93	40,940
June	16,063	710	394	535	3.43	3.83	31,860
July	9,537	422	232	308	1.97	2.27	18,920
August	5,813	220	159	188	1.21	1.39	11,530
September	4,674	250	129	156	1.00	1.11	9,270
Water year 1939-40	140,874	2,320	98	385	2.47	33.59	279,400

Peak discharge.- Dec. 8 (1 p.m.) 1,940 sec.-ft.; Dec. 14 (5 p.m.) 1,580 sec.-ft.; Dec. 15 (11:15 a.m.) 4,010 sec.-ft.; Jan. 2 (1 p.m.) 2,160 sec.-ft.; Jan. 29 (1 to 2:15 a.m.) 1,320 sec.-ft.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geolog. Survey
101604-0 U.S. GOVERNMENT PRINTING OFFICE 1936

DOSEWALLIPS RIVER BASIN

Dosewallips River near Brinnon, Wash.

Location.- Water-stage recorder, lat. 47°43', long. 123°00', in SW¼ sec. 24, T. 26 N., R. 3 W., half a mile upstream from Corrigenda ranger station, 5⅛ miles northwest of Brinnon, and 7⅛ miles upstream from mouth.

Drainage area.- 94 square miles.

Records available.- October 1930 to September 1940.

Average discharge.- 10 years, 464 second-feet.

Extremes.- Maximum discharge during year, 4,310 second-feet Dec. 8 (gage height, 6.56 feet); minimum, 92 second-feet Oct. 16 (gage height, 1.88 feet).
1930-40: Maximum discharge, 10,900 second-feet Nov. 5, 1934 (gage height, 9.57 feet), from rating curve extended above 4,500 second-feet; minimum, 65 second-feet Dec. 4, 1936 (gage height, 1.71 feet).

Remarks.- Records good except those above 1,500 second-feet, which are fair. No diversion or regulation.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 30						May 1 to Sept. 30			
1.9	95	2.7	300	5.0	2,030	2.1	139	3.0	429
2.1	131	3.0	420	6.0	3,380	2.3	184	3.5	647
2.3	176	3.5	690			2.5	243	4.0	931
2.5	233	4.0	1,050			2.7	313	5.0	1,880

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	102	109	747	2,150	660	1,010	520	1,340	778	441	221	160
2	110	109	977	3,020	594	935	475	1,200	724	437	215	150
3	97	107	582	1,960	606	704	438	807	672	405	212	145
4	190	98	700	1,600	802	905	416	697	624	389	212	143
5	159	97	505	1,360	858	858	394	624	596	381	209	135
6	125	100	475	1,050	1,090	666	381	591	600	362	215	134
7	112	200	1,440	851	900	697	442	582	624	358	218	145
8	107	262	2,860	725	732	666	456	718	591	358	218	154
9	105	169	1,700	654	851	576	452	999	647	343	215	152
10	102	200	2,100	582	886	515	424	1,160	724	370	195	167
11	98	408	1,200	526	697	456	420	931	778	381	190	154
12	100	416	844	485	630	420	515	778	837	377	192	273
13	100	357	678	452	660	390	725	697	750	343	182	206
14	98	318	1,120	429	600	390	684	697	647	328	174	192
15	97	311	2,640	411	532	503	570	724	624	324	174	195
16	94	265	1,920	398	548	606	495	724	624	317	172	156
17	131	243	1,400	381	548	515	456	750	586	302	174	160
18	107	221	1,010	361	490	465	485	837	624	284	179	158
19	301	190	1,180	345	447	434	470	931	672	281	184	135
20	179	176	1,180	330	416	429	442	899	600	277	184	126
21	184	344	886	318	394	429	434	837	516	291	174	126
22	148	403	725	311	377	434	460	965	474	270	167	137
23	164	268	630	300	361	442	588	1,080	491	270	167	139
24	139	227	554	290	337	594	570	999	551	260	167	139
25	116	200	500	286	349	548	542	867	582	250	167	143
26	122	190	460	386	429	564	532	697	512	299	162	152
27	129	176	429	1,120	424	612	510	624	450	332	174	165
28	184	164	520	1,240	541	542	475	624	433	284	170	137
29	131	325	1,040	1,500	970	532	434	672	441	274	160	128
30	116	680	900	1,010	-	564	468	750	445	253	167	126
31	112	-	1,180	788	-	542	-	837	-	231	179	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	4,059	301	94	131	1.39	1.61	8,050
November	7,333	680	97	244	2.60	2.90	14,540
December	33,102	2,880	429	1,068	11.4	13.10	65,660
Calendar year 1939	148,391	3,070	94	407	4.33	58.70	294,300
January	25,619	3,020	286	826	8.79	10.14	50,810
February	17,729	1,090	337	611	6.50	7.01	35,160
March	17,943	1,010	390	579	6.16	7.10	35,590
April	14,673	725	381	489	5.20	5.81	29,100
May	25,638	1,340	582	827	8.80	10.14	50,850
June	18,217	837	433	607	6.46	7.21	36,130
July	10,072	441	231	325	3.46	3.98	19,980
August	5,789	221	160	187	1.99	2.29	11,480
September	4,632	273	126	154	1.64	1.83	9,190
Water year 1939-40	184,806	3,020	94	505	5.37	73.12	366,500

Peak discharge.- Dec. 8 (12:30 p.m.) 4,310 sec.-ft.; Dec. 10 (7 a.m.) 2,600 sec.-ft.; Dec. 15 (11 a.m. to 12 m.) 4,220 sec.-ft.; Jan. 1 (9:45 p.m.) 3,300 sec.-ft.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Duckabush River near Brinnon, Wash.

Location.- Water-stage recorder, lat. 47°41'00", long. 123°00'40", in SW¼SW¼ sec. 1, T. 25 N., R. 3 W., 4⅝ miles upstream from mouth and 5 miles west of Brinnon.

Drainage area.- 66 square miles.

Records available.- June 1938 to September 1940. August 1910 to December 1911, staff gage at practically same site but different datum, published as Duckabush River near Duckabush, Wash.

Extremes.- Maximum discharge during year, 6,080 second-feet Dec. 15 (gage height, 8.07 feet); minimum, 50 second-feet Oct. 1 (gage height, 1.33 feet).
1911-12, 1938-40: Maximum discharge, that of Dec. 15, 1939; minimum, 46 second-feet Oct. 8, 9, 1938.

Remarks.- Records excellent. No diversion or regulation.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 15						Dec. 15 to Sept. 30			
1.4	58	2.6	332	5.0	2,150	1.5	50	4.0	985
1.6	83	3.0	505	6.0	3,300	1.7	78	4.5	1,420
1.8	113	3.5	795	6.5	3,920	2.0	135	5.0	1,950
2.0	155	4.0	1,180			2.5	270	6.0	3,130
2.3	234	4.5	1,630			3.0	440	6.5	3,780
						3.5	660		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	51	80	866	2,640	522	1,280	510	1,320	478	216	112	66
2	56	78	1,120	4,050	451	1,020	440	948	463	213	106	63
3	51	76	622	2,000	506	660	394	624	436	199	101	62
4	97	71	634	1,680	985	842	355	535	397	188	99	64
5	99	70	472	1,320	948	759	332	535	369	186	95	62
6	84	73	491	883	1,190	566	312	494	366	173	93	60
7	78	171	2,350	682	849	624	576	463	390	168	93	60
8	69	248	4,050	566	644	584	522	567	362	166	92	60
9	63	155	2,370	510	901	486	490	753	386	163	92	60
10	60	217	3,100	455	849	433	426	796	440	166	88	64
11	58	387	1,430	411	608	386	386	650	478	170	85	62
12	57	362	980	372	527	349	440	540	467	170	85	112
13	56	376	776	349	557	325	544	490	451	163	83	99
14	52	362	1,530	328	510	318	506	490	408	151	80	103
15	52	297	3,590	309	451	557	426	514	386	146	78	116
16	51	234	2,170	302	478	671	372	502	372	144	76	88
17	69	206	1,620	299	510	506	342	498	359	140	75	81
18	63	188	1,020	283	440	433	359	540	362	131	75	90
19	166	158	1,180	267	386	380	345	594	383	127	75	75
20	151	137	1,140	251	352	366	328	561	349	122	75	69
21	162	234	784	242	328	362	315	540	299	122	75	64
22	107	350	624	233	305	382	328	608	270	118	74	63
23	114	237	531	222	292	366	415	682	270	118	74	62
24	119	198	474	216	270	486	408	618	296	114	72	60
25	99	172	429	210	286	440	383	531	305	112	72	59
26	111	160	394	441	474	548	376	518	280	140	72	59
27	119	155	376	1,460	463	660	366	397	245	180	72	64
28	153	141	584	1,230	660	531	359	386	230	173	76	60
29	111	228	1,280	1,460	1,320	510	328	408	224	151	68	56
30	94	685	883	836	-	608	365	478	224	133	66	55
31	86	-	1,370	634	-	544	-	518	-	120	68	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	2,758	166	51	89.0	1.35	1.55	5,470
November	6,506	685	70	217	3.29	3.67	12,900
December	39,240	4,050	376	1,266	19.2	22.11	77,830
Calendar year 1939	128,466	4,200	50	352	5.33	72.42	254,800
January	25,141	4,050	210	811	12.3	14.17	49,870
February	17,062	1,320	270	588	8.91	9.61	33,840
March	16,962	1,280	318	547	8.29	9.56	33,640
April	12,048	576	312	402	6.09	6.79	23,900
May	18,098	1,320	386	584	8.85	10.20	35,900
June	10,745	478	224	358	5.42	6.05	21,310
July	4,783	216	112	154	2.33	2.70	9,490
August	2,547	112	66	82.2	1.25	1.44	5,050
September	2,118	116	55	70.6	1.07	1.19	4,200
Water year 1939-40	158,008	4,050	51	432	6.55	89.04	313,400

Peak discharge.- Dec. 7 (9 p.m.) 5,940 sec.-ft.; Dec. 8 (11:50 a.m.) 5,940 sec.-ft.; Dec. 10 (4 to 5 a.m.) 4,050 sec.-ft.; Dec. 15 (11 a.m.) 6,080 sec.-ft.; Jan. 1 (9 p.m.) 4,190 sec.-ft.; Jan. 2 (11 a.m. to 12 m.) 4,750 sec.-ft.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
101604-0 U.S. GOVERNMENT PRINTING OFFICE 1936

North Fork of Skokomish River below Staircase Rapids, near Hoodsport, Wash.

Location.- Staff gage, lat. 47°31', long. 123°20', in NW¼ sec. 4, T. 23 N., R. 5 W., three-quarters of a mile upstream from Lake Cushman, 2 miles upstream from Dry Creek, and 11½ miles northwest of Hoodsport.

Drainage area.- 60 square miles.

Records available.- July 1924 to September 1940.

Average discharge.- 16 years, 462 second-feet.

Extremes.- Maximum discharge during year not determined, occurred on Dec. 15 when gage was not read; minimum observed, 40 second-feet Oct. 1, 3.
1924-40: Maximum discharge, 23,300 second-feet Nov. 5, 1934 (gage height, 14.4 feet, from floodmarks), from rating curve extended above 3,200 second-feet; minimum recorded, 16 second-feet Sept. 23, 1930 (gage height, 1.12 feet).

Remarks.- Records good. Gage read once daily. No diversion or regulation.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 14

1.7	66	3.0	425
2.0	120	3.5	715
2.3	186	4.0	1,070
2.6	268		

Note.- Same as following table above 4.0 feet.

Dec. 15 to Sept. 30

1.5	46	3.0	450	6.0	3,300
1.7	74	3.5	725	7.0	5,150
2.0	130	4.0	1,070	8.0	7,250
2.3	202	4.5	1,510		
2.6	295	5.0	2,040		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	102	650	2,270	630	1,410	545	2,390	367	164	93	55
2	42	91	1,230	4,740	545	1,230	495	1,150	367	164	88	52
3	42	93	715	2,510	660	a1,100	450	790	348	152	84	54
4	141	89	850	2,150	1,230	a980	428	725	312	150	82	52
5	152	86	620	1,610	1,610	822	407	758	295	145	81	51
6	120	96	590	1,150	1,820	692	407	600	278	141	79	50
7	86	268	560	925	1,070	925	822	572	330	139	77	49
8	72	425	a4,500	790	855	790	692	572	295	137	74	47
9	60	238	2,760	692	1,820	600	725	790	295	130	71	46
10	59	402	3,610	660	1,410	545	600	725	312	130	68	56
11	58	715	a1,750	572	925	472	600	660	330	134	68	49
12	55	560	a1,250	520	758	428	572	572	a304	128	68	91
13	49	475	995	495	725	387	660	520	278	122	65	100
14	47	a518	2,510	450	630	a400	600	520	278	120	62	81
15	47	560	a7,000	428	572	855	495	545	262	118	62	126
16	59	380	2,890	428	572	925	450	520	262	114	59	81
17	163	321	2,040	407	572	630	407	572	262	110	62	65
18	79	321	1,410	367	520	545	472	545	262	102	62	89
19	302	253	1,510	348	472	472	428	545	262	102	59	68
20	163	238	1,610	330	428	472	407	520	246	102	56	64
21	224	302	1,150	330	407	450	387	495	216	102	56	56
22	141	a550	925	312	387	450	387	520	202	100	55	55
23	118	a360	758	295	367	450	495	572	202	97	55	54
24	108	302	660	278	348	630	450	520	202	93	56	51
25	a100	268	a590	278	407	520	428	472	202	88	56	50
26	186	238	520	520	a550	790	428	387	189	122	55	47
27	141	238	495	2,510	692	995	387	367	189	110	59	60
28	198	224	692	1,410	758	790	495	348	176	100	60	51
29	152	268	1,930	1,410	890	692	407	348	176	99	59	49
30	a132	1,070	1,230	a1,150	-	790	520	387	176	97	56	47
31	112	-	1,710	a890	-	692	-	407	-	89	55	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	3,448	302	40	111	1.85	2.14	6,840
November	10,051	1,070	86	335	5.58	6.23	19,940
December	49,710	7,000	495	1,604	26.7	30.81	98,600
Calendar year 1939	157,333	7,000	40	431	7.18	97.55	312,100
January	31,225	4,740	278	1,007	16.8	19.35	61,930
February	22,630	1,820	348	780	13.0	14.03	44,890
March	21,929	1,410	387	707	11.8	13.59	43,500
April	15,026	822	367	501	8.35	9.31	29,800
May	19,414	2,390	348	626	10.4	12.03	38,510
June	7,875	367	176	262	4.37	4.88	15,620
July	3,701	164	88	119	1.98	2.29	7,340
August	2,044	93	55	65.9	1.10	1.27	4,050
September	1,846	126	46	61.5	1.02	1.14	3,660
Water year 1939-40	188,899	7,000	40	516	8.60	117.07	374,700

a No or doubtful gage-height record; discharge interpolated or computed on basis of records for South Fork near Union.

400455 O - 41 - 3

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

South Fork of Skokomish River near Union, Wash.

Location.- Water-stage recorder, lat. 47°20'30", long. 123°16'30", in NE¼ sec. 2, T. 21 N., R. 5 W., 2½ miles upstream from North Fork, 5 miles upstream from Vance Creek, and 8 miles west of Union.

Drainage area.- 81 square miles.

Records available.- August 1931 to September 1940.

Extremes.- Maximum discharge during year, 17,200 second-feet Dec. 15 (gage height, 10.3 feet), from rating curve extended above 3,500 second-feet; minimum, 66 second-feet Sept. 6, 7, 8, 9, 30.

1931-40: Maximum discharge, 21,600 second-feet (revised) Jan. 22, 1935 (gage height, 11.0 feet), from rating curve extended above 11,000 second-feet; minimum, 62 second-feet Sept. 18, 1938.

Remarks.- Records good. No diversion or regulation.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	73	177	1,420	3,170	810	3,560	898	2,520	234	132	104	80
2	73	167	2,380	5,050	720	2,690	800	1,340	228	127	93	80
3	69	156	1,440	3,140	720	1,670	710	956	223	127	90	83
4	226	156	1,700	2,320	1,920	1,560	644	843	211	122	83	76
5	258	156	1,360	2,120	2,600	1,400	580	920	199	122	83	73
6	217	161	1,320	1,600	2,880	1,130	554	790	194	118	76	69
7	172	278	2,420	1,300	2,020	1,370	955	682	194	118	76	66
8	136	625	6,020	1,090	1,420	1,310	1,000	653	188	114	73	66
9	128	452	4,110	944	3,220	1,050	1,070	615	183	114	73	66
10	109	818	4,560	832	2,780	909	898	545	183	114	73	73
11	104	1,510	2,560	750	1,700	810	750	498	183	118	66	73
12	97	1,310	1,720	691	1,300	720	682	467	183	118	76	188
13	97	1,120	1,420	644	1,380	662	634	432	177	114	86	177
14	93	1,030	4,500	598	1,280	672	589	418	172	109	83	109
15	90	932	9,160	580	1,130	919	545	418	167	109	83	199
16	86	720	5,270	563	1,230	1,320	498	391	161	104	80	132
17	118	598	3,890	528	1,400	944	482	371	156	104	76	109
18	118	545	2,600	505	1,160	790	482	358	150	100	73	145
19	542	482	2,300	475	992	710	445	352	150	100	73	132
20	352	445	2,410	452	887	653	425	333	150	100	73	114
21	378	645	1,910	432	790	615	411	320	150	97	73	97
22	301	920	1,510	425	740	580	398	314	150	93	73	93
23	246	682	1,300	411	730	563	411	308	150	93	73	90
24	223	545	1,140	398	691	653	391	301	145	93	73	86
25	199	482	1,000	398	790	572	391	295	145	93	73	83
26	320	452	909	831	1,800	865	391	277	140	100	76	73
27	301	438	843	3,950	1,570	1,420	384	264	136	100	90	80
28	270	411	1,510	2,050	1,430	1,280	520	258	136	93	104	73
29	234	499	2,780	1,640	2,600	1,070	467	246	136	93	90	73
30	211	1,860	2,020	1,200	-	1,270	550	240	136	97	83	69
31	194	-	2,600	956	-	1,070	-	234	-	93	83	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	6,029	542	69	194	2.40	2.77	11,960
November	18,772	1,860	156	626	7.73	8.62	37,230
December	80,082	9,160	843	2,583	31.9	36.77	158,800
Calendar year 1939	238,074	9,160	69	652	8.05	109.28	472,200
January	40,043	5,050	398	1,292	16.0	18.38	79,420
February	42,690	3,220	691	1,472	18.2	19.60	84,670
March	34,807	3,560	583	1,123	13.9	15.98	69,040
April	17,955	1,070	384	598	7.38	8.24	35,610
May	16,959	2,520	234	547	6.75	7.78	33,640
June	5,110	234	136	170	2.10	2.35	10,140
July	3,329	132	93	107	1.32	1.53	6,600
August	2,484	104	66	80.1	.989	1.14	4,930
September	2,927	199	66	97.6	1.20	1.34	5,810
Water year 1939-40	271,187	9,160	66	741	9.15	124.52	537,800

Peak discharge.- Dec. 8 (2 p.m.) 7,740 sec.-ft.; Dec. 10 (6:30 a.m., 8 a.m.) 5,540 sec.-ft.; Dec. 14 (6 p.m.) 8,580 sec.-ft.; Dec. 15 (12 m.) 17,200 sec.-ft.; Jan. 2 (2:15 p.m.) 5,980 sec.-ft.

9-233 April 1936 UNITED STATES DEPARTMENT OF THE INTERIOR Geological Survey

Nisqually River near Alder, Wash.

Location.- Water-stage recorder, lat. 46°46'05", long. 122°16'05", in SW¼ sec. 23, T. 15 N., R. 4 E., 2½ miles southeast of Alder and 8 miles downstream from Mineral Creek.

Drainage area.- 252 square miles.

Records available.- August 1931 to September 1940.

Extremes.- Maximum discharge during year, 9,880 second-feet Dec. 15 (gage height, 8.27 feet); minimum, 228 second-feet Sept. 5, 19 (gage height, 1.63 feet).
1931-40: Maximum discharge, 25,000 second-feet Dec. 22, 1933 (gage height, 13.2 feet), from rating curve extended above 10,000 second-feet; minimum, 142 second-feet Nov. 3, 1935 (gage height, 1.31 feet).

Remarks.- Records excellent except those for periods of faulty or no gage-height record. No diversion or regulation.

Cooperation.- Gage-height record collected in cooperation with city of Tacoma.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 15				Dec. 16 to Sept. 30			
1.8	275	3.0	865	1.7	254	4.0	1,740
2.0	350	3.5	1,240	2.0	380	4.5	2,330
2.3	485	4.0	1,740	2.3	529	5.0	3,010
2.6	635			2.6	698	6.0	4,700
Note.- Same as following table above 4.0 feet.				3.0	935	7.0	6,660
				3.5	1,270		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	382	445	662	3,080	756	3,400	1,480	2,790	815	629	376	389
2	289	422	1,080	2,720	721	4,080	1,310	2,400	786	640	376	413
3	261	386	859	2,260	756	3,010	1,160	1,850	756	583	399	353
4	449	342	728	2,020	815	2,590	1,100	1,580	681	572	437	285
5	642	326	684	1,800	1,040	2,330	1,000	1,800	606	567	493	254
6	450	322	787	1,530	4,300	1,900	935	1,630	589	534	529	301
7	386	935	865	1,350	3,830	2,490	f935	1,440	640	534	524	380
8	322	763	2,000	1,200	2,860	2,940	a1,000	1,350	578	534	508	408
9	310	652	1,900	1,100	3,320	f2,460	a1,100	1,350	f606	529	503	498
10	310	560	2,520	1,030	4,000	d1,900	a950	1,530	710	534	442	675
11	303	657	2,020	935	3,010	d1,450	a900	1,440	786	556	477	572
12	326	625	1,530	875	2,400	d1,350	f1,060	1,240	845	652	503	669
13	346	570	1,280	845	2,590	d1,200	1,240	1,100	875	594	418	529
14	346	565	2,000	815	2,140	d1,060	1,240	1,060	715	551	413	380
15	310	500	6,540	750	1,800	d1,060	1,100	1,030	704	561	413	327
16	264	455	7,850	739	1,680	f1,440	968	935	698	545	442	335
17	296	430	6,440	704	1,680	1,270	905	935	657	513	487	327
18	289	426	4,080	663	1,480	1,200	935	968	704	482	493	301
19	495	404	3,010	629	1,310	1,130	875	1,030	756	467	534	262
20	435	378	2,790	606	1,200	1,100	845	1,000	669	503	545	306
21	408	374	2,330	583	1,100	1,030	786	968	606	583	483	371
22	378	605	1,900	561	1,030	1,030	786	1,030	556	534	413	413
23	426	490	1,580	f540	1,060	1,030	1,060	1,130	600	513	442	402
24	470	450	1,350	f513	1,030	1,130	1,240	1,100	669	493	467	396
25	362	422	1,200	f503	1,740	1,130	1,160	935	756	457	467	370
26	390	390	1,100	578	2,520	1,310	1,100	786	704	583	447	366
27	505	370	1,000	1,000	2,460	1,580	1,030	721	589	669	482	472
28	781	354	1,200	f905	3,010	1,530	1,200	721	578	556	394	348
29	605	342	1,760	815	3,080	1,580	1,270	756	606	482	422	335
30	550	631	2,080	815	-	1,960	1,460	815	634	498	487	336
31	495	-	2,460	786	-	1,740	-	1,030	-	413	447	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	12,581	781	261	406	1.61	1.86	24,950
November	14,591	935	322	486	1.93	2.15	28,940
December	67,585	7,850	662	2,180	8.65	9.97	134,100
Calendar year 1939	393,421	7,850	252	1,078	4.28	58.06	780,400
January	33,250	3,080	503	1,073	4.26	4.91	65,950
February	58,718	4,300	721	2,025	8.04	8.67	116,500
March	54,410	4,080	1,030	1,755	6.96	8.03	107,900
April	32,130	1,480	786	1,071	4.25	4.74	63,730
May	38,450	2,790	721	1,240	4.92	5.67	76,260
June	20,474	875	556	682	2.71	3.02	40,610
July	16,861	669	413	544	2.16	2.49	33,440
August	14,263	545	376	460	1.83	2.10	28,290
September	11,773	675	254	392	1.56	1.74	23,350
Water year 1939-40	375,086	7,850	254	1,025	4.07	55.35	744,000

a No gage-height record; discharge computed on basis of records for Cowlitz River at Packwood.
d Doubtful gage-height record; discharge computed on basis of records for Cowlitz River at Packwood.
f Fragmentary gage-height record; discharge computed from partly or wholly estimated gage heights.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
101604-O U.S. GOVERNMENT PRINTING OFFICE 1936

Little Nisqually River near Alder, Wash.

Location.- Water-stage recorder, lat. 46°47'20", long. 122°18'45", in NW¼ sec. 16, T. 15 N., R. 4 E., 1,500 feet upstream from mouth, 3,000 feet upstream from diversion dam of Tacoma municipal power plant on Nisqually River, and 1½ miles southwest of Alder.

Drainage area.- 27.2 square miles.

Records available.- August 1920 to September 1940.

Average discharge.- 20 years, 121 second-feet.

Extremes.- Maximum discharge during year, 1,950 second-feet Dec. 15 (gage height, 6.0 feet, from recorded range of stage); minimum, 6.6 second-feet Aug. 26.
1920-40: Maximum discharge, 2,430 second-feet Dec. 20, 21, 1933 (gage height, 6.8 feet); minimum, 0.9 second-foot July 17, 1926.

Remarks.- Records excellent except those for October to December, which are good, and those for period of no gage-height record, which are poor. No diversion or regulation.

Cooperation.- Gage-height record collected in cooperation with city of Tacoma.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Nov. 21		Nov. 22 to Sept. 30					
0.6	7.8	0.6	7.6	1.5	107	3.0	531
.8	18.6	.8	20.0	1.7	143	3.5	730
1.0	36	1.0	39.5	2.0	209	4.0	945
1.2	59	1.2	63.2	2.5	354	5.0	1,420

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.2	29	99	f512	81	a600	278	430	32	12	10	7.0
2	8.6	28	155	402	77	f730	209	256	34	12	9.7	8.8
3	8.2	26	114	306	77	434	170	172	30	12	9.7	10
4	30	23	87	290	114	338	143	147	27	12	9.2	8.0
5	31	21	80	256	230	290	122	202	25	11	9.2	7.6
6	34	20	87	207	901	234	107	209	25	11	8.8	7.6
7	25	28	178	167	608	385	122	172	27	11	8.8	7.3
8	19	52	558	141	392	423	151	139	25	11	8.3	7.3
9	16	54	f361	119	494	299	212	116	24	11	8.3	7.6
10	14	46	f512	102	608	229	199	102	24	11	8.3	12
11	12	49	320	93	402	185	161	91	23	11	8.3	8.3
12	12	47	197	85	284	149	134	81	22	11	8.0	8.8
13	12	47	147	78	378	130	116	73	21	11	8.0	11
14	11	48	f423	74	331	112	102	66	20	11	7.6	9.7
15	11	44	f1,190	69	253	114	93	61	20	9.7	7.6	8.8
16	11	38	1,270	63	258	124	83	57	19	9.2	7.6	8.3
17	13	34	990	61	368	119	75	53	18	9.7	7.6	9.2
18	14	34	f550	57	281	112	71	51	18	9.7	7.6	18
19	31	30	f378	55	214	102	66	47	18	9.7	7.6	12
20	32	27	406	52	174	94	62	45	17	9.7	7.6	9.7
21	27	33	361	51	145	88	57	44	16	18	7.6	8.8
22	23	75	261	50	130	84	55	43	16	12	7.6	8.3
23	27	61	f197	47	122	83	69	41	16	11	7.6	8.0
24	36	52	f157	45	117	85	70	38	15	10	7.6	8.0
25	29	46	128	43	f330	83	73	37	15	9.7	7.3	7.6
26	50	41	110	58	f458	151	73	35	14	15	7.3	7.6
27	58	38	94	190	a440	258	70	35	14	14	11	15
28	60	34	126	153	a550	276	101	33	14	11	12	16
29	53	31	f252	121	a550	326	112	32	13	11	8.3	11
30	44	87	f321	105	a550	476	200	31	13	12	7.6	9.2
31	36	-	392	91	-	374	-	35	-	11	7.3	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	796.0	60	8.2	25.7	0.945	1.09	1,580
November	1,223	87	20	40.8	1.50	1.67	2,430
December	10,501	1,270	80	339	12.5	14.4	20,830
Calendar year 1939	37,561.8	1,270	7.0	103	3.79	51.38	74,520
January	4,143	512	43	134	4.93	5.66	8,220
February	9,367	901	77	323	11.9	12.8	18,580
March	7,487	730	83	242	8.90	10.2	14,850
April	3,556	278	55	119	4.38	4.86	7,050
May	2,974	430	31	95.9	3.53	4.07	5,900
June	615	34	13	20.5	.754	.84	1,220
July	350.4	18	9.2	11.3	.415	.48	695
August	259.0	12	7.3	8.35	.307	.35	514
September	286.5	18	7.0	9.55	.351	.39	568
Water year 1939-40	41,557.9	1,270	7.0	114	4.19	56.81	82,440

Peak discharge.- Dec. 15 (time unknown) 1,950 sec.-ft.; Dec. 16 (9 a.m.) 1,520 sec.-ft.; Feb. 6 (12:15 p.m.) 1,060 sec.-ft.
a No gage-height record; discharge computed on basis of records for Nisqually River near Alder.
f Gage height partly estimated.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
101604-O U.S. GOVERNMENT PRINTING OFFICE 1936

Chambers Creek at Steilacoom Lake, near Steilacoom, Wash.

Location.- Water-stage recorder, lat. 47°01', long 122°32', in SW¼NE¼ sec. 34, T. 20 N., R. 2 E., 450 feet downstream from outlet of Steilacoom Lake and 3 miles northeast of Steilacoom.

Records available.- October 1938 to September 1940 (discontinued).

Extremes.- Maximum discharge during year not determined, probably occurred during period of no gage-height record, Mar. 8-12; minimum, 1.3 second-feet (regulated) Nov. 28 to Dec. 2; minimum gage height, 0.52 foot Oct. 8, 11.

1938-40: Maximum discharge not determined, probably occurred during period of no gage-height record, Mar. 8-12, 1940; minimum discharge recorded, 0.7 second-foot (regulated) Nov. 26, 27, 28, 1938; minimum gage height recorded, 0.43 foot Oct. 23-29, 1938.

Remarks.- Records fair except those for periods of no gage-height record, which are poor. Discharge is regulated by gates at outlet of Steilacoom Lake. Some diversions for domestic use and for irrigation of small garden plots.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.0	28	1.3	24	39	104	100	a75	a75	a25	a20	34
2	4.0	25	1.3	30	38	106	100	f77	a80	a25	a20	28
3	4.0	22	2.0	34	39	106	99	76	a70	f25	a20	24
4	3.4	19	2.0	35	39	106	98	75	f57	a25	a20	21
5	3.4	17	3.2	37	41	106	97	78	56	a25	f20	19
6	3.4	15	4.8	39	48	106	93	73	51	a30	a18	17
7	3.1	15	5.4	41	50	f113	96	79	51	a30	a10	16
8	2.8	14	6.3	43	52	a115	97	78	51	a30	a7.0	15
9	3.1	13	6.0	45	56	a120	97	78	50	a30	f6.3	15
10	2.8	12	e8.6	47	59	a120	94	78	50	a30	6.6	14
11	2.5	12	e8.2	47	61	a115	92	75	49	a25	7.5	f14
12	6.6	12	eS.2	48	62	a115	91	74	42	a25	8.2	a14
13	9.2	12	e8.2	48	67	f110	90	f73	27	a20	8.2	a14
14	18	11	e9.8	47	68	108	89	a75	31	a20	9.0	a12
15	23	10	e18	47	70	107	60	a75	f34	a20	9.0	a12
16	19	9.8	e19	46	72	106	53	a75	a35	a20	9.4	f11
17	22	9.0	e19	46	73	104	57	a70	a40	a20	9.8	a10
18	23	8.2	e18	46	74	101	65	a70	a40	a20	10	a10
19	25	7.8	e17	45	76	100	68	a70	a40	f20	11	a10
20	27	7.5	16	44	77	98	36	a70	a40	a20	11	a10
21	22	7.5	15	44	78	97	28	a70	a40	a20	11	a10
22	19	7.5	15	43	78	96	44	a70	a35	a20	12	a10
23	28	7.8	15	42	80	94	70	a70	a35	a20	12	a10
24	36	5.7	15	42	79	93	76	a70	a35	a20	11	a12
25	29	3.0	16	41	73	93	86	a65	a30	a20	9.8	a12
26	31	2.0	16	42	87	95	84	a65	a30	a25	10	a12
27	33	1.9	16	42	96	95	80	a65	a30	a25	11	a12
28	27	1.3	18	42	98	94	f79	a60	a25	a25	10	a12
29	22	1.3	20	40	101	98	a55	a60	a25	a25	18	a12
30	27	1.3	21	39	-	100	a65	a60	a25	a25	28	a12
31	33	-	23	39	-	100	-	a70	-	a25	32	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	516.3	36	2.5	16.7	1,020
November	318.6	28	1.3	10.6	632
December	372.3	23	1.3	12.0	738
Calendar year 1939	13,837.8	116	1.3	37.9	27,450
January	1,295	48	24	41.8	2,570
February	1,931	101	38	66.6	3,830
March	3,221	120	93	104	6,390
April	2,339	100	28	78.0	4,640
May	2,219	79	60	71.6	4,400
June	1,279	80	25	42.6	2,540
July	735	30	20	23.7	1,460
August	405.8	32	6.3	13.1	805
September	434	34	10	14.5	861
Water year 1939-40	15,066.0	120	1.3	41.2	29,890

a No gage-height record; discharge computed on basis of records for station below Leach Creek, near Steilacoom and Little Nisqually River near Alder.
e Computed on basis of elevations at Steilacoom Lake.
f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Chambers Creek below Leach Creek, near Steilacoom, Wash.

Location.- Water-stage recorder, lat. 47°02', long. 122°32', in NE¼NE¼ sec. 27, T. 20 N., R. 2 E., a quarter of a mile downstream from Leach Creek, 1½ miles downstream from outlet of Steilacoom Lake, and 3 miles northeast of Steilacoom.

Records available.- December 1937 to September 1940 (discontinued).

Extremes.- Maximum discharge during year not determined, probably occurred during period of no gage-height record, Mar. 1-10; minimum, 34 second-feet Aug. 16.
1937-40: Maximum discharge not determined, probably occurred during period of no gage-height record, Feb. 12 to Mar. 6, 1939; minimum, that of Aug. 16, 1940.

Remarks.- Records fair except those for periods of no gage-height record, which are poor. Discharge is partly regulated by gates at the outlet of Steilacoom Lake. Some diversions for domestic use and for irrigation of small garden plots.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	41	63	a40	a70	a85	a190	178	146	128	a60	63	71
2	41	60	a40	a70	a85	a195	175	137	133	f60	62	69
3	41	59	a40	a75	a85	a200	171	131	121	62	60	66
4	41	54	a40	a80	a85	a205	168	135	113	63	57	62
5	42	53	a45	a85	a85	a210	163	161	111	63	57	60
6	45	51	a45	a90	a85	a220	161	141	105	63	56	56
7	44	53	a50	a90	a90	a225	171	150	104	62	54	56
8	42	53	a50	a95	a90	a225	168	150	102	63	45	56
9	42	50	a55	a95	a95	a230	166	146	100	68	39	53
10	42	48	a65	a95	a95	a225	159	143	98	65	39	54
11	42	51	a70	a95	a100	a220	154	f141	95	63	39	53
12	44	51	a80	a95	a105	a210	150	a141	88	60	39	57
13	47	48	a85	f92	a110	f192	146	f143	66	60	38	56
14	53	48	a90	90	a110	202	146	143	71	60	38	54
15	60	47	a95	f90	a115	195	110	135	74	59	37	51
16	57	48	a95	a90	a120	188	95	139	75	57	38	50
17	59	47	a90	a90	a125	180	98	135	80	56	39	51
18	60	45	a80	a90	a130	173	109	131	78	54	41	53
19	63	45	f68	a85	a135	168	113	131	80	54	41	48
20	65	45	68	a85	a140	161	78	122	75	54	42	48
21	60	f44	63	a85	a145	157	65	120	72	57	42	50
22	59	a45	62	a85	a150	150	80	128	71	59	44	48
23	71	a40	59	a85	a155	148	126	122	71	56	44	50
24	75	a40	59	a85	a160	146	124	111	71	56	44	66
25	68	a40	59	a85	a165	141	143	109	f69	56	45	60
26	71	a40	59	a85	a170	159	137	109	a65	69	45	60
27	71	a40	f57	a85	a175	154	128	107	a65	66	44	62
28	66	a40	a60	a85	a180	152	124	107	a65	65	44	57
29	62	a40	a60	a85	a185	183	100	109	a60	63	49	54
30	63	a40	a60	a85	-	192	131	107	a60	62	63	54
31	69	-	a65	a85	-	175	-	109	-	62	69	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,706	75	41	55.0	3,380
November	1,428	63	40	47.6	2,830
December	1,954	95	40	63.0	3,880
Calendar year 1939	33,225	250	40	91.0	65,900
January	2,682	95	70	86.5	5,320
February	3,555	185	85	123	7,050
March	5,771	230	141	186	11,450
April	4,037	178	65	135	8,010
May	4,039	161	107	130	8,010
June	2,566	133	60	85.5	5,090
July	1,877	69	54	60.5	3,720
August	1,457	69	37	47.0	2,890
September	1,685	71	48	56.2	3,340
Water year 1939-40	32,757	230	37	89.5	64,970

a No gage-height record; discharge computed on basis of records for station at Steilacoom Lake, near Steilacoom, and Little Nisqually River near Alder.
f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

9-232 February 1936

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Puyallup River at Puyallup, Wash.

Location.- Water-stage recorder, lat. 47°12'20", long. 122°19'30", in NE¼ sec. 20, T. 20 N., R. 4 E., 1 mile northwest of Puyallup and 7 miles upstream from mouth. Datum of gage is at mean sea level (general adjustment of 1929).

Drainage area.- 948 square miles.

Records available.- May 1914 to September 1940.

Average discharge.- 26 years, 3,257 second-feet (adjusted for storage since October 1934).

Extremes.- Maximum discharge during year, 11,500 second-feet (regulated) Feb. 10 (gage height, 15.86 feet); minimum, 854 second-feet (regulated) Oct. 16.
1914-40: Maximum discharge, 57,000 second-feet Dec. 10, 1933 (gage height, 31.0 feet, present datum); minimum, probably less than 350 second-feet (regulated) Nov. 24, 28, Dec. 1, 3-5, 1929.

Remarks.- Records good. All diverted water returned to river above gage. Large part of flow of White River diverted into Lake Tapps above station. Records of daily discharge not adjusted for change in contents of Lake Tapps. Lake Tapps, lat. 47° 14'20", long. 122°11'30", in sec. 8, T. 20 N., R. 5 E., completed in 1912; usable contents between elevations 505 and 541 feet, 50,400 acre-feet. Some pondage on upper Puyallup River and other tributaries.

Cooperation.- Records of change of contents in Lake Tapps furnished by Puget Sound Power & Light Co.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,240	a1,150	2,190	5,820	2,660	5,040	3,390	7,380	2,870	2,500	1,850	1,410
2	1,660	a1,100	2,120	5,880	2,640	5,430	3,020	7,080	2,920	2,470	1,740	1,370
3	1,710	a1,050	1,920	4,870	2,360	5,250	2,650	5,530	2,770	2,290	1,520	1,770
4	1,700	a1,000	2,090	4,410	2,020	5,030	2,630	4,700	2,510	1,560	1,430	1,670
5	2,180	a1,000	2,040	3,890	2,890	5,320	2,510	4,650	2,450	2,010	1,830	1,480
6	1,770	a1,500	2,120	3,230	7,020	4,740	2,540	4,820	2,420	2,110	1,980	1,450
7	1,480	2,910	2,100	2,900	7,280	5,550	3,180	3,810	2,430	1,920	1,940	1,540
8	1,120	2,750	2,760	3,220	6,660	7,770	3,890	3,450	2,440	2,150	1,900	1,530
9	1,580	2,450	2,710	3,100	8,960	6,000	4,280	3,400	2,090	2,240	1,890	1,680
10	1,620	2,210	2,690	3,070	10,500	5,320	4,260	3,840	2,340	2,340	1,420	1,980
11	1,590	2,180	2,840	3,040	8,000	4,260	3,890	3,850	2,520	2,430	1,380	1,900
12	1,520	1,940	2,480	3,030	6,150	3,500	3,530	3,450	2,630	2,490	1,820	2,020
13	1,330	2,160	2,360	2,830	4,350	3,260	3,000	a3,280	2,780	1,990	1,750	2,110
14	1,000	2,070	2,250	2,710	3,630	3,130	2,660	a3,120	2,620	1,670	1,570	1,760
15	986	1,850	3,840	2,880	3,330	3,130	2,840	a2,950	2,430	2,120	1,490	1,510
16	1,070	1,770	8,020	2,910	3,340	3,240	2,650	2,780	3,060	2,300	1,420	1,630
17	1,140	1,720	8,600	2,860	3,580	3,210	2,470	2,760	2,320	2,260	1,580	1,600
18	1,150	1,580	6,500	2,740	3,300	3,010	2,470	2,830	2,300	2,060	1,660	1,620
19	1,280	1,280	5,020	2,770	3,160	2,830	2,460	2,920	2,470	1,990	1,870	1,410
20	1,380	1,590	4,640	2,460	3,040	2,770	2,260	3,230	2,550	1,930	1,880	1,250
21	1,270	1,750	3,830	2,370	2,850	2,640	1,900	3,090	2,410	1,650	1,850	1,170
22	1,060	2,000	3,300	2,650	2,810	2,700	2,410	3,150	2,180	1,960	1,650	1,210
23	1,480	1,400	2,790	2,700	3,030	2,640	3,740	3,440	1,900	2,090	1,600	1,280
24	1,620	1,650	2,550	2,660	2,840	2,650	4,240	3,440	2,420	2,030	1,680	1,380
25	1,460	1,470	2,270	2,590	3,630	2,980	3,510	3,100	2,540	1,960	1,640	1,380
26	1,440	1,290	2,780	2,680	4,910	3,090	3,310	2,850	2,420	2,050	1,730	1,460
27	1,570	1,680	3,180	2,540	4,580	3,580	2,850	2,760	2,310	2,170	1,860	1,840
28	1,760	1,720	3,430	2,210	5,110	3,380	2,930	2,510	2,260	2,000	1,750	1,630
29	1,460	1,710	3,310	2,780	5,460	3,500	3,690	2,460	2,100	2,110	1,640	1,350
30	a1,300	1,870	4,000	2,770	-	4,220	3,770	2,490	1,950	2,140	1,800	1,430
31	a1,200	-	4,420	2,620	-	3,720	-	3,050	-	2,020	1,780	-

Month	Observed				Change in contents in Lake Tapps (acre-feet)	Adjusted for change in reservoir contents			
	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	2,180	986	1,423	87,520	-5,050	82,470	1,341	1.41	1.63
November	2,910	1,000	1,727	102,700	-5,850	96,860	1,628	1.72	1.92
December	8,600	1,920	3,392	208,600	+7,860	216,500	3,521	3.71	4.28
Calendar year 1939	10,800	986	2,900	2,099,000	-12,600	2,087,000	2,882	3.04	41.26
January	5,880	2,210	3,135	192,800	+9,980	202,800	3,298	3.48	4.01
February	10,500	2,020	4,486	258,000	+140	258,100	4,487	4.73	5.10
March	7,770	2,640	3,964	243,700	+2,350	246,000	4,001	4.22	4.86
April	4,280	1,900	3,098	184,300	-1,230	183,100	3,077	3.25	3.63
May	7,380	2,460	3,618	222,500	-290	222,200	3,614	3.81	4.39
June	3,060	1,900	2,447	145,600	+1,920	147,500	2,479	2.61	2.91
July	2,500	1,560	2,097	128,900	-440	128,500	2,090	2.20	2.64
August	1,980	1,380	1,706	104,900	-1,410	103,500	1,683	1.78	2.05
September	2,110	1,170	1,561	92,870	-90	92,780	1,559	1.64	1.83
Water year 1939-40	10,500	986	2,717	1,972,000	+7,890	1,980,000	2,728	2.88	39.15

a No gage-height record; discharge interpolated or computed on basis of records for tributary streams.

Note.- Gage heights for Lake Tapps are estimated midnight readings, based on readings half an hour before and half an hour after midnight.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

101405-0 U.S. GOVERNMENT PRINTING OFFICE 1936

Carbon River near Fairfax, Wash.

Location.- Water-stage recorder, lat. 47°01'30", long. 122°02'00", in SW¼ sec. 22, T. 18 N., R. 6 E., 1¼ miles northwest of Fairfax and 12 miles upstream from Voights Creek.

Drainage area.- 81 square miles.

Records available.- March 1929 to September 1940. November 1910 to July 1912, at site 1¼ miles upstream, published as Carbon River at Fairfax, Wash.

Average discharge.- 11 years (1929-40), 410 second-feet.

Extremes.- Maximum discharge during year, 1,810 second-feet May 1 (gage height, 3.87 feet); minimum, 102 second-feet Oct. 3 (gage height, 1.16 feet).
1910-12, 1929-40: Maximum discharge, 8,030 second-feet Dec. 9, 1933 (gage height, 10.2 feet), from rating curve extended above 500 second-feet; minimum, 40 second-feet (estimated) Jan. 20, 1930 (stage-discharge relation affected by ice).

Remarks.- Records good except those for periods of no gage-height record, which are poor. Some water diverted for use by lumber industry but returned to river above gage.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

1.2	110	1.8	280	2.6	687
1.4	157	2.0	357	3.0	1,000
1.6	214	2.3	499	3.5	1,460

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	142	180	350	900	190	640	317	1,560	362	280	202	211
2	120	170	500	600	182	740	287	1,230	391	306	202	233
3	106	160	400	470	187	680	266	838	391	284	218	202
4	248	150	340	f396	176	650	250	666	310	256	218	157
5	306	150	300	341	279	630	240	687	277	246	246	150
6	214	260	330	295	1,180	600	227	613	270	233	270	142
7	165	600	370	266	912	700	246	538	310	233	273	162
8	145	400	700	246	855	900	317	521	273	240	256	208
9	135	300	600	237	1,280	700	370	556	266	250	263	253
10	135	250	900	233	1,230	520	345	660	287	250	230	321
11	127	400	650	214	798	420	317	587	321	266	243	295
12	125	350	550	202	593	360	357	510	366	306	280	302
13	127	320	500	199	538	310	447	433	409	295	221	253
14	127	290	580	193	442	300	433	419	345	273	202	202
15	125	260	900	184	391	f317	349	414	345	280	196	184
16	114	f246	1,300	187	349	400	291	387	317	287	205	182
17	127	230	1,100	182	333	353	263	400	287	266	237	184
18	125	220	1,000	173	310	317	321	423	306	243	250	193
19	302	210	900	165	284	295	291	488	337	230	280	142
20	237	200	900	160	270	284	273	467	298	246	284	130
21	202	200	700	155	260	277	243	433	280	263	246	137
22	176	350	650	152	250	277	240	478	250	260	230	165
23	209	310	600	150	250	273	481	515	253	263	240	190
24	205	270	530	145	240	374	550	483	280	243	230	176
25	160	220	470	140	500	374	457	414	333	224	240	182
26	210	200	410	150	550	357	409	321	349	287	250	193
27	331	180	350	193	600	353	374	270	284	353	298	310
28	f457	170	400	196	700	325	527	270	263	277	250	221
29	300	170	520	211	680	325	521	287	266	253	243	176
30	250	250	650	208	-	387	707	333	287	256	256	150
31	210	-	770	202	-	353	-	442	-	224	224	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	5,962	457	106	192	2.37	2.74	11,830
November	7,666	600	150	256	3.16	3.52	15,210
December	19,220	1,300	300	620	7.65	8.82	38,120
Calendar year 1939	148,297	1,610	106	406	5.01	68.09	294,200
January	7,745	900	140	250	3.09	3.56	15,360
February	14,809	1,280	176	511	6.31	6.80	29,370
March	13,681	800	273	441	5.44	6.28	27,140
April	10,716	707	227	357	4.41	4.92	21,250
May	16,643	1,560	270	537	6.63	7.64	33,010
June	9,313	409	250	310	3.83	4.28	18,470
July	8,173	353	224	264	3.26	3.76	16,210
August	7,483	298	196	241	2.98	3.44	14,840
September	6,006	321	130	200	2.47	2.76	11,910
Water year 1939-40	127,417	1,560	106	348	4.30	58.51	252,700

Peak discharge.- Feb. 9 (11 to 12 p.m.) 1,610 sec.-ft.; May 1 (3 to 4 a.m.) 1,810 sec.-ft.
f Fragmentary gage-height record; discharge computed from partly estimated gage heights.
Note.- No gage-height record Oct. 29 to Nov. 15, Nov. 17 to Jan. 3, Feb. 20 to Mar. 14; discharge computed on basis of records for White River at Greenwater and Puyallup River near Orting.

9-233 April 1936 UNITED STATES DEPARTMENT OF THE INTERIOR Geological Survey

White River at Greenwater, Wash.

Location.- Water-stage recorder, lat. 47°08'50", long. 121°38'50", in SE¼ sec. 10, T. 19 N., R. 9 E., three-quarters of a mile southeast of Greenwater, three-quarters of a mile upstream from mouth of Greenwater River, and 25 miles upstream from Buckley.

Drainage area.- 216 square miles.

Records available.- March 1929 to September 1940. September 1911 to May 1912 (fragmentary), at site 2 miles upstream, published as White River near Enumclaw, Wash.

Average discharge.- 11 years (1929-40), 812 second-feet.

Extremes.- Maximum discharge during year, 1,780 second-feet Dec. 16 (gage height, 4.16 feet); minimum, 242 second-feet Oct. 25, Nov. 4, 5, 6.
1911-12, 1929-40: Maximum discharge, 12,100 second-feet Dec. 21, 1933 (gage height, 9.38 feet); minimum, 120 second-feet Nov. 2, 1935 (gage height, 1.69 feet).

Remarks.- Records good. No diversion or regulation.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	333	261	345	1,380	393	745	719	1,500	1,190	898	566	528
2	285	251	471	1,360	380	870	669	1,550	1,090	908	543	543
3	265	247	393	1,160	380	789	628	1,440	1,070	843	581	499
4	349	242	356	1,010	380	771	604	1,320	1,010	798	596	437
5	328	242	345	870	451	745	589	1,220	936	771	644	418
6	285	247	350	745	1,030	685	566	1,110	917	719	685	431
7	265	412	380	660	1,040	888	612	1,060	936	728	685	464
8	265	418	756	620	927	1,040	652	1,070	834	728	669	528
9	265	317	661	589	1,200	880	685	1,190	852	728	620	551
10	261	317	1,090	551	1,440	780	669	1,440	974	745	573	677
11	265	393	790	506	1,100	685	652	1,440	1,110	807	604	636
12	275	356	596	478	917	612	685	1,380	1,230	898	612	702
13	275	322	536	471	816	573	816	1,270	1,280	825	558	596
14	265	312	632	444	728	558	880	1,210	1,160	780	536	514
15	265	291	1,210	424	652	558	825	1,180	1,100	798	528	485
16	265	280	1,550	444	620	604	780	1,150	1,060	825	551	471
17	285	270	1,440	424	596	581	736	1,170	1,010	762	596	450
18	256	265	1,120	399	566	566	780	1,220	1,050	702	604	437
19	333	261	993	380	528	543	a760	1,300	1,120	702	669	380
20	306	251	993	374	492	551	a720	1,330	1,040	728	669	368
21	322	273	861	362	478	551	a640	1,290	936	834	573	412
22	291	393	745	356	471	566	754	1,380	861	754	543	450
23	306	312	652	350	471	573	908	1,500	889	745	551	457
24	285	291	573	333	437	636	852	1,500	965	702	589	444
25	251	285	528	345	528	669	870	1,380	1,040	660	589	444
26	285	275	499	345	604	711	825	1,160	993	685	551	485
27	280	265	471	444	596	736	807	1,020	889	754	604	521
28	322	265	528	399	712	694	889	1,000	861	652	551	412
29	291	265	777	412	762	719	861	1,030	880	636	558	374
30	270	380	908	418	-	843	955	1,140	889	644	612	362
31	265	-	1,070	405	-	762	-	1,320	-	581	538	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	8,859	349	251	286	1.32	1.53	17,570
November	8,959	418	242	299	1.38	1.54	17,770
December	22,619	1,550	345	730	3.38	3.89	44,860
Calendar year 1939	257,513	2,290	242	706	3.27	44.34	510,800
January	17,478	1,380	333	564	2.61	3.01	34,670
February	19,695	1,440	380	679	3.14	3.39	39,060
March	21,484	1,040	543	693	3.21	3.70	42,610
April	22,388	955	566	746	3.45	3.85	44,410
May	39,270	1,550	1,000	1,267	5.87	6.76	77,890
June	30,172	1,280	834	1,006	4.66	5.19	59,850
July	23,340	908	581	753	3.49	4.02	46,290
August	18,368	685	528	593	2.75	3.16	36,430
September	14,476	702	362	483	2.24	2.49	28,710
Water year 1939-40	247,108	1,550	242	675	3.12	42.53	490,100

a No gage-height record; discharge computed on basis of records for station near Buckley.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

101604-O U. S. GOVERNMENT PRINTING OFFICE 1936

White River near Buckley, Wash.

Location.- Water-stage recorder, lat. 47°09'05", long. 121°57'00", in SW¼NW¼ sec. 8, T. 19 N., R. 7 E., 3 miles east of Buckley and 8 miles downstream from Clearwater River. Datum of gage is at mean sea level (general adjustment of 1929).

Drainage area.- 403 square miles.

Records available.- October 1938 to September 1940. October 1928 to November 1933, at site 3 miles upstream.

Extremes.- Maximum discharge during year, 4,060 second-feet Feb. 10 (gage height, 803.48 feet); minimum, 352 second-feet Oct. 16 (gage height, 798.72 feet).
1928-33, 1938-40: Maximum discharge, 17,000 second-feet Feb. 26, 1932 (gage height, 17.5 feet, site and datum then in use), from rating curve extended above 4,000 second-feet; minimum, 213 second-feet Nov. 21, 1929 (gage height, 1.78 feet, site and datum then in use), but may have been less at some time during Jan. 15-30, 1930, when stage-discharge relation was affected by ice.

Remarks.- Records good. No diversions. Some light regulation from construction operations at Mud Mountain Dam.

Cooperation.- Water-stage recorder inspected by employees of Corps of Engineers, U. S. Army.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Feb. 5-6)

Oct. 1 to Feb. 6						Feb. 7 to Sept. 30					
799.0	415	800.0	770	801.5	2,020	799.2	450	800.5	1,120	802.0	2,360
799.2	467	800.5	1,080	802.0	2,570	799.5	570	801.0	1,460	802.5	2,860
799.5	560	801.0	1,520	802.5	3,210	800.0	826	801.5	1,880	803.0	3,380

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	482	467	770	2,460	698	1,620	1,280	3,270	1,700	1,060	744	640
2	454	467	1,020	2,460	675	1,840	1,220	3,060	1,620	1,090	691	665
3	438	467	880	2,020	675	1,700	1,150	2,660	1,500	1,030	717	665
4	536	440	770	1,720	655	1,620	1,060	2,310	1,420	970	717	540
5	658	438	675	1,480	774	1,620	1,030	2,210	1,320	941	771	515
6	527	454	675	1,300	2,350	1,460	1,000	2,060	1,280	912	798	523
7	482	1,080	655	1,160	2,410	2,030	1,000	1,880	1,360	912	826	566
8	454	1,120	1,070	1,040	2,360	2,660	1,150	1,790	1,220	883	798	616
9	440	910	1,170	975	3,060	2,110	1,250	1,880	1,220	912	798	665
10	440	770	1,580	940	3,500	1,790	1,220	2,260	1,280	912	665	826
11	438	1,010	1,340	850	2,560	1,500	1,150	2,310	1,460	941	717	771
12	440	910	1,010	820	2,020	1,360	1,180	2,160	1,580	1,030	771	754
13	440	770	910	795	1,740	1,220	1,320	1,920	1,790	970	665	771
14	440	675	952	770	1,540	1,150	1,390	1,840	1,540	941	640	640
15	440	615	2,060	720	1,360	1,120	1,360	1,740	1,420	941	640	598
16	415	560	3,280	745	1,280	1,220	1,220	1,660	1,390	970	640	570
17	440	527	3,280	745	1,220	1,150	1,150	1,660	1,320	912	717	553
18	438	527	2,350	698	1,150	1,090	1,180	1,700	1,320	854	717	557
19	530	496	1,920	655	1,090	1,060	1,150	1,880	1,420	826	798	468
20	512	482	1,870	635	1,000	1,030	1,090	1,970	1,320	883	826	436
21	496	520	1,570	615	941	1,000	1,060	1,880	1,180	1,000	744	468
22	454	795	1,380	595	941	1,000	1,030	2,020	1,090	883	640	523
23	512	635	1,200	595	941	1,000	1,460	2,260	1,090	883	691	531
24	527	578	1,040	560	883	1,180	1,660	2,310	1,180	854	691	527
25	545	544	975	544	1,110	1,250	1,620	2,060	1,280	826	691	523
26	496	527	910	578	1,390	1,280	1,540	1,700	1,220	883	665	575
27	560	496	850	720	1,360	1,360	1,460	1,460	1,090	1,030	771	771
28	655	482	f1,010	675	1,580	1,280	1,700	1,390	1,060	854	665	588
29	615	482	1,400	698	1,660	1,250	1,740	1,420	1,060	798	665	495
30	527	779	1,720	720	-	1,420	1,700	1,500	1,090	854	744	457
31	496	-	1,920	745	-	1,320	-	1,920	-	771	691	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	15,236	658	415	491	1.22	1.41	30,220
November	19,023	1,120	438	634	1.57	1.76	37,730
December	42,212	3,280	655	1,362	3.38	3.90	83,730
Calendar year 1939	459,226	4,030	415	1,258	3.12	42.41	910,800
January	30,033	2,460	544	969	2.40	2.77	59,570
February	42,923	3,500	655	1,480	3.67	3.96	85,140
March	43,690	2,660	1,000	1,409	3.50	4.03	86,660
April	38,520	1,740	1,000	1,284	3.19	3.55	76,400
May	62,140	3,270	1,390	2,005	4.98	5.73	123,300
June	39,820	1,790	1,060	1,327	3.29	3.67	78,980
July	28,526	1,090	771	920	2.28	2.63	56,580
August	22,314	826	640	720	1.79	2.06	44,260
September	17,897	854	436	597	1.48	1.65	35,500
Water year 1939-40	402,334	3,500	415	1,099	2.73	37.12	798,100

f Computed from partly estimated gage-height record.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
101804-0 U S GOVERNMENT PRINTING OFFICE 1936

Greenwater River at Greenwater, Wash.

Location.- Water-stage recorder, lat. 47°09'15", long. 121°38'00", in NW¼NW¼ sec. 11, T. 19 N., R. 9 E., 1 mile upstream from mouth, 1 mile east of Greenwater, and 17 miles east of Buckley.

Drainage area.- 74 square miles.

Records available.- September 1911 to August 1912 (fragmentary), published as Greenwater River near Enumclaw, Wash., May 1929 to September 1940.

Average discharge.- 11 years (1929-40), 199 second-feet.

Extremes.- Maximum discharge during year, 567 second-feet Feb. 10 (gage height, 4.02 feet); minimum, 28 second-feet Sept. 23, 24, 25, 26.
1911-12, 1929-40: Maximum discharge, 4,140 second-feet Dec. 9, 1933 (gage height, 9.24 feet, site and datum then in use), from rating curve extended above 1,000 second-feet; minimum, 23 second-feet Oct. 7, 1934 (gage height, 2.06 feet).

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

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	a30	78	188	112	217	191	a360	197	79	54	31
2	38	a30	95	191	109	237	183	f465	194	77	51	32
3	37	a30	95	186	107	243	172	442	183	76	48	35
4	45	a30	87	175	103	f227	a165	407	172	74	46	34
5	55	a30	79	167	109	a200	a160	378	169	73	45	33
6	45	a35	76	155	237	a160	a165	369	159	73	44	31
7	40	a95	73	146	301	a240	a170	344	169	71	43	31
8	38	a100	89	139	301	a300	a180	332	164	67	41	30
9	37	a70	108	132	416	a250	a190	328	150	66	39	30
10	36	a65	125	128	542	a220	a185	348	146	64	38	31
11	36	a70	131	122	420	a200	a180	369	139	63	38	31
12	36	a90	118	118	320	a180	a190	357	135	62	37	37
13	35	a80	110	114	268	f167	a195	336	130	62	37	45
14	35	f76	121	112	227	159	a200	328	128	61	36	39
15	35	70	201	105	199	157	a190	312	122	59	36	35
16	34	65	363	107	180	162	a185	297	118	58	35	33
17	36	60	457	105	167	159	a180	289	114	58	35	31
18	36	59	353	101	159	152	a185	282	110	58	35	35
19	49	55	273	96	146	150	a180	282	109	56	35	33
20	46	53	244	93	139	150	a180	286	107	56	35	31
21	38	57	214	93	132	150	a170	282	100	59	35	30
22	37	86	194	89	126	150	a200	278	96	57	35	29
23	f37	73	175	89	124	152	a250	282	94	54	35	29
24	a45	65	159	85	120	167	a240	282	93	52	33	28
25	a40	60	146	82	137	186	a225	271	91	52	33	28
26	a35	58	139	85	167	188	a210	257	88	58	34	28
27	a40	55	128	93	167	188	a200	233	85	61	37	42
28	a50	52	130	93	197	183	a210	217	83	58	36	43
29	a40	52	146	98	220	183	a235	199	82	56	35	35
30	a35	76	162	107	-	194	a260	197	80	62	32	32
31	a35	-	169	114	-	191	-	214	-	54	31	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	1,217	55	34	39.3	0.531	0.61	2,410
November	1,827	100	30	60.9	.823	.92	3,620
December	5,038	457	73	163	2.20	2.53	9,990
Calendar year 1939	69,188	842	30	190	2.57	34.72	137,200
January	3,708	191	82	120	1.62	1.86	7,350
February	5,952	542	103	205	2.77	2.99	11,810
March	5,862	300	150	189	2.55	2.95	11,630
April	5,826	260	160	194	2.62	2.93	11,560
May	9,623	465	197	310	4.19	4.84	19,090
June	3,807	197	80	127	1.72	1.91	7,550
July	1,936	79	52	62.5	.845	.97	3,840
August	1,184	54	31	38.2	.515	.60	2,350
September	992	45	28	33.1	.447	.50	1,970
Water year 1939-40	46,972	542	28	128	1.73	23.61	93,170

a No gage-height record; discharge computed on basis of records for White River at Greenwater.
f Fragmentary gage-height record; discharge computed from partly estimated gage heights.
Note.- Shifting-control method used Dec. 18-20 and May 2 to Aug. 8.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
101604 O U S GOVERNMENT PRINTING OFFICE 1936

Green River near Palmer, Wash.

Location.- Water-stage recorder, lat. 47°17'40", long. 121°49'20", in SW¼NW¼ sec. 20, T. 21 N., R. 8 E., 1½ miles upstream from diversion dam and intake of Tacoma water-supply system, 2½ miles downstream from North Fork, and 4 miles southeast of Palmer.

Drainage area.- 231 square miles.

Records available.- October 1931 to September 1940.

Extremes.- Maximum discharge during year, 5,040 second-feet Feb. 10 (gage height, 10.93 feet); minimum, 100 second-feet Sept. 23, 24, 25, 26 (gage height, 4.24 feet).
1931-40: Maximum discharge, 33,600 second-feet Dec. 9, 1933 (gage height, 19.4 feet, computed on basis of flow over diversion dam); minimum, 81 second-feet Sept. 4, 5, 1934; minimum gage height, 4.00 feet Sept. 4, 1933.

Remarks.- Records good except those for period of no gage-height record, which are fair. No diversion or regulation.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used May 7 to June 17)

Oct. 1 to June 17				June 18 to Sept. 30	
4.5	167	6.0	849	4.3	115
4.7	239	7.0	1,370	4.5	179
4.9	323	8.0	1,950	4.7	262
5.2	458	9.0	2,770	5.0	403
5.5	601	10.0	3,850		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a130	412	774	1,700	699	1,950	1,290	2,870	421	190	168	112
2	a140	372	1,050	1,530	674	2,770	1,180	2,410	417	190	168	120
3	a200	363	1,050	1,370	626	2,500	1,080	2,020	399	186	150	131
4	a500	327	926	1,210	601	2,090	976	1,700	381	182	144	126
5	a430	305	799	1,050	674	1,950	900	1,750	367	179	140	120
6	a350	323	749	951	1,970	1,700	849	1,750	354	179	134	116
7	a290	1,190	699	849	2,590	2,190	849	1,580	417	179	134	110
8	a250	1,420	824	799	2,770	2,770	900	1,420	390	175	129	110
9	a210	1,260	874	724	3,850	2,170	1,100	1,310	349	175	129	107
10	187	1,050	900	724	4,620	1,750	1,100	1,290	331	171	131	110
11	174	1,260	849	650	3,170	1,530	1,050	1,240	318	168	126	110
12	167	1,210	799	601	2,330	1,310	1,030	1,130	310	164	123	120
13	161	1,030	749	596	1,950	1,160	1,100	1,000	301	164	120	140
14	155	874	1,110	601	1,580	1,080	1,130	900	297	164	120	131
15	149	749	2,310	572	1,370	1,030	1,050	849	288	157	118	129
16	147	650	3,390	587	1,240	1,130	951	799	276	154	115	118
17	155	577	3,390	572	1,130	1,130	849	749	267	154	112	115
18	155	543	2,640	543	1,050	1,080	874	724	262	150	110	118
19	226	486	2,020	515	1,000	1,030	824	699	258	144	112	115
20	230	444	1,750	491	926	1,000	799	674	253	144	112	112
21	201	482	1,470	468	849	976	749	650	244	150	115	107
22	190	774	1,290	444	824	976	724	626	236	147	112	105
23	251	650	1,130	426	799	976	1,110	601	231	144	110	102
24	345	591	1,000	399	749	1,160	1,580	582	223	144	110	100
25	297	543	900	372	951	1,290	1,420	558	219	144	107	100
26	372	505	824	381	1,240	1,340	1,310	515	210	186	112	102
27	463	463	749	505	1,340	1,420	1,210	477	210	236	134	144
28	749	440	774	519	1,580	1,420	1,420	449	206	198	131	150
29	724	417	1,030	539	1,640	1,340	1,470	426	202	179	123	131
30	577	749	1,180	601	-	1,420	1,690	417	194	175	115	120
31	482	-	1,470	699	-	1,370	-	449	-	164	115	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	9,057	749	130	292	1.26	1.46	17,960
November	20,459	1,420	305	682	2.95	3.29	40,580
December	39,469	3,390	699	1,273	5.51	6.35	78,290
Calendar year 1939	329,502	5,060	110	903	3.91	53.01	653,600
January	21,988	1,700	372	709	3.07	3.54	43,610
February	44,792	4,620	601	1,545	6.69	7.21	88,840
March	47,028	2,770	976	1,517	6.57	7.57	93,280
April	32,564	1,690	724	1,085	4.70	5.24	64,590
May	32,614	2,870	417	1,052	4.55	5.25	64,690
June	8,831	421	194	294	1.27	1.42	17,520
July	5,236	236	144	169	.732	.84	10,390
August	3,879	168	107	125	.541	.62	7,690
September	3,530	150	100	118	.511	.57	7,000
Water year 1939-40	269,447	4,620	100	736	3.19	43.36	534,400

a No gage-height record; discharge computed on basis of recorded range of stage and records for station near Auburn.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
101604-O U.S. GOVERNMENT PRINTING OFFICE 1936

Green River near Black Diamond, Wash.

Location.- Staff gage, lat. 47°17'00", long. 122°03'30", in NW¼ sec. 28, T. 21 N., R. 6 E., at highway bridge, three-quarters of a mile upstream from Newaukum Creek and 3 miles southwest of Black Diamond. Datum of gage is 158.5 feet above mean sea level (river-profile survey).

Drainage area.- 286 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge observed during year, 4,710 second-feet Feb. 10 (gage height, 5.32 feet); minimum observed, 56 second-feet Sept. 25, 26 (gage height, 1.39 feet).

Remarks.- Records good except those for period of no gage-height record, which are fair. Gage read twice daily. City of Tacoma diverts about 85 second-feet for municipal use. No regulation.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

1.5	82	2.4	531	4.0	2,410
1.7	150	2.7	760	4.5	3,230
1.9	239	3.0	1,050	5.0	4,130
2.1	344	3.5	1,680		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a120	404	760	1,960	719	g2,110	1,480	g3,230	465	182	142	73
2	a130	368	994	1,750	678	g3,060	1,340	g2,730	465	174	154	73
3	a150	362	1,050	1,540	678	g2,890	1,220	2,260	434	174	134	88
4	a440	326	943	1,340	640	g2,410	1,100	1,960	404	170	122	91
5	a420	294	804	1,160	g640	g2,260	994	1,960	392	166	115	85
6	a320	g294	804	d1,050	g1,820	g2,110	943	1,960	368	166	112	82
7	259	g896	719	943	g2,890	g2,410	943	1,820	404	154	109	76
8	214	g1,480	804	846	g3,060	g3,060	994	1,610	343	158	103	70
9	182	g1,410	896	848	g3,760	g2,570	1,160	1,480	374	150	100	66
10	170	g1,100	943	760	g4,510	2,110	1,220	1,480	344	150	100	66
11	158	g1,280	896	719	g3,580	1,820	1,160	1,410	332	146	100	66
12	150	1,280	804	678	g2,730	1,610	1,100	1,280	320	142	94	73
13	138	1,050	760	640	g2,260	1,410	1,160	1,100	304	142	94	85
14	126	896	g943	640	1,820	1,280	1,220	994	299	142	91	100
15	118	760	g2,110	640	1,610	1,220	1,160	943	289	142	88	94
16	112	678	g3,580	640	1,480	1,280	1,050	943	279	134	88	85
17	112	602	g3,760	640	1,340	1,280	943	848	269	134	82	76
18	126	566	g3,060	602	1,220	1,220	943	804	259	134	82	79
19	150	498	g2,410	566	1,160	1,160	896	760	249	126	76	76
20	229	465	1,960	531	1,050	1,160	848	760	249	126	76	73
21	194	g434	1,750	531	994	1,100	804	719	239	130	82	66
22	174	g760	1,410	498	943	1,100	760	678	234	126	82	66
23	190	g678	1,220	465	943	1,100	g1,050	678	229	122	82	62
24	350	602	1,050	465	848	1,280	g1,820	640	219	118	82	58
25	299	566	943	434	1,050	1,410	1,610	602	209	118	76	56
26	332	531	848	434	g1,410	1,480	1,480	566	204	142	73	58
27	434	498	804	531	g1,610	1,610	1,340	531	199	219	82	79
28	640	465	848	566	g1,750	1,610	1,540	498	190	194	106	126
29	719	434	943	566	g1,960	1,540	1,610	465	190	170	97	100
30	602	640	1,340	602	-	1,610	g1,680	465	182	158	85	85
31	498	-	1,480	678	-	1,540	-	498	-	146	76	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	8,256	719	112	266	16,380
November	20,617	1,480	294	687	40,890
December	41,636	3,760	719	1,343	82,580
Calendar year	-	-	-	-	-
January	24,265	1,960	434	783	48,130
February	49,153	4,510	640	1,695	97,490
March	53,810	3,060	1,100	1,736	106,700
April	35,568	1,820	760	1,186	70,550
May	36,672	3,230	465	1,183	72,740
June	9,028	465	182	301	17,910
July	4,655	219	118	150	9,230
August	2,985	154	73	96.3	5,920
September	2,333	126	56	77.8	4,630
Water year 1939-40	288,978	4,510	56	790	573,200

a No gage-height record; discharge computed on basis of records for station at Auburn.
d Doubtful gage-height record; discharge computed from graph based on gage readings.
g Computed from graph based on gage readings.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Green River near Auburn, Wash.

Location.- Water-stage recorder, lat. 47°18'15", long. 122°02'10", in lot 3, sec. 17, T. 21 N., R. 5 E., 1½ miles east of Auburn and 2 miles downstream from Big Soos Creek. Datum of gage is at mean sea level (general adjustment of 1929).

Drainage area.- 386 square miles.

Records available.- August 1936 to September 1940.

Extremes.- Maximum discharge during year, 5,150 second-feet Feb. 10 (elevation, 59.90 feet); minimum, 113 second-feet Sept. 25 (elevation, 54.63 feet).
1936-40: Maximum discharge, 14,400 second-feet Apr. 18, 1938 (elevation, 65.88 feet); minimum, that of Sept. 25, 1940.

Remarks.- Records excellent. City of Tacoma diverts about 85 second-feet for municipal supply. No regulation.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

54.7	142	56.0	1,050
54.9	240	56.5	1,500
55.1	359	57.0	2,000
55.3	495	58.0	3,050
55.6	720	59.0	4,130

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	156	546	956	2,260	906	2,470	1,800	3,150	635	256	203	129
2	156	488	1,130	2,150	890	3,260	1,650	2,940	620	250	219	133
3	156	473	1,220	1,900	873	3,260	1,500	2,570	598	256	203	142
4	174	445	1,120	1,700	832	2,840	1,410	2,260	560	250	188	156
5	481	405	1,010	1,500	840	2,840	1,320	2,260	524	250	183	151
6	452	391	964	1,360	2,200	2,470	1,270	2,360	502	245	169	142
7	365	892	939	1,270	3,260	2,730	1,220	2,100	531	240	174	142
8	291	1,600	1,050	1,180	3,370	3,580	1,320	1,900	583	234	169	138
9	256	1,550	1,180	1,100	4,130	3,050	1,460	1,750	495	234	160	133
10	234	1,270	1,220	1,040	4,920	2,620	1,500	1,700	473	229	156	133
11	219	1,410	1,140	972	3,910	2,260	1,410	1,650	438	224	156	133
12	203	1,360	1,070	939	3,050	2,000	1,360	1,500	418	219	151	147
13	193	1,270	998	890	2,680	1,800	1,360	1,360	411	219	147	156
14	188	1,130	1,110	890	2,260	1,650	1,460	1,270	405	214	147	174
15	179	947	2,260	865	2,000	1,550	1,410	1,180	385	203	142	160
16	179	832	3,910	856	1,850	1,600	1,320	1,140	378	198	142	156
17	174	751	4,130	856	1,850	1,600	1,180	1,060	365	188	133	147
18	183	704	3,480	815	1,650	1,550	1,140	1,020	352	188	133	156
19	203	643	2,730	775	1,550	1,460	1,140	964	346	188	133	151
20	291	590	2,310	744	1,460	1,410	1,080	947	340	183	133	138
21	267	568	1,950	704	1,360	1,360	1,040	906	327	193	133	133
22	245	856	1,750	689	1,320	1,360	981	873	321	193	133	129
23	267	848	1,550	666	1,320	1,360	1,270	848	309	188	133	117
24	425	767	1,360	628	1,270	1,460	2,100	823	303	188	133	117
25	411	704	1,220	590	1,600	1,600	1,900	791	291	183	129	113
26	405	658	1,140	598	1,900	1,750	1,800	759	285	224	129	125
27	509	605	1,060	712	2,100	1,900	1,650	712	273	285	147	203
28	673	575	1,110	791	2,310	1,850	1,750	666	261	297	165	224
29	856	628	1,220	775	2,410	1,850	1,850	635	256	250	156	188
30	728	712	1,600	799	-	2,000	1,850	620	250	234	142	165
31	620	-	1,700	865	-	1,900	-	650	-	214	133	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	10,139	856	156	327	20,110
November	24,618	1,600	391	821	48,830
December	49,587	4,130	939	1,600	98,350
Calendar year 1939	422,598	5,070	146	1,158	838,200
January	31,879	2,260	590	1,028	63,230
February	60,071	4,920	832	2,071	119,100
March	64,390	3,580	1,360	2,077	127,700
April	43,501	2,100	981	1,450	86,280
May	43,364	3,150	620	1,399	86,010
June	12,235	635	250	408	24,270
July	6,917	297	183	223	13,720
August	4,794	219	129	155	9,510
September	4,431	224	113	148	8,790
Water year 1939-40	355,926	4,920	113	972	705,900

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Cedar River at Cedar Falls, Wash.

Location.- Water-stage recorder, lat. 47°25'10", long. 121°47'20", in sec. 4, T. 22 N., R. 8 E., three-quarters of a mile downstream from Seattle municipal power plant at Cedar Falls and 3 miles downstream from Cedar Lake.

Drainage area.- 86 square miles.

Records available.- April 1914 to September 1940.

Average discharge.- 26 years, 294 second-feet.

Extremes.- Maximum discharge during year, 1,310 second-feet (regulated) Mar. 8 (gage height, 7.44 feet); minimum, 30 second-feet (regulated) Oct. 20, 21 (gage height, 4.92 feet).

1914-40: Maximum discharge, 6,290 second-feet Dec. 19, 1917; maximum gage height, 11.5 feet Dec. 22, 1933; no flow Nov. 25, 1917, Aug. 18, 1923 due to regulation.

Remarks.- Records excellent. All diverted water returned to river above gage. Flow partly regulated by Cedar Lake Reservoir for power plant.

Cooperation.- Gage-height record collected in cooperation with city of Seattle.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	61	79	a90	217	86	413	490	605	103	83	72	57
2	89	70	124	131	86	538	458	747	102	82	68	61
3	106	63	75	127	179	750	519	663	101	81	68	60
4	96	62	84	149	85	612	417	665	100	81	67	80
5	116	195	106	119	88	648	366	845	100	81	72	80
6	92	59	102	109	110	661	567	718	101	80	68	88
7	69	80	95	108	112	714	316	549	104	232	74	81
8	64	86	111	109	121	788	168	556	98	91	68	57
9	191	84	136	130	138	657	231	528	97	104	76	127
10	196	81	91	126	217	608	204	548	96	102	73	117
11	192	86	116	135	393	644	317	386	95	76	73	94
12	202	85	108	114	472	632	318	503	95	88	64	70
13	113	80	94	101	497	645	188	490	95	81	a65	57
14	155	79	189	101	471	436	216	404	93	99	a70	57
15	108	75	289	114	434	311	420	419	93	75	a125	56
16	130	71	386	117	564	351	350	364	136	81	a130	65
17	142	68	364	151	376	246	297	307	94	102	a70	100
18	133	67	443	158	446	240	231	280	91	76	a70	107
19	140	66	422	220	304	236	238	212	104	74	a90	92
20	139	65	412	163	326	226	296	161	93	74	62	83
21	48	85	469	94	226	206	487	112	91	75	116	68
22	58	71	529	114	192	222	394	112	88	74	121	64
23	67	68	511	184	155	160	416	111	170	75	127	120
24	73	67	252	242	309	170	368	126	87	74	57	116
25	66	96	116	245	154	242	199	108	86	74	56	136
26	58	73	157	373	319	214	423	157	88	84	139	87
27	70	71	282	111	330	276	223	105	96	74	90	125
28	76	a70	212	95	318	331	273	104	85	72	83	62
29	74	a75	231	84	389	378	448	103	84	72	79	53
30	69	a95	216	74	-	420	551	103	84	70	86	106
31	78	-	134	81	-	441	-	104	-	69	57	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	3,271	202	48	106	-	-	6,490
November	2,372	195	59	79.1	-	-	4,700
December	6,946	529	75	224	-	-	13,780
Calendar year 1939	82,577	839	48	226	2.63	35.71	163,800
January	4,396	373	74	142	-	-	8,720
February	7,897	564	85	272	-	-	15,660
March	13,396	788	160	432	-	-	26,570
April	10,389	567	168	346	-	-	20,610
May	11,198	845	103	361	-	-	22,210
June	2,950	170	84	98.3	-	-	5,850
July	2,656	232	69	85.7	-	-	5,270
August	2,536	139	56	81.8	-	-	5,030
September	2,526	136	53	84.2	-	-	5,010
Water year 1939-40	70,533	845	48	193	2.24	30.50	139,900

a No gage-height record; discharge computed on basis of records for station near Landsberg.

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.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Cedar River near Landsberg, Wash.

Location.- Water-stage recorder, lat. 47°23'35", long. 121°56'50", in sec. 17, T. 22 N., R. 7 E., 1¾ miles upstream from Landsberg and intake of Seattle water-supply system, 7 miles upstream from Maple Valley, and 12 miles downstream from Cedar Lake.
Drainage area.- 138 square miles (including that of Rock Creek).
Records available.- April 1914 to September 1940. July 1895 to September 1898 (at site 2 miles downstream, published as Cedar River at Clifford Bridge, near Ravensdale, Wash.), and March 1901 to April 1912 (at site of Seattle water-supply intake, published as Cedar River near Ravensdale, Wash.) in reports of Geological Survey; August 1895 to April 1912 and May 1914 to September 1933 (monthly discharge) in State Water-Supply Bulletin 5. Records as originally published for water years 1932-33 and 1933-34 did not include flow of Rock Creek; revised figures of yearly discharge for these years including estimated flow of Rock Creek were published in Water-Supply Paper 882.
Average discharge.- 42 years (1895-1911, 1914-40), 698 second-feet (adjusted for Rock Creek diversion since October 1932).
Extremes.- Maximum discharge during year, 1,880 second-feet (regulated) Mar. 7 (gage height, 3.43 feet); minimum, 237 second-feet (regulated) Sept. 30 (gage height, 0.99 foot).
1895-98, 1901-12, 1914-40: Maximum discharge observed, 13,600 second-feet Nov. 19, 1911 (gage height, 9.7 feet, site and datum then in use); minimum discharge, 83 second-feet Sept. 19, 1898.
Remarks.- Records excellent. All diversions except Rock Creek returned to river above station. Rock Creek which enters naturally just above gage has been diverted to a point downstream from Seattle municipal water-supply intake to lessen danger of pollution. Monthly discharge adjusted for diversion estimated on basis of five discharge measurements, and relation of flow of Rock Creek to difference in discharge between records of Cedar River at Cedar Falls and near Landsberg. Flow of river partly regulated by Cedar Lake.
Cooperation.- Gage-height record collected in cooperation with city of Seattle.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	299	322	364	668	430	942	879	1,100	419	350	323	274
2	320	310	432	596	425	1,110	859	1,180	414	350	315	277
3	326	303	366	562	500	1,260	900	1,100	405	350	311	277
4	386	295	360	557	434	1,170	812	1,060	401	346	307	288
5	416	407	370	548	445	1,180	756	1,270	401	342	311	291
6	379	303	374	522	621	1,160	922	1,180	397	342	303	300
7	334	405	383	510	615	1,290	740	976	423	466	311	289
8	320	435	456	505	675	1,360	572	981	401	351	303	284
9	402	415	495	507	777	1,210	624	931	392	345	300	313
10	432	392	470	510	802	1,140	599	932	388	368	311	312
11	429	425	458	510	892	1,120	670	786	388	331	311	314
12	431	410	436	484	925	1,130	684	860	384	338	296	286
13	368	392	414	475	990	1,090	579	852	380	332	302	267
14	382	378	517	475	958	958	576	766	380	426	304	263
15	356	356	847	479	925	786	728	776	375	330	346	260
16	369	346	984	488	988	795	726	716	406	332	355	262
17	383	333	967	500	854	720	634	664	371	351	307	294
18	360	328	922	518	876	682	588	640	363	334	302	298
19	382	315	908	552	756	668	580	581	375	326	325	292
20	384	307	855	534	756	649	624	510	367	326	290	279
21	285	331	883	462	635	625	807	456	363	326	314	266
22	291	382	918	459	631	629	721	452	350	326	345	262
23	320	342	893	496	604	567	832	447	420	323	350	296
24	374	382	676	578	716	590	840	447	362	323	296	299
25	338	344	545	574	625	628	672	437	352	323	283	303
26	346	320	520	701	822	636	808	477	354	341	342	285
27	338	315	662	499	827	706	664	428	359	342	324	314
28	360	310	566	454	842	745	692	423	354	334	304	260
29	351	314	626	442	862	804	830	419	350	326	301	242
30	333	381	664	420	-	858	940	419	350	326	304	282
31	329	-	620	415	-	858	-	423	-	323	284	-

Month	Observed: Discharge in second-feet: Maximum	Minimum	Mean	Observed: Run-off in acre-feet	Rock Creek diversion (acre-feet)	Run-off in acre-feet	Discharge in second-feet: Mean	Per square mile	Run-off in inches
October	432	285	359	22,060	750	22,810	371	-	-
November	435	295	351	20,910	880	21,790	366	-	-
December	984	360	611	37,590	2,140	39,730	646	-	-
Calendar year 1939	1,330	285	580	420,000	18,270	438,300	605	4.38	59.46
January	701	415	516	31,740	2,350	34,090	554	-	-
February	990	425	731	42,070	2,640	44,710	777	-	-
March	1,360	567	905	55,670	2,850	58,520	952	-	-
April	940	572	729	43,350	1,660	45,010	756	-	-
May	1,270	419	732	45,000	1,230	46,230	752	-	-
June	423	350	382	22,720	880	23,600	397	-	-
July	466	323	344	21,120	380	21,500	350	-	-
August	355	283	312	19,200	230	19,430	316	-	-
September	314	242	284	16,920	250	17,170	289	-	-
Water year 1939-40	1,360	242	521	378,400	16,240	394,600	544	3.94	53.63

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.

Sammamish Lake near Redmond, Wash.

Location.- Staff gage, lat. 47°39'00", long. 122°06'30", in SE¼ sec. 13, T. 25 N., R. 5 E., on left shore, half a mile upstream from outlet and 1¾ miles south of Redmond. Datum of gage is 32.13 feet above mean lower low water (Corps of Engineers, U. S. Army, bench mark).

Drainage area.- 91 square miles.

Records available.- January 1939 to September 1940.

Extremes.- Maximum gage height observed during year, 6.05 feet Mar. 9, 10; minimum observed, 0.25 foot Oct. 1.

1939-40: Maximum gage height observed, that of Mar. 9, 10, 1940; minimum observed, 0.25 foot Sept. 27, 30, Oct. 1, 1939.

Remarks.- Records excellent. Gage read once daily. No known diversion or regulation.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.25	0.45	0.90	3.72	3.05	4.93	4.59	3.90	2.89	1.60	1.08	.73
2	.27	.47	.98	3.96	3.00	5.11	4.52	4.00	2.90	1.53	1.08	.72
3	.26	.46	1.02	4.13	2.95	5.23	4.48	4.02	2.89	1.50	1.07	.72
4	.29	.46	1.03	4.23	2.97	5.35	4.40	4.04	2.81	1.48	1.05	.71
5	.28	.46	1.04	4.28	2.97	5.58	4.33	4.12	2.77	1.46	1.03	.71
6	.29	.46	1.06	4.29	3.11	5.74	4.25	4.32	2.70	1.45	1.01	.70
7	.30	.48	1.12	4.27	3.35	5.84	4.20	4.42	2.70	1.38	1.00	.69
8	.30	.54	1.32	4.22	3.52	5.99	-	4.48	2.67	1.36	.98	.68
9	.30	.60	1.42	4.19	3.68	6.05	4.14	4.48	2.60	1.34	.97	.67
10	.29	.61	1.60	4.12	3.80	6.05	4.09	4.52	2.56	1.31	.96	.68
11	.29	.70	1.70	-	3.87	6.00	4.01	4.44	2.51	1.28	.94	.68
12	.29	.74	1.75	4.01	3.91	5.98	3.96	4.38	2.47	1.26	.93	.69
13	.29	.76	1.79	3.94	4.00	5.90	3.88	4.30	2.39	1.24	.91	.70
14	.29	.79	1.91	3.88	4.08	5.82	3.80	4.22	2.32	1.22	.88	.70
15	.29	.84	2.18	3.82	4.10	5.74	3.76	4.15	2.30	1.20	.86	.69
16	.29	.85	2.59	3.82	4.15	5.69	3.69	4.07	2.22	1.17	.84	.68
17	.30	.87	2.98	3.78	4.22	5.59	3.60	4.00	2.14	1.15	.83	.67
18	.30	.87	3.22	3.72	4.25	5.48	3.52	3.90	2.11	1.12	.82	.68
19	.30	.88	3.30	3.67	4.24	5.39	3.48	3.83	2.09	1.10	.81	.67
20	.32	.88	-	3.59	4.21	5.28	3.45	3.73	2.06	1.09	.80	.66
21	.32	-	3.49	3.51	4.00	5.19	3.37	-	2.00	1.09	.80	.64
22	.29	.89	3.51	3.44	3.97	5.08	3.30	3.56	1.95	1.07	.79	.63
23	.32	.88	3.51	3.39	4.15	4.98	3.40	3.49	1.91	1.05	.78	.62
24	.39	.87	3.49	-	4.16	4.88	3.54	3.40	1.87	1.02	.77	.62
25	.41	.87	3.48	3.26	4.19	4.79	3.65	3.34	1.82	1.00	.75	.61
26	.41	.87	3.44	3.20	4.28	4.70	3.70	3.26	1.79	1.09	.74	.60
27	.43	.86	3.37	3.23	4.45	-	3.78	3.18	1.76	1.11	.74	.67
28	.45	.86	3.39	3.22	4.59	4.65	3.78	3.10	1.72	1.10	.74	.69
29	.45	.87	3.46	3.19	4.79	4.60	3.78	3.03	1.67	1.10	.74	.69
30	.45	.90	3.44	3.14	-	4.62	3.78	2.98	1.64	1.09	.74	.69
31	.45	-	3.50	3.09	-	4.62	-	2.98	-	1.09	.74	-

400455 O - 41 - 4

Sammamish River near Redmond, Wash.

Location.- Staff gage, lat. 47°39'00", long. 122°06'30", in SE¼ sec. 13, T. 25 N., R. 5 E., on left shore of Lake Sammamish, half a mile upstream from outlet and 1⅞ miles south of Redmond. Datum of gage is 32.13 feet above mean lower low water (Corps of Engineers, U. S. Army, bench mark). Discharge measurements made at railway bridge a mile downstream from Bear Creek.

Drainage area.- 140 square miles, including that of Bear Creek.

Records available.- January 1939 to September 1940 (including flow of Bear Creek).

Extremes.- Maximum discharge observed during year, 689 second-feet Mar. 9, 10; minimum observed, 51 second-feet Oct. 1 (gage height, 0.25 foot).
1939-40: Maximum discharge observed, that of Mar. 9, 10, 1940; minimum observed, 51 second-feet Sept. 27, 30, Oct. 1, 1939 (gage height, 0.25 foot).

Remarks.- Records fair except those for October to December, which are poor. Gage read once daily. No known diversion or regulation.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	51	64	97	405	298	522	483	405	256	122	91	69
2	52	65	104	431	292	549	483	418	256	117	92	69
3	52	64	107	457	286	563	470	418	256	114	91	69
4	53	64	108	457	286	591	457	418	244	113	89	68
5	53	64	108	470	286	619	457	431	238	112	88	68
6	53	64	110	470	304	647	444	457	232	112	87	68
7	54	66	114	470	328	661	431	457	232	106	86	67
8	54	70	135	457	353	675	a431	470	226	105	84	66
9	54	74	140	457	366	689	431	470	220	103	84	66
10	53	75	160	444	379	689	418	470	214	102	84	67
11	53	82	170	a438	392	675	418	457	209	100	82	67
12	53	85	176	431	405	675	405	457	204	98	81	68
13	53	87	176	418	405	661	392	444	198	97	80	68
14	53	89	192	405	418	647	392	431	187	96	78	68
15	53	93	220	405	418	647	379	418	187	95	76	68
16	53	94	268	405	431	633	379	405	182	92	75	67
17	54	96	316	392	431	619	366	392	170	92	74	66
18	54	96	340	392	444	605	353	379	165	89	74	67
19	54	96	353	379	431	591	353	379	165	88	73	67
20	55	96	366	366	431	577	340	353	160	88	73	66
21	55	a96	379	353	405	563	328	a340	155	88	73	65
22	53	97	379	353	405	549	328	328	150	87	72	64
23	55	96	379	340	431	535	340	328	150	86	72	64
24	59	96	379	a334	431	522	353	316	145	84	71	64
25	61	96	379	328	431	509	366	304	140	83	70	63
26	61	96	366	316	444	496	379	298	140	90	69	62
27	62	95	353	316	470	a496	379	286	135	92	69	67
28	64	95	353	316	483	496	392	280	130	92	70	69
29	64	96	366	316	509	483	392	268	130	92	70	69
30	64	98	366	304	-	496	392	262	125	92	70	69
31	64	-	366	304	-	496	-	262	-	92	70	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	1,726	64	51	55.7	0.398	0.46	3,420
November	2,545	98	64	84.8	.606	.68	5,050
December	7,825	379	97	252	1.80	2.08	15,520
Calendar year	-	-	-	-	-	-	-
January	12,129	470	304	391	2.79	3.22	24,060
February	11,393	509	286	393	2.81	3.03	22,600
March	18,176	689	483	586	4.19	4.83	36,050
April	11,931	483	328	398	2.84	3.17	23,660
May	11,801	470	262	381	2.72	3.13	23,410
June	5,601	256	125	187	1.34	1.49	11,110
July	3,019	122	83	97.4	.696	.80	5,990
August	2,418	92	69	78.0	.557	.64	4,800
September	2,005	69	62	66.8	.477	.53	3,980
Water year 1939-40	90,569	689	51	247	1.76	24.06	179,600

a No gage-height record; discharge interpolated.

Sammamish River at Bothell, Wash.

Location.- Water-stage recorder, lat. 47°45'00", long. 122°11'30", in N½SE¼ sec. 8, T. 26 N., R. 5 E., in Bothell, a quarter of a mile downstream from North Creek and 4¼ miles upstream from mouth. Datum of gage is mean lower low water at Seattle (Corps of Engineers, U. S. Army, bench mark). Prior to Dec. 28, 1939, staff gage at same site, readings reduced to present gage datum.

Drainage area.- 199 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge during year, 878 second-feet Mar. 5, 8, 9 (elevation, 30.1 feet); minimum, 81 second-feet Sept. 2 (elevation, 24.56 feet).

Remarks.- Records excellent except those for period of shifting control, which are fair. No known diversion nor artificial regulation. Staff gage read once daily to December 28.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet) (Shifting-control method used July 26 to Aug. 25)

Oct. 2 to Aug. 25						Aug. 26 to Sept. 30	
24.5	89	26.0	240	29.0	693	24.6	84
24.7	105	26.5	306	30.0	861	24.8	100
25.0	132	27.0	378			25.0	118
25.5	182	28.0	533				

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a100	114	193	709	378	776	581	645	299	146	107	83
2	106	118	216	827	370	793	565	597	320	141	107	83
3	99	118	198	810	393	742	533	549	299	141	104	90
4	118	118	204	725	393	759	517	517	286	136	102	90
5	118	118	193	677	408	878	517	549	272	136	101	87
6	123	123	193	613	613	844	501	581	266	136	99	87
7	110	136	253	581	565	844	501	565	286	132	99	86
8	107	188	370	549	565	878	501	549	272	132	97	86
9	104	156	363	533	565	861	517	533	260	128	99	86
10	103	146	533	517	549	861	501	517	246	123	100	86
11	102	161	438	501	533	844	469	501	240	123	96	89
12	101	166	363	485	533	810	453	485	228	123	95	88
13	100	161	341	485	597	776	438	469	222	128	96	94
14	100	171	423	469	565	742	438	453	216	123	95	91
15	103	161	629	469	581	725	423	438	210	118	93	90
16	102	156	759	485	597	725	408	423	204	118	91	89
17	106	156	759	469	661	693	408	408	198	114	90	89
18	103	161	645	453	629	677	393	408	193	114	87	94
19	106	156	693	438	597	645	378	393	193	112	87	92
20	106	151	565	438	565	629	393	378	188	110	87	90
21	104	161	533	423	533	613	378	370	182	113	88	90
22	103	176	501	408	533	597	363	356	176	113	87	89
23	123	171	469	408	565	565	485	348	176	111	88	87
24	136	161	453	393	565	565	565	341	171	111	86	86
25	128	156	438	378	613	549	501	341	166	111	84	86
26	128	156	423	393	677	581	517	334	161	123	85	90
27	123	151	408	453	677	597	501	320	161	132	88	116
28	123	151	517	438	709	565	485	306	156	123	91	118
29	118	156	517	423	793	597	501	299	151	114	86	106
30	118	182	501	408	-	661	485	292	151	113	83	103
31	114	-	565	393	-	613	-	313	-	109	82	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	3,435	136	99	111	0.558	0.64	6,810
November	4,556	188	114	152	.764	.85	9,040
December	13,656	759	193	441	2.22	2.55	27,090
Calendar year	-	-	-	-	-	-	-
January	15,751	827	378	508	2.55	2.94	31,240
February	16,322	793	370	563	2.83	3.05	32,370
March	22,005	878	549	710	3.57	4.11	43,650
April	14,216	581	363	474	2.38	2.66	28,200
May	13,578	645	292	438	2.20	2.54	26,930
June	6,549	320	151	218	1.10	1.22	12,990
July	3,807	146	109	123	.618	.71	7,550
August	2,880	107	82	92.9	.467	.54	5,710
September	2,741	118	83	91.4	.459	.51	5,440
Water year 1939-40	119,496	878	82	326	1.64	22.32	237,000

a No gage-height record; discharge computed on basis of records for station near Redmond.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

South Fork of Skykomish River near Index, Wash.

Location.- Water-stage recorder, lat. 47°48'20", long. 121°32'40", in NE¼ sec. 29, T. 27 N., R. 10 E., 600 feet upstream from Sunset Falls, 2 miles upstream from confluence with North Fork, and 2 miles southeast of Index. Discharge measurements made 1 mile upstream from gage.

Drainage area.- 355 square miles.

Records available.- October 1902 to September 1905, April 1911 to September 1940.

Average discharge.- 32 years, 2,346 second-feet.

Extremes.- Maximum discharge during year, 15,400 second-feet Dec. 15 (gage height, 13.28 feet); minimum, 272 second-feet Sept. 21, 22.
1902-5, 1911-40: Maximum discharge observed, 57,000 second-feet Dec. 18, 1917 (gage height, 22.6 feet, former site); minimum observed, 214 second-feet Oct. 15-21, 23, 1925.

Remarks.- Records excellent. No diversion or regulation.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

2.3	275	4.0	1,370	8.0	5,700
2.5	360	4.5	1,770	9.0	7,250
2.8	520	5.0	2,180	10.0	8,910
3.0	650	6.0	3,130	11.0	10,700
3.5	1,000	7.0	4,310		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	311	1,210	3,130	3,810	1,690	3,180	2,450	5,850	2,540	902	568	333
2	333	1,070	5,240	3,570	1,530	4,570	2,270	5,400	2,450	895	580	333
3	320	1,100	3,350	3,030	1,410	3,130	2,010	4,180	2,270	860	520	342
4	1,460	1,000	2,730	2,540	1,370	2,630	1,850	3,690	2,140	811	502	315
5	1,850	923	2,360	2,270	1,490	2,930	1,770	3,810	1,890	776	478	307
6	1,250	1,040	2,450	2,010	3,650	2,360	1,690	3,570	1,810	755	460	295
7	1,000	5,040	2,660	1,810	3,690	2,860	1,730	3,240	2,360	727	455	303
8	790	4,180	6,240	1,690	2,930	3,570	2,220	3,350	2,050	699	450	307
9	657	3,130	4,700	1,570	5,160	2,730	2,630	3,930	1,970	678	440	315
10	615	2,730	4,980	1,530	5,700	2,220	2,450	5,400	2,050	664	420	338
11	538	4,840	4,700	1,410	3,810	1,930	2,220	4,840	2,140	650	410	342
12	484	4,050	3,460	1,330	2,830	1,730	2,450	4,050	2,140	671	415	338
13	450	2,830	2,830	1,290	2,540	1,570	3,350	3,350	2,090	678	400	395
14	425	2,450	3,880	1,250	2,180	1,490	3,240	3,130	1,770	650	380	375
15	410	2,010	10,200	1,210	1,930	1,570	2,630	3,240	1,650	629	375	351
16	390	1,770	9,080	1,250	1,770	2,830	2,270	3,130	1,570	622	370	328
17	435	1,570	7,410	1,210	1,650	2,360	2,090	3,030	1,450	594	365	311
18	466	1,450	4,980	1,180	1,610	2,010	2,630	3,240	1,410	562	370	320
19	1,150	1,290	3,810	1,100	1,610	1,850	2,450	3,570	1,490	538	370	311
20	1,180	1,180	4,440	1,070	1,490	1,770	2,270	3,240	1,370	556	380	287
21	1,450	1,180	4,180	1,040	1,370	1,770	2,090	3,240	1,250	574	385	279
22	1,180	2,360	3,130	1,000	1,330	1,770	2,090	3,810	1,180	544	346	287
23	1,740	1,770	2,630	965	1,290	1,730	3,130	4,180	1,140	532	351	291
24	1,930	1,490	2,220	909	1,210	2,360	3,350	3,810	1,140	514	346	299
25	1,330	1,330	1,970	860	1,330	2,360	2,830	3,130	1,180	490	346	291
26	1,250	1,180	1,810	895	1,890	2,360	2,730	2,360	1,140	538	338	299
27	1,460	1,100	1,690	1,290	2,010	3,130	2,540	2,050	1,040	741	360	375
28	4,570	1,040	1,610	1,610	2,180	3,130	2,930	2,010	965	657	400	380
29	2,540	1,000	1,930	1,610	2,540	2,730	2,930	2,140	965	587	365	324
30	1,770	4,340	2,540	1,770	-	3,350	2,730	2,360	930	636	365	303
31	1,450	-	2,630	1,850	-	2,930	-	3,350	-	587	351	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	35,184	4,570	311	1,135	3.20	3.69	69,790
November	61,653	5,040	923	2,055	5.79	6.46	122,300
December	118,970	10,200	1,610	3,838	10.8	12.45	236,000
Calendar year 1939	898,739	12,900	311	2,462	6.94	94.15	1,783,000
January	49,929	3,810	860	1,611	4.54	5.23	99,030
February	65,190	5,700	1,210	2,248	6.33	6.83	129,300
March	76,910	4,570	1,490	2,481	6.99	8.06	152,500
April	74,020	3,350	1,690	2,467	6.95	7.75	146,800
May	109,680	5,850	2,010	3,538	9.97	11.49	217,500
June	49,540	2,540	930	1,651	4.65	5.19	98,260
July	20,317	902	490	655	1.85	2.13	40,300
August	12,661	580	338	408	1.15	1.33	25,110
September	9,674	395	279	322	.907	1.01	19,190
Water year 1939-40	683,728	10,200	279	1,868	5.26	71.62	1,356,000

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Skykomish River near Gold Bar, Wash.

Location.- Water-stage recorder, lat. 47°50'15", long. 121°40'00", in SW¼ sec. 9, T. 27 N., R. 9 E., 2 miles southeast of Gold Bar and 5 miles upstream from Wallace River and Startup. Datum of gage is 210.01 feet above mean sea level (subject to correction for general adjustment of 1929).

Drainage area.- 535 square miles.

Records available.- September 1928 to September 1940.

Average discharge.- 12 years, 3,725 second-feet.

Extremes.- Maximum discharge during year not determined (probably occurred Dec. 15, during period of no gage-height record); minimum, 438 second-feet Sept. 22, 23, 24 (gage height, 2.84 feet).
1928-40: Maximum discharge, 79,000 second-feet Dec. 21, 1933 (gage height, 21.3 feet); minimum, 382 second-feet Oct. 9, 1938 (gage height, 2.78 feet).

Remarks.- Records excellent except those for periods of no gage-height record, which are fair. No diversion or regulation.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Feb. 9

3.0	540	4.5	2,200	6.5	5,500
3.3	795	5.0	2,920	7.0	6,510
3.6	1,100	5.5	3,710	8.0	9,100
4.0	1,570	6.0	4,570		

Feb. 10 to Sept. 30

2.9	480	4.3	1,800	6.5	5,110
3.1	635	4.6	2,170	7.0	6,050
3.3	800	5.0	2,710	7.5	7,200
3.6	1,070	5.5	3,430	8.0	8,600
4.0	1,460	6.0	4,240		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a530	2,140	5,310	6,510	3,000	4,970	4,160	9,430	4,160	a1,320	926	548
2	a550	1,880	7,960	6,290	2,620	6,950	3,820	8,600	3,980	a1,280	980	540
3	a540	1,880	5,310	5,310	2,410	5,110	3,360	6,480	3,740	a1,240	845	555
4	a2,800	1,750	a4,400	4,480	2,340	4,410	3,060	5,660	3,500	a1,190	792	518
5	a3,400	1,570	a3,600	4,040	2,620	4,750	2,850	5,660	3,060	a1,150	766	495
6	a2,200	1,690	a3,800	3,470	6,220	3,900	2,710	5,290	2,850	a1,110	749	480
7	a1,600	8,340	a4,000	3,070	6,290	4,550	2,850	4,930	3,660	f1,070	740	480
8	a1,400	6,970	a9,500	2,770	5,120	5,850	3,820	4,930	3,200	a1,040	724	488
9	a1,200	5,310	a7,200	2,550	8,640	4,410	4,410	5,850	3,130	a1,010	707	495
10	f1,130	4,570	a7,600	2,480	9,120	3,660	4,320	8,010	3,280	f980	691	518
11	980	7,700	a7,200	2,270	5,980	3,130	3,820	6,950	3,430	980	675	540
12	890	6,740	a5,400	2,140	4,580	2,780	4,240	5,660	3,430	998	675	532
13	804	4,930	a4,300	2,000	4,240	2,500	5,470	4,930	3,360	1,010	651	627
14	750	4,210	a7,200	1,940	3,580	2,360	5,290	4,750	2,850	989	619	595
15	705	3,470	a17,500	1,880	3,130	2,500	4,410	4,930	2,570	953	595	563
16	671	2,920	a14,000	2,070	2,920	4,750	3,740	4,750	2,430	935	587	525
17	723	2,620	a11,000	2,000	2,710	3,980	3,430	4,750	2,300	899	571	495
18	795	2,410	a7,600	1,940	2,570	3,360	4,240	4,930	2,170	854	571	502
19	2,120	2,200	a5,800	1,750	2,570	3,060	3,980	5,290	f2,300	818	571	502
20	2,070	2,000	a7,000	1,690	2,500	2,920	3,660	4,930	a2,110	827	579	466
21	2,620	2,050	f6,740	1,570	2,170	2,920	3,360	4,930	a1,930	926	587	445
22	2,000	4,040	5,310	1,520	2,040	2,920	3,430	5,850	f1,740	881	540	445
23	3,370	2,840	4,390	1,460	2,040	2,850	4,930	6,480	f1,740	818	540	452
24	3,390	2,410	3,710	1,380	1,920	3,740	5,110	5,660	a1,740	792	532	459
25	2,340	2,140	3,310	1,290	2,100	3,900	4,410	4,930	a1,800	766	532	459
26	2,200	1,940	2,920	1,370	3,130	3,900	4,320	3,820	a1,670	800	540	459
27	2,830	1,810	2,620	2,270	3,360	5,290	4,070	3,280	a1,540	1,090	579	579
28	7,510	1,690	2,550	2,770	3,500	5,110	4,750	3,200	a1,410	1,040	749	667
29	4,210	1,690	3,420	2,920	4,070	4,580	4,580	3,430	f1,410	944	643	532
30	3,150	7,260	4,570	3,310	-	5,660	4,410	3,900	f1,360	1,040	603	488
31	2,550	-	4,480	3,390	-	4,930	-	5,290	-	944	579	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	62,028	7,510	530	2,001	3.74	4.31	123,000
November	103,170	8,340	1,570	3,439	6.43	7.17	204,600
December	189,700	17,500	2,550	6,119	11.4	13.19	376,300
Calendar year 1939	1,436,682	22,000	530	3,936	7.36	99.90	2,850,000
January	83,900	6,510	1,290	2,706	5.06	5.83	166,400
February	107,490	9,120	1,920	3,707	6.93	7.47	213,200
March	125,700	6,950	2,360	4,055	7.58	8.74	249,300
April	121,010	5,470	2,710	4,034	7.54	8.41	240,000
May	167,480	9,430	3,200	5,403	10.1	11.64	332,200
June	77,850	4,160	1,360	2,595	4.85	5.41	154,400
July	30,694	1,320	766	990	1.85	2.13	60,880
August	20,438	980	532	659	1.23	1.42	40,540
September	15,449	667	445	515	.963	1.07	30,640
Water year 1939-40	1,104,909	17,500	445	3,019	5.64	76.79	2,191,000

a No gage-height record; discharge interpolated or computed on basis of records for South Fork near Index.
f Computed on basis of partly estimated gage-height record.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Troublesome Creek near Index, Wash.

Location.- Water-stage recorder, lat. 47°54'00", long. 121°23'50", in NE¼ sec. 21, T. 28 N., R. 11 E. (unsurveyed), a quarter of a mile upstream from mouth and 9 miles northeast of Index.

Drainage area.- 10.4 square miles at measuring section, 1¼ miles upstream from gage.

Records available.- July 1929 to September 1940.

Average discharge.- 11 years, 118 second-feet.

Extremes.- Maximum discharge during year, 438 second-feet Dec. 15 (gage height, 2.98 feet); minimum, 19 second-feet Jan. 26 (gage height, 0.46 foot).
1929-40: Maximum discharge, 2,300 second-feet Dec. 21, 1933 (gage height, 7.0 feet), from rating curve extended above 750 second-feet; maximum gage height, 7.54 feet Feb. 26, 1932; minimum discharge, 10 second-feet Nov. 17, 18, 19, 1936.

Remarks.- Records fair; they represent discharge at measuring section, 1¼ miles upstream from gage. No diversion or regulation.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1, 2, Feb. 11 to Apr. 15)

0.5	21	1.1	58	2.0	177
.7	29	1.3	79	2.5	288
.9	41	1.6	116	3.0	445

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23	83	a150	138	92	88	104	228	143	66	48	32
2	23	72	a190	167	80	140	94	233	137	67	48	29
3	23	65	a120	143	68	114	85	184	144	67	45	28
4	84	59	a170	114	60	86	75	157	134	64	42	25
5	137	53	a120	101	62	82	66	140	112	60	42	24
6	108	49	a160	86	133	71	62	118	100	56	43	23
7	85	190	a240	75	147	79	63	108	109	54	44	22
8	69	256	a320	64	125	117	85	114	102	53	44	24
9	56	209	222	54	275	97	111	149	100	51	42	28
10	48	180	230	48	321	81	112	217	108	50	40	32
11	42	261	191	43	165	63	105	197	118	51	38	34
12	38	235	137	40	104	52	116	167	129	59	37	36
13	34	165	106	37	84	43	150	131	132	67	34	34
14	31	126	140	34	69	40	143	120	112	65	33	32
15	30	104	325	33	56	44	117	131	101	62	31	28
16	27	90	394	31	48	93	104	122	94	61	30	26
17	27	79	354	30	42	90	92	117	91	57	30	24
18	27	71	226	30	39	80	104	129	91	50	33	24
19	60	63	153	28	38	75	102	144	97	45	34	23
20	83	55	165	26	35	72	97	137	97	46	35	22
21	124	57	153	24	33	71	89	140	90	54	34	21
22	104	92	122	23	31	70	91	173	79	54	30	21
23	166	83	95	22	29	67	127	199	76	49	29	22
24	146	73	80	21	27	85	128	189	80	46	29	25
25	104	a60	70	20	28	86	113	160	88	42	31	27
26	94	a55	60	20	43	91	108	118	86	40	30	28
27	118	a50	53	25	61	114	102	97	75	46	31	36
28	228	a50	46	49	64	122	117	90	69	53	41	34
29	165	a90	59	76	71	114	114	97	68	51	38	29
30	118	a210	89	98	-	146	113	114	68	56	36	28
31	96	-	90	102	-	121	-	167	-	51	35	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	2,518	228	23	81.2	7.81	9.00	4,990
November	3,285	261	49	110	10.6	11.75	6,520
December	5,030	394	46	162	15.6	17.99	9,980
Calendar year 1939	42,153	640	14	115	11.1	150.60	83,620
January	1,802	167	20	58.1	5.59	6.44	3,570
February	2,430	321	27	83.8	8.06	8.69	4,820
March	2,694	146	40	86.9	8.36	9.63	5,340
April	3,089	150	62	103	9.90	11.05	6,130
May	4,587	233	90	148	14.2	16.40	9,100
June	3,030	144	68	101	9.71	10.84	6,010
July	1,693	67	40	54.6	5.25	6.05	3,360
August	1,137	48	29	36.7	3.53	4.07	2,260
September	821	36	21	27.4	2.63	2.94	1,630
Water year 1939-40	32,116	394	20	87.7	8.43	114.85	63,710

a No gage-height record; discharge computed on basis of records for Sultan River near Startup.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Sultan River near Startup, Wash.

Location.- Water-stage recorder, lat. 47°58'30", long. 121°46'30", in NE¼ sec. 28, T. 29 N., R. 8 E., 1½ miles upstream from intake of Everett water-supply system and 7½ miles north of Startup.

Drainage area.- 75 square miles.

Records available.- May 1934 to September 1940.

Extremes.- Maximum discharge during year, 7,380 second-feet Oct. 4 (gage height, 11.56 feet), from rating curve extended above 3,000 second-feet; minimum, 52 second-feet Sept. 26 (gage height, 3.47 feet).
1934-40: Maximum discharge, 15,600 second-feet Oct. 24, 1934 (gage height, 16.05 feet), from rating curve extended above 3,000 second-feet; minimum, that of Sept. 26, 1940; minimum gage height, 3.32 feet Sept. 22, 23, 24, 1938.

Remarks.- Records excellent except those for December to February which are good, and those for period of no gage-height record and those above 3,000 second-feet, which are fair. No diversion or regulation.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1-4				Oct. 4 to Sept. 30					
3.7	82	5.5	548	3.5	55	4.7	262	7.0	1,370
3.9	105	6.0	773	3.7	76	5.0	346	7.5	1,770
4.1	140	6.5	1,060	3.9	103	5.5	515	8.0	2,250
4.4	205	7.0	1,390	4.1	136	6.0	750	9.0	3,400
4.7	285	7.5	1,790	4.4	193	6.5	1,020		
5.0	374	8.0	2,270						

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	87	416	1,220	2,150	555	1,640	775	3,640	426	122	310	81
2	98	377	1,920	2,000	435	1,820	725	1,900	535	119	278	79
3	91	380	930	1,260	377	1,020	578	1,160	535	117	191	85
4	2,370	334	1,500	900	477	1,090	496	990	460	111	154	79
5	1,580	296	930	725	868	1,090	460	1,090	362	106	134	76
6	900	408	1,160	555	2,590	750	426	850	319	102	119	72
7	555	3,690	1,720	460	1,690	1,690	490	750	477	99	108	68
8	416	2,000	2,630	399	1,620	1,640	750	750	387	95	99	65
9	334	1,340	1,460	355	3,550	1,020	a1,600	800	362	92	97	62
10	296	1,520	1,880	362	2,370	775	a1,000	960	368	89	96	63
11	252	2,620	1,340	305	1,370	650	a720	700	362	88	89	60
12	223	1,540	850	275	930	535	a720	578	349	85	85	65
13	195	1,020	700	267	875	477	a900	496	349	90	81	69
14	177	930	1,600	265	700	460	a780	496	285	93	77	67
15	164	650	3,660	267	578	698	650	578	262	88	75	59
16	154	515	2,850	477	515	2,380	535	535	242	84	72	57
17	183	442	2,570	387	477	1,120	477	477	228	82	69	70
18	193	429	1,450	349	515	775	675	515	221	80	66	111
19	1,120	368	1,320	296	555	625	555	515	226	76	65	88
20	678	316	2,350	265	460	578	555	460	210	75	64	77
21	1,120	483	1,720	235	409	535	496	460	185	96	65	72
22	625	848	1,060	214	368	515	477	555	169	99	63	67
23	1,720	477	750	199	355	477	889	578	164	89	61	63
24	1,200	383	600	185	340	860	900	477	165	82	59	60
25	700	325	496	173	640	700	675	409	165	80	56	56
26	825	291	429	193	1,370	612	675	337	154	106	57	54
27	1,310	265	380	956	960	1,300	675	283	141	223	92	94
28	2,420	240	429	900	1,010	1,120	1,320	230	136	197	220	90
29	990	294	1,130	1,020	1,090	960	1,160	316	133	206	131	79
30	650	2,120	1,220	930	-	1,810	1,040	355	128	242	102	94
31	515	-	1,170	775	-	1,090	-	688	-	199	89	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	22,141	2,420	87	714	9.52	10.98	43,920
November	25,317	3,690	240	844	11.3	12.55	50,220
December	43,424	3,660	380	1,401	18.7	21.53	86,130
Calendar year 1939	299,440	5,980	87	820	10.9	148.46	593,900
January	18,099	2,150	173	584	7.79	8.97	35,900
February	28,049	3,550	340	967	12.9	13.91	55,630
March	30,812	2,380	460	994	13.3	15.28	61,110
April	22,174	1,600	426	739	9.85	11.00	43,980
May	22,978	3,640	280	741	9.83	11.39	45,560
June	8,505	535	128	284	3.79	4.22	16,870
July	3,512	242	75	113	1.51	1.74	6,970
August	3,324	310	56	107	1.43	1.65	6,590
September	2,162	111	54	72.1	.961	1.07	4,290
Water year 1939-40	230,497	3,690	54	630	8.40	114.29	457,200

a No gage-height record; discharge computed on basis of records for South Fork of Stillaguamish River near Granite Falls.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Snoqualmie River near Tolt, Wash.

Location.- Water-stage recorder, lat. 47°39'55", long. 121°55'30", in sec. 9, T. 25 N., R. 7 E., 100 feet downstream from highway bridge, 1 mile northwest of Tolt and 2 miles downstream from Tolt River. Datum of gage is at mean sea level (subject to correction for general adjustment of 1929). Prior to Oct. 1, 1939, at datum 42.96 feet higher. Auxiliary water-stage recorder, lat. 47°39'00", long. 121°55'25", in SW¼ sec. 16, T. 25 N., R. 7 E., at Tolt, three-quarters of a mile downstream from Tolt River and 1¼ miles upstream from main gage. Datum of gage is at mean sea level (subject to correction for general adjustment of 1929). Prior to Oct. 1, 1939, at datum 52.48 feet higher.

Drainage area.- 605 square miles.

Records available.- February 1929 to September 1940 in reports of Geological Survey. October 1928 to February 1929 (monthly discharge only) in State Water-Supply Bulletin 5.

Average discharge.- 12 years (1928-40), 3,627 second-feet.

Extremes.- Maximum discharge during year, 18,900 second-feet Dec. 16 (elevation, 52.5 feet), determined by using fall as a factor; minimum, 329 second-feet Sept. 9 (elevation, 44.72 feet).

1929-40: Maximum discharge, 51,000 second-feet Feb. 26, 1932; maximum elevation recorded, 59.9 feet (present datum), Nov. 13, 1932; minimum discharge, that of Sept. 9, 1940; minimum elevation, 43.30 feet (present datum), Sept. 11, 1930.

Remarks.- Records excellent. Low-water flow diverted for operation of power plant at Snoqualmie Falls but returned to river above gage. Discharge above elevation about 42 feet computed by using fall as determined by auxiliary water-stage recorder as a factor. Some diurnal fluctuation caused by power plant.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	532	2,230	4,680	7,550	2,640	6,200	4,360	9,400	2,800	1,010	928	496
2	634	2,010	5,560	7,090	2,310	9,210	4,050	8,010	2,640	956	1,020	492
3	580	1,940	4,780	5,760	2,160	7,090	3,550	6,420	2,550	946	929	590
4	1,680	1,940	3,650	4,890	2,080	5,980	3,160	5,430	2,390	900	825	544
5	5,240	1,790	3,160	4,360	2,310	7,550	2,890	6,860	2,080	880	895	466
6	3,260	1,800	3,360	3,750	6,450	5,980	2,800	8,010	1,940	884	717	524
7	2,550	e9,660	3,450	3,260	7,550	6,610	2,800	6,420	2,500	784	738	516
8	2,010	e8,600	7,440	2,980	6,640	9,210	3,750	5,540	2,980	860	894	506
9	1,730	6,200	7,780	2,720	10,200	6,640	4,470	5,430	2,310	808	872	420
10	1,610	5,000	6,860	2,640	11,000	5,430	4,470	6,200	2,160	766	868	480
11	1,460	8,010	7,320	2,470	7,320	4,680	3,650	5,540	2,230	785	810	501
12	1,320	7,320	5,430	2,310	5,540	4,160	3,650	4,780	2,160	738	829	525
13	1,240	5,100	4,470	2,230	5,430	3,750	4,470	3,950	2,160	871	865	578
14	1,130	4,360	5,220	2,160	4,890	3,450	4,470	3,650	1,940	720	825	608
15	1,140	3,450	e13,100	2,080	4,160	3,360	3,850	3,550	1,740	760	862	576
16	1,090	2,890	e17,800	2,550	3,850	4,890	3,260	3,550	1,660	736	840	568
17	1,060	2,550	e15,500	2,720	3,850	4,890	2,800	3,360	1,480	708	862	468
18	1,170	2,390	9,730	2,470	3,550	3,850	3,070	3,360	1,520	690	840	587
19	1,550	2,230	6,860	2,230	3,550	3,360	3,360	3,450	1,500	667	494	541
20	2,470	2,010	8,010	2,080	3,260	3,160	3,070	3,360	1,520	732	482	520
21	2,080	1,940	7,550	1,940	2,980	3,070	2,980	3,070	1,420	630	547	437
22	2,160	3,390	5,980	1,940	2,720	2,980	2,720	3,450	1,250	691	524	460
23	2,810	3,070	4,780	1,800	2,720	2,890	4,140	3,750	1,270	633	510	431
24	5,000	2,390	4,050	1,700	2,720	3,650	7,320	3,550	1,220	650	531	466
25	3,070	2,160	3,550	1,630	3,160	4,050	5,540	2,980	1,200	636	514	462
26	2,640	1,940	3,160	1,650	4,890	3,850	5,000	2,550	1,200	724	a462	466
27	3,160	1,870	2,800	2,340	5,430	5,760	4,890	2,160	1,160	1,290	a504	542
28	6,790	1,720	2,980	3,260	5,210	5,760	5,980	2,010	1,070	1,400	a547	607
29	5,000	1,630	3,850	2,980	5,980	5,000	5,760	2,080	1,030	1,080	625	596
30	3,260	3,680	6,200	3,070	-	5,980	5,000	2,230	1,020	1,070	591	498
31	2,640	-	5,540	2,980	-	5,320	-	2,980	-	1,020	544	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	72,066	6,790	532	2,325	3.84	4.43	142,900
November	105,270	9,660	1,630	3,509	5.80	6.47	208,800
December	194,600	17,800	2,800	6,277	10.4	11.96	386,000
Calendar year 1939	1,350,232	19,700	532	3,699	6.11	82.97	2,678,000
January	93,590	7,550	1,630	3,019	4.99	5.75	185,600
February	134,550	11,000	2,080	4,640	7.67	8.27	266,900
March	157,760	9,210	2,890	5,089	8.41	9.70	312,900
April	121,280	7,320	2,720	4,043	6.68	7.46	240,600
May	137,080	9,400	2,010	4,422	7.31	8.43	271,900
June	54,100	2,980	1,020	1,803	2.98	3.33	107,300
July	26,025	1,400	630	840	1.39	1.60	51,620
August	19,394	1,020	462	626	1.03	1.19	38,470
September	15,521	608	420	517	.855	.95	30,790
Water year 1939-40	1,131,236	17,800	420	3,091	5.11	69.54	2,244,000

a No gage-height record; discharge interpolated.
e Discharge computed by using fall as determined by auxiliary water-stage recorder as a factor.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geolc cal Survey

North Fork of Snoqualmie River near Snoqualmie Falls, Wash.

Location.- Water-stage recorder, lat. 47°37'10", long. 121°42'35", in SW¼ sec. 30, T. 25 N., R. 9 E., 1 mile upstream from Calligan Creek, 8 miles northeast of Snoqualmie Falls, 9 miles northeast of Snoqualmie, and 9½ miles upstream from mouth.

Drainage area.- 65 square miles.

Records available.- August 1929 to September 1940.

Average discharge.- 11 years, 494 second-feet.

Extremes.- Maximum discharge during year, 3,710 second-feet Nov. 7 (gage height, 10.37 feet), from rating curve extended above 1,500 second-feet; minimum, 37 second-feet Sept. 26 (gage height, 1.96 feet).
1929-40: Maximum discharge, 8,020 second-feet Feb. 26, 1932 (gage height, 17.5 feet), from rating curve extended above 1,500 second-feet; minimum, 30 second-feet Sept. 17-19, 1929.

Remarks.- Records excellent except those above 2,500 second-feet, which are poor. No diversion or regulation.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

2.0	40	3.0	143	5.0	700
2.2	54	3.3	192	6.0	1,120
2.4	71	3.6	253	7.0	1,620
2.6	92	4.0	355	8.0	2,170
2.8	116	4.5	515	10.0	3,430

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60	255	568	1,240	333	983	498	f1,650	324	86	115	42
2	62	231	1,280	945	260	1,320	498	1,060	404	84	125	44
3	69	276	586	700	235	760	413	740	335	82	99	46
4	907	249	498	550	244	720	355	700	281	79	86	46
5	751	217	400	498	476	922	330	1,120	231	74	79	45
6	532	339	532	391	1,460	623	324	1,060	215	71	73	43
7	349	2,690	722	327	990	1,210	358	780	542	69	68	42
8	249	1,270	1,820	284	1,020	1,230	604	720	400	66	65	40
9	198	860	950	258	2,170	740	760	760	319	64	62	40
10	178	911	1,270	274	1,540	568	586	820	301	62	61	40
11	156	1,770	990	238	860	481	481	642	291	61	60	38
12	142	1,010	642	219	623	410	568	532	276	60	55	44
13	129	661	532	207	604	370	720	448	258	60	51	50
14	117	586	1,130	198	515	352	586	448	215	60	50	73
15	110	432	2,380	190	416	432	464	464	194	58	47	72
16	103	347	1,990	286	391	918	370	432	179	55	46	64
17	106	294	1,520	276	394	623	319	410	166	54	44	56
18	124	284	968	253	358	464	481	448	156	53	44	55
19	500	255	880	223	373	394	416	464	156	51	42	54
20	361	227	1,270	202	330	367	416	410	144	50	42	49
21	367	276	1,010	188	288	352	373	432	133	53	41	46
22	284	604	680	178	262	341	338	515	125	54	40	44
23	811	344	515	169	255	330	726	515	119	51	40	41
24	656	267	410	156	238	619	945	416	116	48	39	40
25	376	227	347	150	338	515	623	347	114	52	38	38
26	448	203	304	161	642	592	604	255	110	70	38	38
27	710	187	271	492	604	922	642	223	104	52	44	44
28	1,320	176	382	498	766	820	976	227	98	133	44	54
29	604	171	789	515	760	680	740	260	94	108	52	51
30	404	1,170	965	498	-	945	f742	309	91	144	45	47
31	311	-	896	448	-	623	-	464	-	116	44	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	11,494	1,320	60	371	5.71	6.58	22,800
November	16,789	2,690	171	560	8.62	9.61	33,300
December	27,497	2,380	271	887	13.6	15.73	54,540
Calendar year 1939	189,473	2,690	55	519	7.98	108.48	375,800
January	11,212	1,240	150	362	5.57	6.41	22,240
February	17,745	2,170	235	612	9.42	10.15	35,200
March	20,626	1,320	330	665	10.2	11.80	40,910
April	16,256	976	319	542	8.34	9.30	32,240
May	18,071	1,650	223	583	8.97	10.34	35,840
June	6,491	542	91	216	3.32	3.71	12,870
July	2,180	144	48	70.3	1.08	1.25	4,320
August	1,779	125	38	57.4	.883	1.02	3,530
September	1,426	73	38	47.5	.731	.82	2,830
Water year 1939-40	151,566	2,690	38	414	6.37	86.72	300,600

Peak discharge.- Nov. 7 (9 a.m.) 3,710 sec.-ft.
f Computed from partly estimated gage heights.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Tolt River near Tolt, Wash.

Location.- Water-stage recorder, lat. 47°41'45", long. 121°49'20", in S½NE¼ sec. 31, T. 26 N., R. 8 E., 500 feet downstream from the Forks and 6 miles northeast of Tolt. Datum of gage is approximately 348 feet above mean sea level (general adjustment of 1929, river-profile survey).

Drainage area.- 80 square miles.

Records available.- August 1928 to January 1932, September 1937 to September 1940.

Extremes.- Maximum discharge during year, 4,680 second-feet Nov. 7 (gage height, 9.30 feet); minimum, 63 second-feet Sept. 25, 26 (gage height, 4.14 feet).
1928-32, 1937-40: Maximum discharge, 9,750 second-feet Apr. 18, 1938 (gage height, 11.51 feet), from rating curve extended above 4,500 second-feet; minimum, that of Sept. 25, 26, 1940; minimum gage height, 4.07 feet Sept. 23, 1938.

Remarks.- Records good. No diversion or regulation.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Apr. 30 to June 26, Aug. 27 to Sept. 30)

4.2	76	5.3	339	7.0	1,420
4.4	105	5.6	453	7.5	1,950
4.6	143	5.9	588	8.0	2,570
4.8	189	6.2	760	8.5	3,280
5.0	243	6.6	1,050		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	101	325	619	1,570	437	1,310	614	2,160	270	127	181	76
2	123	302	1,050	1,230	371	1,680	569	1,180	346	125	181	79
3	115	302	604	895	349	1,010	517	825	283	123	139	81
4	1,420	280	652	748	383	1,080	474	773	252	121	121	79
5	844	261	540	669	627	1,320	449	1,180	220	117	112	75
6	646	412	704	569	2,040	932	433	1,230	207	115	105	73
7	429	3,000	798	517	1,280	1,790	466	895	448	113	100	72
8	332	1,420	1,420	474	1,480	1,580	657	735	387	113	96	70
9	276	1,050	1,010	441	2,840	1,050	860	680	299	112	95	70
10	249	1,190	1,140	449	1,740	860	686	674	270	108	96	70
11	218	1,950	1,280	409	1,100	766	550	550	252	106	95	68
12	196	1,100	895	379	825	686	579	495	237	106	92	73
13	184	773	735	367	895	630	680	441	229	110	92	83
14	170	717	1,330	353	773	588	574	413	212	106	90	82
15	163	564	2,240	349	669	641	487	406	199	103	89	79
16	156	487	1,900	579	635	1,270	433	394	191	101	87	74
17	161	441	1,620	504	625	825	398	360	181	100	85	73
18	165	413	1,140	453	593	646	474	356	177	98	83	79
19	505	375	970	406	635	579	441	349	172	95	82	74
20	421	346	1,780	375	559	550	413	325	167	93	81	70
21	429	386	1,420	349	504	526	379	312	163	100	81	67
22	349	593	970	335	470	508	367	325	158	98	81	66
23	987	413	766	318	462	495	693	322	154	93	80	64
24	752	356	641	299	437	766	1,100	289	152	92	77	64
25	453	328	564	286	584	614	686	264	150	95	76	63
26	531	305	517	305	1,010	641	614	240	145	135	76	63
27	858	286	470	608	932	1,050	674	218	141	336	86	76
28	1,300	270	630	593	970	932	1,140	209	139	234	100	79
29	609	273	1,160	604	970	792	970	212	139	186	90	73
30	445	1,000	1,200	579	-	970	900	226	133	226	85	72
31	364	-	1,130	531	-	741	-	332	-	179	79	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	13,951	1,420	101	450	5.62	6.49	27,670
November	19,918	3,000	261	664	8.30	9.26	39,510
December	31,895	2,240	470	1,029	12.9	14.83	63,260
Calendar year 1939	233,560	3,270	101	640	8.00	108.68	463,300
January	16,543	1,570	286	534	6.68	7.69	32,810
February	25,195	2,840	349	869	10.9	11.71	49,970
March	27,828	1,790	495	898	11.2	12.94	55,200
April	18,277	1,140	367	609	7.61	8.50	36,250
May	17,370	2,160	209	560	7.00	8.07	34,450
June	6,473	448	133	216	2.70	3.01	12,840
July	3,966	336	92	128	1.60	1.84	7,870
August	3,013	181	76	97.2	1.22	1.40	5,980
September	2,187	83	63	72.9	.911	1.02	4,340
Water year 1939-40	186,616	3,000	63	510	6.38	86.76	370,200

Peak discharge.- Nov. 7 (8 a.m.) 4,680 sec.-ft.; Feb. 9 (8:15 p.m.) 3,130 sec.-ft.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

South Fork of Stillaguamish River near Granite Falls, Wash.

Location.- Water-stage recorder, lat. 48°06'10", long. 121°56'40", in SW¼NW¼ sec. 8, T. 30 N., R. 7 E., 1½ miles upstream from Canyon Creek and 2 miles northeast of Granite Falls.

Drainage area.- 119 square miles.

Records available.- July 1928 to September 1940.

Average discharge.- 12 years, 1,021 second-feet.

Extremes.- Maximum discharge during year, 10,500 second-feet Dec. 15 (gage height, 11.52 feet), from rating curve extended above 6,000 second-feet; minimum, 79 second-feet Sept. 25, 26 (gage height, 3.04 feet).

1928-40: Maximum discharge, 26,700 second-feet Feb. 26, 1932 (gage height, 19.7 feet, from graph based on gage readings), from rating curve extended above 6,000 second-feet; minimum, 55 second-feet Sept. 23, 24, 1938; minimum gage height, 3.04 feet Sept. 23, 24, 1938, Sept. 25, 26, 1940.

Remarks.- Records excellent except those above 6,000 second-feet, which are poor. No diversion or regulation.

Revisions.- Revised figures of discharge for the water year 1939, superseding those published in Water-Supply Paper 822, are given herein.

Rating tables, water years 1938-39 and 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1-11

3.2	78	4.5	570
3.5	150	5.0	915
3.8	243	5.5	1,310
4.1	363		

Note.- Same as following table above 5.5 feet.

Oct. 12, 1938, to Sept. 30, 1940

3.2	104	5.5	1,310	10.0	7,800
3.5	176	6.0	1,760	11.0	9,600
4.0	341	7.0	2,950	12.0	11,400
4.5	575	8.0	4,450		
5.0	910	9.0	6,080		

Discharge, in second-feet, 1938-40

1938-39

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	84	1,180	1,860	8,340	617	365	1,580	1,270	1,020	835	308	229
2	78	1,160	1,810	5,930	542	470	1,540	1,360	978	800	290	280
3	327	3,540	1,380	3,630	500	500	1,720	1,360	1,050	1,990	290	199
4	302	1,860	2,500	2,290	475	411	1,400	1,440	1,310	2,670	297	165
5	153	1,140	4,430	1,620	505	369	1,060	1,220	1,540	1,400	290	216
6	113	828	1,760	1,220	480	442	895	1,010	1,180	1,060	262	283
7	91	821	4,860	1,280	429	424	895	1,400	1,100	940	230	214
8	82	993	3,530	1,810	385	381	1,180	1,270	1,180	842	214	168
9	76	918	3,040	1,540	361	349	1,910	1,270	1,100	880	214	152
10	834	668	1,490	1,540	337	334	1,400	1,310	978	925	224	137
11	2,500	526	1,040	1,670	643	424	1,220	1,440	1,020	865	224	154
12	6,280	470	814	1,270	2,680	542	1,270	1,620	1,100	687	214	171
13	2,830	438	680	1,050	1,400	490	1,050	1,910	1,140	654	202	188
14	1,140	952	570	888	1,400	424	918	2,300	1,000	648	188	157
15	674	2,580	500	1,540	1,490	452	842	2,360	1,140	897	179	758
16	480	5,860	447	1,060	940	490	828	1,960	1,180	1,060	168	558
17	385	2,460	402	2,370	720	558	962	1,620	1,180	720	162	315
18	322	1,860	373	3,230	635	700	1,400	1,360	1,400	605	157	243
19	272	3,610	345	3,160	581	865	1,490	1,100	1,620	706	154	202
20	243	2,250	330	2,090	500	1,060	1,440	880	1,540	726	154	179
21	227	1,270	349	1,310	452	1,360	1,670	902	1,220	605	147	157
22	208	895	377	1,000	420	1,810	1,490	970	1,220	623	147	154
23	190	706	1,570	872	398	2,240	1,220	962	1,490	642	147	147
24	195	599	2,010	1,020	390	2,680	1,060	902	1,220	593	147	139
25	601	526	1,980	955	447	2,880	1,360	1,270	993	553	152	130
26	480	485	993	758	398	1,720	1,440	1,620	814	558	157	123
27	1,620	500	1,690	1,600	394	1,220	1,180	1,360	865	558	144	125
28	864	515	1,860	1,580	377	1,000	1,440	5,230	1,060	531	165	127
29	1,510	617	3,930	1,220	-	910	2,120	4,550	1,270	447	280	121
30	1,400	1,140	5,000	925	-	948	1,580	2,030	1,060	385	171	114
31	2,020	-	6,760	726	-	1,140	-	1,310	-	353	157	-

Peak discharge.- Oct. 12 (4:50 p.m.) 13,100 sec.-ft.; Nov. 16 (7:10 a.m.) 8,700 sec.-ft.; Dec. 31 (2 a.m.) 9,060 sec.-ft.; Jan. 1 (3:50 p.m.) 11,600 sec.-ft.; May 28 (7:50 p.m.) 11,000 sec.-ft.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geolo[illegible]al Survey

Discharge, in second-feet, of South Fork of Stillaguamish River near Granite Falls, Wash., 1938-40--Continued

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	112	505	1,580	2,880	694	2,620	1,140	5,000	531	147	421	119
2	123	485	2,740	2,880	564	2,740	1,050	2,300	648	147	403	106
3	119	629	1,400	1,810	505	1,490	842	1,440	674	144	236	121
4	2,580	505	2,360	1,360	847	1,640	720	1,270	548	137	179	117
5	2,230	424	1,310	1,180	1,400	1,660	635	1,400	433	130	152	108
6	1,140	534	1,680	880	3,760	1,100	642	1,060	377	127	137	101
7	687	4,050	2,490	720	2,200	2,530	623	880	424	123	125	96
8	480	2,880	3,980	611	2,160	2,170	1,310	850	390	119	119	90
9	390	1,860	2,240	531	4,770	1,360	2,570	895	369	114	117	87
10	341	1,760	2,720	553	3,830	1,060	1,540	1,100	369	110	121	87
11	294	3,380	1,920	465	2,070	895	1,060	895	377	108	112	87
12	259	1,980	1,270	424	1,400	746	1,020	720	369	106	106	90
13	233	1,360	978	411	1,540	654	1,310	599	377	121	101	102
14	211	1,360	2,330	420	1,180	635	1,100	570	334	125	96	99
15	196	902	5,860	428	940	903	842	661	286	114	94	96
16	188	700	4,130	842	850	3,060	687	654	266	114	90	89
17	236	593	3,980	629	865	1,490	599	558	249	112	86	86
18	283	617	2,010	558	779	1,030	828	564	239	108	84	114
19	1,040	548	1,580	470	793	828	772	599	249	104	84	119
20	947	461	3,460	415	674	746	668	536	236	99	84	99
21	1,540	772	2,380	377	564	700	617	510	214	110	86	90
22	793	1,390	1,400	353	510	668	542	593	199	144	86	87
23	2,170	800	1,050	330	570	623	931	635	190	117	84	83
24	1,520	599	821	304	575	1,080	1,140	570	182	106	82	82
25	872	495	680	286	899	932	821	480	190	104	82	80
26	1,100	433	587	397	2,020	1,040	779	438	188	125	83	79
27	1,190	390	515	2,240	1,440	1,910	765	345	173	217	120	117
28	2,580	357	706	1,440	1,460	1,760	1,950	315	160	205	396	132
29	1,180	406	1,430	1,360	1,860	1,620	1,580	334	152	259	199	106
30	800	2,630	1,640	1,100	-	3,760	1,210	377	149	304	137	96
31	623	-	1,420	880	-	1,680	-	787	-	230	112	-

Peak discharge.- Dec. 15 (3:30 p.m.) 10,500 sec.-ft.; May 1 (4:30 to 6:05 a.m.) 7,620 sec.-ft.

Monthly discharge, in second-feet, 1938-40

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October 1938	26,581	6,280	76	857	7.20	8.31	52,720
November	41,367	5,860	438	1,379	11.6	12.93	82,050
December	58,680	6,760	330	1,893	15.9	18.34	116,400
Calendar year 1938	316,633	10,800	56	867	7.29	98.98	628,000
January 1939	59,694	8,340	726	1,926	16.2	18.66	118,400
February	18,896	2,680	337	675	5.67	5.91	37,480
March	27,958	2,880	334	902	7.58	8.74	55,450
April	39,560	2,120	828	1,319	11.1	12.36	78,470
May	50,566	5,230	880	1,631	13.7	15.80	100,300
June	34,968	1,620	814	1,166	9.80	10.93	69,360
July	25,758	2,670	353	831	6.98	8.05	51,090
August	6,235	308	144	201	1.69	1.95	12,370
September	6,305	758	114	210	1.76	1.97	12,510
Water year 1938-39	396,568	8,340	76	1,086	9.13	123.95	786,600
October 1939	26,457	2,580	112	853	7.17	8.27	52,480
November	33,805	4,050	357	1,127	9.47	10.56	67,050
December	62,647	5,860	515	2,021	17.0	19.58	124,300
Calendar year 1939	392,849	8,340	112	1,076	9.04	122.78	779,300
January 1940	27,534	2,880	286	888	7.46	8.60	54,610
February	41,719	4,770	505	1,439	12.1	13.04	82,750
March	45,130	3,760	623	1,456	12.2	14.10	89,510
April	30,293	2,570	542	1,010	8.49	9.47	60,090
May	27,935	5,000	315	901	7.57	8.73	55,410
June	9,542	674	149	318	2.67	2.98	18,930
July	4,330	304	99	140	1.18	1.35	8,590
August	4,414	421	82	142	1.19	1.38	8,760
September	2,965	132	79	98.8	.830	.93	5,880
Water year 1939-40	316,771	5,860	79	865	7.27	98.99	628,400

South Fork of Stillaguamish River above Jim Creek, near Arlington, Wash.

Location.- Water-stage recorder, lat. 48°09'55", long. 122°03'55", in SW¼ sec. 17, T. 31 N., R. 6 E., 1½ miles upstream from Jim Creek and 3 miles southeast of Arlington. Datum of gage is 80 feet above mean sea level (general adjustment of 1929).

Drainage area.- 199 square miles.

Records available.- October 1936 to September 1940.

Extremes.- Maximum discharge during year, 14,200 second-feet Dec. 15 (gage height, 19.35 feet); minimum, 114 second-feet Sept. 28 (gage height, 10.66 feet).
1936-40: Maximum discharge, 25,200 second-feet Apr. 17, 1936 (gage height, 23.27 feet), from rating curve extended above 10,000 second-feet; minimum, that of Sept. 26, 1940.

Remarks.- Records excellent. No diversion or regulation.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

10.8	152	12.5	1,100	15.0	4,500
11.0	220	13.0	1,550	16.0	6,450
11.3	341	13.5	2,100	17.0	8,600
11.6	485	14.0	2,760		
12.0	725	14.5	3,570		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	206	787	2,010	3,840	1,100	3,340	1,800	7,160	1,010	220	524	184
2	216	746	3,540	4,120	911	4,120	1,600	3,570	1,270	216	648	178
3	213	1,100	1,920	2,760	823	2,280	1,360	2,220	1,100	213	359	191
4	3,450	816	3,260	2,040	1,200	2,450	1,180	1,920	881	206	271	188
5	3,820	679	1,920	1,860	1,900	2,680	1,060	2,160	699	198	236	171
6	1,800	789	2,220	1,410	5,140	1,750	980	1,750	597	195	209	155
7	1,140	5,670	2,930	1,180	3,230	3,660	972	1,450	679	188	191	146
8	816	4,310	5,450	1,020	3,040	3,610	2,000	1,360	634	184	181	141
9	653	2,840	3,180	896	6,870	2,220	3,930	1,360	574	181	174	135
10	562	2,510	3,600	911	6,450	1,800	2,470	1,600	562	178	188	135
11	490	4,880	2,760	794	3,570	1,550	1,650	1,320	568	178	181	132
12	429	2,910	1,800	732	2,350	1,320	1,550	1,140	551	171	168	132
13	386	1,860	1,450	712	2,420	1,180	1,920	949	556	184	162	152
14	350	1,980	2,600	739	1,980	1,140	1,600	904	501	191	155	146
15	324	1,360	7,540	725	1,600	1,470	1,270	964	444	181	152	144
16	303	1,100	5,650	1,420	1,450	4,180	1,100	1,010	410	171	146	135
17	337	926	5,650	1,270	1,500	2,230	949	881	386	168	141	130
18	475	980	3,120	1,100	1,360	1,600	1,180	881	368	165	138	146
19	1,330	866	2,420	904	1,360	1,360	1,140	918	372	155	135	171
20	1,390	732	5,070	780	1,180	1,230	1,060	830	364	152	132	146
21	2,100	964	3,650	699	1,020	1,140	964	780	333	158	135	130
22	1,180	2,040	2,160	640	926	1,100	866	874	307	209	138	124
23	2,920	1,180	1,650	591	996	1,060	1,320	934	295	178	135	119
24	2,280	911	1,360	556	1,020	1,580	1,700	859	287	165	132	117
25	1,360	766	1,140	517	1,240	1,410	1,270	718	287	162	127	117
26	1,600	653	1,020	551	2,760	1,390	1,230	659	279	181	127	114
27	1,580	580	904	3,170	2,140	2,480	1,180	528	259	328	141	162
28	3,380	528	1,170	2,220	2,090	2,480	2,980	490	240	328	625	220
29	1,700	528	1,920	2,040	2,760	2,350	2,480	507	232	344	316	171
30	1,180	3,200	2,400	1,650	-	5,310	1,920	556	228	475	216	149
31	949	-	1,890	1,360	-	2,640	-	1,130	-	405	181	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	38,919	3,820	206	1,255	6.31	7.27	77,190
November	49,191	5,670	528	1,640	8.24	9.19	97,570
December	87,354	7,540	904	2,818	14.2	16.33	173,300
Calendar year 1939	591,362	11,500	196	1,620	8.14	110.54	1,173,000
January	43,207	4,120	517	1,394	7.01	8.07	85,700
February	64,386	6,870	823	2,220	11.2	12.03	127,700
March	68,110	5,310	1,060	2,197	11.0	12.73	135,100
April	46,681	3,930	866	1,556	7.82	8.72	92,590
May	42,382	7,160	490	1,367	6.87	7.92	84,060
June	15,273	1,270	228	509	2.56	2.85	30,290
July	6,628	475	152	214	1.08	1.24	13,150
August	6,764	648	127	218	1.10	1.26	13,420
September	4,481	220	114	149	.749	.84	8,890
Water year 1939-40	473,376	7,540	114	1,293	6.50	88.45	939,000

Peak discharge.- Oct. 4 (5:30 p.m.) 10,600 sec.-ft.; Nov. 7 (4 p.m.) 9,480 sec.-ft.; Dec. 15 (5:10 p.m.) 14,200 sec.-ft.; Feb. 10 (1 a.m.) 9,040 sec.-ft.; Mar. 30 (7:30 a.m.) 8,820 sec.-ft.; May 1 (6 a.m.) 11,300 sec.-ft.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Jim Creek near Arlington, Wash.

Location.- Water-stage recorder, lat. 48°10'30", long. 122°03'55", in SE¼NW¼ sec. 17, T. 31 N., R. 6 E., 1 mile upstream from mouth and 3 miles southeast of Arlington.

Drainage area.- 48.9 square miles.

Records available.- October 1937 to September 1940.

Extremes.- Maximum discharge during year, 2,060 second-feet Mar. 30 (gage height, 5.74 feet), from rating curve extended above 800 second-feet; minimum, 8.2 second-feet July 19 (gage height, 0.67 foot).

1937-40: Maximum discharge, 5,320 second-feet Dec. 28, 1937 (gage height, 8.32 feet), from rating curve extended above 800 second-feet; minimum, 6.2 second-feet July 30, Sept. 3, 5, 1938; minimum gage height, that of July 19, 1940.

Remarks.- Records excellent except those above 1,000 second-feet, which are fair. No diversion or regulation.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Mar. 30 (12 m.)				(12 m.) Mar. 30 to Sept. 30			
1.1	19	2.6	235	0.7	8.7	2.3	182
1.3	30	3.0	350	.9	14	2.6	256
1.6	55	3.5	525	1.1	23	3.0	370
2.0	112	4.0	750	1.3	36	3.5	540
2.3	166	4.5	1,050	1.6	65	4.0	750
				2.0	123	4.5	1,050

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	93	225	387	143	456	352	709	50	13	26	13
2	15	112	362	497	127	872	280	395	55	12	34	13
3	16	170	240	509	124	482	228	300	51	13	18	15
4	272	126	334	408	185	609	191	278	44	13	14	15
5	530	107	265	371	274	667	172	297	40	12	12	13
6	238	137	274	285	706	412	153	259	35	12	11	12
7	147	469	357	230	521	720	147	208	49	12	10	13
8	104	662	605	198	453	828	248	187	44	12	10	12
9	80	489	478	172	991	497	398	167	36	12	11	11
10	65	401	630	160	1,120	398	300	153	33	12	11	11
11	55	478	471	145	920	341	220	134	31	12	11	11
12	48	323	338	129	565	291	191	116	29	11	10	11
13	45	254	265	131	525	251	189	106	27	12	10	12
14	42	294	321	168	401	232	165	97	27	12	10	12
15	36	208	702	166	317	262	145	92	26	11	10	11
16	34	166	628	377	279	371	130	87	24	10	10	10
17	48	149	800	347	314	251	118	78	23	10	9.8	11
18	59	162	525	274	262	205	136	73	21	9.4	9.8	12
19	110	142	415	215	228	179	121	70	20	8.7	9.8	13
20	107	126	675	181	196	160	125	65	19	8.3	9.8	11
21	151	164	645	158	176	143	114	60	19	8.9	10	11
22	99	320	446	140	160	123	103	56	18	9.1	10	10
23	246	212	344	145	203	126	146	54	17	9.1	11	10
24	257	166	274	114	257	206	198	51	16	9.8	10	10
25	166	147	232	104	262	156	161	51	16	10	10	9.6
26	244	129	201	170	404	178	169	51	16	13	10	9.6
27	225	112	179	468	350	259	182	44	15	21	25	16
28	235	102	233	274	382	225	427	41	15	19	64	18
29	162	107	262	259	440	369	433	38	14	18	22	14
30	127	396	259	198	-	1,120	370	36	13	25	15	13
31	109	-	228	164	-	514	-	63	-	24	13	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	4,087	530	15	132	2.70	3.11	8,110
November	6,923	662	93	231	4.72	5.27	13,730
December	12,213	800	179	394	8.06	9.29	24,220
Calendar year 1939	74,547	1,700	13	204	4.17	56.75	147,900
January	7,544	509	104	243	4.97	5.74	14,960
February	11,285	1,120	124	389	7.96	8.58	22,380
March	11,903	1,120	123	384	7.85	9.05	23,610
April	6,312	433	103	210	4.29	4.80	12,520
May	4,416	709	36	142	2.90	3.36	8,760
June	843	55	13	28.1	.575	.64	1,670
July	394.3	25	8.3	12.7	.260	.30	782
August	457.2	64	9.8	14.7	.301	.35	907
September	363.2	18	9.6	12.1	.247	.28	720
Water year 1939-40	66,740.7	1,120	8.3	182	3.72	50.77	132,400

Peak discharge.- Feb. 9 (10 p.m.) 1,440 sec.-ft.; Mar. 7 (11 p.m.) 1,440 sec.-ft.; Mar. 30 (5:30 a.m.) 2,060 sec.-ft.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

North Fork of Stillaguamish River near Arlington, Wash.

Location.- Water-stage recorder, lat. 48°15'45", long. 122°02'45", in SE¼NW¼ sec. 16, T. 32 N., R. 6 E., 6 miles northeast of Arlington, 7 miles upstream from mouth, and 8 miles downstream from Deer Creek. Altitude of gage, 90 feet (from river-profile map).

Drainage area.- 269 square miles.

Records available.- July 1928 to September 1940.

Average discharge.- 12 years, 1,686 second-feet.

Extremes.- Maximum discharge during year, 12,600 second-feet Dec. 15 (gage height, 9.21 feet), from rating curve extended above 7,000 second-feet; minimum, 191 second-feet Sept. 24, 25, 26 (gage height, 1.24 feet).
1928-40: Maximum discharge, 27,700 second-feet Feb. 26, 1932 (gage height, 12.7 feet); minimum, 88 second-feet Sept. 23, 1938 (gage height, 1.14 feet).

Remarks.- Records excellent. No diversion or regulation.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 15				Dec. 16 to Sept. 30			
1.3	228	4.0	1,400	1.3	207	4.0	1,440
1.5	285	5.0	2,200	1.5	266	5.0	2,210
2.0	440	6.0	3,320	2.0	435	6.0	3,450
2.5	615	7.0	5,480	2.5	636	7.0	5,500
3.0	830	8.0	8,180	3.0	868	8.0	8,220

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	220	830	2,660	4,760	1,440	3,710	2,350	8,690	894	327	392	260
2	220	920	4,100	5,500	1,220	6,380	1,870	4,200	945	330	465	245
3	217	1,360	2,610	4,130	1,140	3,450	1,620	2,800	819	323	323	260
4	1,580	930	3,990	3,070	1,570	3,770	1,410	2,300	748	314	285	242
5	3,150	785	2,610	2,620	2,400	3,750	1,290	2,400	658	307	266	230
6	1,510	956	3,930	2,080	6,070	2,560	1,170	1,990	593	304	260	222
7	958	3,710	4,030	1,720	4,770	4,760	1,170	1,650	725	297	257	213
8	695	4,210	7,320	1,510	3,610	5,030	2,300	1,540	658	294	245	210
9	598	3,240	4,980	1,350	8,380	3,070	3,180	1,510	593	294	248	210
10	562	3,450	5,650	1,290	7,540	2,460	2,400	1,580	572	291	251	213
11	492	5,000	3,980	1,140	4,480	2,080	1,790	1,410	572	288	239	210
12	458	3,440	2,660	1,050	3,140	1,790	1,680	1,220	572	282	236	213
13	419	2,470	2,160	998	2,370	1,620	1,950	1,080	552	285	230	219
14	393	2,520	3,460	1,080	2,460	1,540	1,680	1,020	532	288	227	210
15	375	1,790	8,090	1,020	2,030	1,910	1,410	1,020	481	275	222	204
16	360	1,400	6,640	1,650	1,790	3,990	1,220	998	462	272	216	202
17	473	1,210	6,770	1,480	1,370	2,560	1,110	919	439	269	216	202
18	562	1,400	4,480	1,320	1,650	1,990	1,290	919	428	266	213	222
19	1,410	1,120	3,620	1,140	1,540	1,630	1,170	919	431	260	213	213
20	1,610	955	6,550	998	1,380	1,540	1,140	868	428	257	216	202
21	2,220	1,270	5,360	919	1,260	1,440	1,050	819	406	260	216	199
22	1,330	5,090	3,370	868	1,170	1,380	971	868	388	266	216	196
23	2,250	2,380	2,560	819	1,220	1,320	1,160	894	378	257	216	194
24	2,200	1,630	2,030	771	1,220	1,990	1,540	844	371	254	213	194
25	1,360	1,270	1,720	725	1,290	1,760	1,260	771	374	251	210	194
26	1,650	1,090	1,510	1,320	2,250	1,680	1,260	725	364	263	210	194
27	1,870	955	1,350	3,540	2,260	2,680	1,200	636	350	294	286	236
28	2,520	855	1,670	2,730	2,300	3,140	2,960	572	344	288	655	245
29	1,590	880	2,370	2,560	3,140	3,070	2,870	572	340	294	310	216
30	1,180	5,020	2,840	2,080	-	5,980	2,310	593	337	371	257	204
31	980	-	2,600	1,720	-	3,400	-	1,170	-	364	245	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	35,512	3,150	217	1,146	4.26	4.91	70,440
November	62,136	5,090	785	2,071	7.70	8.59	123,200
December	117,720	8,090	1,350	3,797	14.1	16.28	233,500
Calendar year 1939	647,612	12,200	217	1,774	6.59	89.57	1,285,000
January	58,068	5,500	725	1,873	6.96	8.03	115,200
February	77,460	8,380	1,140	2,671	9.93	10.71	153,600
March	87,510	6,380	1,320	2,823	10.5	12.10	173,600
April	49,781	3,180	971	1,659	6.17	6.88	98,740
May	47,497	8,690	572	1,532	5.70	6.57	94,210
June	15,754	945	337	525	1.95	2.18	31,250
July	8,985	371	251	290	1.08	1.24	17,820
August	8,254	655	210	266	.989	1.14	16,370
September	6,474	260	194	216	.803	.90	12,840
Water year 1939-40	575,151	8,690	194	1,571	5.84	79.53	1,141,000

Peak discharge.- Dec. 8 (8 p.m.) 8,180 sec.-ft.; Dec. 15 (7 p.m.) 12,600 sec.-ft.; Feb. 9 (11 p.m.) 11,800 sec.-ft.; May 1 (7:50 a.m.) 12,200 sec.-ft.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Skagit River near Hope, British Columbia

(International gaging station)

Location.- Water-stage recorder, lat. 49°03', long. 121°05', just downstream from Galena Creek, 4 miles upstream from international boundary, and 40 miles southeast of Hope, British Columbia.

Drainage area.- 370 square miles.

Records available.- October 1934 to September 1940 in reports of Geological Survey. March 1915 to September 1922 in reports of Dominion Water & Power Bureau, Canada.

Extremes.- Maximum discharge during year, 2,990 second-feet May 24 (gage height, 6.52 feet); minimum, 140 second-feet Oct. 16, 17, Sept. 25, 26 (gage height, 2.35 feet). 1915-22, 1934-40: Maximum discharge, 7,560 second-feet June 17, 1916; minimum recorded, 81 second-feet Feb. 9, 1937.

Remarks.- Records good. No diversion or regulation.

Cooperation.- This station is maintained with the cooperation of the city of Seattle and is one of the international gaging stations maintained by Canada under agreement with the United States.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

2.4	151	3.3	475	5.0	1,440
2.6	203	3.6	617	5.5	1,840
2.8	268	4.0	818	6.0	2,330
3.0	345	4.5	1,100	6.5	2,960

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	151	301	631	622	430	391	539	1,220	1,820	627	294	187
2	149	290	914	695	430	470	507	1,410	1,610	617	286	176
3	144	283	903	690	426	462	776	1,460	1,490	593	275	184
4	161	268	992	670	417	462	750	1,440	1,400	564	268	176
5	195	258	1,060	641	413	517	735	1,350	1,300	546	258	168
6	174	258	1,110	617	439	508	725	1,290	1,210	513	261	166
7	164	362	1,130	569	444	522	725	1,280	1,260	489	265	168
8	156	555	1,530	531	434	550	765	1,380	1,180	475	261	168
9	154	494	1,630	546	452	541	792	1,700	1,150	466	254	171
10	151	448	1,490	546	513	517	786	2,310	1,160	448	244	174
11	149	444	1,380	508	498	498	786	2,730	1,250	448	234	179
12	146	452	1,190	489	489	475	876	2,420	1,300	462	234	187
13	144	462	1,070	484	489	452	1,180	2,030	1,340	462	222	222
14	142	475	1,030	462	466	439	1,390	1,890	1,200	439	212	192
15	144	448	1,190	444	448	452	1,300	1,840	1,090	426	206	176
16	140	426	1,320	430	444	569	1,180	1,830	1,030	417	203	166
17	140	417	1,220	417	430	603	1,110	1,790	974	404	200	158
18	144	404	1,090	404	413	593	1,210	1,910	952	374	200	161
19	164	383	1,020	387	404	588	1,210	2,190	974	362	203	151
20	190	366	1,060	374	400	598	1,160	2,210	969	379	206	144
21	313	370	1,020	362	387	622	1,110	2,140	893	452	209	142
22	466	603	952	345	374	646	1,110	2,310	829	387	200	144
23	588	564	882	337	370	655	1,170	2,690	792	362	203	144
24	564	513	818	325	358	755	1,360	2,790	781	345	198	144
25	417	484	786	309	353	866	1,420	2,430	792	329	195	140
26	358	448	755	309	349	871	1,440	1,940	765	317	190	140
27	317	421	715	333	337	898	1,430	1,610	710	349	195	166
28	374	400	685	345	333	898	1,360	1,450	675	353	209	a160
29	370	396	655	391	341	882	1,240	1,400	651	329	192	a153
30	337	583	655	408	-	876	1,150	1,420	641	325	190	146
31	317	-	627	417	-	866	-	1,810	-	305	187	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	7,523	588	140	243	0.66	0.76	14,900
November	12,576	603	258	419	1.13	1.26	24,900
December	31,510	1,630	627	1,020	2.76	3.18	62,500
Calendar year 1939	341,512	5,250	140	936	2.53	34.33	677,000
January	14,407	695	309	465	1.26	1.45	28,600
February	12,081	513	333	417	1.13	1.22	24,000
March	19,042	898	391	614	1.66	1.91	37,800
April	31,892	1,440	725	1,060	2.86	3.19	63,300
May	57,670	2,790	1,220	1,860	5.03	5.80	114,000
June	32,188	1,820	641	1,070	2.89	3.22	63,800
July	15,364	627	305	431	1.16	1.34	26,500
August	6,954	294	187	224	.61	.70	13,800
September	4,953	222	140	165	.45	.50	9,820
Water year 1939-40	244,160	2,790	140	667	1.80	24.53	484,000

a No gage-height record; discharge interpolated.

Skagit River above Devils Creek, near Newhalem, Wash.

Location.- Water-stage recorder, lat. 48°51', long. 121°02', in NW¼ sec. 30, T. 39 N., R. 14 E., 2 miles upstream from Devils Creek, 10⅛ miles upstream from Ross Dam, and 15 miles northeast of Newhalem. Prior to Apr. 18, 1940, temporary staff gage at same site but at datum 1.72 feet higher; gage readings reduced to present datum.

Drainage area.- 638 square miles.

Records available.- March to September 1940.

Extremes.- Maximum discharge during period, 5,900 second-feet May 24 (gage height, 5.55 feet); minimum, 380 second-feet Sept. 21 (gage height, 0.98 foot).

Remarks.- Records fair. No diversion or regulation.

Cooperation.- Gage-height record collected in cooperation with, and two discharge measurements furnished by city of Seattle.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

1.0	389	2.0	1,020	4.0	3,230
1.2	490	2.5	1,450	4.5	4,000
1.4	601	3.0	1,960	5.0	4,830
1.7	796	3.5	2,550		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							h1,800	2,420	3,920	1,400	768	572
2							h1,690	2,810	3,530	1,400	741	522
3							h1,590	2,950	3,300	1,360	714	522
4							h1,590	2,950	3,090	1,320	694	506
5							h1,540	2,680	2,810	1,270	694	469
6							h1,450	2,550	2,620	1,230	727	459
7							h1,450	2,480	2,680	1,190	755	485
8							h1,540	2,680	2,480	1,150	755	501
9							h1,590	3,530	2,480	1,150	762	517
10							h1,590	4,660	2,620	1,100	694	528
11							h1,540	5,180	2,880	1,100	644	567
12							h1,640	4,830	3,020	1,150	625	567
13							a2,500	4,160	3,230	1,230	584	625
14							a2,800	3,840	2,880	1,150	544	601
15							a2,650	3,680	2,550	1,100	528	533
16							a2,540	3,680	2,420	1,100	512	485
17							a2,400	3,600	2,240	1,030	533	464
18							2,550	3,760	2,240	1,010	550	522
19							2,550	4,160	2,360	934	567	428
20							2,420	4,490	2,360	977	619	409
21							2,240	4,320	2,120	1,030	650	394
22							2,240	4,660	1,900	1,000	601	414
23							2,360	5,180	1,800	933	578	428
24							2,680	5,720	1,800	915	590	428
25							2,810	5,180	1,900	859	601	418
26							2,880	4,160	1,800	835	572	409
27							2,880	3,530	1,590	877	590	582
28							2,680	3,160	1,500	932	656	506
29							2,480	3,020	1,450	907	539	459
30							2,240	3,090	1,450	915	561	433
31						h1,900	-	3,760	-	818	572	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October							
November							
December							
Calendar year							
January	-	-	-	-	-	-	-
February	-	-	-	-	-	-	-
March 31	1,900	-	-	-	-	-	3,770
April	64,910	2,880	1,450	2,164	3.39	3.78	128,700
May	116,870	5,720	2,420	3,770	5.91	6.81	231,800
June	73,020	3,920	1,450	2,434	3.82	4.26	144,800
July	33,522	1,400	818	1,081	1.69	1.95	66,490
August	19,520	768	512	630	.987	1.14	38,720
September	14,753	625	394	492	.771	.86	29,260
The period	-	-	-	-	-	-	643,500

a No gage-height record; discharge computed on basis of records for Skagit River near Hope, British Columbia.
h Computed on basis of once or twice-daily staff-gage readings.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Skagit River near Newhalem, Wash.

Location.- Water-stage recorder, lat. 48°45', long. 121°02', in sec. 30, T. 38 N., R. 14 E., 1¼ miles upstream from Ruby Creek, 11 miles northeast of Newhalem, and 24 miles northeast of Marblemount.

Drainage area.- 765 square miles, of which 390 square miles is in Canada.

Records available.- March 1930 to March 1940 (discontinued).

Extremes.- Maximum discharge during period October to March, 6,210 second-feet Dec. 8 (gage height, 8.47 feet); minimum, 559 second-feet Oct. 16, 17 (gage height, 3.94 feet).

1930-40: Maximum discharge, 25,700 second-feet Feb. 27, 1932 (gage height, 15.9 feet), from rating curve extended above 13,000 second-feet; minimum, 230 second-feet Feb. 21, 1937 (gage height, 3.27 feet).

Remarks.- Records excellent except those for period of no gage-height record, which are fair. No diversion or regulation.

Cooperation.- Gage-height record collected in cooperation with and results of two discharge measurements furnished by city of Seattle.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

4.0	595	5.0	1,380	7.0	3,800
4.3	785	5.5	1,850	8.0	5,350
4.6	1,020	6.0	2,420		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	619	964	2,240	2,100	1,450	1,420						
2	613	916	3,250	2,720	1,430	1,400						
3	583	940	3,030	2,710	1,390	1,320						
4	715	860	3,280	2,520	1,380	1,830						
5	884	815	3,350	2,350	1,350	1,940						
6	715	792	3,560	2,160	1,460	f1,850						
7	661	1,160	3,550	1,990	1,590	f1,880						
8	613	1,790	5,320	1,840	1,530	1,980						
9	607	1,510	5,380	1,750	1,560	1,880						
10	649	1,360	4,980	1,710	1,800	1,770						
11	601	1,360	4,550	1,610	1,750	f1,680						
12	595	1,590	3,770	1,530	1,660	a1,600						
13	595	1,450	3,280	1,470	1,620	a1,500						
14	595	1,420	3,160	1,410	1,540	a1,500						
15	607	1,320	4,070	1,360	1,470	a1,900						
16	577	1,240	4,740	1,310	1,420	a2,300						
17	613	1,220	4,480	1,270	1,390	a2,200						
18	625	1,160	3,600	1,220	1,330	a2,100						
19	771	1,090	3,440	1,170	1,280	a2,000						
20	884	1,040	3,630	1,120	1,250	a2,000						
21	1,670	1,130	3,380	1,080	1,220	a2,000						
22	1,870	1,900	3,060	1,040	1,190	a2,000						
23	2,240	1,660	2,760	1,000	1,170	a2,000						
24	1,880	1,490	2,460	972	1,130	a2,600						
25	1,420	1,380	2,280	940	1,110	a2,800						
26	1,220	1,290	2,120	940	1,100	a2,800						
27	1,070	1,210	1,980	1,050	1,080	a2,900						
28	1,380	1,150	1,880	1,190	1,090	a2,800						
29	1,220	1,140	1,870	1,240	1,180	a2,600						
30	1,110	2,480	2,060	1,380	-	a2,700						
31	1,040	-	1,940	1,420	-	a2,600						

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	29,242	2,240	577	943	1.23	1.42	58,000
November	38,827	2,480	792	1,294	1.69	1.89	77,010
December	102,650	5,380	1,870	3,311	4.33	4.99	203,600
Calendar year 1939	922,950	11,000	577	2,529	3.31	44.85	1,831,000
January	47,572	2,720	940	1,535	2.01	2.31	94,360
February	39,920	1,800	1,080	1,377	1.80	1.94	79,180
March	64,350	2,900	1,400	2,076	2.71	3.13	127,600
April	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-
June	-	-	-	-	-	-	-
July	-	-	-	-	-	-	-
August	-	-	-	-	-	-	-
September	-	-	-	-	-	-	-
The period	-	-	-	-	-	-	639,800

a No gage-height record; discharge computed on basis of records for Thunder Creek near Newhalem.
f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Skagit River at Newhalem, Wash.

Location.- Water-stage recorder, lat. 48°40', long. 121°15', in SE¼ sec. 21, T. 37 N., R. 12 E., at power plant of city of Seattle at Newhalem, a quarter of a mile upstream from Newhalem Creek, 11 miles upstream from Bacon Creek, and 16 miles upstream from Marblemount. Datum of gage is 400 feet above mean sea level (subject to correction for general adjustment of 1929).

Drainage area.- 1,160 square miles, of which 390 miles is in Canada.

Records available.- December 1908 to May 1914 and October 1920 to September 1940 in reports of Geological Survey. October 1908 to September 1933 (monthly discharge only) in State Water-Supply Bulletin 5.

Average discharge.- 32 years, 4,361 second-feet (adjusted for storage since October 1929).

Extremes.- Maximum discharge during year, 15,100 second-feet (regulated) May 23 (gage height, 87.56 feet); minimum, 243 second-feet (regulated) July 10 (gage height, 79.07 feet); minimum daily discharge, 1,020 second-feet (regulated) Oct. 15.
1908-14, 1920-40: Maximum discharge, 60,000 second-feet Dec. 12, 1921 (gage height, 94.2 feet); minimum, 74 second-feet (regulated) Nov. 10, 1936 (gage height, 78.39 feet); minimum daily, 136 second-feet (regulated) Aug. 24, 1930.

Remarks.- Records excellent. Water is diverted 3 miles upstream (may be entire low flow) and is returned to river at Seattle power plant just above station. Flow also partly regulated by Diablo Reservoir and Ruby Reservoir (see p. 63).

Cooperation.- Gage-height record collected in cooperation with, and four discharge measurements furnished by city of Seattle.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	†1,110	1,680	3,960	3,400	2,180	2,140	2,860	5,120	9,100	3,350	2,260	†1,540
2	1,340	1,560	5,620	4,700	2,220	3,030	3,440	5,160	†7,820	3,040	2,240	1,520
3	1,350	1,640	†4,580	4,280	1,960	†2,760	3,360	5,190	7,290	2,980	2,260	2,040
4	1,620	1,480	5,560	3,760	†2,020	3,020	3,360	4,700	6,950	2,240	†2,200	2,140
5	1,470	†1,220	5,160	3,460	2,120	3,040	3,280	†4,920	6,490	2,840	2,750	2,130
6	1,390	1,680	5,600	2,970	2,280	2,720	3,000	4,480	6,050	3,140	2,510	2,200
7	1,280	4,070	5,520	†2,320	2,560	2,940	†3,780	4,770	5,760	†2,860	2,530	2,060
8	†1,080	4,020	5,260	2,540	2,440	3,100	3,460	4,980	5,540	3,450	2,520	†1,620
9	1,290	2,540	5,600	2,560	2,540	2,980	2,540	5,520	†6,000	4,030	2,530	2,340
10	1,250	1,800	†7,080	2,560	3,000	†3,420	1,480	6,520	6,140	2,830	2,270	2,290
11	1,230	2,440	6,840	2,150	†2,810	4,840	1,390	6,470	6,470	3,240	†1,960	2,240
12	1,210	†3,020	5,150	2,120	2,390	4,590	1,440	†5,840	7,820	4,080	2,580	2,130
13	1,290	2,280	4,740	1,960	2,470	1,320	3,360	5,220	8,380	4,440	2,460	1,800
14	1,130	2,250	4,700	†1,950	2,150	1,480	†5,260	5,420	6,860	†3,510	2,400	1,850
15	†1,020	2,060	6,640	1,900	2,190	2,040	5,600	5,940	6,100	3,800	2,380	†1,650
16	1,320	1,990	7,720	1,880	1,980	2,920	5,290	5,670	†5,940	4,100	2,430	2,220
17	1,370	1,910	†7,200	1,680	2,000	†2,620	4,930	5,500	5,640	3,400	1,710	2,250
18	1,350	1,790	5,520	1,640	†1,980	2,780	4,860	6,400	6,080	3,060	†1,470	2,370
19	1,590	†1,550	5,000	1,650	1,810	2,620	4,980	†6,380	6,240	2,970	1,880	2,390
20	1,790	1,640	4,680	1,600	1,710	2,630	4,000	7,630	6,360	3,000	1,920	2,370
21	2,760	2,030	5,220	†1,420	1,700	2,780	†3,820	8,070	6,010	†3,620	2,310	2,220
22	†5,020	4,340	4,400	1,560	1,570	2,670	4,360	9,680	5,580	3,180	2,470	†1,940
23	5,690	2,640	3,560	1,420	1,840	3,060	3,930	12,500	†4,340	2,870	2,440	2,390
24	3,040	2,320	†3,350	1,380	1,390	†4,030	4,400	13,200	4,270	2,900	2,180	2,410
25	2,500	2,230	3,160	1,340	†1,620	4,600	4,450	11,200	4,640	2,880	†1,920	2,400
26	2,090	†2,070	3,640	1,280	1,610	5,200	4,260	†8,820	5,560	2,440	2,320	2,420
27	1,780	1,820	2,120	1,800	1,480	5,310	4,730	6,360	5,940	2,160	2,310	2,490
28	4,020	1,940	2,620	†1,680	1,680	4,940	†4,440	6,270	5,160	†2,650	2,220	2,220
29	†1,620	1,960	2,790	2,150	1,780	4,380	4,260	6,580	3,640	2,680	2,320	†1,900
30	2,160	5,500	3,270	2,310	-	4,500	4,330	6,780	†2,810	2,900	2,220	2,300
31	1,760	-	†3,080	2,270	-	†4,280	-	9,300	-	2,540	1,800	-

Month	Observed				Change in contents in Ruby and Diablo Reservoirs (acre-feet)	Adjusted for change in reservoir contents			
	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	5,690	1,020	1,907	117,300	+2,260	119,600	1,945	1.68	1.94
November	5,500	1,220	2,322	138,200	-520	137,700	2,314	1.99	2.22
December	8,600	2,120	5,011	308,100	+660	308,800	5,022	4.33	4.99
Calendar year 1939	18,900	801	4,188	3,032,000	+60	3,032,000	4,189	3.61	49.01
January	4,700	1,280	2,248	138,200	-70	138,100	2,246	1.94	2.24
February	3,000	1,390	2,051	118,000	-330	117,700	2,046	1.76	1.90
March	5,310	1,320	3,314	203,800	-15,380	188,400	3,064	2.64	3.04
April	5,600	1,390	3,822	227,400	+40,500	267,900	4,502	3.88	4.33
May	13,200	4,480	6,803	418,300	+79,700	498,000	8,099	6.98	8.05
June	9,100	2,610	6,033	359,000	-7,890	351,100	5,900	5.09	5.68
July	4,440	2,160	3,135	192,800	+9,060	201,900	3,284	2.83	3.26
August	2,750	1,470	2,251	138,400	-3,360	135,000	2,196	1.89	2.18
September	2,490	1,520	2,128	126,600	-16,540	110,100	1,850	1.59	1.77
Water year 1939-40	13,200	1,020	3,424	2,486,000	+88,090	2,574,000	3,546	3.06	41.60

†Sunday.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Skagit River near Concrete, Wash.

Location.- Water-stage recorder, lat. 48°32', long. 121°46', in sec. 16, T. 35 N., R. 8 E., at dalles 2 miles downstream from Baker River and 2½ miles southwest of Concrete. Datum of gage is 130.0 feet above mean sea level (general adjustment of 1929).

Drainage area.- 2,700 square miles, of which 390 square miles is in Canada.

Records available.- September 1924 to September 1940.

Average discharge.- 16 years, 14,340 second-feet (adjusted for storage in Lake Shannon Reservoir since October 1925, Diablo Reservoir since October 1929, and Ruby Reservoir since March 1940).

Extremes.- Maximum discharge during year, 48,200 second-feet (regulated) Dec. 15 (gage height, 25.70 feet); minimum, 3,830 second-feet (regulated) Oct. 2 (gage height, 13.68 feet).

1924-40: Maximum discharge, 147,000 second-feet Feb. 27, 1932 (gage height, 40.0 feet, present datum); minimum, probably less than 2,160 second-feet during Oct. 1-24, 1925, when recorder was not operating and gates in Baker River Dam were first closed.

Maximum stage known 69.3 feet, present datum from floodmarks (discharge, about 500,000 second-feet), occurred about 1815. Records of other floods prior to establishment of station are given in Water-Supply Paper 612.

Remarks.- Records excellent except those for periods of no gage-height record, which are poor. All diversions returned to river above gage. At low stages flow partly regulated by power plants on Baker and upper Skagit Rivers, and by Ruby, Diablo, and Lake Shannon Reservoirs. Records of daily discharge not adjusted for change in contents of reservoirs.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

14.0	4,290	17.0	10,500	20.0	20,400
15.0	6,070	18.0	13,400	22.0	28,800
16.0	8,130	19.0	16,700	24.0	38,900

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	†4,790	7,900	18,500	23,300	10,100	14,100	14,400	26,700	26,700	10,700	7,760	†5,420
2	5,030	7,840	27,800	29,900	9,340	21,700	12,400	27,500	†22,700	11,400	7,720	4,960
3	5,280	8,020	†20,700	23,100	8,800	†15,600	11,800	22,900	21,900	10,800	7,040	6,000
4	6,380	7,350	23,200	18,800	†8,700	15,800	11,300	19,400	20,200	9,620	†6,120	5,740
5	11,100	†6,450	20,600	16,100	9,280	16,500	10,800	†17,700	17,700	9,120	7,050	5,370
6	7,540	6,740	23,000	13,300	15,100	13,400	10,300	16,700	16,700	9,240	7,060	5,580
7	6,360	16,900	24,600	†12,300	16,500	15,700	†10,500	15,400	17,500	†8,980	7,280	5,930
8	†5,220	24,300	36,900	10,800	13,800	18,600	a13,000	17,500	15,500	10,100	7,080	†5,520
9	5,720	16,000	34,600	10,500	17,300	15,200	a12,500	22,100	†16,800	10,200	6,950	5,900
10	6,130	12,800	†32,200	10,200	23,000	†12,800	10,900	27,300	18,600	9,830	6,740	6,640
11	5,820	16,100	27,100	9,440	†16,400	13,700	9,620	26,100	20,700	9,940	†6,260	6,900
12	5,630	†19,800	20,000	9,090	13,200	13,000	11,000	†22,500	22,900	11,000	6,760	6,800
13	5,640	15,300	17,400	8,580	12,100	10,200	16,300	19,100	24,300	11,400	6,660	7,460
14	5,480	13,700	20,000	†7,830	11,600	8,800	†19,400	18,100	20,500	†10,700	6,280	6,480
15	†4,880	10,800	35,200	8,310	10,500	10,600	16,700	20,000	17,700	10,200	6,170	†5,600
16	5,130	9,580	38,900	8,200	9,920	19,700	15,500	19,800	†16,500	10,200	6,080	5,990
17	5,600	9,100	†34,600	8,070	9,780	†15,900	14,100	18,000	15,900	9,870	5,930	6,350
18	5,970	9,060	26,400	7,860	†9,120	12,900	14,600	19,600	15,700	8,860	†5,790	6,550
19	8,180	†7,800	23,900	7,630	9,040	11,400	14,800	†23,000	18,500	8,410	5,700	6,200
20	9,650	7,700	28,700	7,280	8,360	10,900	14,400	23,500	18,200	8,260	6,180	5,720
21	a11,800	8,160	24,600	†6,660	8,130	10,900	†11,800	22,900	15,400	†9,460	6,440	5,320
22	†a15,000	18,900	19,600	6,920	7,690	10,800	12,600	27,000	14,600	8,880	6,160	†4,990
23	a25,000	12,400	16,000	6,870	7,840	10,500	13,400	32,600	†13,000	8,000	6,080	5,480
24	a14,000	10,400	†14,000	6,490	7,600	†14,900	15,400	34,200	13,200	7,960	6,130	6,040
25	a11,700	9,640	12,400	6,390	†6,910	15,600	13,800	28,800	14,800	7,510	†6,180	5,810
26	a10,600	†8,690	12,500	6,340	8,620	15,700	14,400	†22,200	14,600	6,960	5,710	6,020
27	a10,000	8,300	11,200	9,030	9,460	18,900	15,200	17,600	14,600	7,510	6,480	7,880
28	a18,600	7,920	10,800	†9,740	9,190	18,700	†15,200	16,400	13,000	†8,130	7,320	6,240
29	†a10,800	7,840	13,100	10,700	11,500	16,700	14,900	17,200	12,200	8,140	6,600	†5,220
30	9,480	23,700	18,100	11,000	-	18,900	13,500	19,000	†11,000	8,940	6,680	5,840
31	9,010	-	†15,500	10,800	-	†16,900	-	29,600	-	8,280	6,670	-

Month	Observed				Change in contents (acre-feet)*	Adjusted for change in reservoir contents			
	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	25,000	4,790	8,759	538,600	+32,910	571,500	9,295	3.44	3.97
November	24,300	6,450	11,640	692,600	-5,200	687,400	11,550	4.28	4.78
December	38,900	10,800	22,720	1,397,000	+5,070	1,402,000	22,800	8.44	9.73
Calendar year 1939	68,400	4,790	15,410	11,160,000	+11,700	11,170,000	15,430	5.71	77.52
January	29,900	6,340	11,020	677,400	-1,820	675,600	10,990	4.07	4.69
February	23,000	6,910	11,000	632,500	-4,980	627,500	10,910	4.04	4.36
March	21,700	8,800	14,680	902,500	-10,510	892,000	14,510	5.37	6.19
April	19,400	9,620	13,480	802,400	+41,400	843,800	14,180	5.25	5.86
May	34,200	15,400	22,270	1,369,000	+81,090	1,450,000	23,580	8.73	10.06
June	26,700	11,000	17,390	1,035,000	-9,260	1,026,000	17,240	6.39	7.13
July	11,400	6,960	9,310	572,400	+2,940	575,300	9,356	3.47	4.00
August	7,760	5,700	6,550	402,800	-1,970	400,800	6,518	2.41	2.78
September	7,880	4,960	5,998	356,900	-21,560	335,300	5,635	2.09	2.33
Water year 1939-40	38,900	4,790	12,920	9,379,000	+108,100	9,487,000	13,070	4.84	65.88

Peak discharge.- Dec. 8 (9:15 p.m.) 44,400 sec.-ft.; Dec. 10 (4:15 p.m.) 37,200 sec.-ft.; Dec. 15 (10:30 to 11:15 p.m.) 48,200 sec.-ft. (regulated).

*Change in contents in Ruby, Diablo, and Lake Shannon Reservoirs.

†Sunday.

a No gage-height record; discharge computed on basis of sum of discharge for Cascade River at Marblemount, Skagit River at Newhalem, and Sauk River near Sauk.

Reservoirs in Skagit River Basin, Wash.

(Location given is that of controlling dam or outlet work)

Ruby Reservoir.- Water-stage recorder, lat. 48°44', long. 121°04', in SE¼ sec. 35, T. 38 N., R. 13 E., at Ross Dam on Skagit River, 9 miles northeast of Newhalem. Datum of gage is at mean sea level (city of Seattle bench mark). Records available, March to September 1940. Maximum contents observed during year, 107,200 acre-feet May 24 (elevation, 1,382.5 feet).

Reservoir is formed by concrete dam, completed to elevation 1,365 feet in 1940; additional storage provided by timber crib to elevation 1,380 feet; storage began Mar. 11, 1940. Capacity, 102,300 acre-feet between elevation 1,250 feet (lowest outlet) and 1,380 feet (overflow). Dead storage negligible. Water used to supplement low flow of Skagit River through city of Seattle's Diablo and Newhalem power plants. Prior to Sept. 24, 1940, staff gage at same site and datum. Gage-height record collected in cooperation with city of Seattle. Figures given herein represent total contents.

Diablo Reservoir.- Water-stage recorder, lat. 48°43', long. 121°08', in D'ablo Dam on Skagit River, sec. 6, T. 37 N., R. 13 E.(unsurveyed), 1 mile downstream from Thunder Creek and 6 miles northeast of Newhalem. Datum of gage is at mean sea level (subject to correction for general adjustment of 1929). Records available, October 1938 to September 1940. October 1929 to September 1938, change in reservoir contents published with tables of monthly discharge for Skagit River at Newhalem, Wash. Maximum contents during year, 92,390 acre-feet Sept. 1 (elevation, 1,206.16 feet); minimum contents observed, 70,500 acre-feet Apr. 9 (elevation, 1,179.7 feet, occurred during period of no gage-height record and determined from relation between elevations at upper end of reservoir, which are available during period, and elevations at dam).

Reservoir is formed by concrete dam, completed in 1930. Capacity of reservoir, 76,800 acre-feet between elevations 1,040 feet (bottom of outlet pipes) and 1,205 feet (top of taintor gates). Dead storage, 14,500 acre-feet. Crest of spillway is at elevation, 1,187 feet. Water is used by city of Seattle for power development at Diablo and Newhalem power plants. Gage-height record collected in cooperation with city of Seattle. Figures given herein represent total contents.

Lake Shannon.- Staff gage, lat. 48°33', long. 121°44', in sec. 2, T. 35 N., R. 8 E., on Baker River, half a mile north of concrete and 1 mile upstream from mouth of Baker River. Datum of gage is at mean sea level (subject to correction for general adjustment of 1929). Records available, October 1938 to September 1940.

Reservoir is formed by concrete dam, completed in June 1927. Capacity of reservoir, 132,500 acre-feet between elevations 360 feet (lowest elevation for capacity operation) and 435 feet (spillway crest). Dead storage unknown. Water is used by Puget Sound Power & Light Co. for power development. Gage-height records furnished by Puget Sound Power & Light Co. Figures given herein represent contents above elevation 340 feet (center line of outlet tunnel).

Monthly elevation and contents, water year October 1939 to September 1940

Date	Ruby Reservoir			Diablo Reservoir			Lake Shannon		
	Elevation† (feet)	Contents (acre-feet)	Change in contents during month (acre-feet)	Elevation‡ (feet)	Contents (acre-feet)	Change in contents during month (acre-feet)	Elevation‡ (feet)	Contents (acre-feet)	Change in contents during month (acre-feet)
Sept.30	-	-	-	1,203.01	89,510	-	419.62	123,120	-
Oct. 31	-	-	-	1,205.50	91,770	+2,260	433.90	153,770	+30,650
Nov. 30	-	-	-	1,204.95	91,250	-520	431.80	149,090	-4,680
Dec. 31	-	-	-	1,204.59	91,910	+660	433.78	153,500	+4,410
Calendar year 1939	-	-	-	-	-	+60	-	-	+11,640
Jan. 31	-	-	-	1,205.57	91,840	-70	433.00	151,750	-1,750
Feb. 29	-	-	-	1,205.22	91,510	-330	430.90	147,100	-4,650
Mar. 31	1,286.65	4,530	+4,530	1,181.20	71,600	-19,910	433.10	151,970	-4,870
Apr. 30	1,324.30	25,360	+20,830	1,204.97	91,270	+19,670	433.50	152,870	+900
May 31	1,381.55	106,540	+81,180	1,203.39	89,790	-1,480	434.12	154,260	+1,390
June 30	1,376.70	97,140	-9,400	1,205.00	91,300	+1,510	433.51	152,890	-1,370
July 31	1,381.10	105,660	+8,520	1,205.57	91,840	+540	430.75	146,770	-6,120
Aug. 31	1,379.55	102,620	-3,040	1,205.23	91,520	-320	431.36	148,160	+1,390
Sept.30	1,370.90	86,490	-16,130	1,204.80	91,110	-410	429.09	143,140	-5,020
Water year 1939-40	-	-	+86,490	-	-	+1,600	-	-	+20,020

† Elevations are estimated midnight readings based on twice-daily gage readings.
‡ Elevation at midnight.

Ruby Creek near Newhalem, Wash.

Location.- Water-stage recorder, lat. 48°43', long. 121°00', in SE¼ sec. 5, T. 37 N., R. 14 E., 2 miles upstream from mouth and 12 miles northeast of Newhalem. Prior to Mar. 8, 1940, water-stage recorder 2 miles downstream, at different datum.

Drainage area.- 203 square miles; 210 square miles at former site.

Records available.- June 1919 to March 1920, April 1930 to September 1940.

Average discharge.- 10 years (1930-40), 657 second-feet.

Extremes.- Maximum discharge during year, 3,070 second-feet May 23 (gage height, 6.91 feet, present datum); minimum, 110 second-feet Sept. 20, 21 (gage height, 3.11 feet, present datum).

1919-20, 1930-40: Maximum discharge, 6,730 second-feet Feb. 27, 1932 (gage height, 14.15 feet, site and datum then in use); minimum, 40 second-feet Feb. 22, 1937.

Remarks.- Records excellent except those for period of doubtful gage-height record, which are poor. No diversion or regulation.

Cooperation.- Gage-height record collected in cooperation with, and results of six discharge measurements furnished by city of Seattle.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Mar. 8

6.4	116	8.0	388
6.7	152	8.5	512
7.0	194	9.0	650
7.5	284		

Mar. 8 to Sept. 30

3.2	127	4.4	471	5.6	1,270
3.5	190	4.7	612	6.0	1,750
3.8	266	5.0	786	6.5	2,450
4.1	357	5.3	999		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	116	199	473	347	272	215	484	755	1,750	592	244	166
2	125	185	528	395	256	251	463	961	1,490	602	234	158
3	115	179	465	379	249	236	438	984	1,390	538	229	166
4	159	168	574	364	241	254	422	969	1,280	493	224	158
5	201	161	569	345	238	268	403	866	1,170	450	229	147
6	147	160	596	316	256	249	385	826	1,100	430	239	149
7	132	286	574	290	262	262	400	852	1,080	426	244	164
8	125	358	792	278	251	242	434	976	969	426	239	177
9	125	278	742	294	264	200	459	1,340	1,040	415	232	179
10	134	254	710	278	304	195	446	2,300	1,250	400	214	197
11	128	251	627	253	280	192	459	2,300	1,460	434	214	207
12	126	280	539	249	264	183	572	1,880	1,620	493	219	222
13	126	266	491	243	258	181	852	1,560	1,490	480	200	200
14	124	249	499	236	241	188	946	1,500	1,150	415	186	170
15	124	229	756	231	234	229	819	1,440	1,040	415	181	162
16	119	217	796	225	229	286	712	1,390	976	422	183	147
17	124	215	686	218	222	277	f666	1,440	895	378	190	139
18	124	207	577	210	215	274	d760	1,680	961	334	192	139
19	167	196	528	196	210	280	d740	2,020	1,140	321	202	121
20	173	185	528	197	202	297	d700	2,000	1,030	403	216	114
21	284	238	486	192	194	318	d670	2,020	839	403	204	116
22	282	539	442	185	192	340	d740	2,300	743	334	179	129
23	324	375	404	185	192	350	d800	2,750	743	321	179	137
24	292	337	358	173	186	430	d800	2,680	812	306	190	135
25	218	314	360	171	186	493	d800	2,160	895	280	186	131
26	197	292	337	179	188	511	f931	1,560	749	272	172	139
27	185	268	320	199	184	538	888	1,280	617	331	179	230
28	322	253	308	202	186	515	832	1,190	592	294	181	168
29	266	260	326	218	194	511	749	1,230	597	274	170	145
30	231	574	337	238	-	529	689	1,350	587	277	181	153
31	215	-	320	268	-	506	-	2,090	-	252	175	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	5,530	324	115	178	0.848	0.98	10,970
November	7,973	574	160	266	1.27	1.41	15,810
December	16,048	796	308	518	2.47	2.84	31,830
Calendar year 1939	224,608	3,520	108	615	2.93	39.79	445,500
January	7,754	395	171	250	1.19	1.37	15,380
February	6,650	304	184	229	1.09	1.18	13,190
March	9,800	538	181	316	1.56	1.80	19,440
April	19,459	946	385	649	3.20	3.56	38,600
May	48,669	2,750	755	1,570	7.73	8.92	96,530
June	31,455	1,750	587	1,048	5.16	5.76	62,390
July	12,211	602	252	394	1.94	2.24	24,220
August	6,307	244	170	203	1.00	1.16	12,510
September	4,765	230	114	159	.783	.87	9,450
Water year 1939-40	176,621	2,750	114	483	†2.35	32.09	350,300

†Adjusted for change in drainage area.

d Doubtful gage-height record; discharge computed on basis of records for Thunder Creek near Newhalem.

f Fragmentary gage-height record; discharge computed on basis of partly estimated gage heights.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Thunder Creek near Newhalem, Wash.

Location.- Water-stage recorder, lat. 48°40', long. 121°04', in SE¼ sec. 23, T. 37 N., R. 13 E. (unsurveyed), half a mile upstream from backwater from Diablo Reservoir, 8 miles east of Newhalem, and 20 miles northeast of Marblemount.

Drainage area.- 98 square miles.

Records available.- October 1930 to September 1940.

Average discharge.- 10 years, 634 second-feet.

Extremes.- Maximum discharge during year, 2,060 second-feet May 23 (gage height, 6.63 feet); minimum, 132 second-feet Jan. 24 (gage height, 2.06 feet).
1930-40: Maximum discharge, 8,780 second-feet Feb. 26, 1932 (gage height, 11.3 feet), from rating curve extended above 2,000 second-feet; minimum not determined, occurred during period of ice effect.

Remarks.- Records excellent. No diversion or regulation.

Cooperation.- Gage-height record collected in cooperation with and results of five discharge measurements furnished by city of Seattle.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

2.2	155	3.0	313	4.0	606	5.0	1,050
2.5	208	3.5	441	4.5	810	6.0	1,620

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	311	308	503	453	235	177	331	537	1,090	1,120	744	711
2	290	290	643	527	219	216	311	727	1,000	1,170	690	662
3	227	266	444	447	208	206	292	632	980	1,020	702	682
4	497	227	739	393	201	245	279	561	910	925	766	564
5	363	212	557	350	201	272	266	488	801	891	866	482
6	243	218	557	315	239	253	255	450	770	837	1,010	639
7	206	1,120	586	283	253	264	260	463	814	886	1,010	810
8	188	697	896	260	233	283	304	606	707	945	1,010	919
9	244	412	686	260	260	253	315	910	860	950	905	979
10	262	360	690	243	297	233	295	1,400	1,090	940	784	1,140
11	231	396	551	227	262	216	292	1,250	1,280	1,220	879	1,170
12	247	456	450	216	243	201	370	940	1,490	1,480	900	1,250
13	262	362	396	212	233	192	636	757	1,400	1,430	666	873
14	290	311	424	203	219	247	647	736	1,070	1,220	639	727
15	258	277	712	197	208	192	530	757	1,000	1,340	647	686
16	204	264	749	192	199	348	447	711	965	1,360	721	582
17	286	266	628	185	195	311	407	749	930	1,100	829	581
18	199	247	517	177	186	288	530	896	1,160	940	912	842
19	464	223	491	165	183	275	482	1,120	1,470	970	1,010	415
20	757	208	554	165	176	272	429	1,080	1,210	1,180	1,140	412
21	1,780	455	469	160	165	277	404	1,080	940	1,140	873	528
22	1,620	743	407	152	162	281	435	1,360	878	970	698	702
23	1,630	407	360	150	160	279	485	1,730	985	1,020	779	753
24	736	353	318	138	155	370	485	1,610	1,220	905	964	753
25	456	308	304	138	152	385	485	1,240	1,430	779	905	727
26	365	277	281	140	150	388	520	837	1,090	749	719	801
27	419	251	264	179	145	418	485	682	891	882	834	1,150
28	1,060	235	251	190	153	388	466	690	920	828	683	674
29	460	307	364	245	157	368	401	792	1,020	930	779	624
30	393	799	429	251	-	382	360	945	1,040	886	922	585
31	353	-	343	247	-	355	-	1,550	-	762	801	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	15,301	1,780	188	494	5.04	5.81	30,350
November	11,255	1,120	208	375	3.83	4.27	22,320
December	15,563	896	251	502	5.12	5.91	30,870
Calendar year 1939	218,511	2,780	77	599	6.11	82.89	433,400
January	7,460	527	138	241	2.46	2.83	14,800
February	5,849	297	145	202	2.06	2.22	11,600
March	8,835	418	177	285	2.91	3.35	17,520
April	12,204	647	255	407	4.15	4.63	24,210
May	28,286	1,730	450	912	9.31	10.73	56,100
June	31,411	1,490	707	1,047	10.7	11.92	62,300
July	31,775	1,480	749	1,025	10.5	12.06	63,020
August	25,787	1,140	639	832	8.49	9.79	51,150
September	22,423	1,250	412	747	7.62	8.51	44,480
Water year 1939-40	216,149	1,780	138	591	6.03	82.03	428,700

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Stetattle Creek near Newhalem, Wash.

Location.- Water-stage recorder, lat. 48°43'40", long. 121°09'30", in NE¼ sec. 6, T. 37 N., R. 13 E., three-quarters of a mile upstream from mouth, 5⅛ miles northeast of Newhalem, and 18½ miles northeast of Marblemount.

Drainage area.- 21.4 square miles.

Records available.- September 1933 to September 1940. December 1913 to March 1914 and December 1914 to April 1915, at site half a mile downstream, published as Stetattle Creek near Marblemount, Wash.

Extremes.- Maximum discharge during year, 1,130 second-feet Nov. 30 (gage height, 5.10 feet), from rating curve extended above 700 second-feet; minimum, 28 second-feet Oct. 3 (gage height, 2.12 feet, from recorded range of stage).
1913-15, 1933-40: Maximum discharge, 4,520 second-feet Nov. 5, 1934 (gage height, 10.4 feet, site and datum then in use), from rating curve extended above 400 second-feet; minimum, 9 second-feet Nov. 9, 10, 11, 1936.

Remarks.- Records excellent. No diversion or regulation.

Cooperation.- Gage-height record collected in cooperation with, and results of four discharge measurements furnished by city of Seattle.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1-20				Oct. 21 to Sept. 30			
2.2	33	3.0	152	2.4	46	3.3	213
2.4	53	3.3	232	2.6	73	3.6	305
2.6	79	3.6	325	2.8	105	4.0	477
2.8	111			3.0	143	4.3	633

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	90	350	306	141	208	149	380	309	159	81	54
2	32	98	601	377	107	258	129	401	297	157	73	49
3	a30	95	291	246	93	171	116	261	273	143	70	47
4	a210	79	608	175	88	215	107	213	237	129	70	42
5	a150	75	324	143	100	222	98	177	192	125	72	38
6	82	93	383	119	191	163	98	177	195	116	79	39
7	69	573	452	100	198	188	123	186	225	119	79	44
8	61	417	694	85	151	210	165	313	209	121	75	46
9	76	207	389	79	213	155	155	467	252	118	75	49
10	71	189	452	73	231	123	137	553	302	119	67	51
11	63	308	270	66	159	103	139	381	313	143	66	51
12	61	273	181	60	131	87	240	267	373	161	64	63
13	54	192	147	59	118	75	447	225	305	149	55	58
14	52	163	196	56	100	76	279	246	222	129	49	55
15	46	135	460	51	87	185	179	341	204	133	46	44
16	40	123	417	50	78	345	145	273	186	133	47	39
17	84	116	349	46	76	207	145	282	183	112	51	47
18	61	108	231	45	72	157	322	365	238	93	54	45
19	249	87	277	40	66	141	195	393	264	95	56	34
20	411	75	333	39	62	139	163	321	198	115	62	31
21	650	318	228	37	57	143	155	360	155	123	56	31
22	628	308	165	36	54	143	175	484	151	100	50	36
23	622	161	133	34	52	141	198	543	165	95	49	37
24	261	127	110	32	51	309	183	437	205	88	50	37
25	151	107	100	32	49	231	181	288	219	75	50	36
26	119	90	87	34	59	210	201	171	155	67	47	38
27	154	81	76	100	67	228	169	153	127	92	110	90
28	307	72	73	123	76	204	165	183	137	90	70	45
29	155	261	184	236	126	173	141	230	143	114	57	38
30	137	668	169	195	-	207	129	283	145	95	56	44
31	114	-	141	171	-	171	-	601	-	76	59	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	5,233	650	30	169	7.90	9.09	10,380
November	5,689	668	72	190	8.88	9.89	11,280
December	8,871	694	73	286	13.4	15.42	17,600
Calendar year 1939	70,217	1,360	30	192	8.97	122.06	139,300
January	3,245	377	32	105	4.91	5.64	6,440
February	3,053	231	49	105	4.91	5.31	6,060
March	5,588	345	75	180	8.41	9.71	11,080
April	5,228	447	98	174	8.13	9.09	10,370
May	9,955	601	153	321	15.0	17.30	19,750
June	6,579	373	127	219	10.2	11.43	13,050
July	3,584	161	67	116	5.42	6.23	7,110
August	1,945	110	46	62.7	2.93	3.38	3,860
September	1,358	90	31	45.3	2.12	2.36	2,690
Water year 1939-40	60,328	694	30	165	7.71	104.85	119,700

Peak discharge.- Nov. 30 (12:30 a.m.) 1,130 sec.-ft.; Dec. 8 (2 p.m.) 928 sec.-ft.
a No gage-height record; discharge computed on basis of records for Thunder Creek near Newhalem.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Cascade River at Marblemount, Wash.

Location.- Water-stage recorder, lat. 48°31'45", long. 121°23'30", in SW¼ sec. 9, T. 35 N., R. 11 E., 2 miles east of Marblemount and 2½ miles upstream from mouth.

Drainage area.- 180 square miles.

Records available.- September 1928 to September 1940.

Average discharge.- 12 years, 974 second-feet.

Extremes.- Maximum discharge during year, 3,190 second-feet Dec. 15 (gage height, 5.87 feet); minimum, 281 second-feet Oct. 4 (gage height, 1.71 feet).
1928-40: Maximum discharge, 12,900 second-feet Feb. 26, 1932 (gage height, 9.88 feet); minimum, 149 second-feet Nov. 15, 1929, or may have been less during January or February 1929, when stage-discharge relation was affected by ice; mirimum gage height, 1.11 feet Feb. 8, 1937.

Remarks.- Records good. No diversion or regulation.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Jan. 1 to Feb. 9, May 31 to Aug. 29)

1.8	305	2.3	470	3.0	765	4.0	1,350	5.0	2,250
2.0	365	2.6	590	3.5	1,020	4.5	1,760	5.5	2,760

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	334	630	1,260	1,670	720	765	815	1,590	1,670	992	698	494
2	325	590	1,670	2,050	652	1,050	742	1,800	1,590	1,050	630	466
3	300	570	1,210	1,550	610	865	698	1,430	1,510	940	630	494
4	709	502	1,640	1,240	610	890	652	1,240	1,350	890	630	437
5	748	470	1,240	1,080	610	940	610	1,110	1,180	865	675	486
6	510	494	1,320	940	865	815	590	1,050	1,110	840	698	419
7	433	1,920	1,470	840	915	940	610	1,020	1,240	815	720	502
8	382	1,510	2,400	790	815	1,050	765	1,210	1,050	840	698	419
9	448	1,080	1,900	742	915	890	790	1,630	1,240	865	675	466
10	498	965	1,850	698	1,110	790	742	2,450	1,550	840	590	675
11	430	1,140	1,470	652	915	698	720	2,100	1,720	915	590	1,050
12	412	1,240	1,140	610	790	652	908	1,670	1,900	1,050	630	840
13	391	1,020	992	590	742	590	1,390	1,350	1,800	1,110	530	610
14	375	890	1,250	570	675	590	1,280	1,350	1,350	940	486	405
15	368	765	2,240	550	630	765	992	1,350	1,280	965	474	452
16	337	698	2,150	530	590	1,180	865	1,280	1,210	965	510	408
17	444	652	1,850	530	570	940	790	1,350	1,140	840	570	444
18	408	630	1,430	510	530	815	965	1,590	1,280	765	590	506
19	850	570	1,430	478	510	765	890	1,850	1,550	742	610	378
20	1,270	530	1,670	463	490	742	840	1,760	1,280	878	652	359
21	2,100	786	1,390	452	466	742	765	1,800	1,020	965	590	391
22	1,950	1,580	1,140	437	448	720	815	2,250	915	790	490	452
23	2,250	992	992	422	440	698	965	2,600	1,050	765	494	478
24	1,380	865	890	402	426	915	992	2,350	1,230	720	570	510
25	940	765	815	395	426	890	915	1,850	1,320	652	550	448
26	790	675	742	405	470	915	1,050	1,280	1,110	630	502	486
27	819	610	675	630	474	1,020	940	1,080	915	1,080	608	929
28	1,740	570	675	652	510	915	965	1,080	940	840	616	498
29	992	628	713	790	570	865	890	1,280	992	815	550	455
30	865	1,850	1,050	815	-	1,020	840	1,510	992	815	590	405
31	742	-	1,000	790	-	915	-	2,450	-	698	550	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	24,540	2,250	300	792	4.40	5.07	48,670
November	26,187	1,920	470	873	4.85	5.41	51,940
December	41,664	2,400	675	1,344	7.47	8.61	82,640
Calendar year 1939	390,377	4,880	251	1,070	5.94	80.63	774,200
January	23,273	2,050	395	751	4.17	4.81	46,160
February	18,494	1,110	426	638	3.54	3.82	36,680
March	26,347	1,180	590	850	4.72	5.44	52,260
April	25,791	1,390	590	860	4.78	5.33	51,160
May	49,710	2,600	1,020	1,604	8.91	10.27	98,600
June	38,484	1,900	915	1,283	7.13	7.95	76,330
July	26,877	1,110	630	867	4.82	5.55	53,310
August	18,396	720	474	593	3.29	3.80	36,490
September	15,362	1,050	359	512	2.84	3.17	30,470
Water year 1939-40	335,125	2,600	300	916	5.09	69.23	664,700

Peak discharge.- Dec. 8 (5 to 5:30 p.m.) 2,990 sec.-ft.; Dec. 15 (3:40 p.m.) 3,190 sec.-ft.; May 23 (10:30 to 11:30 p.m.) 3,060 sec.-ft.

9-233 April 1936

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Sauk River above Whitechuck River, near Darrington, Wash.

Location.- Water-stage recorder, lat. 48°10'00", long. 121°27'45", in NW¼ sec. 24, T. 31 N., R. 10 E., half a mile upstream from Whitechuck River and 9⅝ 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 1940.

Average discharge.- 17 years (1917-22, 1928-40), 1,105 second-feet.

Extremes.- Maximum discharge during year, 5,480 second-feet Dec. 15 (gage height, 6.71 feet); minimum, 158 second-feet Sept. 20 (gage height, 2.12 feet).
1917-22, 1928-40: Maximum discharge 23,000 second-feet Dec. 12, 1921 (gage height, 14.65 feet), from rating curve extended above 3,000 second-feet; minimum, 115 second-feet Nov. 15, 16, 30, Dec. 1, 1936.

Remarks.- Records good except those for periods of no gage-height records, which are fair. No diversion or regulation.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used May 23 to Sept. 30)

2.2	211	2.7	414	3.3	839	4.0	1,520	5.0	2,740
2.4	279	3.0	600	3.6	1,110	4.5	2,090	6.0	4,260

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	214	539	1,520	1,850	797	1,360	1,220	2,740	1,630	615	378	211
2	211	482	2,470	2,090	691	1,740	1,110	2,600	1,580	622	378	202
3	211	476	1,680	1,740	630	1,300	982	2,030	1,630	579	332	214
4	884	436	1,630	1,420	645	1,150	892	1,800	1,520	545	310	196
5	1,030	403	1,420	1,230	707	1,190	822	1,630	1,300	513	302	191
6	615	414	1,520	1,040	1,430	a1,000	755	1,420	1,190	482	306	185
7	470	1,500	1,640	901	1,420	a1,500	772	1,360	1,290	470	306	191
8	383	1,680	3,240	805	1,140	a1,300	1,000	1,470	1,140	482	298	194
9	350	1,220	2,400	739	1,740	a1,100	1,210	1,800	1,230	470	287	199
10	350	1,080	2,600	699	2,210	f892	1,130	2,600	1,420	442	275	208
11	315	1,680	2,150	622	1,580	780	1,020	2,340	1,520	447	264	211
12	294	1,680	1,680	586	1,240	699	1,120	1,970	1,630	526	264	220
13	278	1,250	1,360	545	1,110	622	1,580	1,630	1,580	526	250	226
14	264	1,120	1,800	513	955	593	1,580	1,580	1,240	470	233	208
15	253	901	3,780	494	830	712	1,310	1,680	1,140	464	226	196
16	243	764	3,540	507	764	1,470	1,140	1,580	1,100	459	223	185
17	287	683	3,020	482	691	1,130	1,050	1,580	1,000	414	230	175
18	290	652	2,210	470	652	946	1,240	1,740	1,070	378	233	196
19	805	579	1,850	430	608	839	1,180	1,910	1,200	359	233	175
20	715	519	2,030	414	565	780	1,100	1,850	1,040	373	243	165
21	797	576	1,740	403	539	764	1,000	1,910	848	480	233	167
22	600	1,290	1,420	383	507	764	1,010	2,210	764	414	217	175
23	949	857	a1,200	373	500	747	1,360	2,470	780	378	211	177
24	955	699	a1,000	359	476	955	1,360	2,280	857	364	211	180
25	637	615	a900	346	513	1,030	1,270	1,910	936	337	214	177
26	608	559	a800	369	622	1,100	1,300	1,520	830	337	199	185
27	607	507	a700	787	805	1,470	1,220	1,230	668	430	223	253
28	1,600	470	a900	839	857	1,360	1,420	1,150	637	403	302	223
29	1,000	464	a1,100	901	1,080	1,240	1,360	1,250	645	393	246	196
30	739	2,020	f1,180	955	-	1,630	1,290	1,520	652	447	236	188
31	615	-	1,180	910	-	1,420	-	2,090	-	359	226	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	17,570	1,600	211	567	3.73	4.30	34,850
November	26,115	2,020	403	870	5.72	6.39	51,800
December	55,660	3,780	700	1,795	11.8	13.62	110,400
Calendar year 1939	420,147	5,140	209	1,151	7.57	102.83	833,400
January	24,202	2,090	346	781	5.14	5.92	48,000
February	26,504	2,210	476	914	6.01	6.48	52,570
March	33,583	1,740	593	1,083	7.12	8.22	66,610
April	34,803	1,580	755	1,160	7.63	8.52	69,030
May	56,850	2,740	1,150	1,834	12.1	13.91	112,800
June	34,067	1,630	637	1,136	7.47	8.34	67,570
July	13,978	622	337	451	2.97	3.42	27,720
August	8,089	378	199	261	1.72	1.98	16,040
September	5,869	253	165	196	1.29	1.44	11,640
Water year 1939-40	337,290	3,780	165	922	6.07	82.54	669,000

a No gage-height record; discharge computed on basis of records for South Fork of Stillaguamish River near Granite Falls.
f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Sauk River near Sauk, Wash.

Location.- Water-stage recorder, lat. 48°25'15", long. 121°33'45", in NW¼ sec. 19, T. 34 N., R. 10 E., 5 miles upstream from mouth and 5 miles southeast of Sauk. Datum of gage is approximately 266 feet (revised) above mean sea level (river-profile survey).

Drainage area.- 714 square miles.

Records available.- July 1928 to September 1940. August 1910 to August 1912, various gages between a point 1 mile downstream from and a point 5 miles upstream from present site, published as Sauk River near Suiattle Crossing, near Sauk, Wash. All early discharge measurements made at point 5 miles upstream from present site.

Average discharge.- 12 years (1928-40), 4,133 second-feet.

Extremes.- Maximum discharge during year, 20,000 second-feet Dec. 15 (gage height, 9.00 feet); minimum, 880 second-feet Sept. 20, 21 (gage height, 2.80 feet).
1910-12, 1928-40: Maximum discharge, 68,500 second-feet Feb. 26, 1932 (gage height, 15.83 feet); minimum, 572 second-feet Dec. 5, 1929; discharge may have been less sometime during period of ice effect Jan. 10-27, 1930.

Remarks.- Records excellent except those for periods of doubtful or no gage-height record, which are fair. No diversion or regulation.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used June 23 to July 25)

Oct. 1 to Feb. 9, July 26 to Sept. 30						Feb. 10 to July 25			
2.9	1,000	4.5	3,680	7.0	11,000	3.8	2,030	5.5	5,810
3.1	1,240	5.0	4,880	8.0	15,200	4.2	2,750	6.0	7,280
3.5	1,810	5.5	6,200			4.6	3,560	6.8	10,000
4.0	2,650	6.0	7,670			5.0	4,510		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,060	a2,150	5,000	7,820	3,140	5,030	4,030	10,000	6,090	3,050	1,970	1,430
2	988	a1,950	7,670	8,960	2,840	7,280	3,690	8,590	5,680	3,260	1,990	1,380
3	952	a1,900	5,390	7,060	2,650	5,140	3,360	6,670	5,540	2,950	1,860	1,410
4	2,370	a1,700	5,390	5,780	2,740	4,510	3,050	5,680	5,270	2,750	1,830	1,240
5	4,190	a1,600	4,630	5,130	2,940	4,760	2,850	5,270	4,640	2,660	1,870	1,160
6	2,470	a1,700	5,130	4,380	5,170	3,920	2,660	4,760	4,270	2,560	1,970	1,220
7	1,890	3,930	5,500	3,910	5,390	4,760	2,660	4,510	4,510	2,470	2,080	1,340
8	1,580	5,920	10,700	3,460	4,260	5,810	3,470	4,760	3,920	2,560	2,000	1,510
9	1,440	4,380	8,630	3,250	5,920	4,510	4,150	5,540	4,390	2,470	1,940	1,580
10	1,510	3,910	8,630	3,140	8,420	3,800	3,920	8,080	5,140	2,380	1,680	1,740
11	1,360	5,650	7,360	2,840	5,680	3,360	3,360	7,760	5,810	2,470	1,700	1,760
12	1,300	5,650	5,650	2,740	4,510	3,050	3,690	6,520	6,240	2,950	1,810	1,950
13	1,250	4,260	4,880	2,560	4,030	2,750	5,010	5,410	6,380	3,050	1,580	1,840
14	1,200	4,020	6,080	2,470	3,690	2,660	5,010	5,140	5,010	2,750	1,510	1,430
15	1,170	3,250	13,100	2,380	3,260	3,050	4,270	5,270	4,510	2,750	1,500	1,300
16	1,100	2,940	13,000	2,560	2,950	5,540	3,690	5,140	4,390	2,750	1,510	1,240
17	1,200	2,650	11,800	2,470	2,850	4,270	3,360	5,140	4,030	2,560	1,640	1,180
18	1,340	2,470	8,300	2,380	2,660	3,580	3,920	5,680	4,270	2,290	1,700	1,280
19	2,260	2,300	7,360	2,220	2,470	3,260	3,690	6,520	5,010	2,200	1,740	1,080
20	2,560	2,130	8,300	2,100	2,380	3,150	3,580	6,380	4,390	2,290	1,830	1,000
21	3,680	2,180	7,360	2,030	2,200	3,050	3,260	6,240	3,690	2,850	1,780	1,080
22	3,250	5,050	6,060	1,950	2,120	2,950	3,260	7,440	3,260	2,380	1,450	1,200
23	a4,100	3,460	5,130	1,870	2,120	2,850	4,030	8,590	3,470	2,200	1,400	1,300
24	a3,000	2,840	4,380	1,800	2,030	3,560	4,270	8,250	3,800	2,200	1,540	1,380
25	a2,600	2,560	3,910	1,750	2,030	3,690	3,920	6,970	4,270	1,980	1,660	1,290
26	a2,400	2,300	3,570	1,830	2,950	3,690	4,270	5,270	3,800	1,870	1,510	1,300
27	a2,400	2,130	3,360	4,080	3,150	4,880	3,920	4,270	3,150	2,560	1,480	a1,540
28	3,570	2,000	3,360	4,020	3,150	4,760	4,510	4,030	2,950	2,470	1,910	a1,430
29	a4,500	2,000	4,240	3,800	4,150	4,270	4,510	4,390	3,050	2,110	1,560	a1,290
30	a3,000	6,500	5,260	3,680	-	5,810	4,150	5,270	3,150	2,380	1,660	a1,250
31	a2,500	-	5,000	3,460	-	4,880	-	7,600	-	2,020	1,600	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	68,190	4,500	952	2,200	3.08	3.55	135,300
November	95,480	6,500	1,600	3,183	4.46	4.97	189,400
December	204,130	13,100	3,360	6,585	9.22	10.63	404,900
Calendar year 1939	1,603,240	19,000	952	4,392	6.15	83.45	3,180,000
January	107,880	8,960	1,750	3,480	4.87	5.62	214,000
February	101,850	8,450	2,030	3,512	4.92	5.31	202,000
March	128,600	7,280	2,660	4,148	5.81	6.70	255,100
April	113,520	5,010	2,660	3,784	5.30	5.91	225,200
May	191,140	10,000	4,030	6,166	8.64	9.96	379,100
June	134,080	6,390	2,950	4,469	6.26	6.98	265,900
July	78,190	3,260	1,870	2,522	3.53	4.07	155,100
August	53,260	2,080	1,400	1,718	2.41	2.77	105,600
September	41,130	1,950	1,000	1,371	1.92	2.14	81,580
Water year 1939-40	1,317,450	13,100	952	3,600	5.04	68.61	2,613,000

a No gage-height record; discharge computed on basis of sum of records for station above Whitechuck River near Darrington and Suiattle River near Mansford.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Suiattle River near Mansford, Wash.

Location.- Water-stage recorder, lat. 48°21'50", long. 121°29'30", in N½ sec. 10, T. 33 N., R. 10 E., 2½ miles downstream from Big Creek and 4 miles north of Mansford.

Drainage area.- 335 square miles.

Records available.- July 1938 to September 1940.

Extremes.- Maximum discharge during year, 5,300 second-feet Dec. 15 (gage height, 7.97 feet); minimum, 467 second-feet Oct. 3 (gage height, 3.46 feet).
1938-40: Maximum discharge, 9,680 second-feet May 29, 1939 (gage height, 9.79 feet), from rating curve extended above 5,000 second-feet; minimum, 444 second-feet Oct. 8, 9, 1939 (gage height, 3.41 feet).

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

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

3.5	483	4.6	1,180	6.5	3,150
3.7	577	5.0	1,530	7.0	3,800
4.0	748	5.5	2,030	8.0	5,300
4.3	948	6.0	2,560		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	572	948	1,630	2,910	1,220	1,530	1,530	3,150	3,150	1,880	1,100	806
2	524	872	2,280	3,220	1,100	2,080	1,440	3,220	2,910	1,930	984	761
3	496	859	1,730	2,560	1,060	1,730	1,300	2,620	2,910	1,730	1,020	776
4	1,240	761	1,980	2,180	1,060	1,780	1,260	2,400	2,670	1,630	1,020	664
5	1,230	711	1,680	1,930	1,100	1,780	1,180	2,180	2,400	1,580	1,100	630
6	793	774	1,730	1,730	1,630	1,530	1,140	2,030	2,280	1,480	1,180	694
7	676	2,150	1,980	1,580	1,530	1,880	1,180	2,080	2,340	1,440	1,220	793
8	604	1,980	3,280	1,440	1,350	1,980	1,400	2,230	2,130	1,480	1,180	914
9	630	1,440	2,620	1,400	1,630	1,680	1,480	2,730	2,450	1,480	1,100	924
10	687	1,440	2,790	1,300	2,180	1,480	1,400	3,940	2,910	1,440	984	1,060
11	604	1,830	2,280	1,220	1,830	1,350	1,350	3,670	3,220	1,530	1,020	1,060
12	593	1,930	1,980	1,180	1,580	1,260	1,630	3,030	3,540	1,730	1,060	1,280
13	577	1,580	1,730	1,100	1,480	1,180	2,280	2,620	3,410	1,830	879	992
14	557	1,440	2,280	1,060	1,350	1,140	2,180	2,560	2,730	1,630	859	795
15	567	1,260	3,760	1,020	1,260	1,350	1,830	2,620	2,560	1,630	866	730
16	510	1,140	3,940	1,060	1,220	1,880	1,630	2,500	2,450	1,630	879	698
17	625	1,060	a3,300	1,020	1,140	1,530	1,530	a2,500	2,280	1,440	990	681
18	557	1,020	a3,000	984	1,100	1,350	1,780	a2,600	2,500	1,350	1,010	754
19	1,020	948	a2,800	914	1,020	1,300	1,630	a3,200	2,850	1,260	1,060	619
20	1,210	879	2,910	879	984	1,300	1,580	a3,100	2,500	1,460	1,140	588
21	1,930	1,020	2,560	859	984	1,300	1,480	a3,200	2,130	1,630	1,020	641
22	1,830	1,830	2,280	825	914	1,300	1,530	a3,800	1,980	1,300	859	d690
23	2,080	1,260	1,980	806	914	1,260	1,880	a4,800	2,080	1,300	866	d740
24	1,530	1,100	1,780	761	879	1,530	1,830	a4,400	2,340	1,260	990	d770
25	1,100	1,020	1,680	748	914	1,480	1,730	3,540	2,500	1,100	984	d740
26	1,020	948	1,530	799	1,100	1,630	1,930	2,620	2,180	1,100	859	d790
27	1,020	879	1,440	1,300	1,060	1,830	1,780	2,280	1,830	1,580	944	d1,170
28	2,180	839	1,400	1,260	1,140	1,630	1,930	2,230	1,780	1,350	984	d870
29	1,400	914	1,730	1,350	1,300	1,530	1,780	2,450	1,880	1,220	872	d720
30	1,180	2,280	1,880	1,350	-	1,880	1,730	2,910	1,880	1,260	984	d670
31	1,060	-	1,880	1,300	-	1,630	-	3,940	-	1,100	914	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	30,602	2,180	496	987	2.95	3.40	60,700
November	37,112	2,280	711	1,237	3.69	4.12	73,610
December	69,870	3,940	1,400	2,254	6.73	7.76	138,600
Calendar year 1939	676,425	7,420	496	1,853	5.53	75.05	1,342,000
January	42,045	3,220	748	1,356	4.05	4.67	83,400
February	36,029	2,180	879	1,242	3.71	4.00	71,460
March	48,090	2,080	1,140	1,551	4.63	5.34	95,390
April	48,330	2,280	1,140	1,611	4.81	5.37	95,860
May	91,100	4,800	2,030	2,939	8.77	10.11	180,700
June	74,770	5,540	1,780	2,492	7.44	8.30	148,300
July	45,760	1,930	1,100	1,476	4.41	5.08	90,760
August	30,927	1,220	859	998	2.98	3.43	61,340
September	24,020	1,280	588	801	2.39	2.67	47,640
Water year 1939-40	578,655	4,800	496	1,581	4.72	64.25	1,148,000

a No gage-height record; discharge computed on basis of records for Sauk River near Sauk.
d Doubtful gage-height record; discharge computed on basis of records for nearby streams.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Whatcom Creek near Bellingham, Wash.

Location.- Water-stage recorder, lat. 48°45'10", long. 122°25'40", in NW¼SE¼ sec. 28, T. 38 N., R. 3 E., in Whatcom Falls State Park three-quarters of a mile downstream from Lake Whatcom, and 2 miles east of Bellingham. Prior to Sept. 18, 1939, staff gage at same site and datum. Datum of gage is 200.00 feet above mean sea level (city of Bellingham datum). Former gage at site about half a mile upstream at different datum.

Drainage area.- 56 square miles (revised).

Records available.- November 1910 to September 1914 (gage heights only October 1912 to September 1914), July 1939 to September 1940.

Extremes.- 1939 (regulated): Maximum daily discharge during period July to September, 120 second-feet Sept. 30; minimum daily discharge, 0.7 second-foot July 13.
1939-40 (regulated): Maximum discharge during year, 412 second-feet Mar. 16 (gage height, 87.88 feet); minimum, 0.7 second-foot Aug. 16, 1940 (gage height, 84.85 feet); minimum daily, 0.9 second-foot Oct. 2, 5, 8-12.
1910-12, 1939-40: Maximum discharge observed, 739 second-feet Nov. 20, 21, 1911 (gage height, 5.50 feet, site and datum then in use); minimum discharge, that of Aug. 16, 1940; minimum daily discharge, that of Oct. 12, 1939.

Remarks.- Records excellent except those below 20 second-feet and those for periods of no gage-height record, which are fair. Flow regulated by Lake Whatcom (usable capacity, about 28,800 acre-feet). The city of Bellingham diverts about 30 second-feet from lake for municipal use. Prior to Aug. 20, 1939, gage read twice daily.

Cooperation.- Gage-height record collected in cooperation with the City of Bellingham.

Rating table, July 1939 to September 1940 (gage height, in feet, and discharge, in second-feet)

84.9	1.0	85.3	7.8	86.0	40	87.4	277
85.0	2.1	85.4	11	86.3	70	87.8	383
85.1	3.5	85.6	18	86.6	113		
85.2	5.5	85.8	27	87.0	187		

Discharge, in second-feet, 1939-40

1939

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1										-	0.9	1
2										-	.9	1
3										-	.9	1
4										-	15	1
5										-	54	1
6										-	a50	1
7										-	.9	1
8										-	.9	20
9										-	.9	50
10										-	.9	40
11										-	.9	1
12										-	.9	1
13										c0.7	.9	1
14										c1.4	.9	1
15										c1.7	.9	10
16										2	1.0	40
17										c2.3	1.0	40
18										2.2	.9	1.0
19										1.3	1.0	1.0
20										1.1	1	1.0
21										1.1	1	29
22										1.1	1	12
23										1.1	1	34
24										1.1	1	63
25										1.1	1	1.1
26										1.1	1	28
27										1.1	1	42
28										1.1	1	16
29										56	1	45
30										56	1	120
31										1.1	1	-

c Minor backwater from temporary channel obstructions; discharge computed on basis of adjusted gage heights.
Note.- No gage-height record July 16, Aug. 6, Aug. 20 to Sept. 17; discharge computed on basis of information on gate openings furnished by city of Bellingham.

9-238 September 1937 UNITED STATES DEPARTMENT OF THE INTERIOR Geological Survey

Discharge, in second-feet, of Whatcom Creek near Bellingham, Wash., 1939-40--Continued

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	80	1.8	66	369	1.6	88	188	c2.1	c1.7	1.6	9.7	40
2	.9	1.9	212	355	1.5	328	88	c2.2	c1.7	1.6	11	25
3	8.7	3.8	144	355	1.4	323	16	57	c1.8	1.6	11	1.9
4	1.1	2.1	2.6	355	1.5	77	2.8	189	1.8	1.7	11	1.9
5	.9	1.9	65	355	1.6	3.0	2.5	187	1.8	1.6	6.5	1.8
6	52	1.9	44	350	2.9	2.6	2.3	49	1.8	1.5	2.2	1.8
7	150	2.2	67	344	166	3.2	2.2	1.9	1.8	1.5	8.2	1.7
8	103	2.5	120	339	284	114	2.1	2.1	1.8	1.5	5.7	1.6
9	.9	1.8	217	333	292	355	2.1	1.9	1.8	1.5	14	1.5
10	.9	1.8	217	331	305	355	2.1	60	1.9	1.5	36	1.4
11	.9	1.7	117	325	310	90	2.1	95	1.9	1.5	23	1.4
12	.9	1.6	123	320	312	3.2	2.1	95	1.7	1.5	1.7	1.5
13	50	1.6	114	315	122	2.9	2.1	25	1.5	1.5	1.7	1.6
14	146	1.5	126	307	119	3.0	1.9	1.8	1.5	1.4	10	1.5
15	106	1.4	140	302	192	114	c1.9	1.8	1.4	1.4	3.0	1.5
16	1.7	1.4	228	302	196	342	c2.2	1.8	1.3	1.4	78	1.5
17	1.7	58	230	297	312	383	c2.1	c1.8	1.2	1.3	44	1.5
18	1.6	187	232	307	310	369	c2.1	c1.9	1.3	1.3	33	3.2
19	1.8	141	274	310	75	369	47	c2.1	1.4	1.3	3.7	1.4
20	44	2.1	350	302	2.6	251	146	5.5	1.5	1.4	2.0	2.5
21	127	1.6	369	294	116	369	146	1.9	1.5	1.5	9.0	2.8
22	94	1.6	383	284	302	347	38	1.9	1.5	1.6	1.9	1.3
23	2.5	1.6	383	275	173	344	2.2	1.8	1.5	1.6	1.3	1.1
24	1.8	1.6	369	267	300	342	2.1	c1.8	1.5	1.4	22	1.1
25	1.4	117	369	253	297	195	2.1	1.7	1.5	1.3	47	2.5
26	1.4	121	369	239	80	193	2.1	1.7	1.5	13	2.1	6.1
27	47	2.1	288	232	2.8	190	1.9	2.1	1.5	38	1.8	5.5
28	156	2.1	355	215	2.6	178	c1.9	c1.9	1.5	25	1.7	4.8
29	111	1.9	355	71	2.5	192	c1.9	c1.9	1.5	5.5	1.9	4.3
30	1.7	1.8	369	2.2	-	350	c1.9	c1.7	1.6	1.8	14	3.9
31	1.7	-	369	1.7	-	350	-	c1.8	-	1.3	40	-

c Minor backwater from temporary channel obstructions; discharge computed on basis of adjusted gage heights.

Monthly discharge, in second-feet, 1939-40

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
July 13-31, 1939	134.6	56	0.7	7.08	267
August	145.7	54	.9	4.70	289
September	604.1	120	1	20.1	1,200
The period	-	-	-	-	1,760
October 1939	1,298.5	156	.9	41.9	2,580
November	671.3	187	1.4	22.4	1,330
December	7,066.6	383	2.6	228	14,020
Calendar year	-	-	-	-	-
January 1940	8,706.9	369	1.7	281	17,270
February	4,284.0	312	1.4	148	8,500
March	6,625.9	383	2.6	214	13,140
April	717.7	188	1.9	23.9	1,420
May	804.1	189	1.7	25.9	1,590
June	47.7	1.9	1.2	1.59	95
July	121.6	38	1.3	3.92	241
August	458.1	78	1.3	14.8	909
September	129.6	40	1.1	4.32	257
Water year 1939-40	30,932.0	383	.9	84.5	61,350

Nooksack River above Cascade Creek, near Glacier, Wash.

Location.- Water-stage recorder, lat. 48°54'20", long. 121°50'50", in NW¼ sec. 1, T. 39 N., R. 7 E., a quarter of a mile upstream from Cascade Creek, 6 miles upstream from Glacier Creek, and 4⅛ miles east of Glacier.

Drainage area.- 105 square miles.

Records available.- October 1937 to September 1940.

Extremes.- Maximum discharge during year, 4,950 second-feet Dec. 10 (gage height, 7.39 feet), from rating curve extended above 2,000 second-feet; minimum not determined, probably occurred during period of no gage-height record, Oct. 9-14.
1937-40: Maximum discharge, 9,670 second-feet Oct. 28, 1937 (gage height, 10.28 feet), from rating curve extended above 2,000 second-feet; minimum recorded, 85 second-feet (regulated) Mar. 30, 1938 (gage height, 2.34 feet).

Remarks.- Records good except those above 2,000 second-feet, which are poor. No diversion. Some regulation at low water by power plant at Excelsior.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	214	461	1,160	1,300	553	710	570	1,340	1,360	873	582	509
2	199	493	1,860	1,860	498	744	514	1,740	1,170	896	526	a410
3	189	466	940	1,300	477	548	472	1,180	1,100	770	509	a340
4	721	381	1,740	964	526	640	430	956	956	731	520	a320
5	420	347	1,210	803	504	634	420	803	859	725	582	a370
6	311	410	1,520	681	700	504	395	738	887	675	645	a450
7	244	1,260	2,670	604	640	531	440	731	1,070	688	645	493
8	225	1,420	3,660	553	553	570	520	1,170	888	738	628	493
9	a220	831	2,040	531	640	472	504	1,580	996	712	599	520
10	a210	790	3,390	493	663	410	456	2,040	1,190	719	514	570
11	a180	1,020	1,680	461	559	381	450	1,800	1,360	852	564	570
12	a170	1,120	1,070	435	509	347	622	1,300	1,580	948	531	640
13	a150	925	873	425	526	329	972	1,050	1,410	903	435	509
14	a160	852	1,080	400	477	338	845	1,050	1,090	796	415	440
15	244	731	1,630	395	425	582	634	1,190	1,010	859	410	420
16	233	688	1,520	390	420	817	553	1,100	948	838	450	361
17	496	645	1,300	385	430	559	504	1,110	903	675	520	420
18	328	548	972	376	405	472	681	1,220	1,040	599	570	395
19	807	466	1,460	361	381	425	599	1,460	1,260	622	582	289
20	1,360	410	1,800	352	361	410	548	1,300	1,030	706	604	268
21	2,160	826	1,140	342	338	410	509	1,300	803	663	531	324
22	1,740	1,000	896	334	329	410	548	1,680	744	651	493	385
23	2,040	604	738	334	320	410	604	1,980	824	663	477	410
24	1,140	514	645	324	306	879	663	1,680	988	599	509	390
25	776	450	582	316	298	700	645	1,300	1,130	536	504	390
26	634	400	526	347	357	712	663	940	866	559	466	425
27	624	366	482	604	357	831	604	803	719	688	716	586
28	996	342	542	645	361	757	599	824	750	657	487	376
29	657	531	1,010	1,090	514	681	548	980	796	907	477	352
30	599	1,320	939	712	-	770	504	1,170	810	675	536	347
31	548	-	890	628	-	657	-	2,160	-	548	620	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	18,995	2,160	150	613	5.84	6.73	37,680
November	20,617	1,420	342	687	6.54	7.30	40,890
December	41,965	3,660	482	1,354	12.9	14.86	83,240
Calendar year 1939	307,770	3,660	149	843	8.03	109.06	610,500
January	18,745	1,860	316	605	5.76	6.64	37,180
February	13,427	700	298	463	4.41	4.76	26,630
March	17,640	879	329	569	5.42	6.25	34,990
April	17,016	972	395	567	5.40	6.03	33,750
May	39,675	2,160	731	1,280	12.2	14.05	78,690
June	30,537	1,580	719	1,018	9.70	10.82	60,570
July	22,471	948	536	725	6.90	7.96	44,570
August	16,647	716	410	537	5.11	5.90	33,020
September	12,772	640	268	426	4.06	4.52	25,330
Water year 1939-40	270,507	3,660	150	739	7.04	95.82	536,500

Peak discharge.- Dec. 8 (3 a.m., 3:20 p.m.) 4,650 sec.-ft.; Dec. 10 (11:30 a.m.) 4,950 sec.-ft.
a No gage-height record; discharge computed on basis of records for South Fork of Nooksack River near Wickersham.
Note.- Shifting-control method used Oct. 20 to Sept. 30.

9-233 April 1936 UNITED STATES DEPARTMENT OF THE INTERIOR Geological Survey

Nooksack River at Deming, Wash.

Location.- Water-stage recorder, lat. 48°48'35", long. 122°12'15", in lot 12, sec. 6, T. 38 N., R. 5 E., 800 feet downstream from South Fork and 1 mile southeast of Deming. Datum of gage is 203.6 feet above mean sea level (general adjustment of 1929).

Drainage area.- 580 square miles.

Records available.- July 1935 to September 1940. September to December 1910 (gage heights only) at site 1 1/8 miles downstream; December 1910 to March 1911 (gage heights only) at Nugents' bridge, 4 miles downstream from Deming.

Extremes.- Maximum discharge during year, 14,200 second-feet Dec. 15 (gage height, 9.16 feet); minimum, 612 second-feet Oct. 3.
1935-40: Maximum discharge, 33,200 second-feet Oct. 28, 1938 (gage height, 13.21 feet), from rating curve extended above 11,000 second-feet; minimum, 560 second-feet Nov. 9, 10, 1936, but may have been less sometime during periods of ice effect.

Remarks.- Records good. No diversion. Slight regulation at power plant at Excelsior has little if any effect at this station.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used May 1 to Sept. 30)

2.9	630	4.0	1,640	6.0	4,950
3.1	770	4.5	2,260	7.0	7,470
3.3	930	5.0	3,000	8.0	10,300
3.6	1,210	5.5	3,890		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	742	2,200	3,910	6,040	2,690	5,000	3,990	6,680	3,860	1,760	1,760	1,470
2	686	2,130	8,680	7,200	2,330	6,440	3,340	6,930	3,080	1,880	1,640	1,170
3	644	2,400	4,840	6,280	2,130	4,190	3,000	4,950	2,760	1,700	1,360	1,130
4	2,160	2,000	7,200	4,840	2,330	5,980	2,690	4,090	2,470	1,640	1,310	984
5	2,250	1,880	5,180	4,090	2,690	6,340	2,540	3,700	2,200	1,640	1,420	906
6	1,880	2,060	6,560	3,430	7,000	4,400	2,400	3,260	2,130	1,530	1,530	1,020
7	1,320	6,080	8,300	3,080	6,700	5,280	2,470	3,000	3,260	1,480	1,580	1,200
8	1,040	7,470	11,000	2,760	4,840	5,660	3,340	3,480	2,540	1,530	1,530	1,300
9	1,120	4,950	7,470	2,620	7,580	4,190	3,340	4,500	2,540	1,580	1,530	1,390
10	1,230	4,610	9,240	2,470	8,040	3,520	2,920	5,420	2,620	1,530	1,310	1,530
11	966	5,300	6,690	2,260	5,420	3,260	2,620	5,420	2,920	1,700	1,330	1,580
12	914	5,300	4,840	2,130	4,290	2,920	3,000	3,890	3,170	2,000	1,380	1,760
13	874	4,400	4,090	2,000	3,990	2,620	3,890	3,260	3,080	1,940	1,120	1,580
14	858	4,950	5,780	1,880	3,520	2,760	3,520	3,170	2,540	1,820	993	1,250
15	906	3,700	10,300	1,940	3,080	3,890	2,840	3,340	2,330	1,820	966	1,120
16	749	3,080	8,580	2,200	2,920	7,200	2,470	3,080	2,200	1,820	1,020	975
17	1,190	2,840	8,300	2,130	3,000	4,610	2,330	3,000	2,060	1,640	1,220	972
18	1,120	2,690	6,410	2,130	2,760	3,700	2,760	3,260	2,130	1,420	1,330	1,150
19	3,470	2,400	6,160	1,880	2,620	3,170	2,540	3,610	2,470	1,480	1,360	818
20	3,930	2,130	11,000	1,760	2,470	2,920	2,400	3,430	2,330	1,580	1,420	756
21	8,580	2,350	8,870	1,700	2,260	2,760	2,200	3,260	1,880	1,580	1,340	850
22	7,200	4,190	6,280	1,640	2,130	2,690	2,260	3,800	1,700	1,480	1,190	1,060
23	8,300	2,690	4,840	1,530	2,130	2,620	2,400	4,290	1,760	1,530	1,180	1,170
24	5,660	2,260	4,090	1,480	2,000	5,900	2,620	3,990	2,000	1,420	1,250	1,130
25	3,520	2,060	3,520	1,420	2,060	4,400	2,540	3,170	2,200	1,290	1,230	1,120
26	3,260	1,880	3,080	1,530	2,760	3,890	2,540	2,540	2,000	1,340	1,130	1,230
27	3,000	1,760	2,840	3,640	3,080	4,720	2,330	2,200	1,700	1,700	1,410	1,650
28	4,950	1,640	3,890	3,610	2,840	5,180	2,760	2,130	1,640	1,700	1,550	1,220
29	3,430	1,820	4,720	4,610	3,800	4,720	2,690	2,330	1,700	1,910	1,190	1,070
30	2,840	6,450	6,060	3,520	-	6,700	2,540	2,620	1,760	2,000	1,360	1,010
31	2,540	-	4,950	3,080	-	5,060	-	4,970	-	1,760	1,410	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	81,329	8,580	644	2,624	4.52	5.21	161,300
November	99,670	7,470	1,640	3,322	5.73	6.39	197,700
December	197,670	11,000	2,840	6,376	11.0	12.67	392,100
Calendar year 1939	1,271,596	19,000	644	3,484	6.01	81.50	2,522,000
January	90,880	7,200	1,420	2,932	5.06	5.83	180,300
February	103,460	8,040	2,000	3,568	6.15	6.63	205,200
March	136,690	7,200	2,620	4,409	7.60	8.76	271,100
April	83,280	3,990	2,200	2,776	4.79	5.34	165,200
May	116,770	6,930	2,130	3,767	6.49	7.49	231,600
June	71,030	3,860	1,640	2,368	4.08	4.55	140,900
July	51,200	2,000	1,290	1,652	2.85	3.28	101,600
August	41,349	1,760	966	1,334	2.30	2.65	82,010
September	35,571	1,760	756	1,186	2.04	2.28	70,550
Water year 1939-40	1,108,899	11,000	644	3,030	5.22	71.08	2,200,000

Peak discharge.- Dec. 8 (3:40 a.m.) 13,200 sec.-ft.; Dec. 15 (5:30 p.m.) 14,200 sec.-ft.; Dec. 20 (4:40 p.m.) 13,500 sec.-ft.

3-233 April 1936 UNITED STATES DEPARTMENT OF THE INTERIOR Geological Survey

South Fork of Nooksack River near Wickersham, Wash.

Location.- Water-stage recorder, lat. 48°39'50", long. 122°07'50", in lot 2, sec. 26, T. 37 N., R. 5 E., three-quarters of a mile upstream from Skookum Creek and 4 miles east of Wickersham.

Drainage area.- 103 square miles.

Records available.- May 1934 to September 1940.

Extremes.- Maximum discharge during year, 6,380 second-feet Dec. 15 (gage height, 7.81 feet); minimum, 67 second-feet Sept. 24, 25, 26 (gage height, 2.12 feet).
1934-40: Maximum discharge, 12,900 second-feet Oct. 28, 1937 (gage height, 10.70 feet); minimum, that of Sept. 24, 25, 26, 1940.

Remarks.- Records good. No diversion or regulation.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 15				Dec. 15 to Sept. 30			
2.3	100	4.5	1,460	2.3	100	4.5	1,340
2.6	178	5.0	1,990	2.6	178	5.0	1,860
3.0	330	5.5	2,590	3.0	315	5.5	2,450
3.5	590	6.0	3,270	3.5	550	6.0	3,130
4.0	980			4.0	880		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	92	455	1,150	1,440	608	1,590	996	2,450	608	156	156	122
2	92	475	2,920	1,860	501	1,800	805	1,750	486	153	161	96
3	92	542	1,260	1,490	456	1,010	696	1,140	441	147	124	98
4	898	445	1,870	1,070	579	1,830	614	978	377	145	107	92
5	648	395	1,150	880	880	1,540	573	969	347	134	98	88
6	694	538	1,740	716	3,150	987	539	842	335	129	98	84
7	362	2,120	1,990	608	1,980	1,640	664	709	614	127	94	80
8	254	1,820	2,220	528	1,390	1,540	1,090	784	427	124	90	80
9	258	1,230	1,510	491	3,400	996	1,140	936	390	122	88	78
10	258	1,410	1,990	466	2,370	805	835	1,120	377	119	90	77
11	200	1,660	1,360	418	1,340	702	709	944	386	117	88	77
12	178	1,360	980	386	969	620	842	716	381	114	86	78
13	161	1,370	805	364	858	556	1,030	608	377	119	84	98
14	147	1,410	2,180	351	735	639	791	620	311	122	82	84
15	142	890	3,430	355	639	1,030	633	639	281	112	80	78
16	134	697	1,970	446	585	2,160	556	585	274	110	78	77
17	257	616	2,330	441	573	1,130	512	573	252	110	77	77
18	224	662	1,490	418	523	835	728	620	249	107	75	80
19	1,400	530	1,330	373	550	709	585	651	260	100	75	78
20	1,580	455	3,130	340	496	658	523	567	249	100	75	74
21	2,080	668	1,970	319	446	645	486	573	212	100	75	72
22	1,460	1,080	1,270	304	413	620	501	664	200	98	77	70
23	1,560	642	936	285	418	602	573	683	194	94	78	69
24	1,220	514	742	270	399	1,710	639	585	203	94	77	67
25	741	445	645	263	418	1,030	556	491	203	94	75	67
26	773	400	567	296	788	969	573	390	190	100	75	67
27	758	366	501	1,340	777	1,540	496	340	175	119	143	96
28	1,360	339	816	1,000	728	1,750	770	347	164	137	170	86
29	789	453	1,120	1,260	1,050	1,440	728	381	161	153	102	77
30	655	2,580	1,140	872	-	2,320	718	404	158	184	90	74
31	548	-	1,080	735	-	1,390	-	1,020	-	178	98	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	20,015	2,080	92	646	6.27	7.23	39,700
November	26,567	2,580	339	886	8.60	9.59	52,690
December	47,592	3,430	501	1,535	14.9	17.18	94,400
Calendar year 1939	292,918	6,000	92	803	7.80	105.78	581,000
January	20,385	1,860	263	658	6.39	7.36	40,430
February	28,019	3,400	399	966	9.38	10.12	55,570
March	36,793	2,320	556	1,187	11.5	13.28	72,980
April	20,901	1,140	486	697	6.77	7.55	41,460
May	24,079	2,450	340	777	7.54	8.69	47,760
June	9,282	614	158	309	3.00	3.35	18,410
July	3,818	184	94	123	1.19	1.38	7,570
August	2,966	170	75	95.7	.929	1.07	5,880
September	2,441	122	67	81.4	.790	.88	4,840
Water year 1939-40	242,858	3,430	67	664	6.45	87.68	481,700

Peak discharge.- Dec. 15 (1 p.m.) 6,380 sec.-ft.; Dec. 20 (1 to 2 p.m.) 4,000 sec.-ft.; Feb. 6 (6 p.m.) 5,350 sec.-ft.; Feb. 9 (7:40 to 8:20 p.m.) 4,970 sec.-ft.

COLUMBIA RIVER MAIN STEM

Columbia River at Birchbank, British Columbia
(International gaging station)

Location.- Water-stage recorder, lat. 49°10', long. 117°43', at Birchbank, British Columbia, 7 miles upstream from Trail, 11 miles downstream from Kootenai River, and 17 miles upstream from international boundary. Datum of gage is 1,338.00 feet above mean sea level (levels by Geodetic Survey of Canada in 1930).

Drainage area.- 34,000 square miles.

Records available.- October 1937 to September 1940. April 1913 to September 1937 at site at Trail, 7 miles downstream, published as Columbia River at Trail, British Columbia.

Average discharge.- 27 years, 70,470 second-feet.

Extremes.- Maximum discharge during year, 197,000 second-feet May 29 (gage height, 34.06 feet); minimum, 18,000 second-feet Feb. 14 (gage height, 5.78 feet).

1913-40: Maximum discharge observed, 312,000 second-feet June 14, 15, 1913 (gage height, 41.6 feet, site and datum then in use); minimum observed, 8,940 second-feet Feb. 3, 1937 (gage height, 6.27 feet, site and datum then in use).

Remarks.- Records excellent except those for period of no gage-height record, which are good. Small amount of water diverted above station for irrigation. Slight fluctuation at low water caused by power plant on Kootenai River. Flow affected by natural storage in numerous lakes and by artificial regulation in Kootenai River Basin.

Cooperation.- This station is one of the international gaging stations maintained by Canada under agreement with the United States.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

6	18,900	15	61,400	27	138,000
8	27,200	18	77,900	30	162,000
10	36,400	21	95,900	34	196,000
12	46,300	24	116,000		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	39,700	55,800	27,200	25,000	20,200	19,300	36,500	58,900	193,000	160,000	111,000	67,000
2	39,000	55,900	27,000	24,700	19,700	20,000	36,800	60,700	193,000	157,000	110,000	66,700
3	38,200	55,800	27,200	24,500	19,700	21,000	37,100	63,000	193,000	155,000	108,000	66,100
4	37,300	55,000	26,700	23,500	20,100	21,400	37,800	64,900	193,000	154,000	105,000	65,400
5	37,300	50,400	26,500	24,100	19,900	22,900	37,600	66,200	192,000	152,000	102,000	65,700
6	36,400	40,800	26,500	24,200	20,000	22,000	37,500	67,300	190,000	150,000	98,400	66,600
7	35,600	40,800	26,600	24,000	20,100	22,600	37,100	68,500	187,000	147,000	94,500	66,600
8	34,900	41,200	26,600	23,700	19,900	23,800	37,200	70,000	183,000	143,000	89,600	66,500
9	33,900	40,600	29,800	23,100	19,900	24,500	37,700	71,600	178,000	139,000	84,400	66,200
10	32,900	40,000	30,500	22,100	20,000	25,600	37,700	75,400	174,000	135,000	83,500	65,900
11	32,000	39,500	31,800	22,900	20,000	25,000	38,100	80,800	172,000	131,000	83,300	65,600
12	30,100	39,100	33,400	23,100	19,900	20,800	37,900	85,700	169,000	127,000	84,600	65,700
13	30,600	38,300	34,000	22,900	19,300	19,500	38,600	90,800	171,000	127,000	84,500	66,300
14	30,400	37,400	34,000	22,800	18,700	19,900	39,500	96,200	173,000	126,000	84,000	68,600
15	30,100	36,600	34,700	22,600	19,100	21,200	40,100	101,000	176,000	127,000	84,100	71,700
16	29,500	35,100	36,600	21,700	19,600	21,700	40,500	106,000	178,000	126,000	82,500	72,800
17	29,000	35,800	37,200	21,000	19,200	22,500	40,900	110,000	177,000	125,000	80,400	72,800
18	28,900	32,500	38,300	22,200	19,000	21,700	42,300	113,000	174,000	126,000	78,300	73,300
19	28,700	a32,200	40,700	21,600	19,900	20,900	43,600	117,000	173,000	127,000	75,600	74,100
20	28,500	a31,800	42,000	21,600	20,000	20,500	44,300	121,000	172,000	127,000	73,500	73,300
21	28,500	a31,600	42,000	21,900	19,900	20,600	45,200	126,000	174,000	125,000	72,100	71,100
22	28,900	a31,300	39,300	21,600	19,700	20,800	46,400	132,000	176,000	124,000	71,600	63,100
23	32,200	a31,200	35,200	20,400	18,900	21,000	48,000	140,000	176,000	124,000	71,600	61,100
24	40,600	a31,000	28,500	19,700	19,600	22,200	49,400	150,000	175,000	122,000	70,100	59,000
25	48,000	a30,800	27,300	19,100	19,700	22,700	50,700	161,000	172,000	120,000	65,100	57,300
26	50,700	a30,400	26,800	20,100	19,600	23,500	52,300	175,000	170,000	119,000	64,700	55,200
27	52,100	29,000	26,700	20,700	19,600	24,600	54,200	186,000	169,000	117,000	65,200	54,000
28	55,000	27,800	26,000	20,600	19,500	25,500	56,000	193,000	168,000	115,000	68,200	53,200
29	57,400	27,800	25,500	20,600	19,400	26,900	57,000	196,000	167,000	113,000	68,500	52,200
30	57,800	27,400	25,900	20,200	-	30,100	58,200	195,000	164,000	113,000	68,100	51,300
31	57,200	-	25,300	20,300	-	35,900	-	193,000	-	112,000	67,600	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	1,171,400	57,800	28,500	37,800	1.11	1.23	2,320,000
November	1,132,900	55,900	27,400	37,800	1.11	1.24	2,250,000
December	966,100	42,000	25,300	31,200	.92	1.03	1,920,000
Calendar year 1939	23,782,000	195,000	12,900	65,200	1.92	26.04	47,200,000
January	686,500	25,000	19,100	22,100	.65	.73	1,360,000
February	570,100	20,200	18,700	19,700	.58	.64	1,130,000
March	710,600	35,900	19,300	22,900	.67	.77	1,410,000
April	1,296,200	58,200	36,500	43,200	1.27	1.42	2,570,000
May	3,535,000	196,000	58,900	114,000	3.35	3.88	7,010,000
June	5,322,000	193,000	164,000	177,000	5.21	5.81	10,600,000
July	4,065,000	160,000	112,000	131,000	3.85	4.44	8,060,000
August	2,550,000	111,000	64,700	82,300	2.42	2.79	5,060,000
September	1,944,400	74,100	51,300	64,800	1.91	2.13	3,860,000
Water year 1939-40	23,950,200	196,000	18,700	65,400	1.92	26.18	47,600,000

a No gage-height record; discharge computed on basis of gage-height records for former station at Trail, British Columbia.

Columbia River at international boundary

(International gaging station)

Location.- Water-stage recorder, lat. 49°00'03", long. 117°37'40", in SE¼ sec. 4, T. 40 N., R. 41 E., at the international boundary, half a mile downstream from Pend Oreille River. Datum of gage is at mean sea level (Bureau of Reclamation 1937 datum). Prior to Apr. 27, 1939, staff gage at same site and datum.

Drainage area.- 59,700 square miles.

Records available.- March 1938 to September 1940.

Extremes.- 1938: Maximum discharge observed during period March to September, 325,200 second-feet June 27, 28 (elevation, 1,324.00 feet); minimum observed, 37,000 second-feet Mar. 26 (elevation, 1,293.52 feet).

1938-39: Maximum discharge during water year, 259,600 second-feet May 31, June 1 (elevation, 1,318.95 feet); minimum observed, 21,600 second-feet Feb. 10 (elevation, 1,290.12 feet).

1939-40: Maximum discharge during water year, 248,000 second-feet May 30 (elevation, 1,317.98 feet); minimum, 25,200 second-feet Jan. 26 (elevation, 1,290.92 feet).

Flow probably as low as 12,900 second-feet occurred during January 1930, based on information from other gaging stations (elevation, 1,288.1 feet, from rating curve extended below 1,291.6 feet).

Remarks.- Records excellent except those for periods of no gage-height record, which are good. Many diversions above gage for irrigation but quantity very small percentage of flow past gage. Some fluctuation at low stage caused by power plant on Kootenai River. Flow affected by natural storage in several lakes and by artifical regulation in Kootenai and Pend Oreille River Basins.

Cooperation.- This is one of the international gaging stations maintained by the United States under agreement with Canada.

Rating table, Mar. 26, 1938, to Sept. 30, 1940 (gage height, in feet, and discharge, in second-feet)

1,290.5	23,300	1,294	39,200	1,302	86,100	1,310	157,300
1,291	25,500	1,296	49,200	1,304	101,300	1,314	200,700
1,292	30,000	1,298	60,200	1,306	118,500	1,318	248,200
1,293	34,600	1,300	72,400	1,308	137,300	1,322	299,200

Discharge, in second-feet, 1938-40

1938

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						-	38,500	125,200	303,100	310,200	138,300	68,300
2						-	37,700	129,300	308,700	303,800	134,300	68,300
3						-	38,100	132,300	311,600	296,000	130,100	68,900
4						-	37,300	137,300	314,800	287,500	124,400	69,600
5						-	40,100	140,300	316,100	279,000	119,600	71,100
6						-	40,800	144,300	317,400	270,000	115,100	74,400
7						-	40,800	145,800	318,000	261,800	111,000	g74,400
8						-	42,600	147,800	319,500	256,600	107,000	76,400
9						-	43,000	148,800	316,800	249,400	103,000	76,000
10						-	43,700	149,300	315,400	244,800	99,100	76,000
11						-	44,600	149,300	312,800	238,600	95,200	g75,700
12						-	45,300	150,800	309,600	231,400	91,800	74,000
13						-	46,300	151,300	305,000	224,800	88,200	73,400
14						-	48,200	152,800	302,400	218,800	86,600	71,800
15						-	49,100	155,800	299,800	212,200	85,000	70,500
16						-	51,300	157,300	298,600	205,100	83,200	69,600
17						-	55,400	157,800	298,800	199,600	80,800	68,600
18						-	g63,100	159,300	298,600	195,000	80,800	66,400
19						-	g69,200	160,800	296,000	190,200	80,400	67,700
20						-	g79,400	162,800	297,200	187,000	78,700	67,700
21						-	81,300	166,000	299,800	182,000	77,400	67,700
22						-	85,700	172,100	303,100	177,400	77,000	64,000
23						-	90,800	179,800	307,300	173,200	76,700	63,700
24						-	g90,500	g192,400	313,800	169,900	75,200	64,000
25						-	98,100	g205,100	320,000	166,600	74,000	63,400
26						37,000	101,300	g221,200	323,900	162,800	72,700	64,000
27						a37,200	104,600	g236,800	325,200	159,300	71,500	63,700
28						37,500	107,500	g252,400	324,900	154,100	70,800	63,700
29						g39,000	112,300	271,200	321,300	150,100	71,100	62,500
30						37,800	118,000	g287,500	315,800	146,100	68,900	61,900
31						38,300	-	g297,200	-	142,300	68,300	-

a No gage-height record; discharge interpolated.
g Discharge computed from graph based on gage readings.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Discharge, in second-feet, of Columbia River at international boundary, 1938-40--Continued

1938-39

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	61,400	38.300	29,600	27,000	28,300	26,000	38,500	115,000	259,000	200,700	141,000	79,200
2	60,500	37,000	29,200	27,800	28,200	25,800	41,200	122,700	257,200	203,300	140,500	77,400
3	60,200	37,700	28,900	28,100	a28,200	25,500	42,800	133,300	253,000	205,100	138,200	76,100
4	60,200	37,600	28,200	28,000	a28,300	26,000	45,200	143,400	247,700	207,300	135,000	75,000
5	59,900	37,000	28,500	28,400	28,300	25.700	45,300	152,800	241,100	206,400	132,200	73,100
6	59,900	36,500	28,600	28,400	27,900	25,600	46,100	161,200	234,800	204,200	129,500	71,500
7	59,300	36,300	29,300	28,600	27,800	25,000	47,700	168,600	229,000	201,600	126,200	71,800
8	57,000	36,300	29,600	28,300	27,800	24,700	48,500	175,200	223,700	198,200	124,700	73,700
9	55,100	35,700	30,300	28,800	g24,600	24,500	50,500	179,800	219,400	194,600	120,200	73,800
10	54,000	35,000	29,400	28,800	g21,800	24,400	50,100	182,400	215,100	191,400	114,600	73,000
11	53,700	34,300	28,100	28,800	g22,900	24,100	51,500	184,100	211,700	188,000	109,700	f71,600
12	52,400	33,800	28,200	28,700	g23,800	24,000	52,500	185,000	207,900	185,700	105,100	f70,300
13	53,700	32,800	28,900	28,600	25,100	23,700	52,800	186,000	205,100	184,300	97,500	a68,400
14	52,400	33,000	28,000	28,800	25.600	23,800	54,100	188,500	202,900	183,100	93,600	a66,200
15	49,600	33,500	28,900	29,000	26,400	23,400	55,700	193,700	199,800	181,300	92,000	a63,500
16	48,600	33,400	28,000	29,100	25,800	23,200	56,500	200,800	197,200	179,500	91,300	a61,000
17	47,900	32,900	28,000	29,100	25,800	23,200	57,600	209,000	195,300	176,800	90,800	a58,800
18	47.000	32,800	27,300	29,300	26,000	23,200	58,700	217,700	192,600	174,200	89,500	a57,200
19	45,900	32,700	27,600	29,000	26,200	23,300	60,900	227,300	191,000	170,300	87,700	a56,000
20	45,100	32,500	27,600	28,300	26,200	23,500	63,100	233,600	191,000	165,100	86,300	a54,500
21	44,300	32,200	27,600	27,600	26,400	24,000	66,300	238,100	191,900	159,600	84,800	a53,500
22	43,900	32,200	27,100	27,700	26,600	24,800	69,900	241,200	193,800	154,000	82,900	f52,400
23	42,700	31,000	26,700	28,100	26,500	25,800	75,000	242,600	195,500	148,600	81,500	51,400
24	41,700	31,300	26,600	27,900	26,300	27,700	77,400	242,200	198,300	144,600	80,100	50,800
25	40,100	30,800	26,400	28,000	26,400	29,500	80,400	241,600	201,500	141,000	78,500	49,900
26	39,700	30,500	25,600	27.600	26,000	30,800	83,900	242,300	202,600	138,000	78,200	49,800
27	39,400	29,900	25,200	28,300	26,000	31,400	f87,200	243,500	202,500	138,100	80,000	49,900
28	39,200	29,800	g24,000	28,500	25,900	34,000	91,900	244,500	201,100	138,300	80,000	49,500
29	39,700	29,800	26,000	28,300	-	34,500	98,000	247,700	199,900	138,700	80,600	49,000
30	39,000	29,700	28,500	28,800	-	35,000	110,600	253,600	199,700	139,800	80,200	48,300
31	38,800	-	g28,200	28,500	-	36,200	-	258,200	-	141,400	80,100	-

a No gage-height record; discharge interpolated or computed on basis of records for station at Kettle Falls.
f Fragmentary gage-height record; discharge computed from partly estimated gage heights.
g Discharge computed from graph based on gage readings.

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	48,100	65,100	35,100	35,300	28,900	30,800	a58.000	92,700	244,600	182,800	120,300	72,800
2	47,700	63,700	35,300	35,200	28,900	31,700	f60,100	95,200	243,900	178,500	118.500	72,600
3	46,900	63,400	35,200	35,200	28,600	33,600	60,200	99,800	243,000	175,400	116,300	72,000
4	46,100	63,300	34,800	34,100	29,000	34,200	61,000	102,300	242,600	173,500	113,400	71,100
5	46,200	62,400	34,600	34,200	28,900	36,400	61,500	104,300	240,800	171,200	110,000	71,800
6	45,600	59,400	35,000	34,200	29,000	35,400	61,600	105,500	237,400	168,200	106,600	72,900
7	44,700	49,300	34,800	33,800	29,500	35,900	61,600	107,000	234,400	164,400	102,200	73,100
8	44,000	49,300	35,200	33,700	29,600	37,600	62,300	109,100	229,200	160,100	97,000	72,900
9	43,000	49,900	38,800	33,600	29,900	38,300	63,400	111,600	223,500	155,700	91,300	72,900
10	42,200	49,300	39,700	32,400	30,200	39,600	64,000	116,800	218,400	151,800	90,200	72,400
11	41,000	48,800	41,700	32,900	30,100	39,600	64,600	124,800	214,800	147,000	89,400	72,200
12	39,300	48,500	43,100	32,700	29,800	35,100	64,600	130,300	212,200	143,400	91,100	72,200
13	39,700	48,100	43,900	32,400	29,400	33,200	65,300	134,700	212,900	142,300	91,000	72,600
14	39,500	47,400	44,000	32,300	28,500	33,200	67,300	140,600	212,600	141,000	90,100	74,600
15	39,400	46,600	44,800	32,000	29,200	34,700	67,700	147,100	214,200	141,300	90,200	78,000
16	38,800	45,800	47,200	31,400	29,300	35,200	67,900	152,700	214,700	140,800	88,600	78,900
17	38,400	44,200	47,900	29,900	29,300	36,200	68,200	156,800	212,600	138,800	86,400	78,900
18	38,200	44,800	48,800	31,600	28,800	35,600	69,700	161,200	210,400	138,800	84,400	79,500
19	37,900	41,400	51,100	30,700	30,000	34,800	71,400	166,900	207,600	138,800	82,400	80,500
20	37,800	40,400	52,600	30,300	29,900	34,200	72,400	171,900	206,300	138,600	80,600	79,800
21	37,600	39,300	52,600	30,000	29,700	34,600	73,500	177,400	206,000	136,800	79,100	78,000
22	38,100	38,800	50,500	28,800	29,400	35,100	75,400	183,900	207,300	135,500	78,900	69,800
23	39,800	38,700	46,800	27,700	28,900	35,400	78,100	192,700	206,800	134,500	78,200	68,300
24	46,300	38,600	40,400	26,500	29,400	37,000	80,500	202,500	204,700	132,400	77,000	66,200
25	53,600	38,100	38,500	25,900	29,300	38,300	82,200	214,500	201,800	130,000	75,500	64,600
26	57,900	38,000	37,700	25,500	29,500	a40,000	84,500	227,100	198,500	128,500	73,100	62,100
27	59,100	36,700	37,200	25,800	29,600	a42,000	87,000	236,300	196,000	126,800	72,300	60,800
28	60,200	35,600	36,600	26,100	30,000	a46,000	89,300	244,100	193,900	124,800	74,300	60,000
29	63,200	35.700	36,500	27,600	30,400	a48,000	90,800	247,200	191,700	123,400	74,600	59,000
30	65,100	35,300	36,400	28,300	-	a49,000	91,900	246,900	187,500	122,300	74,300	57,900
31	64,900	-	35,700	28,500	-	a54,000	-	245,600	-	121,400	73,600	-

a No gage-height record; discharge computed on basis of records for station at Kettle Falls.
f Fragmentary gage-height record; discharge computed from partly estimated gage height.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geolog. al Survey

31177 O U S GOVERNMENT PRINTING OFFICE 1937

Monthly discharge, in second-feet, of Columbia River at international boundary, 1938-40

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
March 26-31, 1938	226,800	-	-	37,800	0.633	0.14	449,900
April	1,949,100	118,000	37,300	64,970	1.09	1.21	3,866,000
May	5,440,100	297,200	125,200	175,500	2.94	3.39	10,790,000
June	9,315,300	325,200	296,000	310,500	5.20	5.80	18,480,000
July	6,645,600	310,200	142,300	214,400	3.59	4.14	13,180,000
August	2,836,200	138,300	68,300	91,490	1.53	1.77	5,626,000
September	2,067,400	76,400	61,900	68,910	1.15	1.29	4,101,000
The period	-	-	-	-	-	-	56,490,000
October 1938	1,532,300	61,400	38,800	49,430	.828	.95	3,039,000
November	1,006,300	38,300	29,700	33,540	.562	.63	1,996,000
December	864,100	30,300	24,000	27,870	.467	.54	1,714,000
Calendar year	-	-	-	-	-	-	-
January 1939	880,200	29,300	27,000	28,390	.475	.55	1,746,000
February	735,100	28,300	21,800	26,250	.440	.46	1,458,000
March	822,300	36,200	23,200	26,530	.444	.51	1,631,000
April	1,859,900	110,600	38,500	62,000	1.04	1.16	3,689,000
May	6,255,600	258,200	115,000	201,800	3.38	3.90	12,410,000
June	6,361,300	259,000	191,000	212,000	3.55	3.96	12,620,000
July	5,384,100	207,300	138,100	173,700	2.91	3.35	10,680,000
August	3,132,500	141,000	79,200	101,000	1.69	1.95	6,213,000
September	1,876,600	79,200	48,300	62,550	1.05	1.17	3,722,000
Water year 1938-39	30,710,300	259,000	21,800	84,140	1.41	19.13	60,920,000
October 1939	1,430,300	65,100	37,600	46,140	.773	.89	2,837,000
November	1,405,900	65,100	35,300	46,860	.785	.88	2,789,000
December	1,272,500	52,600	34,600	41,050	.683	.79	2,524,000
Calendar year 1939	31,416,300	259,000	21,800	86,070	1.44	19.57	62,320,000
January 1940	958,600	35,300	25,500	30,920	.518	.60	1,901,000
February	853,000	30,400	28,500	29,410	.493	.53	1,692,000
March	1,164,700	54,000	30,800	37,570	.629	.73	2,310,000
April	2,126,000	91,900	58,000	70,870	1.19	1.32	4,217,000
May	4,949,500	247,200	92,700	159,700	2.68	3.08	9,817,000
June	6,470,300	244,600	187,500	215,700	3.61	4.03	12,830,000
July	4,508,800	182,800	121,400	145,400	2.44	2.81	8,943,000
August	2,763,900	120,300	71,100	89,160	1.49	1.72	5,482,000
September	2,138,400	80,600	57,900	71,280	1.19	1.33	4,241,000
Water year 1939-40	30,041,900	247,200	25,500	82,080	1.37	18.71	59,580,000

Columbia River at Kettle Falls, Wash.

Location.- Water-stage recorder, lat. 48°37'20", long. 118°07'00", in northwest corner lot 1, sec. 14, T. 36 N., R. 37 E., at Kettle Falls, 3¼ miles upstream from Colville River. Datum of gage is at mean sea level (subject to correction for general adjustment of 1929).
Drainage area.- 64,500 square miles.
Records available.- April 1913 to September 1940.
Average discharge.- 27 years, 98,750 second-feet.
Extremes.- Maximum discharge during year, 278,200 second-feet June 2 (elevation, 1,190.45 feet); minimum, 26,400 second-feet Jan. 27 (elevation, 1,167.67 feet).
1913-40: Maximum discharge, 468,000 second-feet June 14, 15, 1913 (gage height, 34.2 feet, from floodmarks, referred to U. S. weather Bureau gage at Marcus); minimum, 13,000 second-feet (estimated because of ice effect), Jan. 18-21, 1930, Jan. 31, 1937.
Maximum discharge known, 700,000 second-feet during flood of 1894 (based on information from several sources).
Remarks.- Records excellent except those for periods of ice effect or no gage-height record, which are good. Many diversions upstream from gage for irrigation, but quantity diverted is very small percentage of flow past gage. Slight fluctuation at extreme low water caused by power plant on Kootenai River. Flow affected by natural storage in many lakes and by artificial regulation in Kootenai and Pend Oreille River basins.

Rating table, water year 1939-40 except period of ice effect (gage height, in feet, and discharge, in second-feet)

1,168	27,900	1,173	58,000	1,180	123,000
1,169	32,700	1,174	65,200	1,182	146,500
1,170	38,100	1,175	73,400	1,185	185,000
1,171	44,400	1,176	82,300	1,188	232,600
1,172	51,200	1,178	101,600	1,190	269,500

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	49,500	65,700	35,800	36,300	a29,600	31,800	66,200	106,100	273,500	187,800	123,600	74,700
2	49,300	65,000	35,700	36,200	a29,600	32,400	67,900	107,600	276,600	183,400	122,100	73,900
3	48,500	64,200	35,800	36,200	a29,500	34,200	68,200	111,300	275,300	179,600	119,900	73,600
4	47,600	64,400	35,400	*35,800	a29,800	34,800	68,200	116,400	275,300	177,600	117,400	72,600
5	47,400	63,500	35,200	34,400	f30,000	36,800	69,400	119,100	272,900	176,800	113,900	72,700
6	46,800	62,600	35,100	35,000	30,000	36,700	69,600	119,200	266,100	173,700	110,700	73,700
7	45,700	62,800	35,300	34,800	30,200	36,600	69,900	120,500	f260,000	170,400	106,600	74,000
8	44,900	60,400	35,400	34,400	30,600	38,200	71,000	122,000	f257,600	166,000	102,300	73,800
9	44,000	61,300	38,000	34,300	30,400	39,100	73,000	124,200	250,100	161,000	95,000	73,700
10	43,300	60,800	39,800	33,200	30,700	40,100	74,000	129,300	243,000	156,900	93,400	73,600
11	42,200	60,000	41,900	33,000	30,700	40,800	74,700	137,200	236,100	152,400	92,200	73,100
12	40,500	49,300	43,800	33,200	30,400	37,600	74,900	149,000	231,700	148,000	93,600	73,000
13	40,400	49,100	44,900	32,900	30,200	34,400	75,200	153,500	230,800	146,400	93,800	73,500
14	40,000	48,700	45,200	32,900	29,400	34,000	78,400	156,400	229,400	144,700	93,000	74,700
15	40,100	47,300	45,800	32,800	29,400	35,100	80,300	160,900	229,200	144,500	93,200	79,000
16	39,600	46,500	48,000	32,300	29,500	35,800	79,900	166,000	229,000	144,300	91,900	80,400
17	39,400	45,500	49,400	31,000	30,300	36,800	79,600	169,600	226,300	142,400	89,900	80,900
18	38,900	45,400	49,900	31,300	29,400	37,000	80,600	173,000	223,500	141,900	87,600	81,100
19	38,600	42,200	52,200	31,400	30,500	36,100	82,800	179,000	219,000	141,900	85,300	82,100
20	38,500	41,000	53,800	31,100	30,700	35,700	84,200	185,500	216,500	141,600	83,200	81,800
21	38,200	40,000	54,300	29,700	30,600	36,100	85,100	191,200	215,300	140,400	81,600	80,900
22	38,600	39,200	53,400	b28,900	30,300	36,600	86,500	197,000	215,800	138,800	80,200	73,200
23	39,500	38,900	50,100	b28,100	30,000	37,500	89,300	205,100	215,300	138,000	80,100	70,000
24	44,400	38,900	44,500	b27,500	29,800	39,500	92,600	217,000	213,300	136,200	80,000	67,400
25	51,800	38,800	39,900	b27,200	30,300	40,600	94,800	231,500	208,900	133,900	74,500	65,900
26	57,400	38,400	38,700	b26,700	30,200	42,600	97,400	247,600	204,500	132,200	72,800	63,700
27	59,600	37,800	38,100	26,500	30,300	48,000	100,100	256,300	201,200	131,000	72,600	62,300
28	60,700	36,400	37,600	26,700	30,700	52,500	103,000	262,300	199,400	128,700	75,100	61,100
29	62,800	37,000	37,300	27,700	31,300	54,600	104,900	267,600	197,300	127,100	76,000	60,300
30	65,400	36,300	37,300	f28,700	-	55,200	105,800	269,500	192,900	126,100	76,000	59,300
31	65,900	-	37,000	a29,500	-	62,500	-	271,000	-	124,600	75,500	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	1,449,500	65,900	38,200	46,760	0.725	0.84	2,875,000
November	1,437,400	65,700	36,300	47,910	.743	.83	2,851,000
December	1,304,600	54,300	35,100	42,080	.652	.75	2,588,000
Calendar year 1939	33,074,600	279,000	22,700	90,620	1.40	19.08	65,610,000
January	979,700	36,300	26,500	31,600	.490	.56	1,943,000
February	874,400	31,300	29,400	30,150	.467	.50	1,734,000
March	1,229,700	62,500	31,800	39,670	.615	.71	2,439,000
April	2,447,500	105,800	66,200	81,580	1.26	1.41	4,855,000
May	5,421,900	271,000	106,100	174,900	2.71	3.13	10,750,000
June	6,986,100	276,600	192,900	232,900	3.61	4.03	13,860,000
July	4,638,300	187,800	124,600	149,600	2.32	2.67	9,200,000
August	2,853,000	123,600	72,600	92,030	1.43	1.65	5,659,000
September	2,180,000	82,100	59,300	72,670	1.13	1.26	4,324,000
Water year 1939-40	31,802,100	276,600	26,500	86,890	1.35	18.34	63,080,000

*Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for station at international boundary.
b Stage-discharge relation affected by ice.
f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

COLUMBIA RIVER MAIN STEM

Columbia River at Grand Coulee, Wash.

Location.- Water-stage recorder, lat. 47°58'00", long. 118°58'45", opposite lot 4, sec. 36, T. 29 N., R. 30 E., in pier 3 of highway bridge at Grand Coulee, 2,500 feet downstream from Grand Coulee Dam and 14 miles upstream from Nespelem River. Datum of gage is at mean sea level (subject to correction for general adjustment of 1929).

Drainage area.- 74,100 square miles.

Records available.- June to December 1923 and June 1928 to September 1940. April 1913 to June 1923 and January 1924 to May 1928 (monthly discharge only).

Average discharge.- 27 years, 107,200 second-feet (adjusted for storage in Columbia River Reservoir beginning October 1939).

Extremes.- Maximum discharge during year, 265,600 second-feet June 5, 6 (elevation, 965.3 feet); minimum, 27,300 second-feet (regulated) Jan. 28, 29 (elevation, 935.08 feet).

1913-40: Maximum discharge, 492,000 second-feet June 15, 1913 (computed on basis of records of peak discharge at other gaging stations); minimum may have been less than 15,300 second-feet (estimated) in January or February 1937, when stage-discharge relation was affected by ice.

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

Remarks.- Records excellent. Diversion above station for irrigation is small percentage of flow past gage. Some diurnal fluctuation caused by power plants on Spokane River and by construction at Grand Coulee Dam. Flow affected by natural storage in many lakes and by artificial regulation in Kootenai, Pend Oreille and Spokane River Basins and at Grand Coulee Dam.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

935.1	27,400	941	55,800	952	132,900
936	31,000	942	61,600	954	150,300
937	35,400	944	74,000	956	168,300
938	40,000	946	87,300	958	187,000
939	45,000	948	101,300	961	217,000
940	50,200	950	116,900	964	250,000

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	52,400	65,400	37,000	40,000	32,900	53,900	f86,200	122,900	245,000	210,400	124,500	75,700
2	51,500	65,500	37,100	39,900	34,100	59,200	83,900	122,700	257,000	207,400	124,600	75,800
3	48,200	66,000	37,100	39,800	34,000	59,400	85,900	120,800	262,400	204,700	124,900	75,600
4	46,200	66,000	37,000	39,700	33,900	58,600	88,900	102,800	264,300	201,700	124,900	75,600
5	48,300	66,000	37,200	38,700	33,800	56,600	88,600	108,400	265,100	199,500	122,900	75,600
6	49,600	66,000	39,000	36,500	34,000	55,500	90,700	126,400	265,000	196,700	115,100	76,600
7	49,400	65,800	41,500	36,500	40,400	55,300	92,800	127,300	263,800	193,000	108,000	79,200
8	49,200	61,900	41,400	36,600	45,600	52,800	92,500	129,300	262,000	190,800	103,000	79,000
9	47,500	50,900	39,800	36,800	39,400	50,400	91,600	132,500	258,600	188,300	102,100	77,200
10	44,200	49,200	39,800	37,000	36,500	51,500	92,800	134,200	255,000	186,000	96,900	74,100
11	43,000	51,300	40,000	36,800	36,700	54,200	96,500	132,800	251,400	170,600	95,100	75,200
12	43,100	52,400	43,200	36,800	36,900	57,500	97,200	134,700	247,600	135,400	95,100	77,400
13	43,000	52,300	47,700	36,900	37,000	52,700	96,300	141,300	244,600	178,900	95,100	77,700
14	43,000	52,200	49,200	36,700	37,200	46,600	94,500	143,600	242,700	176,600	95,300	77,600
15	43,000	50,100	49,200	35,400	37,200	43,600	98,000	142,600	241,000	173,900	95,300	78,600
16	41,800	48,900	49,200	33,600	38,300	44,000	103,000	140,300	239,200	171,900	95,200	81,000
17	39,800	49,000	49,200	33,700	42,000	45,700	102,700	143,300	237,700	170,100	95,100	81,000
18	40,000	49,000	48,700	33,700	43,000	40,000	102,400	147,900	236,200	167,000	95,100	81,800
19	40,000	47,500	50,800	33,700	40,800	39,200	100,700	154,600	234,600	158,600	91,900	84,000
20	40,000	44,800	54,900	35,500	37,800	37,600	99,100	158,800	232,000	153,200	86,800	86,500
21	40,000	41,800	58,100	36,900	36,500	36,900	100,100	153,300	230,800	153,000	81,800	86,500
22	40,100	39,500	59,000	36,700	37,700	37,600	103,800	164,300	229,100	152,800	77,100	86,200
23	40,000	39,600	58,800	34,800	37,500	38,000	110,700	165,400	227,400	152,300	75,400	82,100
24	41,500	39,900	52,700	32,400	36,300	38,300	113,400	165,900	225,900	149,600	76,900	72,800
25	45,400	41,200	42,500	31,100	36,300	39,600	116,800	169,800	224,700	144,400	82,300	70,000
26	55,100	43,000	39,700	31,000	36,500	40,000	117,500	174,600	222,700	140,800	78,900	67,200
27	66,000	41,800	39,900	31,300	39,600	43,400	116,000	181,500	220,100	137,300	75,200	65,300
28	65,400	38,600	39,900	28,600	50,100	49,200	115,900	195,600	217,000	135,200	75,400	64,800
29	65,000	36,800	40,000	27,400	52,300	59,400	118,700	218,900	215,000	130,000	75,400	64,000
30	65,000	37,000	40,100	27,600	-	f82,000	121,600	227,600	212,600	123,800	75,500	61,200
31	65,200	-	40,200	29,600	-	f87,000	-	236,400	-	124,100	75,600	-

Month	Observed				Change in contents in Columbia River Reservoir (acre-feet)	Adjusted for change in reservoir contents			
	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	66,000	39,800	48,130	2,959,000	-4,800	2,954,000	48,040	0.648	0.75
November	66,000	36,800	50,650	3,014,000	+3,000	3,017,000	50,700	.684	.76
December	59,000	37,000	44,510	2,737,000	-6,600	2,730,000	44,400	.599	.69
Calendar year 1939	290,000	26,400	97,350	70,480,000	+172,600	70,650,000	97,590	1.32	17.88
January	40,000	27,400	34,890	2,146,000	+9,600	2,156,000	35,060	.473	.55
February	52,300	32,900	38,420	2,210,000	-9,600	2,200,000	38,250	.516	.56
March	87,000	36,900	50,510	3,106,000	+319,400	3,425,000	55,700	.752	.87
April	121,600	83,900	100,600	5,988,000	+31,000	6,019,000	101,200	1.37	1.53
May	236,400	102,800	152,300	9,363,000	+1,995,000	11,360,000	184,800	2.49	2.87
June	265,100	212,600	241,000	14,340,000	-308,600	14,030,000	235,800	3.18	3.55
July	210,400	123,800	167,000	10,270,000	-712,600	9,557,000	155,400	2.10	2.42
August	124,900	75,200	94,720	5,824,000	+33,200	5,857,000	95,250	1.29	1.49
September	86,500	61,200	76,180	4,533,000	-39,800	4,493,000	75,510	1.02	1.14
Water year 1939-40	265,100	27,400	91,590	66,490,000	+1,309,000	67,800,000	93,390	1.26	17.18

f Fragmentary gage-height record; discharge computed from partly or wholly estimated gage heights.

Columbia River at Trinidad, Wash.

Location.- Water-stage recorder, lat. 47°13'30", long. 120°00'50", in SE¼ sec. 13, T. 20 N., R. 22 E., half a mile southwest of Trinidad, 8½ miles downstream from Colockam Creek, and 12 miles downstream from Rock Island Dam. Datum of gage is 500 feet above mean sea level (subject to correction for general adjustment of 1929).

Drainage area.- 89,700 square miles.

Records available.- October 1930 to September 1940. January to December 1910 (gage heights only), and May 1913 to December 1916 at sites about 1 mile above and at highway bridge at Wenatchee, 24 miles upstream, published as Columbia River at Wenatchee, Wash.; January 1917, at Beverly, 29 miles downstream; January 1917 to September 1930, at site half a mile north of Vernita, 50 miles downstream, published as Columbia River at Vernita, Wash.

Average discharge.- 27 years, 117,200 second-feet (adjusted for Columbia River Reservoir beginning October 1939).

Extremes.- Maximum discharge during year, 274,000 second-feet June 5 (gage height, 41.88 feet); minimum, 26,000 second-feet (regulated) Jan. 31 (gage height, 17.43 feet).

1913-40: Maximum discharge, 528,000 second-feet June 15, 16, 1913 (gage height, 45.7 feet, site and datum then in use); minimum, 4,120 second-feet (regulated) Feb. 10, 1932 (gage height, 11.40 feet).

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

Remarks.- Records excellent. Considerable water diverted above gage for irrigation but quantity small in proportion to flow past gage. Some diurnal fluctuation caused by power plant at Rock Island and by construction at Grand Coulee Dam. Flow affected by natural storage in numerous lakes and by artificial regulation in Kootenai, Pend Oreille, Spokane, Okanogan, and Chelan River Basins, and at Grand Coulee Dam.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

17.5	26,300	20	39,200	23	58,100	28	97,000	34	159,000	41	259,000
18	28,600	21	45,300	24	65,000	30	116,000	36	184,000		
19	33,600	22	51,600	26	79,800	32	137,000	38	211,000		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56,900	69,200	42,800	45,500	31,100	55,500	92,500	131,000	250,000	213,000	126,000	77,600
2	56,800	69,600	42,800	45,300	34,200	56,500	91,700	132,000	258,000	210,000	126,000	77,100
3	56,000	69,800	43,100	45,200	36,600	61,800	89,600	132,000	269,000	208,000	126,000	77,600
4	53,200	70,000	42,800	45,100	36,200	62,600	91,100	129,000	271,000	205,000	126,000	77,700
5	51,000	69,900	42,600	44,700	36,900	62,200	93,500	116,000	272,000	200,000	126,000	78,000
6	52,500	70,200	42,800	44,100	37,100	60,700	93,700	121,000	271,000	198,000	124,000	78,100
7	54,100	69,800	44,100	41,400	36,900	59,000	95,200	136,000	271,000	196,000	118,000	78,800
8	53,900	70,000	47,400	41,500	40,300	58,600	97,000	137,000	269,000	193,000	111,000	81,200
9	53,900	68,100	48,900	41,000	48,200	56,800	97,400	140,000	266,000	190,000	106,000	81,200
10	52,400	57,600	48,000	41,400	43,900	52,800	96,900	145,000	264,000	188,000	105,000	79,900
11	49,700	54,800	47,700	41,200	39,600	54,200	98,000	153,000	263,000	185,000	100,000	76,800
12	47,400	56,200	47,000	41,000	39,300	56,800	101,000	153,000	260,000	167,000	98,400	77,500
13	47,300	58,200	48,900	40,000	40,000	60,500	103,000	155,000	257,000	146,000	97,900	80,300
14	47,100	58,000	54,100	41,200	39,900	57,100	103,000	159,000	255,000	177,000	97,700	80,400
15	47,200	57,500	55,900	40,700	39,600	51,100	103,000	160,000	251,000	175,000	97,500	80,200
16	47,300	56,000	56,500	40,200	39,900	47,500	106,000	159,000	248,000	173,000	97,400	81,200
17	46,500	54,300	56,400	37,800	40,600	48,100	111,000	156,000	245,000	171,000	97,400	83,100
18	44,200	54,100	56,200	37,000	44,000	50,300	111,000	159,000	243,000	169,000	97,100	83,200
19	44,300	54,100	55,200	37,000	45,500	46,100	111,000	164,000	241,000	166,000	97,000	83,800
20	44,600	53,400	56,800	36,700	44,300	43,800	110,000	172,000	246,000	159,000	94,300	86,200
21	44,700	50,300	60,100	37,500	41,400	42,900	107,000	177,000	239,000	155,000	89,500	88,300
22	44,400	47,400	63,500	40,000	39,100	41,500	109,000	182,000	234,000	154,000	85,000	88,500
23	44,400	45,400	64,700	40,400	39,900	41,800	114,000	186,000	231,000	153,000	80,400	88,400
24	44,300	45,100	63,200	39,300	40,800	42,600	121,000	190,000	229,000	153,000	78,200	84,800
25	44,900	45,100	60,800	36,900	39,000	44,400	123,000	192,000	229,000	150,000	79,700	76,100
26	49,000	45,400	50,400	35,200	38,900	45,900	127,000	192,000	229,000	147,000	81,500	73,000
27	56,700	48,000	45,500	34,900	39,300	48,000	127,000	193,000	225,000	143,000	81,300	71,000
28	68,900	47,000	45,500	34,200	41,300	50,300	125,000	196,000	221,000	140,000	77,900	69,200
29	69,400	44,100	45,300	32,900	51,700	55,500	126,000	211,000	218,000	137,000	77,700	68,400
30	68,900	41,200	45,300	30,600	-	64,000	129,000	230,000	215,000	132,000	77,500	67,400
31	68,800	-	45,100	29,800	-	86,200	-	239,000	-	126,000	77,600	-

Month	Observed				Change in contents in Columbia River Reservoir (acre-feet)	Adjusted for change in reservoir contents			
	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	69,400	44,200	51,960	3,195,000	-4,800	3,190,000	51,880	0.578	0.67
November	70,200	41,200	56,660	3,372,000	+3,000	3,375,000	56,720	.632	.71
December	64,700	42,600	50,630	3,113,000	-6,600	3,106,000	50,510	.563	.65
Calendar year 1939	297,000	27,000	101,900	73,780,000	+172,600	73,950,000	102,100	1.14	15.46
January	45,500	29,800	39,350	2,419,000	+9,600	2,429,000	39,500	.440	.51
February	51,700	31,100	40,190	2,312,000	-9,600	2,302,000	40,020	.446	.48
March	86,200	41,500	53,710	3,303,000	+319,400	3,622,000	58,910	.657	.76
April	129,000	89,600	106,800	6,354,000	+31,000	6,385,000	107,300	1.20	1.34
May	239,000	116,000	164,400	10,110,000	+1,995,000	12,100,000	196,800	2.19	2.52
June	272,000	215,000	248,000	14,760,000	-308,600	14,450,000	242,800	2.71	3.02
July	213,000	126,000	170,300	10,470,000	-712,600	9,757,000	158,700	1.77	2.04
August	126,000	77,500	98,550	6,060,000	+33,200	6,093,000	99,090	1.10	1.27
September	88,500	67,400	79,170	4,711,000	-39,800	4,671,000	78,500	.875	.98
Water year 1939-40	272,000	29,800	96,670	70,180,000	+1,309,000	71,480,000	98,460	1.10	14.95

Note.- Discharge Nov. 30 to Dec. 4 computed from gage-height graph estimated by power-plant officials from power-plant records.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

101605-0 U.S. GOVERNMENT PRINTING OFFICE 1936

Kootenai River at Newgate, British Columbia

(International gaging station)

Location.- Two staff gages, one on main river and one on slough, lat. 49°01', long. 115° 10', at highway bridges, 0.7 mile northwest of Newgate and 0.9 mile north of the international boundary, respectively.

Drainage area.- 7,660 square miles.

Records available.- October 1930 to September 1940.

Average discharge.- 10 years, 9,268 second-feet.

Extremes.- Maximum discharge observed during year, 43,600 second-feet May 26; minimum, 1,590 second-feet (estimated) Jan. 22, 23.
1931-40: Maximum discharge observed, 83,500 second-feet June 18, 1933; minimum observed, 994 second-feet Feb. 7, 1936.

Remarks.- Records good except those for periods of ice effect, which are fair. Gages read once daily. Records give total flow of main channel and slough.

Cooperation.- This station is one of the international gaging stations maintained by Canada under agreement with the United States.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,100	6,220	3,610	2,690	b2,360	2,400	4,210	10,500	31,400	12,700	8,070	4,470
2	3,960	5,900	3,610	3,110	b2,330	2,490	4,230	10,700	30,600	12,600	7,750	4,470
3	3,940	5,620	3,580	3,150	2,280	2,510	4,410	12,900	29,700	13,300	7,340	4,660
4	4,080	5,520	3,580	3,200	2,310	2,560	4,300	15,500	27,600	13.500	6,800	4,700
5	4,160	5,460	3,550	3,240	2,330	2,540	4,100	15,500	25,800	12,700	6,510	5,020
6	4,100	5,420	3,500	3,140	2,380	2,520	4,000	14,700	24,300	12,000	6,410	6,360
7	3,960	5,220	3,550	2,970	2,430	2,470	3,900	13,400	23,900	11,500	6,220	7,240
8	3,880	5,280	3,660	2,850	2,520	2,440	4,230	13,200	22,300	10,800	6,220	6,840
9	3,800	5,580	3,630	2,510	2,570	2,440	4,750	13,800	21,300	10,300	6,270	6,250
10	3,800	5,710	3,880	2,390	2,610	2,390	4,960	17,100	20,700	10,100	6,220	5,590
11	3,540	5,440	4,730	2,280	2,620	2,390	4,810	27,200	22,000	9,840	6,130	5,610
12	3,510	5,240	4,640	2,240	2,600	2,390	4,890	33,000	24,500	9,780	6,090	5,350
13	3,410	4,920	4,450	2,160	2,520	2,370	5,290	34,600	27,900	9,780	5,960	5,350
14	3,460	4,810	4,090	2,270	2,490	2,360	6,180	28,700	28,100	10,200	5,960	5,590
15	3,570	4,660	4,160	2,510	2,490	2,360	7,320	27,200	29,100	10,100	5,800	5,910
16	3,620	4,560	4,580	b2,630	2,450	2,490	7,200	25,400	23,400	9,850	5,490	6,600
17	3,590	4,450	4,900	b2,510	2,410	2,610	7,250	24,100	21,700	9,630	5,290	6,510
18	3,590	4,370	4,120	b2,230	2,400	2,860	7,850	22,600	20,400	9,540	5,150	6,250
19	3,610	4,270	3,910	b2,030	2,380	2,870	8,790	25,500	20,600	9,240	5,110	5,960
20	3,530	4,300	3,950	b1,910	2,440	2,860	10,100	29,500	22,000	8.800	5,020	5,550
21	3,530	3,930	4,140	b1,710	2,350	2,860	10,500	32,700	23,000	8,740	5,080	5,290
22	3,640	3,910	3,980	b1,590	2,330	2,860	10,500	33,300	19,800	8.630	5,060	5,390
23	a5,500	3,830	3,400	b1,590	2,100	2,970	10,600	36,700	17,400	8 500	5,040	5,650
24	11,900	3,710	2,940	b1,610	2,190	3,060	10,300	40,400	16,700	8,180	5,000	5,930
25	13,200	3,610	2,730	b1,660	2,060	3,280	9,870	43,300	16,300	8.220	4,980	5,720
26	11,200	3,500	2,360	b1,710	2,190	3,400	9,680	43,600	16,600	8.530	4,930	5,490
27	8,940	3,470	2,150	b1,810	2,190	3,400	9,980	36,600	15,800	8,740	5,350	5,210
28	8,350	3,360	b2,010	b1,960	2,190	3,640	11,400	33,600	15,200	9,570	5,200	5,030
29	7,400	3,200	b1,910	b2,160	2,170	4,070	11,300	28,300	14,100	9,280	5,060	4,830
30	7,180	3,280	b2,110	b2,360	-	4,050	10,900	28,200	12,900	8,590	4,950	4,720
31	6,540	-	b2,410	b2,410	-	4,050	-	30,400	-	8,230	4,580	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	162,590	13,200	3,410	5,240	0.63	0.78	322,500
November	138,750	6,220	3,200	4,620	.67	.67	275,200
December	109,820	4,900	1,910	3,540	.46	.53	217,800
Calendar year 1939	3,151,220	37,200	1,260	8,630	1.13	15.29	6,258,000
January	72,590	3,240	1,590	2,340	.31	.36	144,000
February	68,690	2,620	2,060	2,370	.31	.33	136,200
March	87,960	4,070	2,360	2,840	.37	.43	174,500
April	217,800	11,400	3,900	7,260	.95	1.06	432,000
May	802,200	43,600	10,500	25,900	3.38	3.90	1,591,000
June	665,100	31,400	12,900	22,200	2.90	3.24	1,319,000
July	311,470	13,500	8,180	10,000	1.31	1.51	617,800
August	179,040	8,070	4,580	5,780	.75	.86	355,100
September	167,540	7,240	4,470	5,580	.73	.81	332,300
Water year 1939-40	2,983,550	43,600	1,590	8,150	1.06	14.48	5,917,000

a No gage-height record; discharge computed on basis of weather records and records for stations above and below.
b Stage-discharge relation affected by ice.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geolog. l Survey

Kootenai River near Rexford, Mont.

(International gaging station)

Location.- Wire-weight gage, lat. 48°52', long. 115°14', in sec. 21, T. 36 N., R. 28 W., at highway bridge, 300 feet downstream from Sullivan Creek and 1.1 miles southwest of Rexford.

Drainage area.- 8,420 square miles.

Records available.- March 1929 to November 1940 (discontinued).

Average discharge.- 11 years, 9,621 second-feet.

Extremes.- Maximum discharge observed during period of record, 47,200 second-feet May 26 (gage height, 11.71 feet); minimum daily, 1,650 second-feet (estimated) Jan. 22-24; minimum gage height observed, 0.90 foot Dec. 28.
1929-40: Maximum discharge observed, 87,300 second-feet June 18, 1933 (gage height, 15.70 feet), from rating curve extended above 60,000 second-feet; minimum discharge, 1,100 second-feet (estimated) Feb. 7, 1936; minimum gage height observed, 0.12 foot Dec. 7, 1936.

Remarks.- Records good except those for periods of ice effect and no or doubtful gage-height record, which are fair. Gage read twice daily. No diversion or regulation.

Cooperation.- This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Discharge, in second-feet, 1939-40

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,150	6,280	3,550	2,800	2,500	2,520	4,510	10,800	32,800	13,200	8,100	4,600
2	4,060	6,070	3,720	3,160	2,450	2,590	4,510	10,500	32,200	13,600	7,840	4,700
3	3,970	5,870	3,630	3,240	2,400	2,650	4,700	11,800	31,500	13,600	7,600	4,800
4	4,060	5,770	3,630	3,200	2,400	2,690	4,510	14,600	29,600	13,900	7,140	4,700
5	4,060	5,570	3,470	3,280	2,400	2,640	4,330	15,800	28,300	31,600	6,810	4,890
6	4,150	5,470	3,470	3,240	2,500	2,710	4,150	15,400	26,500	12,800	6,490	6,070
7	4,150	5,270	3,470	3,280	2,500	2,710	4,150	13,900	24,800	12,100	6,280	6,920
8	4,060	5,270	3,390	2,890	2,600	2,690	4,330	13,200	23,700	11,400	6,280	6,920
9	4,060	5,470	3,470	2,500	2,700	2,630	4,700	13,600	22,700	10,800	6,280	6,490
10	3,880	5,570	4,060	2,480	2,700	2,590	5,180	15,400	21,600	10,500	6,280	5,970
11	3,880	5,670	4,510	2,430	2,740	2,630	5,270	22,700	a22,200	10,100	6,280	5,770
12	3,720	5,370	4,800	2,370	2,690	2,570	5,080	32,200	a24,000	9,820	6,280	5,670
13	3,550	5,180	4,510	2,260	2,590	2,490	4,980	34,800	a27,600	10,100	6,070	5,470
14	3,550	4,980	4,240	2,500	2,570	2,490	a6,200	31,500	a28,800	10,500	5,970	5,370
15	3,630	4,800	4,240	2,590	2,520	2,550	a7,600	28,300	a29,600	10,100	5,970	5,670
16	3,630	4,700	4,600	2,830	2,490	2,570	a7,500	24,800	a25,000	10,100	5,770	6,380
17	3,630	4,600	4,510	2,650	2,510	2,820	a7,500	24,600	a23,000	9,820	5,570	6,700
18	3,630	4,510	4,510	*2,500	2,530	2,990	a8,000	23,200	a21,500	9,820	5,370	6,380
19	3,550	4,420	4,240	2,200	2,500	3,010	a9,000	23,700	a21,000	9,520	5,270	6,070
20	3,630	4,330	4,060	2,000	2,490	3,060	a10,400	29,000	a22,000	8,920	5,180	5,770
21	3,550	4,150	4,060	1,800	2,520	2,990	a10,700	32,200	a23,000	8,920	5,180	5,470
22	3,800	4,060	4,060	1,650	2,540	3,090	a10,800	33,500	a21,000	8,360	5,180	5,270
23	d5,270	4,150	3,600	1,650	2,250	3,280	a11,000	35,500	a19,000	8,640	5,180	5,370
24	8,360	3,970	3,100	1,650	2,280	3,310	a10,700	39,800	17,400	8,360	5,180	5,870
25	13,200	3,800	2,900	1,700	2,280	3,470	a10,300	44,200	16,600	8,360	5,180	5,970
26	15,400	3,720	2,500	1,750	2,260	3,550	a10,200	46,500	17,000	8,640	5,080	5,670
27	9,820	3,630	2,200	1,850	2,290	3,720	a10,300	42,000	17,400	8,640	4,980	5,370
28	8,360	3,470	2,100	2,050	2,360	4,060	a11,500	35,500	16,200	9,220	5,080	5,180
29	7,600	3,310	2,000	2,250	2,440	4,150	a11,500	30,900	14,600	9,820	5,270	5,080
30	7,140	3,390	2,200	2,450	-	4,240	11,100	29,600	13,600	8,920	5,080	4,890
31	6,600	-	2,500	2,500	-	4,420	-	30,900	-	8,360	4,800	-

*Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for stations at Newgate, British Columbia, and Libby, Mont.
d Doubtful gage-height record believed read one foot low.
Note.- Stage-discharge relation affected by ice Dec. 23-31, Jan. 1, 17-31, and Feb. 1-10.

9-238 September 1937 UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Discharge, in second-feet, of Kootenai River near Rexford, Mont., 1939-40--Continued

1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,800	5,180										
2	4,700	5,080										
3	4,600	4,890										
4	4,510	4,700										
5	4,420	4,510										
6	4,700	4,240										
7	4,240	4,240										
8	4,150	4,150										
9	4,060	3,970										
10	d4,600	3,800										
11	d6,000	3,550										
12	d6,280	3,130										
13	d6,300	2,640										
14	d6,000	b2,500										
15	5,470	b2,450										
16	5,180	b2,550										
17	4,890	2,750										
18	4,800	3,090										
19	4,600	-										
20	4,510	-										
21	4,800	-										
22	5,180	-										
23	5,670	-										
24	5,670	-										
25	d5,800	-										
26	d5,870	-										
27	6,070	-										
28	5,870	-										
29	5,570	-										
30	5,370	-										
31	5,080	-										

b Stage-discharge relation affected by ice.
d Doubtful gage-height record; discharge computed on basis of engineer's reading Oct. 12, observer's afternoon reading Oct. 26, and records for stations at Newgate, British Columbia, and Libby, Mont.

Monthly discharge, in second-feet, 1939-40

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October 1939	166,100	15,400	3,550	5,358	0.639	0.73	329,500
November	142,820	6,280	3,310	4,761	.565	.63	283,300
December	111,300	4,800	2,000	3,590	.423	.49	220,800
Calendar year 1939	3,278,110	39,100	1,200	8,981	1.07	14.49	6,502,000
January 1940	75,700	3,280	1,650	2,442	.290	.33	150,100
February	71,800	2,740	2,250	2,476	.294	.32	142,400
March	93,880	4,420	2,490	3,028	.360	.42	186,200
April	224,700	11,500	4,150	7,490	.890	.99	445,700
May	810,400	46,500	10,500	26,140	3.10	3.57	1,607,000
June	694,200	32,800	13,600	23,140	2.75	3.07	1,377,000
July	320,540	13,900	8,360	10,340	1.23	1.42	635,800
August	183,020	8,100	4,800	5,904	.701	.81	363,000
September	169,450	6,920	4,600	5,648	.671	.75	336,100
Water year 1939-40	3,063,910	46,500	1,650	8,371	.994	13.53	6,077,000
October 1940	159,760	6,300	4,060	5,154	0.612	0.71	316,900
November 1-18	67,420	-	-	3,746	.445	.30	133,700
December	-	-	-	-	-	-	-
The period	-	-	-	-	-	-	450,600

Kootenai River at Libby, Mont.

Location.- Water-stage recorder, lat. 48°24', long. 115°33', in NW¼ sec. 3, T. 30 N., R. 31 W., at Libby, 1,200 feet downstream from highway bridge.

Drainage area.- 10,240 square miles.

Records available.- October 1910 to September 1940.

Average discharge.- 14 years (1912-15, 1917-18, 1928-32, 1934-40), 10,440 second-feet.

Extremes.- Maximum discharge during year, 48,500 second-feet May 26 (gage height, 11.88 feet); minimum, 1,380 second-feet Dec. 28.
1910-40: Maximum discharge, 130,000 second-feet June 21, 1916 (gage height, 19.17 feet); minimum, 895 second-feet, discharge measurement, Jan. 11, 1930 (affected by ice).

Remarks.- Records excellent except those for periods of ice effect, which are fair. No known diversions or regulation above station.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,500	6,780	3,780	3,190	b2,700	2,860	6,220	13,100	33,800	13,100	8,400	4,760
2	4,380	6,500	4,020	3,420	b2,600	3,080	6,360	12,700	33,800	13,100	8,100	4,630
3	4,260	6,200	4,020	3,660	b2,600	3,300	6,360	13,800	33,300	13,100	7,800	4,760
4	4,380	6,080	3,900	3,780	b2,600	3,190	6,220	16,500	32,300	13,400	7,500	4,760
5	4,500	5,940	4,020	3,660	h2,780	3,190	5,940	18,500	30,200	13,400	7,060	4,890
6	4,500	5,800	3,900	3,660	h2,780	3,190	5,670	18,500	27,800	13,100	6,780	5,280
7	4,500	5,670	3,900	3,660	f2,860	3,080	5,540	16,900	26,800	12,400	6,500	6,500
8	4,500	5,670	3,900	3,300	3,080	3,190	5,540	16,100	25,400	11,700	6,360	7,200
9	4,380	5,800	4,140	2,680	3,080	3,080	5,800	15,700	24,500	11,000	6,360	6,920
10	4,260	6,080	4,380	2,640	3,080	2,970	6,360	16,900	23,200	10,300	6,360	6,360
11	4,260	6,080	4,890	2,200	3,080	2,970	6,500	22,300	22,700	10,300	6,360	5,940
12	4,140	5,800	5,280	b2,200	3,190	2,860	6,500	31,800	23,600	9,980	6,360	5,800
13	4,020	5,540	5,150	b2,200	3,080	2,970	6,360	37,600	27,300	9,660	6,220	5,540
14	3,900	5,410	4,890	*b2,300	2,840	2,770	6,780	35,500	29,800	9,980	6,080	5,540
15	3,900	5,280	4,760	2,530	2,820	2,770	8,400	31,800	30,200	10,300	6,080	5,540
16	3,900	5,150	5,020	3,080	2,680	2,970	9,340	29,800	27,300	10,300	5,940	6,080
17	4,020	5,020	5,410	b2,800	2,640	3,300	9,340	28,300	24,500	9,660	5,670	6,780
18	4,020	4,760	5,280	b2,600	2,660	3,660	9,340	26,400	22,700	9,660	5,410	6,780
19	3,900	4,760	5,020	b2,400	2,710	3,900	9,660	25,900	21,800	9,660	5,280	6,500
20	3,900	4,630	4,760	b2,200	2,790	3,900	11,000	28,300	21,800	9,340	5,150	6,080
21	3,900	4,630	4,500	b1,900	2,790	3,900	12,400	33,300	23,200	9,020	5,150	5,800
22	3,900	4,380	4,500	b1,750	2,820	4,020	12,700	35,500	24,000	8,700	5,150	5,540
23	4,140	4,260	4,380	b1,700	2,570	4,140	12,700	36,600	22,300	8,700	5,150	5,540
24	6,080	4,380	4,020	b1,700	2,220	4,380	12,700	40,000	19,300	8,400	5,150	5,800
25	11,700	4,260	3,420	b1,750	2,380	4,630	12,400	44,400	17,300	8,400	5,150	6,080
26	13,400	4,020	b2,800	b1,800	2,330	5,150	12,400	47,800	16,900	8,400	5,020	5,940
27	11,000	3,900	b2,200	b2,000	2,440	5,410	12,400	46,400	17,300	8,700	5,020	5,800
28	9,340	3,900	b1,800	b2,200	2,490	5,540	12,400	39,400	17,300	9,020	5,020	5,540
29	8,400	3,780	b1,700	b2,400	2,640	5,800	13,100	33,300	15,300	9,660	5,150	5,280
30	7,800	3,780	b2,300	b2,600	-	5,940	13,400	30,800	13,800	9,660	5,280	5,150
31	7,200	-	2,750	b2,700	-	5,940	-	31,800	-	8,700	5,020	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	170,980	13,400	3,900	5,515	0.539	0.62	339,100
November	154,260	6,780	3,780	5,142	.502	.56	306,000
December	124,790	5,410	1,700	4,025	.393	.45	247,500
Calendar year 1939	3,590,560	40,400	-	9,837	.961	13.03	7,121,000
January	80,660	3,780	1,700	2,602	.254	.29	160,000
February	79,330	3,190	2,220	2,736	.267	.29	157,300
March	118,050	5,940	2,770	3,808	.372	.43	234,100
April	269,830	13,400	5,540	8,994	.878	.98	535,200
May	875,700	47,800	12,700	28,250	2.76	3.18	1,737,000
June	729,500	33,800	13,800	24,320	2.38	2.65	1,447,000
July	320,800	13,400	8,400	10,350	1.01	1.17	636,300
August	186,030	8,400	5,020	6,001	.586	.68	369,000
September	173,110	7,200	4,630	5,770	.563	.63	343,400
Water year 1939-40	3,283,040	47,800	1,700	8,970	.876	11.93	6,512,000

*Winter discharge measurement made on this day.
b Stage-discharge relation affected by ice.
f Computed on basis of partly estimated gage-height record.
h Computed from wire-weight-gage reading.

9-233 April 1936 UNITED STATES DEPARTMENT OF THE INTERIOR Geological Survey

Kootenai River at Leonia, Idaho

Location.- Water-stage recorder, lat. 48°37', long. 116°03', in SW¼ sec. 17, T. 33 N., R. 34 W., at Leonia, 450 feet east of Montana-Idaho State line and half a mile upstream from Boulder Creek. Zero of gage is 1,700.00 feet above mean sea level (U. S. Coast and Geodetic Survey datum).

Drainage area.- 11,740 square miles.

Records available.- March 1928 to September 1940.

Average discharge.- 12 years, 12,290 second-feet.

Extremes.- Maximum discharge during year, 52,000 second-feet May 26 (elevation, 1,812.92 feet); minimum discharge recorded, 1,810 second-feet Jan. 26 (elevation, 1,798.84 feet); lesser discharge may have occurred Jan. 23, 24, during period of ice effect.
1928-40: Maximum discharge, 95,500 second-feet June 18, 1933 (elevation, 1,818.11 feet); minimum, 996 second-feet Dec. 9, 1936; minimum elevation, 1,787.56 feet Dec. 10, 1929.
Floods of June 1894 and 1916 reached elevations of 1,824.6 and 1,821.6 feet, respectively (information furnished by Great Northern Railway Co.).

Remarks.- Records good except those for periods of ice effect and those below 3,000 second-feet, all of which are fair. No diversion or regulation above station.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,840	7,190	4,150	3,340	3,200	3,500	8,370	16,200	35,700	13,900	9,080	5,060
2	4,750	6,810	4,300	3,770	3,100	3,710	8,650	16,200	36,300	13,600	8,710	4,870
3	4,640	6,580	4,370	4,050	3,100	3,830	8,510	18,500	35,700	13,500	8,420	4,890
4	4,590	6,420	4,280	4,260	3,200	3,950	8,140	20,900	34,400	13,700	8,140	4,980
5	4,800	6,290	4,260	4,260	3,200	3,850	7,730	22,900	32,300	13,800	7,730	5,200
6	4,780	6,140	4,260	4,200	3,300	3,850	7,290	22,700	30,100	13,600	7,380	5,300
7	4,840	6,060	4,180	4,200	3,400	3,870	7,020	21,200	28,800	12,900	7,020	6,290
8	4,780	6,140	4,300	3,970	3,500	3,930	7,100	19,700	27,900	12,200	6,790	7,240
9	4,680	6,240	4,750	3,300	3,580	3,890	7,730	19,500	26,600	11,500	6,660	7,320
10	4,590	6,350	5,060	3,000	3,610	3,750	8,400	21,400	25,000	10,900	6,680	6,760
11	4,520	6,420	5,720	2,800	3,610	3,630	8,790	27,800	24,100	10,600	6,680	6,290
12	4,460	6,240	5,890	2,700	*3,580	3,500	8,650	36,500	24,800	10,500	6,660	6,020
13	4,320	5,990	5,860	*2,700	3,520	3,430	8,650	43,400	27,800	10,300	6,550	5,860
14	4,220	5,790	5,590	2,800	3,440	3,350	9,720	41,600	30,700	10,300	6,400	5,790
15	4,150	5,620	5,660	2,900	3,280	3,350	11,300	37,400	31,800	10,600	6,320	5,720
16	4,200	5,460	6,270	3,150	3,270	3,460	12,400	34,600	29,200	10,600	6,290	5,960
17	4,220	5,340	6,500	3,100	3,230	3,810	12,300	32,700	26,300	10,400	6,120	6,680
18	4,280	5,200	*6,370	2,900	3,220	4,200	12,400	31,000	24,200	10,200	5,860	7,050
19	4,280	5,060	6,020	2,700	3,230	4,430	13,000	30,200	22,800	10,200	5,660	6,760
20	4,260	4,960	5,620	2,500	3,180	4,520	14,300	32,200	22,700	9,870	5,540	6,370
21	4,260	4,910	5,340	2,150	3,220	4,620	15,500	37,000	23,700	9,520	5,460	6,120
22	4,240	4,800	5,250	1,950	3,130	4,800	16,200	39,600	24,700	9,290	5,420	5,860
23	4,320	4,640	5,010	1,850	3,110	5,080	16,300	40,600	23,300	9,030	5,390	5,760
24	5,660	4,640	4,730	1,850	2,840	5,420	16,400	43,700	20,400	9,140	5,390	5,790
25	10,200	4,590	4,130	1,900	2,840	5,860	16,100	48,700	18,200	8,910	5,390	6,220
26	13,700	4,410	3,300	1,930	2,960	6,630	15,600	51,800	17,300	8,940	5,340	6,220
27	11,700	4,240	2,600	2,170	3,020	7,510	15,600	50,100	17,500	9,230	5,320	5,960
28	10,000	4,150	2,100	2,570	3,130	7,980	15,900	43,300	17,700	9,400	5,270	5,720
29	9,030	4,090	2,000	2,900	3,300	8,140	16,500	36,700	16,300	10,000	5,340	5,490
30	8,310	4,070	2,700	3,100	-	8,170	16,500	33,500	14,800	10,300	5,490	5,320
31	7,730	-	3,160	3,200	-	8,200	-	33,800	-	9,550	5,340	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	179,350	13,700	4,150	5,785	0.493	0.57	355,700
November	164,840	7,190	4,070	5,495	.468	.52	327,000
December	143,730	6,500	2,000	4,636	.395	.46	285,100
Calendar year 1939	4,059,220	46,700	1,500	11,120	.947	12.86	8,051,000
January	92,190	4,260	1,850	2,974	.253	.29	182,900
February	94,300	3,610	2,840	3,252	.277	.30	187,000
March	148,220	8,200	3,350	4,781	.407	.47	294,000
April	351,050	16,500	7,020	11,700	.997	1.11	696,300
May	1,005,400	51,800	16,200	32,430	2.76	3.18	1,994,000
June	771,100	36,300	14,800	25,700	2.19	2.44	1,529,000
July	336,580	13,900	8,400	10,860	.925	1.07	667,600
August	197,840	9,080	5,270	6,382	.544	.63	392,400
September	178,870	7,320	4,870	5,962	.508	.57	354,800
Water year 1939-40	3,663,470	51,800	1,850	10,010	.853	11.61	7,266,000

*Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 26-30, Jan. 9-15, 17-25, Jan. 29 to Feb. 5.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Kootenai River at Boom Camp, near Bonners Ferry, Idaho

Location.- Water-stage recorder, lat. 48°42'05", long. 116°14'30", in NW¼ sec. 29, T. 62 N., R. 2 E., 600 feet east of Boom Camp, 3⅛ miles upstream from Bonners Ferry, and 4 miles downstream from Moyie River. Datum of gage is 1,700.00 feet above mean sea level (U. S. Coast and Geodetic Survey datum).

Records available.- October 1927 to September 1940 in reports of Geological Survey. April 1925 to September 1927 in reports of Dominion Water and Power Bureau, Canada.

Extremes.- Maximum elevation during year, 1,768.57 feet May 27; minimum, 1,756.12 feet Jan. 24.
1927-40: Maximum elevation recorded, 1,776.58 feet June 18, 1933; minimum elevation, 1,755.53 feet Dec. 9, 1936.

Remarks.- Elevations affected by backwater from Kootenay Lake about May 12 to June 18.

Elevation, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	57.67	58.63	57.41	-	57.07	57.06	59.41	61.58	65.49	60.69	59.20	57.78
2	57.64	58.50	57.47	-	57.18	57.21	59.52	61.60	65.65	60.60	59.08	57.69
3	57.59	58.40	57.53	-	56.94	57.26	59.45	62.12	65.59	60.61	59.00	57.70
4	57.57	58.34	57.47	-	56.91	57.35	59.31	62.60	65.32	60.63	58.91	57.75
5	57.65	58.28	57.45	f57.45	56.91	57.29	59.17	62.97	64.91	60.65	58.78	57.86
6	57.65	58.23	57.47	57.46	56.95	57.29	59.02	62.94	64.41	60.59	58.64	57.90
7	57.67	58.20	57.44	57.46	57.03	57.30	58.91	62.65	64.09	60.44	58.53	58.23
8	57.65	58.25	57.50	57.36	57.08	57.32	58.95	62.39	63.89	60.25	58.44	58.58
9	57.62	58.31	57.71	57.24	57.10	57.30	59.26	62.33	63.61	60.05	58.38	58.62
10	57.58	58.32	57.86	56.93	57.16	57.24	59.46	62.69	63.26	f59.89	58.38	58.43
11	57.54	58.35	58.19	57.11	57.18	57.17	59.59	63.90	63.02	59.80	58.38	58.27
12	57.53	58.28	58.22	56.91	57.16	57.10	59.53	65.46	63.11	59.74	58.37	58.16
13	57.47	58.18	58.21	56.97	57.13	57.07	59.53	66.70	63.62	59.66	58.34	58.11
14	57.44	58.09	58.11	56.80	57.06	57.02	59.98	66.66	64.18	59.63	58.28	58.08
15	57.40	58.03	58.15	56.74	57.08	57.00	60.41	65.96	64.47	59.71	58.24	58.05
16	57.40	57.95	58.44	56.90	56.94	57.09	60.66	65.41	64.04	59.71	58.24	58.13
17	57.41	57.90	58.52	57.26	56.91	57.32	60.63	65.00	63.42	59.66	58.17	58.38
18	57.45	57.95	58.48	57.38	56.92	57.50	60.67	64.63	62.99	59.59	58.09	58.55
19	57.46	57.80	58.31	57.28	56.92	57.61	60.86	64.46	62.68	59.57	58.01	58.44
20	57.45	57.75	58.15	56.93	56.90	57.68	61.16	64.77	62.64	59.48	57.96	58.30
21	57.45	57.72	58.03	56.63	56.89	57.74	61.44	65.60	62.80	59.36	57.94	58.20
22	57.45	57.68	57.97	56.61	56.88	57.84	61.60	66.18	63.00	59.28	57.90	58.12
23	57.46	57.62	f57.91	56.60	56.88	58.00	61.66	66.42	62.80	59.19	57.90	58.06
24	57.89	57.60	-	56.66	56.71	58.16	61.70	66.94	62.23	59.22	57.91	58.06
25	59.37	57.59	-	56.69	56.65	58.34	61.60	67.75	61.72	59.13	57.91	58.24
26	60.55	57.54	-	56.82	56.74	58.69	61.49	68.44	61.50	59.13	57.89	58.24
27	60.07	57.46	-	56.54	56.76	59.08	61.49	68.42	61.51	59.22	57.88	58.15
28	59.58	57.41	-	56.69	56.85	59.30	61.58	67.50	61.57	59.29	57.86	58.05
29	59.24	57.39	-	56.81	56.95	59.34	61.70	66.18	61.30	59.47	57.88	57.96
30	59.02	57.38	-	56.91	-	59.35	61.69	65.28	60.94	59.58	57.95	57.89
31	58.82	-	-	57.05	-	59.38	-	65.16	-	59.35	57.90	-

f Fragmentary record.
Note.- Add 1,700 feet to obtain elevations above mean sea level.

9-238 September 1937 UNITED STATES DEPARTMENT OF THE INTERIOR Geological Survey

Kootenai River at Bonners Ferry, Idaho

Location.- Wire-eight gage, lat. 48°42'00", long. 116°18'45", in NE¼ sec. 27, T. 62 N., R. 1 E., on highway bridge at Bonners Ferry. Zero of gage is 1,743.00 feet above mean sea level (U. S. Coast and Geodetic Survey datum).

Drainage area.- 13,000 square miles.

Records available.- October 1927 to September 1940. May to October 1904 at site three-quarters of a mile downstream.

Average discharge.- 12 years (1929-40), 13,270 second-feet.

Extremes.- Maximum daily discharge during year, 55,100 second-feet May 26; maximum elevation observed, 1,765.08 feet May 27; minimum daily discharge, 2,000 second-feet Jan. 23, 24 (estimated); minimum elevation, 1,742.86 feet Mar. 16.
1928-40: Maximum discharge, 99,800 second-feet June 18, 1933; maximum elevation, 1,774.98 feet June 19, 1933; minimum daily discharge, 1,300 second-feet, Feb. 8, 1936; minimum elevation, 1,741.14 feet Dec. 5, 1929.
Maximum elevation known, 1,777.2 feet in June 1894.

Remarks.- Records of discharge good except those for periods of ice effect or no gage-height record which are fair. Gage-height record good; gage read twice daily. Discharge for periods of backwater from Kootenay Lake, May 12 to June 18, computed on basis of fall between gages at Boom Camp and near Bonners Ferry; that for remainder of year on basis of stage-discharge relation for station at Boom Camp. Discharge measurements are made at station near Bonners Ferry. No diversion or regulation above station.

Elevation, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46.68	48.37	46.64	45.92	45.10	43.61	46.40	50.98	60.80	51.23	48.04	46.76
2	46.74	48.18	46.71	45.98	45.01	43.71	46.54	51.00	61.11	50.91	47.84	46.73
3	46.71	47.89	46.74	46.07	44.91	43.76	46.46	51.78	61.12	50.84	47.74	46.71
4	46.64	47.66	46.69	46.04	44.82	43.76	46.24	52.99	60.76	50.76	47.65	46.76
5	46.60	47.48	46.66	46.06	44.78	43.66	45.95	53.76	60.22	50.70	47.47	46.80
6	46.68	47.33	46.64	45.96	44.69	43.62	45.68	54.04	59.34	50.60	47.24	46.89
7	46.68	47.26	46.66	45.94	44.59	43.56	45.46	53.69	58.69	50.32	47.08	47.12
8	46.66	47.27	46.72	45.94	44.72	43.52	45.50	53.11	58.24	49.84	46.98	47.44
9	46.63	47.40	46.90	46.04	44.64	43.46	45.82	52.94	57.74	49.52	46.99	47.56
10	46.60	47.41	47.02	45.78	44.51	43.32	46.21	53.40	57.14	49.12	47.06	47.42
11	46.56	47.48	47.28	45.86	44.57	43.18	46.38	55.68	56.54	48.91	47.18	47.28
12	46.54	47.40	47.31	45.93	44.42	43.02	46.42	58.90	56.38	48.72	47.22	47.20
13	46.52	47.30	47.28	45.96	44.34	42.95	46.38	61.34	56.97	48.52	47.19	47.16
14	46.50	47.20	47.19	45.94	44.30	42.90	47.03	61.70	57.98	48.48	47.22	47.13
15	46.52	47.12	47.52	45.74	44.16	42.87	47.83	60.80	58.59	48.56	47.25	47.14
16	46.42	47.04	47.50	45.62	44.08	42.88	48.40	60.00	58.13	48.56	47.19	47.18
17	46.42	46.98	47.48	45.68	44.01	43.18	48.46	59.22	57.12	48.61	47.15	47.28
18	46.42	46.92	47.50	45.58	43.96	43.39	48.52	58.57	56.24	48.52	47.04	47.42
19	46.38	46.90	47.20	45.56	43.91	43.52	48.90	58.29	55.64	48.54	46.94	47.34
20	46.40	46.84	46.96	45.54	43.88	43.59	49.42	58.72	55.42	48.49	46.87	47.17
21	46.46	46.86	46.79	45.18	43.82	43.68	50.01	60.00	55.48	48.36	46.78	47.02
22	46.52	46.82	46.63	45.06	43.77	43.77	50.50	61.20	55.87	48.24	46.74	46.88
23	46.72	46.79	46.44	44.98	43.68	43.98	50.76	61.68	55.48	48.14	46.81	46.84
24	47.75	46.76	46.22	44.88	43.58	44.19	50.88	62.50	54.69	48.18	46.76	46.86
25	48.56	46.78	46.12	44.92	43.54	44.52	50.84	63.84	53.72	48.06	46.75	47.00
26	50.43	46.74	46.02	44.91	43.50	44.96	50.64	64.84	53.20	48.04	46.78	47.06
27	50.14	46.68	46.05	45.02	43.42	45.55	50.60	65.00	53.00	48.10	46.79	47.02
28	49.56	46.66	46.00	45.21	43.46	46.12	50.73	64.02	52.96	48.12	46.93	46.97
29	49.21	46.62	45.96	45.17	43.52	46.24	51.02	62.23	52.56	48.23	46.90	46.87
30	48.91	46.58	45.92	45.17	-	46.26	51.12	60.88	51.75	48.42	46.94	46.86
31	48.65	-	45.92	45.14	-	46.40	-	60.41	-	48.22	46.86	-

Note.- Add 1,700 feet to obtain elevations above mean sea level.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Discharge, in second-feet, of Kootenai River at Bonners Ferry, Idaho, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,930	7,380	4,360	a3,550	b3,350	3,740	9,930	18,400	38,700	14,400	9,090	5,180
2	4,860	7,020	4,480	a4,000	b3,300	4,040	10,300	18,500	39,500	14,100	8,710	4,970
3	4,750	6,740	4,620	a4,300	b3,300	4,150	10,100	20,800	39,000	14,100	8.470	5,000
4	4,700	6,580	4,480	a4,500	3,450	4,340	9,600	23,200	37,500	14,200	8.200	5,110
5	4,880	6,420	4,440	4,440	3,450	4,210	9,150	25,100	35,200	14,300	7,820	5,360
6	4,880	6,290	4,480	4,460	3,520	4,210	8,680	25,000	32,400	14,000	7,410	5,460
7	4,930	6,210	4,420	4,460	3,680	4,230	8,350	23,500	30,700	13,400	7,100	6,290
8	4,880	6,340	4,550	4,250	3,780	4,270	8,470	22,200	29,800	12,700	6.850	7,240
9	4,810	6,500	5,020	b3,500	3,820	4,230	9,440	21,900	28,300	12,000	6.690	7,360
10	4,730	6,530	5,360	b3,150	3,940	4,100	10,100	23,700	26,400	11,400	6.690	6,830
11	4,640	6,610	6,180	b2,950	3,980	3,960	10,500	30,400	25,100	11,100	6.690	6,390
12	4,620	6,420	6,260	b2,850	3,940	3,820	10,300	38,400	25,400	10,900	6.660	6,110
13	4,480	6,160	6,240	b2,850	3,880	3,760	10,300	46,900	27,900	10,600	6.580	5,980
14	4,420	5,930	5,980	b2,950	3,740	3,660	11,900	46,200	31,100	10,500	6.420	5,900
15	4,340	5,780	6,080	3,040	3,780	3,620	13,500	41,900	32,800	10,800	6.310	5,830
16	4,340	5,580	6,850	3,340	3,510	3,800	14,500	38,400	30,500	10,800	6.310	6,030
17	4,360	5,460	7,080	b3,300	3,450	4,270	14,400	35,900	27,100	10,600	6.130	6,690
18	4,440	5,340	6,960	b3,100	3,470	4,660	14,500	33,700	24,900	10,400	5,930	7,160
19	4,460	5,220	6,500	b2,850	3,470	4,900	15,300	32,600	23,400	10,300	5.730	6,850
20	4,440	5,110	*6,080	b2,650	3,430	5,060	16,600	34,400	23,200	10,000	5,600	6,480
21	4,440	5,040	5,780	b2,300	3,410	5,200	17,800	39,600	24,000	9,600	5,560	6,210
22	4,440	4,950	5,630	*b2,100	3,390	5,440	18,500	43,100	25,000	9,350	5,460	6,000
23	4,460	4,810	5,480	b2,000	3,390	5,830	18,700	44,400	24,000	9,060	5,460	5,860
24	5,440	4,770	a5,000	b2,000	3,080	6,240	18,900	47,500	21,100	9,150	5.480	5,860
25	9,640	4,750	a4,350	b2,050	2,970	6,720	18,500	52,000	18,800	8,870	5,480	6,310
26	13,900	4,640	a3,500	b2,050	*3,130	7,700	18,000	55,100	17,800	8,870	5,440	6,310
27	12,100	4,460	a2,750	b2,300	3,170	8,870	18,000	54,100	17,800	9,150	5,410	6,080
28	10,300	4,360	a2,250	b2,700	3,340	9,570	18,400	48,600	18,100	9,380	5,360	5,830
29	9,220	4,310	a2,150	b3,050	3,520	9,700	18,900	41,500	16,900	9,970	5,410	5,600
30	8,530	4,290	a2,850	b3,300	-	9,740	18,900	37,100	15,400	10,300	5,580	5,440
31	7,930	-	a3,350	b3,400	-	9,830	-	36,700	-	9,570	5,460	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	183,290	13,900	4,340	5,913	0.455	0.52	363,600
November	170,000	7,380	4,290	5,667	.436	.49	337,200
December	153,510	7,080	2,150	4,952	.381	.44	304,500
Calendar year 1939	4,341,290	50,200	1,600	11,890	.915	12.43	8,611,000
January	97,740	4,500	2,000	3,153	.243	.28	193,900
February	101,640	3,980	2,970	3,505	.270	.29	201,600
March	167,870	9,830	3,620	5,415	.417	.48	333,000
April	410,520	18,900	8,350	13,680	1.05	1.17	814,300
May	1,100,800	55,100	18,400	35,510	2.73	3.15	2,183,000
June	807,800	39,500	15,400	26,930	2.07	2.31	1,602,000
July	343,870	14,400	8,870	11,090	.853	.98	682,100
August	199,490	9,090	5,360	6,435	.495	.57	395,700
September	181,720	7,360	4,970	6,057	.466	.52	360,400
Water year 1939-40	3,918,250	55,100	2,000	10,710	.824	11.20	7,771,000

*Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for nearby stations on the river.
b Stage-discharge relation affected by ice.

9-233 April 1936 UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Kootenai River near Bonners Ferry, Idaho

Location.- Water-stage recorder, lat. 48°41'55", long. 116°20'40", in N½ sec. 28, T. 62 N., R. 1 E., 1.6 miles downstream from highway bridge at Bonners Ferry. Datum of gage is 1,700.00 feet above mean sea level (U. S. Coast and Geodetic Survey datum).

Drainage area.- 13,000 square miles.

Records available.- May 1928 to September 1940.

Extremes.- Maximum elevation during year, 1,764.49 feet May 27; minimum, 1,741.77 feet Mar. 16.
1928-40: Maximum elevation, 1,774.17 feet June 20, 1933; minimum, 1,740.23 feet Mar. 11, 17, 1939.

Remarks.- Elevations affected by backwater from Kootenay Lake.

Elevation, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46.54	48.21	46.56	45.62	44.35	43.01	45.54	50.37	60.30	51.00	47.68	46.56
2	46.60	47.97	46.59	45.74	44.23	43.10	45.66	50.36	60.61	50.63	47.57	46.54
3	46.48	47.74	46.64	45.81	44.16	43.09	45.62	51.16	60.64	50.50	47.46	46.51
4	46.39	47.54	46.58	45.85	44.12	43.03	45.40	52.38	60.32	50.41	47.38	46.60
5	46.47	47.34	46.57	45.85	44.06	42.93	45.08	53.20	59.76	50.35	47.18	46.60
6	46.55	47.14	46.54	45.81	44.06	42.85	44.76	53.46	58.96	50.23	46.95	46.71
7	46.56	47.10	46.57	45.77	44.10	42.77	44.51	53.09	58.36	49.90	46.79	46.93
8	46.52	47.13	46.60	f45.78	44.09	42.70	44.43	52.55	57.94	49.48	46.70	47.20
9	46.50	47.22	46.76	a 45.70	44.05	42.60	44.86	52.36	57.42	49.12	46.66	47.30
10	46.48	47.24	46.87	a 45.60	44.10	42.45	45.25	52.99	56.77	48.78	46.77	47.18
11	46.44	47.31	47.15	a 45.50	44.10	42.26	45.53	55.09	56.18	48.53	46.92	47.06
12	46.43	47.24	47.14	a 45.50	44.00	42.08	45.49	58.13	56.02	48.36	46.93	46.97
13	46.39	47.15	47.10	a 45.40	43.90	41.97	45.40	60.53	56.54	48.13	46.95	46.93
14	46.36	47.06	46.97	a 45.30	43.86	41.91	46.08	60.99	57.47	48.10	47.00	46.93
15	46.42	46.98	47.03	a 45.10	43.73	41.85	47.00	60.27	58.09	48.19	47.04	46.97
16	46.32	46.92	47.31	a 45.10	43.66	41.81	47.60	59.40	57.75	48.23	46.99	47.00
17	46.28	46.86	47.29	a 45.15	43.61	42.00	47.66	58.69	56.77	48.25	46.93	47.08
18	46.31	46.80	47.27	a 45.00	43.61	42.15	47.70	58.08	55.94	48.18	46.82	47.20
19	46.26	46.75	47.03	a 44.85	43.57	42.29	48.14	57.79	55.30	48.18	46.72	47.11
20	46.27	46.72	46.76	f44.73	43.46	42.35	48.72	58.20	54.96	48.13	46.65	46.96
21	46.28	46.68	46.57	44.56	43.38	42.43	49.36	59.36	55.08	48.06	46.52	46.79
22	46.39	46.71	46.42	44.47	43.29	42.55	49.83	60.55	55.41	47.97	46.51	46.66
23	46.71	46.69	46.23	44.37	43.20	42.75	50.09	61.13	55.23	a47.90	46.60	46.63
24	47.44	46.67	46.04	44.26	43.08	42.98	50.28	61.92	54.38	a47.92	46.55	46.65
25	48.42	46.66	45.92	44.22	43.02	43.28	50.19	63.11	54.43	f47.82	46.52	46.78
26	50.06	46.62	45.82	44.20	43.03	43.79	49.98	64.19	52.88	47.74	46.57	46.84
27	49.88	46.58	f45.71	44.27	42.98	44.51	49.95	64.41	52.74	47.79	46.62	46.80
28	49.37	46.56	a45.60	44.33	43.02	45.15	50.10	63.52	52.69	47.79	46.75	46.80
29	49.02	46.52	a45.55	44.34	43.04	45.30	50.40	61.88	52.28	47.90	46.72	46.76
30	48.74	46.49	f45.57	44.35	-	45.37	50.50	60.48	51.58	48.03	46.74	46.67
31	48.47	-	45.62	44.37	-	45.55	-	59.99	-	47.83	46.62	-

a Elevations computed on basis of records for stations at Klockmann Ranch and near Copeland.
f Fragmentary records.
Note.- Add 1,700 feet to obtain elevations above mean sea level.

9-238 September 1937 UNITED STATES DEPARTMENT OF THE INTERIOR
Geolog al Survey

400455 O - 41 - 7

Kootenai River at Klockmann Ranch, near Bonners Ferry, Idaho

Location.- Water-stage recorder, lat. 48°47'40", long. 116°22'50", 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. Datum of gage is 1,700.00 feet above mean sea level (U. S. Coast and Geodetic Survey datum).

Records available.- May 1928 to September 1940.

Extremes.- Maximum water-surface elevation during year, 1,762.33 feet May 27; minimum, 1,741.20 feet Mar. 16.
1928-40: Maximum water-surface elevation, 1,771.24 feet June 20, 1933; minimum, 1,739.11 feet Mar. 18, 1939.

Remarks.- Elevations affected by backwater from Kootenay Lake.

Elevation, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46.23	47.73	46.29	45.32	43.95	42.57	44.04	48.62	58.66	49.96	46.97	46.26
2	46.28	47.52	46.32	45.36	43.83	42.61	44.14	48.62	58.93	49.64	46.89	46.24
3	46.21	47.35	46.35	45.41	43.78	42.59	44.10	49.36	58.95	49.50	46.80	46.23
4	46.12	47.09	46.32	45.43	43.78	42.50	43.95	50.49	58.68	49.41	46.75	46.31
5	46.19	46.88	46.32	45.44	43.72	42.40	43.67	51.29	58.18	49.33	46.58	46.28
6	46.24	46.70	46.30	45.45	43.68	42.31	43.40	51.56	57.45	49.21	46.40	46.38
7	46.24	46.67	46.31	45.44	43.67	42.21	43.16	51.30	56.88	48.90	46.27	46.53
8	46.22	46.72	46.35	45.43	43.65	42.13	43.05	50.85	56.49	48.53	46.20	46.70
9	46.20	46.80	46.46	45.27	43.61	42.02	43.35	50.67	56.02	48.19	46.19	46.80
10	46.18	46.80	46.55	45.23	43.59	41.87	43.69	51.24	55.40	47.89	46.32	46.73
11	46.15	46.84	46.76	45.11	43.58	41.67	43.90	53.09	54.86	47.66	46.47	46.65
12	46.15	46.78	46.73	45.04	43.50	41.51	43.93	55.99	54.68	47.48	46.50	46.60
13	46.12	46.71	46.70	45.01	43.41	41.40	43.85	58.31	55.09	47.30	a46.54	46.58
14	46.10	46.64	46.59	44.98	43.37	41.35	44.38	58.88	55.87	47.24	a46.57	46.60
15	46.16	46.58	46.64	44.89	43.27	41.28	45.21	58.29	56.42	47.30	a46.60	46.61
16	46.05	46.53	46.82	44.87	43.21	41.23	45.76	57.56	56.15	47.34	a46.56	46.62
17	46.02	46.48	46.81	44.94	43.14	41.30	45.90	56.86	55.30	47.40	a46.49	46.64
18	46.04	46.43	46.75	44.81	43.11	41.35	45.95	56.28	54.58	47.37	a46.41	46.70
19	46.02	46.40	46.56	44.68	43.10	41.43	46.34	56.03	54.02	47.38	a46.34	46.64
20	46.04	46.38	46.34	44.55	43.03	41.46	46.85	56.39	53.70	47.36	a46.27	46.51
21	46.06	46.36	46.17	44.40	42.96	41.49	47.43	57.46	53.74	47.32	46.18	46.37
22	46.21	46.39	46.01	44.32	42.86	41.57	47.94	58.63	53.99	47.24	46.17	46.25
23	46.57	46.38	45.83	44.23	42.75	41.70	48.21	59.24	53.86	47.18	46.25	46.24
24	47.16	46.37	45.69	44.13	42.69	41.85	48.42	59.96	53.12	47.19	46.19	46.25
25	47.86	46.36	45.60	44.11	42.62	42.09	48.39	61.02	52.31	47.15	46.19	46.34
26	49.04	46.33	45.53	44.07	42.61	42.43	48.22	61.98	51.75	47.07	46.24	46.40
27	49.00	46.32	45.40	44.07	42.56	43.02	48.20	62.26	51.59	47.08	46.32	46.40
28	48.67	46.29	45.28	44.08	42.55	43.62	48.34	61.64	51.48	47.06	46.43	46.41
29	48.42	46.26	45.26	44.04	42.57	43.79	48.63	60.20	51.10	47.10	46.39	46.41
30	48.18	46.26	45.26	44.02	-	43.89	48.73	58.97	50.48	47.19	46.39	46.35
31	47.96	-	45.33	43.98	-	44.07	-	58.44	-	47.06	46.30	-

a Elevations computed on basis of records for stations near Bonners Ferry and Copeland.
Note.- Add 1,700 feet to obtain elevations above mean sea level.

9-238 September 1937

UNITED STATES DEPARTMENT OF THE INTERIOR
Geolog al Survey

Kootenai River near Copeland, Idaho

(International gaging station)

Location.- Water-stage recorder, lat. 48°54'45", long. 116°25'00", in NW¼NW¼SW¼ sec. 12, T. 64 N., R. 1 W., at Andrews Ranch, three-quarters of a mile downstream from Mission Creek and 1½ miles northwest of Copeland. Datum of gage is 1,700.00 feet above mean sea level (U. S. Coast and Geodetic Survey datum).

Drainage area.- 13,400 square miles.

Records available.- October 1927 to September 1940 (gage height record only prior to May 1929) in reports of Geological Survey. April 1925 to September 1927 (gage heights only) in reports of Dominion Wager and Power Bureau, Department of Mines and Resources, Canada.

Average discharge.- 11 years (1929-40), 13,850 second-feet.

Extremes.- Maximum daily discharge during year, 53,400 second-feet May 27; maximum elevation, 1,759.37 feet May 27; minimum daily discharge, 2,070 second-feet Jan. 24, during ice period; minimum elevation, 1,740.97 feet Mar. 18.
1929-40: Maximum daily discharge, 90,500 second-feet June 19, 1933; maximum elevation, 1,767.98 feet June 20, 1933; minimum daily discharge, 1,350 second-feet Feb. 8, 1936, during ice period; minimum elevation, 1,738.94 feet Mar. 18, 1939.

Remarks.- Records of discharge good except those for periods of ice effect, which are fair. Discharge computed from mean-elevation conveyance curve determined on basis of fall in reach between station at Klockmann Ranch near Bonners Ferry and station at Port Hill, and discharge measurements made at stations near Copeland and at Port Hill. Stage-discharge relation affected by backwater from Kootenay Lake.

Cooperation.- This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Elevation, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46.11	47.45	46.23	45.25	43.81	42.36	42.84	46.72	56.56	49.10	46.47	46.13
2	46.14	47.26	46.24	45.28	43.71	42.39	42.88	46.73	56.78	48.80	46.44	46.13
3	46.10	47.07	46.25	45.28	43.67	42.36	42.86	47.32	56.80	48.63	46.37	46.12
4	46.02	46.88	46.23	45.30	43.61	42.26	42.73	48.27	56.58	48.53	46.34	46.18
5	46.09	46.67	46.23	45.31	43.54	42.20	42.53	48.94	56.24	48.42	46.20	46.17
6	46.13	46.48	46.22	45.32	43.52	42.04	42.31	49.25	55.64	48.30	46.04	46.24
7	46.13	46.45	46.23	45.32	43.51	41.98	42.13	49.09	55.14	48.02	45.95	46.34
8	46.11	46.51	46.26	45.29	43.46	41.90	42.02	48.77	54.76	47.70	45.90	46.44
9	46.09	46.58	46.34	45.16	43.41	41.78	42.18	48.65	54.32	47.41	45.92	46.52
10	46.07	46.57	46.40	45.15	43.43	41.64	42.41	49.12	53.82	47.16	46.04	46.49
11	46.05	46.60	46.55	45.05	43.40	41.45	42.55	50.67	53.35	46.94	46.19	46.46
12	46.05	46.57	46.51	45.00	43.31	41.31	42.59	53.04	53.16	46.80	46.24	46.43
13	46.03	46.51	46.48	44.94	43.24	41.20	42.54	f55.08	53.41	46.65	46.29	46.42
14	46.02	46.46	46.40	44.85	43.22	41.17	42.93	55.82	53.97	46.60	46.34	46.45
15	46.07	46.41	46.43	44.78	43.14	41.08	f43.52	55.48	54.39	46.62	46.38	46.49
16	45.98	46.37	46.54	44.79	43.07	41.02	44.00	54.94	54.25	46.65	46.34	46.47
17	45.96	46.33	46.52	44.82	43.01	41.02	44.14	54.44	53.61	46.74	46.29	46.45
18	45.96	46.29	46.47	44.69	43.00	41.00	44.23	53.96	53.03	46.74	46.24	46.48
19	45.94	46.27	46.29	44.61	42.97	41.02	44.52	53.79	52.57	46.76	46.17	46.40
20	45.95	46.26	46.11	44.50	42.91	41.03	44.95	54.11	52.32	46.77	46.13	46.30
21	45.98	46.24	45.95	f44.35	42.84	41.04	45.43	54.93	52.29	46.77	46.04	46.17
22	46.12	46.27	45.79	f44.25	42.74	41.08	45.85	55.95	52.44	46.72	46.04	46.08
23	46.50	46.28	45.61	f44.17	42.63	41.16	46.14	56.55	52.33	46.70	46.11	46.09
24	47.01	46.27	45.52	44.10	42.57	41.25	46.33	57.20	51.79	46.68	46.07	46.10
25	47.48	46.26	45.48	44.06	42.50	41.40	46.36	58.16	51.15	46.65	46.07	46.17
26	48.29	46.24	45.45	44.03	42.47	41.58	46.27	58.97	50.70	46.58	46.10	46.22
27	48.34	46.24	45.35	44.02	42.42	41.99	46.29	59.31	50.51	46.58	46.20	46.21
28	48.17	46.23	45.26	43.99	42.40	42.45	46.42	58.96	50.34	46.53	46.29	46.26
29	48.00	46.20	45.24	43.94	42.39	42.61	46.68	57.96	50.02	46.55	46.25	46.26
30	47.81	46.19	45.25	43.91	-	42.71	46.78	56.95	49.52	46.57	46.25	46.22
31	47.63	-	45.26	43.86	-	42.86	-	56.46	-	46.51	46.17	-

f Fragmentary record; daily gage height computed on basis of records for other Kootenai River stations.
Note.- Add 1,700 feet to obtain elevations above mean sea level.

9-238 September 1937

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Discharge, in second-feet, of Kootenai River near Copeland, Idaho, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,020	7,670	4,370	3,640	3,520	3,950	11,300	20,000	38,200	14,400	9,220	5,360
2	5,200	7,360	4,470	4,080	3,500	4,170	11,600	19,800	39,300	13,900	8,850	5,120
3	4,860	7,060	4,730	4,440	3,410	4,420	11,600	21,500	39,300	13,900	8,570	5,110
4	4,670	6,830	4,640	4,630	3,600	4,620	11,300	24,300	38,300	14,000	8,430	5,370
5	4,770	6,600	4,640	4,710	3,600	4,550	10,700	26,400	36,400	14,200	8,120	5,290
6	5,030	6,530	4,460	4,720	3,620	4,680	10,200	26,900	33,800	14,200	7,680	5,620
7	5,030	6,520	4,550	4,570	3,750	4,650	9,750	25,800	31,900	13,600	7,320	6,330
8	4,940	6,400	4,560	4,440	3,960	4,620	9,650	24,400	30,900	12,900	6,990	6,950
9	4,940	6,500	5,020	3,640	4,000	4,630	10,500	23,600	29,800	12,200	6,790	7,250
10	4,850	6,640	5,520	3,260	4,060	4,530	11,300	25,000	27,800	11,600	6,780	6,890
11	4,760	6,730	6,200	3,110	4,240	4,410	11,900	29,900	26,200	11,200	6,840	6,450
12	4,670	6,490	6,260	3,020	4,160	4,200	11,800	38,700	25,900	10,800	6,720	6,210
13	4,500	6,250	6,320	2,960	4,050	4,060	11,600	46,100	27,800	10,600	6,610	6,070
14	4,410	6,010	5,990	3,120	3,900	3,990	12,800	46,800	30,900	10,400	6,550	6,000
15	4,590	5,770	6,220	3,200	3,970	4,020	14,500	43,900	33,100	10,700	6,490	5,860
16	4,390	5,670	7,050	3,430	3,660	4,000	15,600	40,800	31,800	10,800	6,480	6,150
17	4,380	5,580	7,120	3,440	3,540	4,570	15,900	38,200	28,700	10,600	6,310	6,510
18	4,650	5,480	7,090	3,240	3,600	4,950	15,700	35,900	26,200	10,400	6,070	7,010
19	4,640	5,320	6,810	3,010	3,620	5,370	16,500	34,600	24,400	10,300	5,830	7,050
20	4,730	5,150	6,320	2,810	3,620	5,560	17,500	35,600	23,400	10,100	5,660	6,730
21	4,480	5,070	6,110	2,420	3,580	5,650	18,700	39,600	23,900	9,690	5,630	6,470
22	4,610	5,080	5,920	2,250	3,590	5,930	19,800	43,300	25,100	9,540	5,550	6,080
23	4,260	4,990	5,720	2,200	3,520	6,340	20,200	44,700	24,900	9,180	5,800	5,940
24	5,570	4,910	5,240	2,070	3,270	6,760	20,500	46,700	22,200	9,350	5,630	5,870
25	8,460	4,900	4,600	2,150	3,080	7,390	20,300	49,900	19,700	9,270	5,560	6,190
26	12,900	4,640	3,690	2,150	3,260	8,270	19,600	53,100	18,000	9,060	5,500	6,210
27	12,300	4,550	2,930	2,340	3,340	9,540	19,400	53,400	17,900	9,290	5,380	6,070
28	10,500	4,370	2,340	2,820	3,430	10,700	19,600	49,900	18,200	9,540	5,710	5,860
29	9,400	4,270	2,280	3,150	3,680	11,000	20,100	43,500	17,400	9,730	5,630	5,780
30	8,700	4,270	2,880	3,410	-	11,000	20,300	38,700	15,700	10,300	5,700	5,460
31	8,180	-	3,430	3,470	-	11,400	-	37,000	-	9,650	5,450	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	184,390	12,900	4,260	5,948	0.444	0.51	365,700
November	173,610	7,670	4,270	5,787	.432	.48	344,400
December	157,480	7,120	2,280	5,080	.379	.44	312,400
Calendar year 1939	4,468,940	49,200	1,670	12,240	.913	12.40	8,864,000
January	101,900	4,720	2,070	3,287	.245	.28	202,100
February	106,130	4,240	3,080	3,660	.273	.29	210,500
March	183,930	11,400	3,950	5,933	.443	.51	364,800
April	450,200	20,500	9,650	15,010	1.12	1.25	893,000
May	1,128,000	53,400	19,800	36,390	2.72	3.14	2,237,000
June	827,100	39,300	15,700	27,570	2.06	2.30	1,641,000
July	345,400	14,400	9,060	11,140	.831	.96	685,100
August	203,850	9,220	5,380	6,576	.491	.57	404,300
September	183,260	7,250	5,110	6,109	.456	.51	363,500
Water year 1939-40	4,045,250	53,400	2,070	11,050	.825	11.24	8,024,000

Note.- Stage-discharge relation affected by ice Dec. 26 to Jan. 3, Jan. 7 to Mar. 4.

9-233 April 1936 UNITED STATES DEPARTMENT OF THE INTERIOR Geological Survey

Kootenai River at Port Hill, Idaho

(International gaging station)

Location.- Water-stage recorder, lat. 49°00'00", long. 116°30'10", in SW¼ sec. 8, T. 65 N., R. 1 W., 300 feet south of international boundary at Port Hill. Datum of gage is 1,700.00 feet above mean sea level, U. S. Coast and Geodetic Survey datum, and 1,699.80 feet above mean sea level, datum of Geodetic Survey of Canada (adjustment of 1928).

Drainage area.- 13,700 square miles.

Records available.- May to July 1904 and October 1927 to April 1928 (gage heights only), and April 1928 to September 1940 in reports of Geological Survey. October 1924 to September 1927 (gage heights only), in reports of Dominion Water and Power Bureau Department of Mines and Resources, Canada.

Average discharge.- 12 years (1928-40), 14,020 second-feet.

Extremes.- Maximum daily discharge during year, 54,600 second-feet May 26, 27; maximum elevation, 1,756.49 feet May 27; minimum daily discharge, 2,140 second-feet Jan. 24; minimum elevation, 1,740.66 feet Mar. 20.

1928-40: Maximum daily discharge, 93,200 second-feet June 19, 1933; maximum elevation, 1,764.08 feet May 31, 1938; minimum daily discharge, 1,320 second-feet Feb. 8, 1936; minimum elevation, 1,738.69 feet Mar. 18, 1939.

Maximum elevation known, 1,772.7 feet sometime in June 1894.

Remarks.- Records of discharge good except those for periods of ice effect at station near Copeland, which are fair. Daily discharge, which represents the entire flow passing international boundary, computed by adding tributary inflow, including that of Boundary Creek, to flow at station near Copeland. Boundary dike of Reclamation Farm and Forest Service roadway dike (south side of Boundary Creek) remained intact and flow of river was confined throughout the year to main channel upon which gage and cableway are located. Elevations affected by backwater from Kootenay Lake.

Cooperation.- This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Elevation, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45.86	47.08	46.00	45.05	43.55	42.07	42.07	45.26	54.63	48.41	46.04	45.89
2	45.89	46.90	46.02	45.06	43.45	42.09	42.09	45.30	54.76	48.14	46.02	45.90
3	45.86	46.73	46.02	45.06	43.42	42.03	42.06	45.80	54.78	47.97	45.97	45.89
4	45.79	46.52	46.00	45.08	43.36	41.96	41.97	46.54	54.63	47.84	45.94	45.94
5	45.85	46.33	46.00	45.08	43.30	41.92	41.80	47.04	54.34	47.72	45.81	45.92
6	45.87	46.15	46.00	45.09	43.26	41.80	41.62	47.30	53.90	47.58	45.69	45.98
7	45.87	46.12	46.00	45.08	43.25	41.70	41.48	47.24	53.54	47.32	45.61	46.04
8	45.86	46.19	46.04	45.06	43.20	41.62	41.38	47.05	53.23	47.05	45.59	46.13
9	45.84	46.26	46.10	44.95	43.14	41.50	41.48	47.02	52.83	46.80	45.61	46.19
10	45.83	46.24	46.13	44.95	43.15	41.36	41.64	47.44	52.43	46.58	45.75	46.17
11	45.81	46.27	46.26	44.85	43.11	41.17	41.70	48.70	52.06	46.39	45.90	46.15
12	45.82	46.24	46.22	44.80	43.04	41.04	41.75	50.55	51.90	46.26	45.95	46.13
13	45.81	46.20	46.18	44.73	42.96	40.95	41.73	52.14	52.03	46.13	46.01	46.13
14	45.80	46.16	46.11	44.66	42.95	40.91	42.01	52.08	52.40	46.10	46.05	46.16
15	45.84	46.13	46.13	44.60	42.87	40.83	42.48	52.74	52.66	46.10	46.09	46.19
16	45.75	46.09	46.20	44.58	42.80	40.78	42.81	52.42	52.57	46.13	46.05	46.16
17	45.72	46.05	46.18	44.58	42.75	40.74	42.93	52.06	52.12	46.23	46.00	46.13
18	45.71	46.01	46.12	44.46	42.74	40.71	43.04	51.77	51.70	46.25	45.95	46.12
19	45.69	46.00	45.96	44.41	42.70	40.70	43.29	51.74	51.36	46.28	45.91	46.05
20	45.70	46.00	45.80	44.31	42.63	40.69	43.63	52.03	51.16	46.29	45.86	45.96
21	45.75	45.90	45.65	44.19	42.56	40.70	44.00	52.59	51.11	46.32	45.77	45.85
22	45.89	46.02	45.51	44.11	42.46	40.72	44.35	53.40	51.18	46.28	45.77	45.78
23	46.31	46.02	45.35	44.00	42.37	40.76	44.60	53.98	51.06	46.28	45.82	45.79
24	46.76	46.02	45.27	43.92	42.32	40.82	44.77	54.58	50.67	46.26	45.78	45.81
25	47.10	46.01	45.26	43.89	42.26	40.92	44.82	55.39	50.18	46.23	45.79	45.86
26	47.64	46.01	45.25	43.84	42.21	41.06	44.81	56.10	49.85	46.18	45.85	45.92
27	47.71	46.01	45.16	43.81	42.17	41.38	44.86	56.44	49.67	46.15	45.95	45.94
28	47.66	46.00	45.09	43.76	42.14	41.75	45.00	56.31	49.47	46.08	46.02	45.98
29	47.56	45.98	45.07	43.70	42.13	41.87	45.21	55.64	49.18	46.09	45.99	45.99
30	47.41	45.98	45.07	43.66	-	41.97	45.29	54.94	48.77	46.08	45.98	45.97
31	47.25	-	45.06	43.60	-	42.09	-	54.58	-	46.06	45.92	-

Note.- Add 1,700 feet to obtain elevations above mean sea level.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geolog. al Survey

Discharge, in second-feet, of Kootenai River at Port Hill, Idaho, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,050	7,730	4,440	3,770	3,610	4,040	11,700	20,900	39,300	14,500	9,290	5,380
2	5,250	7,420	4,550	4,230	3,590	4,260	12,000	20,900	40,500	14,000	8,920	5,140
3	4,910	7,130	4,810	4,590	3,500	4,520	12,000	23,400	40,400	14,000	8,630	5,140
4	4,720	6,890	4,720	4,780	3,690	4,720	11,700	25,800	39,300	14,100	8,480	5,400
5	4,940	6,660	4,710	4,850	3,690	4,650	11,100	27,800	37,400	14,300	8,170	5,360
6	5,100	6,590	4,540	4,850	3,720	4,780	10,500	28,200	34,600	14,300	7,730	5,690
7	5,090	6,580	4,630	4,700	3,850	4,750	10,100	27,000	32,800	13,700	7,360	6,370
8	4,990	6,630	4,880	4,560	4,070	4,720	10,000	25,700	31,800	13,000	7,030	6,990
9	4,990	6,690	5,460	3,760	4,110	4,730	11,000	25,100	30,600	12,300	6,830	7,290
10	4,900	6,760	6,210	3,370	4,180	4,620	11,800	27,100	28,500	11,700	6,820	6,920
11	4,800	6,840	6,830	3,220	4,350	4,500	12,400	32,600	26,900	11,300	6,880	6,480
12	4,710	6,590	6,630	3,130	4,260	4,290	12,300	41,000	26,600	10,900	6,760	6,240
13	4,540	6,330	6,610	3,070	4,140	4,150	12,200	48,000	28,400	10,700	6,640	6,100
14	4,450	6,100	6,270	3,230	3,980	4,080	13,600	48,500	31,400	10,500	6,580	6,040
15	4,630	5,850	6,580	3,320	4,050	4,110	15,300	45,600	33,600	10,800	6,520	5,920
16	4,430	5,740	7,550	3,540	3,740	4,120	16,300	42,400	32,200	10,900	6,510	6,190
17	4,420	5,650	7,510	3,540	3,620	4,710	16,600	39,700	29,100	10,700	6,340	6,550
18	4,690	5,560	7,410	3,330	3,680	5,090	16,500	37,500	26,500	10,500	6,100	7,080
19	4,690	5,390	7,100	3,100	3,700	5,510	17,400	36,500	24,700	10,400	5,860	7,120
20	4,800	5,210	6,590	2,890	3,700	5,700	18,400	37,500	23,700	10,200	5,690	6,790
21	4,540	5,140	6,360	2,500	3,650	5,810	19,600	41,400	24,200	9,740	5,660	6,520
22	4,670	5,160	6,150	2,320	3,660	6,100	20,800	45,200	25,300	9,590	5,580	6,120
23	4,320	5,060	5,900	2,270	3,590	6,530	21,300	46,700	25,100	9,230	5,830	5,980
24	5,720	4,970	5,380	2,140	3,340	6,970	21,500	48,700	22,400	9,400	5,660	5,910
25	8,560	4,960	4,720	2,220	3,150	7,630	21,300	52,000	19,900	9,320	5,590	6,220
26	13,000	4,710	3,790	2,220	3,330	8,570	20,600	54,600	18,200	9,120	5,530	6,240
27	12,400	4,620	3,020	2,420	3,410	9,980	20,600	54,600	18,100	9,380	5,410	6,100
28	10,600	4,430	2,420	2,900	3,510	11,200	20,900	51,000	18,400	9,620	5,740	5,890
29	9,480	4,340	2,370	3,240	3,760	11,400	21,200	44,600	17,500	9,820	5,660	5,810
30	8,760	4,350	2,980	3,500	-	11,400	21,200	39,900	15,800	10,400	5,730	5,490
31	8,240	-	3,550	3,560	-	11,800	-	38,300	-	9,710	5,480	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	186,390	13,000	4,320	6,013	0.439	0.51	369,700
November	176,080	7,730	4,340	5,869	.428	.48	349,200
December	164,670	7,550	2,370	5,312	.388	.44	326,600
Calendar year 1939	4,607,680	51,100	1,720	12,620	.921	12.52	9,139,000
January	105,120	4,850	2,140	3,391	.248	.29	208,500
February	108,630	4,350	3,150	3,746	.273	.29	215,500
March	189,440	11,800	4,040	6,111	.446	.51	375,700
April	471,900	21,500	10,000	15,730	1.15	1.28	936,000
May	1,178,200	54,600	20,900	38,010	2.77	3.19	2,337,000
June	843,200	40,500	15,800	28,110	2.05	2.29	1,672,000
July	348,130	14,500	9,120	11,230	.820	.95	690,500
August	205,010	9,290	5,410	6,613	.483	.56	406,600
September	184,470	7,290	5,140	6,149	.449	.50	365,900
Water year 1939-40	4,161,240	54,600	2,140	11,370	.830	11.30	8,253,000

Note.- Stage-discharge relation at station near Copeland affected by ice, Dec. 26 to Jan. 3, Jan. 7 to Mar. 4.

Granite Creek near Libby, Mont.

Location.- Staff gage and concrete control, lat. 48°18', long. 115°35', in SE¼ sec. 5, T. 29 N., R. 31 W., at Glacier silver-lead mine, 2½ miles upstream from Cherry Creek and 7 miles southwest of Libby.

Drainage area.- 23.6 square miles.

Records available.- January to September 1933, August 1936 to September 1940.

Extremes.- Maximum discharge observed during year, 408 second-feet May 11, 25 (gage height, 3.75 feet); minimum observed, 4.5 second-feet Oct. 4 (gage height, 1.77 feet).
1933, 1936-40: Maximum discharge observed, 1,960 second-feet Apr. 18, 1938; no flow Jan. 4, 1933 (creek blocked by snowslide).

Remarks.- Records good except those for periods of ice effect, which are fair. Gage read once daily.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.0	18	10	18	9.3	25	97	124	193	36	15	6.2
2	5.0	17	12	23	9.3	27	97	137	184	37	14	5.5
3	4.8	17	12	24	11	22	89	330	178	37	13	5.2
4	4.5	16	11	23	11	22	81	226	150	34	13	5.2
5	13	9.6	10	22	11	22	71	178	137	33	12	14
6	8.1	9.3	12	17	11	25	63	164	119	31	11	16
7	7.5	16	12	17	12	25	59	124	119	28	10	14
8	6.0	27	14	16	13	27	63	119	112	27	10	11
9	5.5	31	47	17	13	25	81	137	112	25	11	10
10	5.5	25	59	13	23	20	81	208	119	23	9.3	9.0
11	5.0	18	76	b13	11	18	83	408	124	23	9.6	9.0
12	5.2	15	50	b14	12	17	85	355	124	23	8.7	8.7
13	5.2	13	36	*b14	11	16	78	263	137	25	8.7	7.8
14	5.2	13	37	14	13	16	156	226	112	28	8.7	11
15	5.5	11	37	14	13	17	167	193	91	23	7.8	17
16	5.0	11	63	14	11	34	124	202	83	24	7.2	15
17	4.8	11	69	20	11	39	110	178	72	23	7.2	13
18	5.0	10	55	14	12	43	124	172	71	23	6.2	13
19	5.2	9.9	47	7.8	13	43	137	226	71	23	6.5	12
20	9.3	9.9	41	14	10	46	161	279	87	20	6.8	16
21	8.1	7.8	36	b15	9.3	47	134	263	78	19	6.8	12
22	9.9	9.3	36	b14	9.6	52	145	243	64	22	6.8	21
23	9.0	8.7	32	b13	9.3	50	134	243	56	21	6.8	18
24	13	8.1	26	b12	9.6	58	134	263	51	19	6.8	15
25	16	7.8	23	b11	10	69	112	408	48	20	6.5	18
26	18	7.5	24	b11	11	106	119	263	55	19	6.2	17
27	18	7.5	20	b10	14	127	134	178	49	16	6.5	16
28	18	7.0	16	b10	17	122	129	150	39	16	6.5	15
29	20	7.0	19	11	21	127	124	150	38	25	6.2	8.7
30	18	9.9	20	11	-	103	101	164	35	20	6.8	13
31	18	-	14	11	-	87	-	243	-	18	6.2	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	286.3	20	4.5	9.24	0.392	0.45	568
November	388.3	31	7.0	12.9	.547	.61	770
December	976	76	10	31.5	1.33	1.53	1,940
Calendar year 1939	21,592.7	534	4.5	59.2	2.51	34.09	42,840
January	457.8	24	7.8	14.8	.627	.72	908
February	351.4	23	9.3	12.1	.513	.55	697
March	1,477	127	16	47.6	2.02	2.33	2,930
April	3,273	167	59	109	4.62	5.16	6,490
May	6,817	408	119	220	9.32	10.74	13,520
June	2,908	193	35	96.9	4.11	4.59	5,770
July	761	37	16	24.5	1.04	1.20	1,510
August	267.8	15	6.2	8.64	.366	.42	531
September	372.3	21	5.2	12.4	.525	.59	738
Water year 1939-40	18,335.9	408	4.5	50.1	2.12	28.89	36,370

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

9-233 April 1936 UNITED STATES DEPARTMENT OF THE INTERIOR Geological Survey

Boulder Creek near Leonia, Idaho

Location.- Water-stage recorder, lat. 48°36', long. 116°06', in NW¼ sec. 32, T. 61 N., R. 3 E., half a mile downstream from McGinty Creek, 1 mile upstream from 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.- November 1928 to September 1940. April to November 1928 at site 1¼ miles downstream.

Average discharge.- 11 years (1929-40), 106 second-feet.

Extremes.- Maximum discharge during year, 760 second-feet May 11 (gage height, 3.20 feet); minimum discharge, 4 second-feet Aug. 21-26; minimum gage height, 0.18 foot Aug. 26.
1928-40: Maximum discharge, 2,050 second-feet Apr. 18, 1938 (gage height, 5.50 feet), from rating curve extended above 1,800 second-feet; minimum, 2 second-feet Aug. 25 and Sept. 5, 1931.

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

Rating table, Feb. 8 to Sept. 30, (gage height, in feet, and discharge, in second-feet)

0.2	3.9	1.0	39	2.2	305
.4	9.2	1.3	72	2.5	425
.6	16.5	1.6	125	2.8	560
.8	26.1	1.9	205		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7	11	13	b24	b18	a27	172	294	119	17	10	6
2	8	10	15	b27	b18	a30	168	385	121	16	10	6
3	8	10	16	b30	b18	a28	145	560	111	15	9	5
4	8	10	14	b29	b18	a30	132	417	100	15	8	7
5	20	10	13	b28	b18	a30	130	377	89	15	8	14
6	12	10	15	b28	b19	a30	123	321	81	15	7	13
7	11	13	15	b27	b20	a31	128	313	103	14	7	10
8	10	44	48	26	20	a31	175	337	91	13	6	9
9	9	29	80	b26	21	a30	202	393	80	13	6	a7
10	9	19	111	b26	24	a28	193	506	72	13	5	a7
11	9	15	103	26	21	27	181	695	66	12	a5	a8
12	9	15	58	25	20	26	170	497	59	11	a5	a8
13	9	14	45	28	19	25	256	413	52	11	a5	a9
14	9	13	45	28	19	25	389	349	47	10	5	9
15	9	12	108	26	18	26	333	341	44	10	5	9
16	8	12	173	26	18	46	280	337	40	12	5	8
17	9	11	136	24	a17	57	277	313	37	11	5	8
18	9	12	94	24	a17	52	345	309	35	10	5	8
19	11	11	73	b23	a18	52	345	337	33	9	5	9
20	15	11	63	b20	a18	57	333	305	31	9	5	9
21	11	10	55	b18	a17	69	302	277	29	9	4	9
22	10	12	50	b16	a17	82	317	260	27	9	4	11
23	10	11	40	b15	a16	94	325	246	26	8	4	9
24	14	10	35	b15	a16	107	294	235	24	8	4	8
25	14	10	b28	b15	a17	135	284	242	23	7	4	7
26	12	10	b22	b16	a18	165	305	181	21	8	4	7
27	11	11	b19	b16	a20	270	313	155	21	12	8	7
28	14	10	b16	b16	a22	196	333	142	20	13	15	7
29	16	11	b17	b17	a24	162	280	132	19	12	9	7
30	12	13	b19	b17	-	178	235	130	18	13	7	7
31	11	-	b21	b17	-	170	-	135	-	13	6	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	334	20	7	10.8	0.204	0.24	662
November	400	44	10	13.3	.251	.28	793
December	1,560	173	13	50.3	.949	1.09	3,090
Calendar year 1939	29,887	695	6	81.9	1.55	20.95	59,270
January	699	30	15	22.5	.425	.49	1,390
February	546	24	16	18.8	.355	.38	1,080
March	2,316	270	25	74.7	1.41	1.63	4,590
April	7,465	389	123	249	4.70	5.24	14,810
May	9,934	695	130	320	6.04	6.96	19,700
June	1,639	121	18	54.6	1.03	1.15	3,250
July	363	17	7	11.7	.221	.25	720
August	195	15	4	6.3	.119	.14	387
September	248	14	5	8.3	.157	.18	492
Water year 1939-40	25,699	695	4	70.2	1.32	18.03	50,960

a No gage-height record; discharge interpolated or computed on basis of weather records and records for other Kootenai tributary streams.
b Stage-discharge affected by ice.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Moyie River at Eastport, Idaho
(International gaging station)

Location.- Water-stage recorder, lat. 49°00', long. 116°11', in SE¼ sec. 10, T. 65 N., R. 2 E., at Eastport, 1,000 feet downstream from international boundary.

Drainage area.- 570 square miles.

Records available.- August 1929 to September 1940 in reports of U. S. Geological Survey; January to December 1915, March to December 1916, and discharge measurements during 1914 and 1917, in reports of the Dominion Water and Power Bureau of the Department of Mines and Resources, Canada.

Average discharge.- 11 years, 602 second-feet.

Extremes.- Maximum discharge during year, 3,150 second-feet May 12 (gage height, 7.13 feet); minimum, 45 second-feet Sept. 1-3 (gage height, 3.40 feet).
1929-40: Maximum discharge, 6,240 second-feet Apr. 28, 1934 (gage height, 9.46 feet), from rating curve extended above 5,500 second-feet; minimum, 23 second-feet Nov. 7, 1936 (gage height, 3.20 feet).

Remarks.- Records good except those for period of ice effect, which are fair. No regulation or diversion above station.

Cooperation.- This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	54	99	109	150	110	148	942	1,560	1,310	220	82	45
2	55	99	109	160	110	157	942	1,620	1,310	212	82	45
3	59	102	106	160	110	167	860	2,200	1,230	194	80	45
4	59	99	104	160	110	164	781	2,200	1,170	188	75	48
5	77	96	99	150	115	174	766	2,010	1,080	180	73	75
6	77	94	106	145	120	177	721	1,890	1,000	174	71	86
7	69	99	106	135	125	180	729	1,840	1,040	167	69	69
8	69	124	132	125	130	180	843	1,840	1,060	157	64	64
9	66	151	191	120	135	177	1,080	1,950	968	148	62	62
10	64	135	220	120	140	170	1,050	2,390	900	144	60	60
11	64	132	321	*115	130	164	1,040	3,010	843	138	60	60
12	62	132	274	110	120	160	960	3,010	789	129	59	a60
13	62	132	246	110	*107	154	1,120	2,800	729	129	57	a61
14	62	132	258	115	105	154	1,260	2,590	671	121	57	a62
15	62	129	286	120	100	157	1,510	2,460	623	115	55	a63
16	60	126	344	115	100	194	1,360	2,320	577	118	55	64
17	60	124	334	110	100	254	1,310	2,200	527	115	55	62
18	60	124	312	105	100	262	1,460	2,070	491	106	54	64
19	60	118	291	100	105	274	1,620	2,200	457	102	54	64
20	71	112	282	95	110	304	1,670	2,200	423	96	54	64
21	71	115	270	90	105	348	1,670	2,130	387	96	54	62
22	66	126	250	85	100	403	1,720	2,130	363	94	54	62
23	69	115	200	85	95	473	1,720	2,130	344	89	52	60
24	104	112	150	90	90	533	1,720	2,130	321	86	50	59
25	106	109	130	95	100	571	1,620	2,130	304	84	50	59
26	102	106	120	100	110	671	1,620	1,950	282	86	48	59
27	99	106	110	105	120	884	1,720	1,780	266	89	47	57
28	102	112	100	110	129	951	1,840	1,620	254	92	48	57
29	106	109	110	115	144	851	1,780	1,510	238	89	50	55
30	104	115	120	115	-	900	1,670	1,410	227	86	48	54
31	102	-	140	110	-	917	-	1,410	-	89	47	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	2,303	106	54	74.3	0.130	0.15	4,570
November	3,484	151	94	116	.204	.23	6,910
December	5,930	344	99	191	.335	.39	11,760
Calendar year 1939	197,947	3,600	47	542	.951	12.92	392,600
January	3,620	160	85	117	.205	.24	7,180
February	3,275	144	90	113	.193	.21	6,500
March	11,273	951	148	364	.639	.74	22,360
April	39,404	1,840	721	1,313	2.30	2.57	78,160
May	64,690	3,010	1,410	2,087	3.66	4.22	128,300
June	20,184	1,310	227	673	1.18	1.32	40,030
July	3,933	220	84	127	.223	.26	7,800
August	1,826	82	47	58.9	.103	.12	3,620
September	1,807	86	45	60.2	.103	.12	3,580
Water year 1939-40	161,729	3,010	45	442	.775	10.57	320,800

*Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
Note.- Stage-discharge relation affected by ice Dec. 22 to Feb. 27.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Moyie River at Eileen, Idaho

Location.- Water-stage recorder, lat. 48°46', long. 116°10', 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 upstream from mouth.

Drainage area.- 755 square miles.

Records available.- October 1925 to September 1940.

Average discharge.- 15 years, 766 second-feet.

Extremes.- Maximum discharge during year, 3,630 second-feet May 12 (gage height, 3.39 feet); minimum, 71 second-feet Sept. 4 (gage height, -0.40 foot).
1925-40: Maximum discharge, 8,780 second-feet Apr. 29, 1934, from rating curve extended above 6,500 second-feet; maximum gage height, 4.8 feet May 17, June 10, 11, 1927, May 13, 17-19, 1928; minimum discharge, 40 second-feet Nov. 27, 1936; minimum gage height, that of Sept. 4, 1940.

Remarks.- Records good except those for period of ice effect, which are fair. No diversion or regulation above station.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	86	132	151	190	150	194	1,230	1,900	1,540	276	118	74
2	87	132	147	200	150	216	1,230	1,980	1,510	260	114	72
3	89	132	145	200	150	232	1,140	2,600	1,420	243	113	72
4	95	134	142	200	150	230	1,020	2,660	1,360	231	108	74
5	104	130	142	190	155	238	1,000	2,490	1,270	223	104	104
6	116	128	145	180	160	244	940	2,320	1,180	218	101	113
7	105	134	147	170	160	244	940	2,220	1,190	209	101	102
8	100	158	174	160	170	244	1,020	2,220	1,230	199	98	92
9	98	194	244	150	180	238	1,350	2,390	1,130	192	94	90
10	97	179	294	145	*183	230	1,330	2,810	1,040	186	92	88
11	95	172	420	*140	175	221	1,320	3,400	980	179	90	87
12	95	170	386	140	165	216	1,240	3,470	930	170	88	87
13	94	167	332	140	155	207	1,350	3,290	857	168	86	87
14	94	165	343	150	150	205	1,860	3,050	797	158	84	94
15	94	165	411	160	140	210	1,920	2,890	748	154	81	96
16	94	162	497	155	140	256	1,680	2,790	697	152	81	94
17	94	160	471	150	140	343	1,580	2,640	642	150	81	92
18	92	158	443	140	140	369	1,750	2,490	598	146	81	92
19	94	158	402	135	145	386	1,980	2,560	563	139	81	93
20	97	151	390	130	150	415	2,060	2,620	535	135	a81	92
21	100	149	365	130	145	471	2,060	2,530	487	133	a80	92
22	98	158	350	125	135	540	2,090	2,470	463	129	a79	90
23	97	156	307	120	130	624	2,150	2,470	434	126	a79	90
24	122	147	240	120	130	713	2,150	2,470	408	122	a78	88
25	140	145	190	125	140	750	2,010	2,490	382	120	a77	87
26	136	142	170	130	150	879	1,980	2,300	358	122	a77	87
27	134	142	150	135	158	1,110	2,070	2,060	336	129	a76	87
28	132	138	130	140	162	1,260	2,190	1,880	318	126	76	86
29	136	140	140	150	184	1,170	2,190	1,740	301	126	76	86
30	138	149	150	155	-	1,180	2,010	1,640	288	127	76	86
31	136	-	170	155	-	1,230	-	1,640	-	124	75	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	3,289	140	86	106	0.140	0.16	6,520
November	4,547	194	128	152	.201	.22	9,020
December	8,188	497	130	264	.350	.40	16,240
Calendar year 1939	243,121	4,360	75	666	.882	11.96	482,300
January	4,710	200	120	152	.201	.23	9,340
February	4,442	184	130	153	.203	.22	8,810
March	15,065	1,260	194	486	.644	.74	29,880
April	48,840	2,190	940	1,628	2.16	2.41	96,870
May	76,480	3,470	1,640	2,467	3.27	3.77	151,700
June	23,992	1,540	288	800	1.06	1.18	47,590
July	5,172	276	120	167	.221	.25	10,260
August	2,726	118	75	87.9	.116	.13	5,410
September	2,674	113	72	89.1	.118	.13	5,300
Water year 1939-40	200,125	3,470	72	547	.725	9.84	396,900

*Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
Note.- Stage-discharge affected by ice Dec. 24 to Jan. 10, Jan. 12 to Feb. 9, Feb. 11-26.

9-233 April 1936

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

101604-O U.S. GOVERNMENT PRINTING OFFICE 1936

Deep Creek at Moravia, Idaho

Location.- Staff gage, lat. 48°38', long. 116°24', in sec. 18, T. 61 N., R. 1 E., at concrete highway bridge, 1 mile downstream from Ruby Creek and 1 mile southwest of Moravia.

Drainage area.- 133 square miles.

Records available.- May 1928 to September 1940 (no winter records prior to 1933).

Extremes.- Maximum discharge observed during year, 550 second-feet Mar. 27 (gage height, 2.70 feet); minimum observed, 5 second-feet Aug. 14, 22; minimum gage height observed, 0.00 foot Aug. 22.
1928-40: Maximum discharge observed, 1,300 second-feet Dec. 22, 1933; maximum gage height, 4.20 feet Dec. 22, 1933, Apr. 18, 1938; minimum discharge observed, that of Aug. 14, 22, 1940; minimum gage height observed, that of Aug. 22, 1940.

Remarks.- Records good except those for periods of ice effect, which are fair. Gage read once daily. Small diversion above station for irrigation.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	25	25	b41	b35	104	450	331	123	20	14	8
2	16	25	25	47	b35	100	438	348	123	17	14	8
3	14	22	25	51	b35	87	390	337	119	17	12	8
4	15	21	24	49	b35	110	331	331	104	18	10	8
5	30	19	24	47	b35	131	314	320	101	17	10	30
6	20	22	24	43	b38	127	292	309	92	16	10	23
7	19	25	23	38	b40	123	281	287	99	16	9	16
8	16	43	34	38	b50	137	325	260	95	14	8	12
9	17	37	55	b37	b60	111	360	276	89	15	6	10
10	16	29	127	b36	b85	110	354	303	86	16	6	10
11	15	28	87	b36	77	91	331	360	74	15	6	10
12	16	28	41	b35	68	87	300	314	68	14	6	10
13	15	25	49	b36	55	84	320	276	59	13	6	12
14	17	24	57	38	45	84	372	260	60	13	5	14
15	16	22	156	40	45	87	348	260	54	12	6	12
16	15	20	152	b38	39	127	325	230	52	12	6	12
17	17	19	148	b36	40	139	309	225	52	12	6	12
18	16	19	104	b35	43	148	309	220	42	11	7	12
19	16	19	78	b34	47	148	314	225	37	10	6	13
20	15	19	66	b33	48	160	331	225	34	11	6	12
21	17	19	63	b31	45	178	309	225	34	10	6	14
22	17	19	57	b29	43	196	281	215	33	10	5	16
23	20	19	55	b27	b40	220	325	215	33	11	6	16
24	24	19	53	b27	b35	235	343	196	32	11	6	14
25	22	19	49	b28	38	287	314	178	28	10	6	14
26	24	19	b40	b29	47	372	303	152	25	10	6	14
27	24	19	b35	b30	57	550	314	139	24	12	10	13
28	31	19	b30	b31	59	508	303	135	24	12	11	14
29	30	19	b33	*b32	84	426	314	131	21	12	10	13
30	28	26	b35	b32	-	450	255	135	21	14	9	12
31	27	-	b38	b32	-	390	-	139	-	14	8	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	597	31	12	19.3	0.145	0.17	1,180
November	688	43	19	22.9	.172	.19	1,360
December	1,812	156	23	58.5	.440	.51	3,590
Calendar year 1939	31,823	450	10	87.2	.656	8.91	63,120
January	1,116	51	27	36.0	.271	.31	2,210
February	1,403	85	35	48.4	.364	.39	2,780
March	6,107	550	84	197	1.48	1.71	12,210
April	9,855	450	255	328	2.47	2.76	19,550
May	7,557	348	131	244	1.83	2.11	14,990
June	1,838	123	21	61.3	.461	.51	3,650
July	415	20	10	13.4	.101	.12	823
August	242	14	5	7.8	.059	.07	480
September	392	30	8	13.1	.098	.11	778
Water year 1939-40	32,022	550	5	87.5	.658	8.91	63,120

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

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Long Canyon Creek near Port Hill, Idaho

Location.- Water-stage recorder, lat. 48°57', long. 116°32', in NW¼ sec. 36, T. 65 N., R. 2 W., at U. S. Forest Service bridge at mouth of canyon, 4 miles southwest of Port Hill.

Drainage area.- 29 square miles.

Records available.- May 1928 to September 1940 (no winter records prior to 1935).

Extremes.- Maximum discharge during year, 375 second-feet May 11 (gage height, 3.34 feet); minimum discharge recorded, 5 second-feet Aug. 22-27, Aug. 29 to Sept. 4, Sept. 11, 12, 30; minimum gage height, 1.08 feet Sept. 2, 3.
1928-40: Maximum daily discharge, 950 second-feet (estimated) June 15, 1933; maximum gage height, 6.55 feet (drift jam) June 14, 15, 1933; minimum discharge, 3 second-feet Nov. 1-3, 28, Dec. 4-10, 1936, Jan. 6-8, 1937; minimum gage height, 0.91 foot Nov. 8, 1930.

Remarks.- Records good except those for period of no gage-height record, which are poor. No diversion above gage.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6	8	9	18	13	10	42	133	198	27	9	5
2	9	8	10	20	13	11	42	149	202	25	10	5
3	8	9	10	20	13	11	39	200	186	23	9	5
4	8	8	9	20	13	11	37	188	175	23	8	5
5	16	8	8	19	13	11	35	182	179	21	8	10
6	9	8	10	18	13	11	34	171	156	21	8	8
7	8	9	10	17	14	11	34	166	149	20	7	6
8	7	24	23	16	15	11	37	171	141	18	7	6
9	7	18	30	15	16	11	42	191	131	17	7	6
10	7	13	41	15	17	10	41	245	129	17	6	6
11	7	12	41	14	15	10	42	318	131	16	6	5
12	6	11	30	14	13	10	41	312	129	15	6	5
13	6	10	26	14	11	10	45	262	121	15	6	6
14	6	10	26	15	10	10	62	242	106	14	6	8
15	6	10	34	16	10	11	65	242	90	14	6	8
16	6	9	45	15	10	14	65	234	80	14	6	6
17	6	9	37	14	10	16	67	224	71	13	6	6
18	6	10	33	13	10	16	81	232	65	12	6	7
19	8	8	31	12	10	16	94	259	61	12	6	8
20	9	7	29	12	10	17	101	268	57	11	6	7
21	8	8	28	11	9	18	101	265	51	11	6	6
22	8	11	27	10	9	21	108	278	46	10	5	6
23	8	8	20	9	9	23	123	284	42	10	5	6
24	21	7	17	9	9	25	125	301	40	10	5	6
25	12	8	14	10	9	29	123	308	39	10	5	6
26	10	9	13	10	9	34	125	242	35	10	5	6
27	9	9	12	11	9	41	133	207	34	13	5	6
28	10	7	11	11	9	40	149	195	32	11	6	6
29	10	8	13	12	10	37	139	193	29	10	5	6
30	9	10	15	12	-	41	127	198	28	10	5	5
31	8	-	17	12	-	41	-	209	-	9	5	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	264	21	6	8.5	0.293	0.34	524
November	294	24	7	9.8	.338	.38	583
December	679	45	8	21.9	.755	.87	1,350
Calendar year 1939	18,139	385	-	49.7	1.71	23.25	35,990
January	434	20	9	14.0	.483	.56	861
February	331	17	9	11.4	.393	.42	657
March	588	41	10	19.0	.655	.76	1,170
April	2,299	149	34	76.6	2.64	2.94	4,560
May	7,069	318	133	228	7.86	9.06	14,020
June	2,933	202	28	97.8	3.37	3.76	5,820
July	462	27	9	14.9	.514	.59	916
August	196	10	5	6.3	.217	.25	389
September	187	10	5	6.2	.214	.24	371
Water year 1939-40	15,736	318	5	43.0	1.48	20.17	31,220

Note.- No gage-height record Dec. 24 to Feb. 13; discharge computed on basis of weather records, one discharge measurement, and records for Boundary Creek near Port Hill.

9-233 April 1936 UNITED STATES DEPARTMENT OF THE INTERIOR
Geolog. l Survey

Smith Creek near Port Hill, Idaho

Location.- Water-stage recorder, lat. 48°57'40", long. 116°33'20", in NW¼ sec. 26, T. 65 N., R. 2 W., at U. S. 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 1940 (no winter records prior to 1935).

Extremes.- Maximum discharge during year, 1,330 second-feet May 11 (gage height, 5.44 feet); minimum, 6 second-feet Sept. 1-3 (gage height, 1.32 feet).
1928-40: Maximum discharge, 3,060 second-feet June 14, 1933, (gage height, 7.15 feet), from rating curve extended above 1,600 second-feet; minimum, 4 second-feet Dec. 4-10, 1936; minimum gage height, 0.78 foot Sept. 4, 1931.

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

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9	23	33	60	37	36	166	356	449	46	17	6
2	13	23	39	65	37	40	162	440	492	42	23	6
3	16	28	39	65	37	40	149	840	424	39	19	6
4	14	25	36	65	37	38	136	594	389	36	15	7
5	71	23	35	63	38	40	134	523	381	35	14	18
6	27	23	37	60	40	40	128	470	328	35	13	21
7	20	25	37	58	42	39	128	449	356	33	12	12
8	16	111	180	56	44	38	158	474	332	30	11	10
9	15	96	227	54	46	38	207	619	300	28	11	10
10	14	63	356	52	48	35	193	869	284	28	10	9
11	14	53	322	52	44	33	187	1,190	284	26	10	8
12	13	48	193	*52	40	33	176	990	269	24	9	8
13	12	44	155	50	35	33	226	755	249	22	9	8
14	12	44	144	52	33	33	349	670	202	20	8	11
15	11	40	208	54	32	36	319	696	174	20	8	21
16	11	37	281	50	31	53	278	649	156	20	8	13
17	11	38	214	46	30	64	272	585	140	23	8	11
18	11	39	172	42	30	60	349	644	129	20	8	26
19	18	38	151	38	29	57	389	811	122	17	8	33
20	31	30	140	36	29	59	370	783	111	16	8	22
21	22	33	129	33	28	66	356	755	100	16	7	18
22	23	39	120	31	27	71	389	783	89	15	7	15
23	20	33	105	29	26	77	424	811	83	14	7	13
24	75	30	70	29	26	82	393	840	77	14	7	12
25	43	32	55	30	27	94	370	869	72	14	7	11
26	31	34	45	32	28	117	408	614	66	15	7	11
27	26	35	40	33	29	174	470	453	61	22	7	10
28	30	29	37	35	29	182	528	440	55	24	8	10
29	37	31	40	36	32	153	428	445	51	30	8	10
30	28	35	45	37	-	162	349	470	47	21	7	10
31	24	-	55	37	-	168	-	514	-	20	7	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	718	75	9	23.2	0.331	0.38	1,420
November	1,182	111	23	39.4	.563	.63	2,340
December	3,740	356	33	121	1.73	1.99	7,420
Calendar year 1939	56,129	1,190	9	154	2.20	29.80	111,300
January	1,432	65	29	46.2	.660	.76	2,840
February	991	48	26	34.2	.489	.53	1,970
March	2,191	182	33	70.7	1.01	1.16	4,350
April	8,591	528	128	286	4.09	4.56	17,040
May	20,401	1,190	356	658	9.40	10.84	40,460
June	6,272	492	47	209	2.99	3.34	12,440
July	766	46	14	24.7	.353	.41	1,520
August	308	23	7	9.9	.141	.16	611
September	386	33	6	12.9	.184	.21	766
Water year 1939-40	46,978	1,190	6	128	1.83	24.97	93,180

*Winter discharge measurement on this date.

Note.- Discharge for periods of no gage-height record, Nov. 17-30, Dec. 24 to Jan. 11, Jan. 13 to Feb. 13, computed on basis of weather records and records for Boundary Creek near Port Hill and Long Canyon Creek near Port Hill.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Boundary Creek near Port Hill, Idaho

(International gaging station)

Location.- Water-stage recorder, lat. 48°59'50", long. 116°34'05", in SW¼ sec. 11, T. 65 N., R. 2 W., 140 feet downstream from bridge at mouth of canyon, 0.2 mile south of international boundary, and 3 miles west of Port Hill.

Drainage area.- 97 square miles.

Records available.- May 1928 to September 1940.

Average discharge.- 10 years (1930-40), 172 second-feet.

Extremes.- Maximum discharge during year, 1,200 second-feet May 11 (gage height, 4.01 feet); minimum discharge recorded, 11 second-feet Sept. 2 (gage height, 0.48 foot). 1928-40: Maximum discharge, 2,400 second-feet June 15, 1933 (gage height, 5.22 feet), from curve extended above 1,400 second-feet; minimum, 5 second-feet sometime between Nov. 10 and Dec. 3, 1936 (gage height, 0.27 foot).

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

Cooperation.- This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	22	27	46	34	34	195	397	433	51	36	12
2	25	22	27	52	34	35	192	445	450	47	34	11
3	27	28	28	52	34	36	172	770	405	44	28	12
4	24	22	27	52	34	36	158	630	369	42	25	12
5	70	22	26	50	34	37	154	580	348	41	23	36
6	31	24	28	47	36	38	150	553	309	40	22	34
7	25	24	28	44	38	38	148	526	362	39	21	22
8	23	81	96	41	40	40	168	540	334	36	20	20
9	22	61	156	39	43	39	218	630	302	35	19	20
10	22	40	254	38	45	34	215	830	277	35	18	18
11	20	35	234	37	40	35	218	1,060	265	34	18	16
12	20	32	130	*36	35	35	208	920	241	32	18	16
13	20	25	97	36	32	35	262	770	220	30	16	16
14	19	31	94	37	31	34	373	710	190	30	16	20
15	19	27	94	38	30	36	348	710	165	28	16	26
16	19	22	143	36	30	41	309	655	150	31	16	21
17	18	23	117	34	30	47	302	605	136	37	16	19
18	18	24	95	33	30	49	358	655	124	29	16	30
19	24	24	89	32	30	51	405	770	115	27	15	30
20	31	19	85	30	30	54	401	740	105	26	15	24
21	27	20	79	28	29	56	389	710	96	25	14	21
22	26	25	72	26	29	62	417	740	88	25	14	20
23	24	21	48	25	28	69	463	770	83	25	14	19
24	50	20	43	25	29	79	463	770	76	24	14	18
25	35	21	38	26	30	90	433	770	72	25	14	16
26	28	22	35	28	30	115	450	605	66	28	13	16
27	27	23	32	30	30	178	499	468	62	44	13	16
28	28	20	30	32	31	205	548	437	60	40	14	16
29	30	24	32	33	33	190	499	437	56	50	14	15
30	24	28	35	34	-	185	417	472	55	35	13	14
31	22	-	40	34	-	195	-	494	-	31	12	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	815	70	17	26.3	0.271	0.31	1,620
November	832	81	19	27.7	.286	.32	1,650
December	2,359	254	26	76.1	.785	.90	4,680
Calendar year 1939	56,322	1,160	-	154	1.59	21.60	111,700
January	1,131	52	25	36.5	.376	.43	2,240
February	959	45	28	33.1	.341	.37	1,900
March	2,208	205	34	71.2	.734	.85	4,380
April	9,532	548	148	318	3.28	3.66	18,910
May	20,169	1,060	397	651	6.71	7.74	40,000
June	6,012	450	53	200	2.06	2.30	11,920
July	1,066	51	24	34.4	.355	.41	2,110
August	557	36	12	18.0	.186	.21	1,100
September	586	36	11	19.5	.201	.22	1,160
Water year 1939-40	46,226	1,060	11	126	1.30	17.72	91,670

*Winter discharge measurement on this day.

Note.- Stage-discharge relation affected by ice Dec. 23 to Feb. 13, Feb. 23, 24. No gage-height record Nov. 22-30; discharge computed on basis of records for Long Canyon Creek near Port Hill.

9-233 April 1936 UNITED STATES DEPARTMENT OF THE INTERIOR Geological Survey

Clark Fork above Missoula, Mont.

Location.- Water-stage recorder, lat. 46°53', long. 113°56', in NW¼ sec. 19, T. 13 N., R. 18 W., 3 miles downstream from Blackfoot River and 3 miles east of Missoula.

Drainage area.- 5,740 square miles.

Records available.- March 1929 to September 1940.

Average discharge.- 11 years, 2,219 second-feet.

Extremes.- Maximum discharge during year, 6,140 second-feet May 13 (gage height, 5.17 feet); minimum, about 400 second-feet Jan. 20 (gage height, 1.75 feet, ice present); minimum daily discharge, 520 second-feet Jan. 20.
1928-40: Maximum discharge, 21,600 second-feet June 2, 1933 (gage height, 9.90 feet); minimum, 86 second-feet Jan. 8, 1930 (gage height, 0.52 foot, ice jam above gage); minimum daily discharge, 224 second-feet Jan. 8, 1930, (ice jam above gage).

Remarks.- Records good except those for period of ice effect, which are fair. Regulation from operation of power plant at Bonner. Several diversions above station for irrigation.

Rating tables, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Nov. 24		Nov. 25 to Sept. 30			
2.0	850	1.5	470	3.5	2,780
2.2	1,040	1.8	690	4.0	3,630
2.4	1,270	2.2	1,060	4.5	4,600
		2.6	1,520	5.1	5,910
		3.0	2,040		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,080	1,230	1,080	1,260	b900	1,780	2,470	3,540	4,920	1,390	833	610
2	1,120	1,250	1,090	1,260	b910	1,780	2,700	3,450	4,810	1,350	980	610
3	1,080	1,220	1,040	1,270	b930	1,780	2,540	3,820	4,600	1,290	960	626
4	1,140	1,220	1,090	1,290	b970	1,840	2,620	4,300	4,400	1,260	924	666
5	1,190	1,200	1,060	1,170	b1,030	1,720	2,700	4,600	4,100	1,290	879	642
6	1,120	1,150	*1,070	1,180	b1,110	1,470	2,250	4,400	4,010	1,300	897	682
7	1,150	1,150	1,090	1,080	b1,170	1,650	2,250	4,100	3,820	1,260	807	708
8	1,190	1,220	1,070	1,040	b1,220	1,510	2,180	3,920	3,920	1,260	816	674
9	1,190	1,220	1,130	879	b1,210	1,510	2,250	3,820	4,100	1,160	834	682
10	1,270	1,200	1,090	1,080	b1,270	1,440	2,320	4,010	4,010	1,130	834	666
11	1,190	1,170	1,170	b950	b1,270	1,330	2,320	4,600	3,720	1,160	771	674
12	1,040	1,120	1,180	807	b1,210	1,330	2,320	5,570	3,450	1,180	735	650
13	1,230	1,160	1,080	879	1,220	1,260	2,320	5,910	3,360	1,070	690	674
14	1,110	1,120	1,090	970	1,140	1,260	2,400	5,800	3,100	1,050	666	762
15	1,130	1,130	1,040	b1,040	1,080	1,350	2,780	5,570	2,860	1,030	674	753
16	1,230	1,060	1,090	1,060	1,140	1,320	3,020	5,350	2,700	915	666	771
17	1,210	1,070	1,220	1,200	1,050	1,510	2,940	5,240	2,540	1,020	626	771
18	1,120	1,010	1,220	*b755	1,020	1,650	2,940	5,020	2,470	1,000	626	798
19	1,160	1,060	1,220	b610	1,090	1,650	3,020	4,810	2,250	1,150	618	861
20	1,130	1,060	1,150	b520	980	1,720	3,270	4,920	2,180	1,660	658	861
21	1,130	1,100	1,150	b530	*1,130	1,720	3,450	5,020	2,040	744	634	807
22	1,100	1,050	1,160	b560	1,000	1,720	3,450	4,810	1,910	554	589	843
23	1,150	1,080	1,140	b620	1,020	1,840	3,360	4,700	2,040	980	582	843
24	1,130	1,170	1,000	b670	906	1,840	3,450	4,810	1,650	1,000	568	879
25	1,110	1,720	834	b700	1,020	1,910	3,450	5,130	1,400	1,010	626	825
26	1,150	843	825	b640	1,010	1,910	3,360	5,350	1,410	870	610	834
27	1,170	807	b760	b670	1,390	2,110	3,540	5,350	1,530	951	596	879
28	1,230	1,000	b700	b800	1,520	2,040	3,820	5,130	1,520	1,080	610	942
29	1,250	1,010	b770	b900	1,580	1,980	3,820	4,920	1,470	1,020	626	1,030
30	1,250	1,030	852	b935	-	1,980	3,630	4,810	1,280	970	618	1,330
31	1,270	-	1,180	b920	-	2,040	-	4,810	-	833	603	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	36,020	1,270	1,040	1,162	71,440
November	33,830	1,720	807	1,128	67,100
December	32,641	1,220	700	1,053	64,740
Calendar year 1939	784,413	10,400	360	2,149	1,556,000
January	28,245	1,290	520	911	56,020
February	32,496	1,580	900	1,121	64,450
March	51,950	2,110	1,260	1,676	103,000
April	86,940	3,820	2,180	2,898	172,400
May	147,590	5,910	3,450	4,761	292,700
June	87,570	4,920	1,280	2,919	173,700
July	33,937	1,660	554	1,095	67,310
August	22,156	980	568	715	43,950
September	23,353	1,330	610	778	46,320
Water year 1939-40	616,728	5,910	520	1,685	1,223,000

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

Clark Fork below Missoula, Mont.

Location.- Water-stage recorder, lat. 46°52', long. 114°07', in SE¼ sec. 21, T. 13 N., R. 20 W., 2 miles downstream from Bitterroot River and 6 miles west of Missoula.

Drainage area.- 8,690 square miles.

Records available.- October 1929 to September 1940.

Average discharge.- 11 years, 4,093 second-feet.

Extremes.- Maximum discharge during year, 14,200 second-feet May 13 (gage height, 5.56 feet); minimum, 647 second-feet Jan. 20 (gage height, 0.43 foot).
1929-40: Maximum discharge, 36,800 second-feet June 11, 1933 (gage height, 10.14 feet); minimum, 388 second-feet Jan. 18, 1933 (gage height, 0.58 foot, ice present).

Remarks.- Records excellent except those for periods of partly estimated gage heights or staff-gage readings, which are good. Slight regulation from power plant at Bonner. Many diversions above station for irrigation.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Mar. 23 to Apr. 14)

Oct. 1 to Apr. 14

0.5	710	1.8	2,470
.8	1,030	2.3	3,420
1.2	1,540	2.9	4,790

Apr. 15 to Sept. 30

0.5	810	2.4	3,790
.8	1,120	3.0	5,200
1.2	1,600	4.0	8,080
1.8	2,560	5.0	11,700

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,640	1,980	f1,620	2,140	1,600	2,820	4,180	6,840	11,300	2,050	1,330	801
2	1,710	1,960	f1,780	2,120	1,470	2,820	4,660	6,840	11,300	2,050	1,350	810
3	1,760	1,950	f1,780	2,220	1,570	2,730	4,660	7,300	10,500	2,000	1,330	840
4	1,780	1,890	f1,710	2,220	1,770	2,640	4,540	7,920	9,790	1,990	1,290	910
5	1,880	1,900	f1,830	2,110	1,950	2,560	4,540	8,240	9,080	2,050	1,230	930
6	1,860	1,860	f1,800	2,030	2,010	2,300	4,180	7,760	8,740	2,130	1,230	980
7	1,890	1,880	1,760	1,900	2,060	2,380	3,960	7,140	8,240	2,050	1,160	1,000
8	1,950	1,960	1,720	1,720	2,110	2,300	3,960	6,840	8,240	2,050	1,140	980
9	1,960	1,950	1,800	1,580	2,010	2,300	4,300	7,140	8,080	1,940	1,140	990
10	1,980	1,960	1,880	1,740	2,140	2,220	4,180	8,240	7,600	1,770	1,130	960
11	1,940	1,940	1,960	1,740	2,140	2,140	3,960	10,200	6,990	1,710	1,030	960
12	1,740	1,890	2,000	1,430	2,030	2,110	3,850	12,500	6,990	1,710	1,030	940
13	1,860	1,940	1,960	1,440	1,920	2,040	3,850	13,800	6,990	1,570	1,010	950
14	1,800	1,860	1,920	1,580	1,830	2,060	4,070	12,900	6,700	1,540	940	1,040
15	1,760	1,860	1,940	1,710	1,800	2,300	5,080	12,100	6,130	1,500	930	1,040
16	1,880	1,800	1,950	1,720	1,800	2,470	5,590	11,300	5,590	1,400	940	1,080
17	1,860	1,780	2,110	1,880	1,770	2,470	5,330	11,300	5,200	1,480	930	1,100
18	1,820	1,710	2,300	1,640	1,710	2,470	5,200	10,500	4,830	1,460	940	1,130
19	1,800	1,720	2,380	1,070	1,760	2,470	5,720	10,500	4,360	1,510	930	1,200
20	1,800	1,710	2,220	832	1,650	2,560	6,990	10,900	4,240	2,050	940	1,240
21	1,780	1,720	2,080	770	1,950	2,470	7,760	11,300	4,120	1,350	910	1,200
22	1,770	1,710	2,040	790	1,950	2,560	7,300	10,900	3,790	1,010	830	1,270
23	1,780	1,710	1,950	f986	1,860	2,730	6,270	10,900	3,790	1,300	831	1,300
24	1,760	1,740	1,800	997	1,650	2,820	5,990	11,300	3,260	1,350	831	1,330
25	1,780	2,140	1,610	1,050	1,740	2,920	5,860	12,500	2,750	1,350	840	1,330
26	1,830	1,430	1,640	1,100	1,840	3,110	5,720	12,900	2,560	1,240	830	1,340
27	1,860	f1,410	1,570	1,070	2,300	3,420	5,860	12,100	2,560	1,340	810	1,370
28	1,950	h1,680	1,470	1,310	2,640	3,520	6,410	10,900	2,470	1,500	810	1,520
29	1,960	f1,640	1,350	1,700	2,640	3,520	6,410	10,200	2,380	1,450	830	1,770
30	1,980	h1,680	1,500	1,650	-	3,420	6,270	10,200	2,130	1,400	820	2,560
31	2,010	-	1,980	1,570	-	3,520	-	10,900	-	1,350	810	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	57,130	2,010	1,640	1,843	113,300
November	54,360	2,140	1,410	1,812	107,800
December	57,410	2,380	1,350	1,852	113,900
Calendar year 1939	1,480,497	21,500	997	4,056	2,936,000
January	47,815	2,220	770	1,542	94,840
February	55,670	2,640	1,470	1,920	110,400
March	82,170	3,520	2,040	2,651	163,000
April	156,650	7,760	3,850	5,222	310,700
May	314,360	13,800	6,840	10,140	623,500
June	180,700	11,300	2,130	6,023	358,400
July	50,650	2,130	1,010	1,634	100,500
August	31,052	1,350	801	1,002	61,590
September	34,871	2,560	801	1,162	69,170
Water year 1939-40	1,122,838	13,800	770	3,068	2,227,000

f Gage-height record partially estimated.
h Staff-gage reading.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Clark Fork at St. Regis, Mont.

Location.- Water-stage recorder, lat. 47°18', long. 115°05', in sec. 19, T. 18 N., R. 27 W., at St. Regis, half a mile downstream from St. Regis River.

Drainage area.- 10,500 square miles.

Records available.- October 1910 to September 1923, February 1929 to September 1940.

Average discharge.- 24 years, 7,234 second-feet

Extremes.- Maximum discharge during year, 17,200 second-feet May 13, 14 (gage height, 10.38 feet); minimum, 1,150 second-feet Jan. 21 (gage height, 3.60 feet).
1910-23, 1929-40: Maximum discharge observed, 62,800 second-feet May 30, 31, 1913 (gage height, 19.1 feet); minimum daily discharge, 1,050 second-feet Feb. 19-22, 1929.

Remarks.- Records excellent except those for periods of ice effect, which are good. Many diversions and slight regulation above station.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

3.7	1,220	6.5	5,610
4.2	1,670	7.5	8,030
4.8	2,370	9.0	12,500
5.5	3,560	10.5	17,500

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,110	2,450	2,060	2,450	2,230	3,840	5,830	8,890	13,800	3,040	1,940	1,260
2	2,110	2,450	2,110	2,700	2,230	4,030	6,500	9,490	14,100	2,960	1,890	1,260
3	2,170	2,450	2,170	2,700	2,110	3,930	6,970	10,400	13,800	2,870	1,840	1,290
4	2,230	2,370	2,110	2,780	2,170	3,840	6,500	11,300	13,100	2,780	1,840	1,330
5	2,230	2,370	2,110	2,780	2,300	3,740	6,500	11,600	12,200	2,780	1,780	1,370
6	2,370	2,370	2,170	2,700	2,530	3,650	6,500	11,300	11,600	2,780	1,780	1,420
7	2,300	2,370	2,170	2,630	2,700	3,380	6,050	10,700	11,000	2,780	1,720	1,420
8	2,300	2,370	2,170	2,450	2,700	3,560	5,830	9,790	10,700	2,700	1,670	1,460
9	2,370	2,450	2,230	2,300	2,870	3,380	6,050	9,790	10,400	2,700	1,620	1,420
10	2,370	2,370	2,300	2,170	2,780	3,380	6,270	11,000	10,100	2,530	1,620	1,420
11	2,450	2,450	2,450	2,230	2,870	3,210	6,050	13,100	9,490	2,450	1,620	1,420
12	2,370	2,450	2,530	2,230	2,700	3,120	5,830	15,500	9,190	2,300	1,620	1,420
13	2,230	2,370	2,530	2,060	2,530	3,040	5,830	16,800	8,890	2,300	1,510	1,420
14	2,300	2,370	2,450	2,060	2,450	2,870	6,270	16,800	8,600	2,170	1,510	1,420
15	2,230	2,300	2,450	2,110	2,370	2,960	6,970	15,800	8,310	2,110	1,420	1,460
16	2,230	2,300	2,700	*2,170	2,300	3,300	7,750	15,100	7,750	2,170	1,420	1,510
17	2,300	2,230	3,210	2,170	2,300	3,560	8,030	14,800	6,970	2,110	1,420	1,510
18	2,300	2,230	3,300	2,170	2,230	3,740	8,030	14,400	6,500	2,110	1,370	1,560
19	2,300	2,170	3,210	b1,720	2,230	3,740	8,310	14,100	6,050	2,060	1,420	1,620
20	2,230	2,170	3,210	b1,370	2,230	3,740	9,490	14,100	5,830	2,110	1,370	1,620
21	2,300	2,170	3,040	1,220	2,170	3,840	10,700	14,800	5,500	2,530	1,370	1,670
22	2,230	2,170	2,780	1,220	2,370	3,930	10,700	14,800	5,280	2,060	1,330	1,670
23	2,230	2,170	2,700	1,330	2,370	4,030	10,100	14,400	4,960	1,720	1,290	1,720
24	2,230	2,170	2,620	b1,460	2,300	4,330	9,190	14,800	4,640	1,840	1,290	1,780
25	2,230	2,170	2,450	1,670	2,230	4,540	8,890	15,500	4,230	1,890	1,260	1,780
26	2,230	2,620	2,230	2,000	2,370	4,960	8,600	15,800	3,840	1,890	1,290	1,780
27	2,300	2,000	2,230	2,170	2,620	5,280	8,600	15,800	3,560	1,890	1,290	1,840
28	2,300	1,890	2,060	2,110	3,120	5,610	8,890	14,400	3,470	1,940	1,290	1,890
29	2,450	2,000	2,060	1,940	3,740	5,610	9,190	13,400	3,380	2,060	1,260	2,000
30	2,450	2,060	2,110	2,170	-	5,610	8,890	13,100	3,210	2,000	1,290	2,230
31	2,450	-	2,110	2,230	-	5,610	-	13,400	-	1,940	1,260	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	70,900	2,450	2,110	2,287	140,600
November	68,480	2,620	1,890	2,283	135,800
December	76,030	3,300	2,060	2,453	150,800
Calendar year 1939	1,907,740	26,100	1,280	5,227	3,784,000
January	65,460	2,780	1,220	2,112	129,800
February	72,120	3,740	2,110	2,487	143,000
March	123,360	5,610	2,870	3,979	244,700
April	229,310	10,700	5,830	7,644	454,800
May	414,960	16,800	8,890	13,390	823,100
June	240,450	14,100	3,210	8,015	476,900
July	71,570	3,040	1,720	2,309	142,000
August	46,600	1,940	1,260	1,503	92,430
September	46,970	2,230	1,260	1,566	93,160
Water year 1939-40	1,526,210	16,800	1,220	4,170	3,027,000

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

Clark Fork near Plains, Mont.

Location.- Water-stage recorder, lat. 47°26', long. 114°51', on lot 7, SW¼ sec. 1, T. 19 N., R. 26 W., 2 miles upstream from Plains and 6 miles downstream from Flathead River.

Drainage area.- 19,900 square miles.

Records available.- October 1910 to September 1940.

Average discharge.- 24 years (1912-15, 1917-19, 1920-24, 1925-40), 18,320 second-feet.

Extremes.- Maximum discharge during year, 48,100 second-feet May 27 (gage height, 10.88 feet); minimum, 3,990 second-feet Jan. 9 (gage height, 3.17 feet).
1910-40: Maximum discharge, 126,000 second-feet May 28, 1928 (gage height, 18.4 feet); minimum, 3,200 second-feet Feb. 8, 1936 (affected by ice).

Remarks.- Records excellent except those for periods of no gage-height record or ice effect, which are fair. Many diversions above station for irrigation. Partial regulation since April 1938 at Kerr Dam, 4 miles below Flathead Lake (see p. 137).

Rating table, water year 1939-40 except periods of ice effect
(gage height, in feet, and discharge, in second-feet)

3.3	4,430	5	10,800	9	33,000
3.7	5,770	6	15,060	10	40,500
4.0	6,870	7	20,100	11	49,000
4.5	8,800	8	26,000		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7,620	7,240	5,420	6,130	b6,400	7,430	12,000	23,000	38,200	12,000	6,500	5,420
2	7,430	7,240	5,600	5,250	b6,600	a7,000	12,500	23,500	39,800	11,200	6,320	5,600
3	7,240	7,060	6,320	5,950	b6,400	a6,400	a13,300	24,700	37,500	10,800	6,320	5,600
4	7,430	7,060	6,130	6,870	b6,600	a4,850	a11,800	25,400	30,800	10,400	6,320	5,600
5	7,430	7,060	5,770	6,870	b6,000	a5,150	a12,300	26,600	33,000	9,400	6,130	5,600
6	7,430	7,060	6,800	7,060	b5,800	5,080	a13,000	27,300	34,500	10,800	6,130	5,770
7	7,620	7,060	6,320	7,060	b6,000	5,600	a11,600	28,000	34,500	11,200	6,130	5,770
8	7,620	7,060	5,770	5,770	b6,400	5,600	a11,200	27,300	33,000	9,800	6,130	5,770
9	a7,620	7,060	6,130	4,920	b6,400	6,320	a11,500	27,300	30,000	11,600	5,950	5,770
10	7,620	7,060	5,600	6,680	b6,600	6,500	a11,900	28,600	28,000	9,600	5,950	5,770
11	7,620	7,060	5,420	6,500	b6,800	6,320	a12,200	31,500	26,000	6,870	5,950	5,770
12	7,620	6,500	4,920	6,680	6,320	5,950	a12,300	34,500	25,400	6,680	5,950	5,770
13	7,620	5,600	5,600	6,130	6,130	5,950	a12,400	38,200	26,600	6,500	5,950	5,770
14	7,430	5,080	5,770	7,060	6,500	6,130	a12,800	39,800	27,300	6,320	5,770	5,770
15	7,620	5,950	5,600	6,680	6,320	5,770	a13,500	39,800	28,000	6,320	5,770	5,770
16	7,430	5,770	5,950	6,130	6,320	5,600	a15,100	39,800	25,400	6,500	5,770	5,770
17	7,240	5,770	6,500	5,950	6,130	5,770	a15,600	39,800	24,700	6,500	5,770	5,950
18	7,240	5,770	6,320	5,600	5,950	5,600	a16,100	40,500	24,700	6,500	5,770	5,950
19	7,060	5,770	5,950	5,250	5,950	5,600	a17,000	40,500	23,500	6,500	5,770	5,950
20	7,060	5,950	6,130	5,420	5,770	5,950	h19,600	40,500	22,400	6,500	5,770	5,950
21	7,060	6,130	6,130	b5,600	5,950	5,940	a20,300	42,200	21,200	7,060	5,600	6,130
22	6,870	6,320	6,320	b5,400	5,770	5,770	a21,200	43,000	19,600	6,680	5,600	6,130
23	6,680	6,130	6,130	b5,500	6,680	6,130	a22,000	43,000	17,400	6,320	5,600	5,950
24	6,500	5,600	6,870	b5,700	6,250	6,500	21,800	43,800	16,400	6,130	5,600	6,130
25	6,870	5,600	6,870	b5,900	4,900	7,240	21,800	45,600	14,600	6,130	5,600	6,130
26	6,870	6,320	6,500	b6,100	6,870	8,400	21,800	47,200	13,300	6,320	5,420	6,130
27	6,870	5,770	6,320	b6,400	6,130	10,800	21,800	47,200	12,000	6,320	5,420	6,130
28	7,060	5,080	b5,150	b6,600	6,130	12,000	22,400	47,200	12,500	6,680	5,600	6,320
29	7,060	5,600	b5,600	b4,600	7,620	12,900	23,000	44,700	13,700	6,680	5,600	6,320
30	7,060	5,600	b6,000	b5,400	-	12,500	23,000	37,500	12,900	6,500	5,600	6,500
31	7,060	-	b6,200	b5,900	-	12,500	-	30,800	-	6,320	5,420	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	224,960	7,620	6,500	7,257	446,200
November	188,330	7,240	5,080	6,278	373,500
December	185,990	6,870	4,920	6,000	368,900
Calendar year 1939	5,762,600	68,000	4,920	15,790	11,430,000
January	187,060	7,060	4,600	6,034	371,000
February	181,690	7,620	4,900	6,265	360,400
March	219,260	12,900	4,850	7,073	434,900
April	486,800	23,000	11,200	16,230	965,600
May	1,118,800	47,200	23,000	36,090	2,219,000
June	746,900	39,800	12,000	24,900	1,481,000
July	243,130	12,000	6,130	7,843	482,200
August	181,180	6,500	5,420	5,845	359,400
September	176,960	6,500	5,420	5,899	351,000
Water year 1939-40	4,141,060	47,200	4,600	11,310	8,213,000

a No gage-height record; discharge interpolated or computed on basis of recorded range of stage and records for station at St. Regis and Flathead River near Polson.
b Stage-discharge relation affected by ice.
h Computed from wire-weight gage reading.

Clark Fork near Heron, Mont.

Location.- Water-stage recorder, lat. 48°04', long. 115°59', in sec. 28, T. 27 N., R. 34 W., 600 feet upstream from Dead Horse Creek and 1½ miles northwest of Heron.

Drainage area.- 21,800 square miles.

Records available.- September 1928 to September 1940.

Average discharge.- 12 years, 18,710 second-feet.

Extremes.- Maximum discharge during year, 52,600 second-feet May 27 (gage height, 26.95 feet); minimum, 2,270 second-feet, regulated, Aug. 19 (gage height, 8.43 feet), from rating curve extended below 4,000 second-feet.

1928-40: Maximum discharge, 137,000 second-feet June 17, 1933 (gage height, 46.62 feet, present datum); minimum, 620 second-feet Dec. 23, 1935 during period of extreme regulation (gage height, 7.59 feet), from rating curve extended below 4,000 second-feet. Maximum stage known, 59.1 feet, present datum, June 1894.

Remarks. - Records good. Power plant at Thompson Falls causes diurnal fluctuation during low water. Considerable water diverted from tributaries above station for irrigation.

Rating table. water year 1939-40 (gage height. in feet, and discharge, in second-feet (Shifting-control method used May 26 to Sept. 30)

8.4	2,200	12	7,800	16	16,500	24	41,460
9.2	3,320	13	9,750	18	21,780	26	48,780
10	4,490	14	11,860	20	27,830		
11	6,030	15	14 110	22	34,460		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7,610	7,610	6,200	6,890	6,710	9,350	16,200	26,900	38,300	13,900	7,070	6,890
2	7,990	7,610	5,870	6,710	7,250	8,750	15,500	27,500	43,600	13,400	7,610	5,550
3	7,610	7,610	6,200	6,030	6,540	8,370	16,800	29,400	43,600	12,500	7,990	4,190
4	8,180	7,610	6,710	6,890	7,250	7,610	16,800	31,100	40,700	11,400	7,250	6,540
5	8,370	7,610	6,540	7,610	7,430	7,250	15,000	32,100	35,100	11,400	6,370	6,540
6	7,800	7,610	6,200	7,610	6,710	6,890	15,800	32,400	38,300	10,800	7,430	6,710
7	8,180	7,800	6,890	7,610	6,890	7,070	16,000	33,100	38,600	12,700	6,890	7,610
8	8,370	7,250	6,710	7,610	7,430	7,430	15,500	32,800	37,900	11,900	7,070	7,430
9	8,180	7,250	6,370	6,030	7,610	7,800	15,000	32,400	36,500	11,600	7,800	5,550
10	8,180	7,610	6,890	6,030	7,430	7,800	15,300	33,400	33,800	12,500	8,370	6,200
11	8,180	7,610	6,200	6,890	7,990	7,990	15,800	36,500	31,800	11,000	7,250	6,540
12	8,180	7,430	6,030	6,710	7,990	7,800	15,800	40,400	29,400	10,400	6,200	6,540
13	8,180	6,710	5,710	6,890	6,890	7,430	15,800	42,900	29,100	8,950	7,990	6,710
14	8,180	5,710	6,200	6,710	6,710	7,430	16,200	45,100	29,800	7,430	6,890	7,250
15	7,800	5,870	6,540	7,430	7,250	7,430	17,800	45,800	31,100	5,090	6,890	6,200
16	7,990	6,540	6,540	6,890	7,070	7,430	18,500	45,400	30,800	7,070	7,070	5,550
17	7,800	6,370	7,070	7,070	7,070	7,430	19,600	45,100	28,800	7,250	7,070	6,200
18	7,990	6,370	7,430	6,030	7,070	7,610	19,800	45,400	28,200	7,800	6,200	6,710
19	7,610	6,200	7,250	5,390	6,710	7,430	21,500	45,800	27,800	7,430	3,670	6,710
20	7,610	6,540	6,890	5,870	6,890	7,430	22,900	45,800	26,600	8,560	5,710	7,430
21	7,610	6,370	6,890	6,200	6,540	7,800	22,400	47,300	25,000	7,070	7,250	7,610
22	7,610	6,710	6,990	5,090	6,710	7,990	25,000	48,000	23,200	7,610	6,200	6,200
23	7,800	6,710	6,890	6,370	6,710	7,990	27,200	48,400	21,500	7,800	7,250	5,390
24	7,800	6,710	6,890	6,370	7,430	8,560	26,900	48,800	19,800	8,750	6,710	6,890
25	6,710	6,030	7,430	6,370	8,180	9,150	26,200	50,300	18,300	8,560	6,370	7,430
26	7,070	6,200	7,610	6,710	7,070	10,600	26,200	51,400	16,800	8,560	5,710	6,710
27	7,990	6,710	6,890	7,070	7,610	12,700	25,900	52,200	15,000	7,250	6,030	7,070
28	7,610	6,200	6,710	7,070	7,250	15,500	26,900	51,400	13,600	6,370	6,030	7,610
29	7,070	5,550	6,540	7,430	7,800	17,500	26,900	50,700	13,400	5,710	6,370	7,610
30	6,890	6,200	6,370	6,370	-	16,500	27,200	48,000	13,600	7,430	6,540	5,870
31	7,610	-	7,250	5,240	-	16,200	-	40,400	-	7,430	7,610	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	241,760	8,370	6,710	7,799	479,500
November	204,310	7,800	5,550	6,810	405,200
December	206,800	7,610	5,710	6,671	410,200
Calendar year 1939	6,553,920	73,400	5,240	17,960	13,000,000
January	205,190	7,610	5,090	6,619	407,000
February	208,190	8,180	6,540	7,179	412,900
March	284,220	17,500	6,890	9,168	563,700
April	602,400	27,200	15,000	20,080	1,195,000
May	1,286,200	52,200	26,900	41,490	2,551,000
June	860,000	43,600	13,400	28,670	1,706,000
July	285,620	13,900	5,710	9,214	566,500
August	210,860	8,370	3,670	6,802	418,200
September	197,440	7,610	4,190	6,581	391,600
Water year 1939-40	4,792,990	52,200	3,670	13,100	9,507,000

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Pend Oreille Lake at Hope, Idaho

Location.- Water-stage recorder, lat. 48°15', long. 116°18', 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 (U. S. Coast and Geodetic Survey datum).

Drainage area.- 22,900 square miles.

Records available.- September 1921 to September 1940. March 1914 to September 1922, at site at Sandpoint.

Extremes.- Maximum elevation during year, 2,056.76 feet May 30; minimum, 2,047.25 feet Dec. 3.

1921-40: Maximum elevation, 2,068.78 feet June 21, 1933; minimum, 2,046.47 feet Feb. 17, 1936.

Maximum elevation known, 2,076.08 feet, June 1894.

Remarks.- Considerable water diverted from tributaries of Clark Fork for irrigation.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	47.71	47.61	47.31	-	47.48	47.99	49.60	52.55	56.39	51.07	47.92	47.34
2	47.76	47.60	47.29	-	47.46	48.09	49.75	52.60	56.29	50.89	47.88	47.33
3	47.74	47.60	47.27	-	47.48	48.17	49.88	52.73	56.24	50.71	47.85	47.30
4	47.75	47.60	47.28	-	47.48	48.20	49.99	52.89	56.14	50.51	47.84	47.27
5	47.78	47.59	47.29	-	47.50	48.24	50.06	53.05	55.95	50.34	47.79	47.38
6	47.76	47.59	47.29	-	47.55	48.24	50.11	53.21	55.76	50.18	47.76	47.35
7	47.73	47.64	47.30	-	47.58	48.26	50.16	53.32	55.64	50.00	47.73	47.36
8	47.74	47.67	47.33	-	47.59	48.30	50.24	53.44	55.52	49.91	47.71	47.37
9	47.73	47.70	47.37	-	47.62	48.32	50.33	53.51	55.38	49.79	47.69	47.38
10	47.73	47.69	47.42	-	47.68	48.32	50.40	53.61	55.20	49.69	47.71	47.34
11	47.74	47.67	47.49	-	47.70	48.32	50.42	53.77	54.98	49.60	47.69	47.34
12	47.73	47.65	47.49	-	47.72	48.31	50.46	54.02	54.73	49.48	47.67	47.34
13	47.73	47.64	47.45	-	47.74	48.29	50.49	54.28	54.59	49.39	47.65	47.35
14	47.73	47.63	47.46	-	47.73	48.26	50.52	54.54	54.44	49.22	47.62	47.38
15	47.73	47.58	47.57	47.56	47.71	48.23	50.60	54.80	54.24	49.02	47.61	47.37
16	47.71	47.53	47.64	47.57	47.70	48.21	50.68	55.02	54.11	48.87	47.57	47.37
17	47.70	47.51	47.70	47.56	47.70	48.21	50.76	55.20	53.98	48.74	47.56	47.35
18	47.71	47.50	47.73	47.53	47.71	48.21	50.86	55.34	53.80	48.64	47.53	47.36
19	47.70	47.47	47.73	47.48	47.71	48.21	50.97	55.49	53.64	48.55	47.50	47.37
20	47.71	47.45	47.74	47.44	47.70	48.21	51.10	55.62	53.52	48.50	47.42	47.36
21	47.70	47.43	47.76	47.42	47.69	48.21	51.26	55.75	53.35	48.42	47.41	47.39
22	47.70	47.41	47.74	47.40	47.66	48.22	51.40	55.88	53.15	48.33	47.40	47.40
23	47.69	47.41	47.72	47.34	47.65	48.24	51.56	56.01	52.94	48.28	47.40	47.37
24	47.71	47.38	47.70	47.36	47.66	48.27	51.74	56.15	52.73	48.23	47.40	47.34
25	47.66	47.36	47.70	47.42	47.71	48.31	51.89	56.30	52.50	48.20	47.40	47.37
26	47.64	47.33	47.70	47.47	47.77	48.41	52.01	56.43	52.28	48.14	47.39	47.37
27	47.64	47.33	47.69	47.52	47.79	48.59	52.13	56.53	52.02	48.16	47.37	47.38
28	47.64	47.33	-	47.52	47.84	48.80	52.25	56.61	51.74	48.11	47.36	47.38
29	47.64	47.31	-	47.53	47.92	49.04	52.38	56.68	51.49	48.01	47.32	47.39
30	47.62	47.30	-	47.54	-	49.28	52.47	56.69	51.26	47.98	47.32	47.41
31	47.60	-	-	47.51	-	49.44	-	56.60	-	47.94	47.32	-

Note.- Add 2,000 feet to obtain elevations above mean sea level.

9-238 September 1937

UNITED STATES DEPARTMENT OF THE INTERIOR
Geolo[illegible]cal Survey

Pend Oreille River at Priest River, Idaho

Location.- Water-stage recorder, lat. 48°10'30", long. 116°55'30", in lot 4, sec. 26, T. 56 N., R. 5 W., at town of Priest River, 1½ miles downstream from Priest River. Datum of gage is 2,000.0 feet above mean sea level (general adjustment of 1929). Discharge measurements made at highway bridge at Newport, Wash., 6 miles downstream.
Drainage area.- 24,200 square miles.
Records available.- June 1903 to April 1905, October 1921 to September 1940. June 1903 to September 1921, published as Clark Fork at Newport, Wash.
Average discharge.- 37 years, 25,140 second-feet (adjusted for storage in Pend Oreille Lake).
Extremes.- Maximum discharge during year, 55,100 second-feet May 30, 31 (gage height, 53.12 feet); minimum, 4,600 second-feet Jan. 25 (gage height, 43.94 feet).
1903-40: Maximum discharge, 136,000 second-feet June 15, 1913, June 21, 1933; minimum, 2,200 second-feet Dec. 12, 1919.
Maximum stage known, 38.9 feet June 1894, from floodmarks, referred to Newport gage (discharge, 217,000 second-feet, estimated).
Remarks.- Records good except those for periods of backwater from logs and shifting control, which are fair. Many small diversions from upper tributaries for irrigation. Flow subject to natural regulation in Pend Oreille Lake and artificial regulation on Flathead River, and to slight regulation during log-driving seasons by flash dam on tributary of Priest River.
Cooperation.- Gage-height record collected in cooperation with U. S. Weather Bureau.

Rating table, water year 1939-40, except period of log effect (gage height, in feet, and discharge, in second-feet)
(Shifting control method used Aug. 13 to Sept. 30)

44.0	4,750	46.0	12,100	50.0	33,600
44.5	6,200	47.0	16,800	52.0	47,200
45.0	7,950	48.0	21,800		
45.5	9,960	49.0	27,500		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8,600	8,500	7,680	9,390	8,620	11,100	17,900	31,100	52,900	23,200	9,550	7,060
2	8,600	8,500	7,720	9,430	8,500	11,600	18,400	31,200	52,200	22,400	9,510	7,200
3	8,600	8,400	7,650	9,470	8,500	12,000	19,000	31,800	51,900	21,600	9,300	6,960
4	8,700	8,300	7,610	9,510	8,420	12,100	19,600	32,800	51,200	20,700	9,390	6,750
5	8,700	8,300	7,650	9,340	8,500	12,000	19,600	33,400	50,200	20,000	9,300	7,310
6	8,600	8,300	7,500	9,390	8,860	12,300	19,800	34,200	49,200	19,500	9,020	7,420
7	8,700	8,400	7,680	9,550	8,940	12,500	20,000	34,800	48,500	18,700	8,940	7,610
8	8,600	8,500	7,950	9,670	8,940	12,300	20,200	35,400	47,500	18,200	8,780	7,650
9	8,600	8,600	8,180	9,450	9,220	12,600	20,800	35,900	46,700	17,700	8,500	7,530
10	8,600	8,400	8,620	8,820	9,340	12,500	21,100	36,400	45,600	17,300	8,620	7,380
11	8,600	8,600	8,540	8,860	9,470	12,500	21,700	37,100	44,400	17,000	8,740	7,200
12	8,600	8,600	8,620	8,860	9,590	12,200	21,400	38,300	43,100	16,700	8,460	7,200
13	8,600	8,600	8,660	8,700	9,710	12,300	21,300	39,900	41,100	15,900	8,460	7,100
14	8,600	8,600	8,500	8,660	9,630	12,100	21,400	41,500	40,400	15,600	8,420	7,200
15	8,600	8,500	8,940	8,820	9,590	12,100	21,900	43,000	39,200	15,000	8,220	7,270
16	8,600	8,400	9,510	8,860	9,630	11,900	22,300	44,400	38,500	14,100	8,140	7,160
17	8,600	8,400	9,550	9,020	9,760	11,900	22,500	45,600	37,900	13,400	8,180	7,310
18	8,600	8,380	9,800	9,340	9,760	11,900	22,700	46,500	37,000	13,000	8,220	7,160
19	8,600	8,340	10,000	8,420	9,710	11,900	23,500	47,300	36,000	12,700	7,840	7,350
20	8,600	8,260	9,880	7,800	9 590	11,900	24,000	48,400	34,900	12,200	7,720	7,420
21	8,500	8,220	9,630	7.270	9,630	12,000	24,700	49,100	34,300	12,000	7,350	7,530
22	8,500	8,070	9,960	7,420	9,960	12,100	25,700	50,000	33,300	11,700	7,420	7,530
23	8,600	8,420	10,100	7.760	9,760	12,200	26,500	50,600	32,300	11,300	7,380	7,530
24	8,500	8,580	9.510	6.120	9,140	12,400	27,200	51,200	31,200	11,000	7,460	7,530
25	8,400	8,300	9,430	4,700	9,550	12,800	28,000	51,800	29,800	10,900	7,240	7,380
26	8,600	7,870	9,510	5,440	9,760	13,300	28,400	52,600	28,500	10,800	7,200	7,530
27	8,700	7,800	9,550	6,620	9,960	14,000	28,900	53,300	27,500	10,800	7,020	7,270
28	8,500	7,800	9,390	7,240	10,400	14,800	29,400	54,000	26,400	10,600	7,130	7,380
29	8,400	7,800	9,220	8,110	10,800	15,800	29,900	54,500	25,100	10,300	7,020	7,350
30	8,400	7,530	9,100	8,580	-	16,600	30,600	54,800	24,200	10,000	7,100	7,420
31	8,400	-	9,340	8,780	-	17,400	-	54,200	-	9,880	6,960	-

Month	Observed: Discharge in second-feet: Maximum	Minimum	Mean	Observed: Run-off in acre-feet	Change in contents in Pend Oreille Lake (acre-feet)	Adjusted for change in reservoir contents: Run-off in acre-feet	Discharge in second-feet: Mean	Per square mile	Run-off in inches
October	8,700	8,400	8,574	527,200	-9,240	518,000	8,424	0.348	0.40
November	8,600	7,530	8,309	494,400	-25,000	469.400	7,889	.326	.36
December	10,100	7,500	8,870	545,400	+30,040	575.400	9,358	.387	.45
Calendar year 1939	75,400	5,800	20,650	14,950,000	+2,630	14,950,000	20,650	.853	11.56
January	9,670	4,700	8,367	514,500	-12,600	501,900	8,163	.337	.39
February	10,800	8,420	9,422	542,000	+34,440	576,400	10,020	.414	.45
March	17,400	11,100	12,750	783,700	+128,800	912,500	14,840	.613	.71
April	70,600	17,900	23,280	1,385,000	+262,900	1,648,000	27,700	1.14	1.27
May	54,800	31,100	43,390	2,668,000	+367,900	3,036,000	49,380	2.04	2.35
June	52.900	24,200	39.370	2,342,000	-473,700	1,868,000	31,390	1.30	1.45
July	23,200	9,880	14,980	921,100	-284,300	636,800	10,360	.428	.49
August	9,550	6,960	8,148	501,000	- 51,900	449,100	7,304	.302	.35
September	7,650	6,750	7,323	435,700	+7,470	443,200	7,448	.308	.34
Water year 1939-40	54,800	4,700	16,060	11,660,000	-25,190	11,630,000	16,030	.662	9.01

Note.- Stage-discharge relation affected by backwater from logs Oct. 1 to Nov. 17; discharge computed on basis of records for station below Z Canyon, near Metaline Falls.

Pend Oreille River below Z Canyon, near Metaline Falls, Wash.
(International gaging station)

Location.- Water-stage recorder, lat. 48°59', long. 117°21', in lot 2, sec. 11, T. 40 N., R. 43 E., three-quarters of a mile downstream from Z Canyon, 1⅛ miles south of international boundary, 5 miles downstream from Slate Creek, and 10 miles downstream from Metaline Falls.

Drainage area.- 25,200 square miles.

Records available.- October 1928 to September 1940. November 1908 to September 1910 and October 1912 to September 1928, at site at Metaline Falls, 10 miles upstream, published as Clark Fork at Metaline Falls, Wash.

Average discharge.- 28 years (1912-40), 25,640 second-feet (adjusted for storage in Pend Oreille Lake).

Extremes.- Maximum discharge during year, 56,900 second-feet May 31 (gage height, 27.24 feet); minimum not determined, occurred during period of faulty gage-height record; minimum daily discharge, 4,850 second-feet Jan. 27.

1912-40: Maximum discharge, 139,000 second-feet June 16, 1913 (gage height, 41.2 feet, site and datum then in use); minimum, 2,500 second-feet December 12, 1919 (gage height, -2.4 feet, site and datum then in use).

Remarks.- Records good. Many small diversions from upper tributaries for irrigation. Flow regulated by natural storage in Pend Oreille Lake and by artificial regulation on Flathead River.

Cooperation.- This is one of the international gaging stations maintained by the United States under agreement with Canada.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

9.5	4,780	13	12,000	17	25,400	24	46,900
10	5,570	14	14,900	18	28,800	26	53,100
11	7,480	15	18,100	20	34,900		
12	9,560	16	21,800	22	40,900		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8,780	8,740	8,280	9,470	8,850	11,300	20,000	32,700	55,900	27,200	9,800	7,200
2	8,910	8,680	8,180	9,650	8,970	11,700	21,000	33,300	55,100	26,100	9,580	7,180
3	8,950	8,640	8,200	9,740	9,230	12,300	21,200	33,900	54,200	25,000	9,450	7,300
4	9,040	8,470	8,120	9,780	9,020	12,700	21,600	34,200	53,700	23,900	9,250	7,280
5	9,100	8,430	8,020	9,830	8,990	12,900	22,300	35,100	52,900	23,000	9,250	7,500
6	8,970	8,430	7,980	9,740	9,020	13,000	22,500	35,000	51,800	21,900	9,270	7,480
7	9,040	8,490	7,860	9,670	9,380	13,200	22,600	36,200	50,800	21,100	9,060	7,560
8	8,970	8,800	7,960	9,650	9,740	13,400	23,000	37,000	50,000	20,200	8,930	7,660
9	8,930	8,910	8,180	9,830	10,100	13,600	23,500	37,600	49,100	19,400	8,780	7,780
10	8,950	8,760	8,360	9,900	10,200	13,600	24,000	38,300	48,200	18,700	8,620	7,700
11	8,850	8,850	8,740	9,520	9,990	13,400	24,300	39,200	47,300	18,100	8,380	7,680
12	8,890	8,910	8,660	9,160	9,800	13,500	24,600	39,500	46,300	17,700	8,570	7,540
13	8,950	8,910	8,680	9,080	9,870	13,500	24,600	40,300	45,200	17,200	8,550	7,480
14	8,990	8,870	8,890	9,120	9,990	13,600	24,700	41,500	43,400	16,400	8,240	7,500
15	8,970	8,780	9,210	9,040	9,940	13,500	24,800	43,100	42,800	15,900	8,180	7,440
16	8,970	8,620	9,430	9,020	9,870	13,500	24,800	44,300	41,600	15,400	8,140	7,500
17	8,970	8,490	9,650	9,100	9,940	13,400	25,100	45,500	40,700	f14,600	8,160	7,520
18	8,930	8,490	9,490	9,080	10,100	13,300	25,400	47,000	40,000	a14,100	8,200	7,600
19	8,870	8,570	9,490	9,080	10,100	13,300	25,500	47,900	39,100	a13,600	8,280	7,640
20	8,800	8,490	9,760	8,410	10,000	13,200	26,000	48,900	38,400	a13,100	8,100	7,560
21	8,760	8,490	9,760	8,080	9,920	13,200	26,600	49,800	37,200	a12,600	7,920	7,660
22	8,760	8,490	9,490	7,320	9,870	13,300	27,200	50,700	36,300	a12,100	7,640	7,720
23	8,830	8,360	9,450	7,320	10,100	13,500	28,100	51,600	35,600	f11,600	7,540	7,840
24	8,760	8,410	9,650	7,120	10,100	13,700	28,900	52,400	33,700	11,400	7,520	7,820
25	8,740	8,640	9,520	6,920	9,780	14,000	29,600	53,300	32,700	11,000	7,580	7,860
26	9,040	8,760	9,250	f5,750	9,800	14,600	30,300	53,600	31,400	10,800	7,600	7,800
27	8,910	8,620	9,190	f4,850	9,940	16,100	30,700	54,200	a30,600	10,700	7,420	7,800
28	8,780	8,430	9,210	f5,710	10,300	16,700	31,300	55,100	a29,800	10,600	7,380	7,800
29	8,620	8,320	9,250	7,260	10,700	17,000	31,700	55,700	a29,100	10,600	7,280	7,720
30	8,550	8,380	9,380	8,160	-	18,100	32,200	56,000	f28,300	10,300	7,280	7,820
31	8,620	-	9,380	8,430	-	19,000	-	56,600	-	10,000	7,240	-

Month	Observed				Change in contents in Pend Oreille Lake (acre-feet)	Adjusted for change in reservoir contents			
	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	9,100	8,550	8,877	545,900	-9,240	536,700	8,729	0.346	0.40
November	8,910	8,320	8,608	512,200	-25,000	487,200	8,188	.325	.36
December	9,760	7,860	8,925	548,800	+30,040	578,800	9,413	.374	.43
Calendar year 1939	76,400	5,000	21,070	15,250,000	+2,630	15,260,000	21,070	.836	11.35
January	9,900	4,850	8,542	525,200	-12,600	512,600	8,337	.331	.38
February	10,700	8,850	9,780	562,500	+34,440	596,900	10,380	.412	.44
March	19,000	11,300	13,910	855,100	+128,800	983,900	16,000	.635	.73
April	32,200	20,000	25,600	1,524,000	+262,900	1,787,000	30,030	1.19	1.33
May	56,600	32,700	44,500	2,736,000	+367,900	3,104,000	50,480	2.00	2.31
June	55,900	28,300	42,370	2,521,000	-473,700	2,047,000	34,400	1.37	1.53
July	27,200	10,000	16,270	1,000,000	-284,300	715,700	11,640	.462	.53
August	9,800	7,240	8,296	510,100	-51,900	458,200	7,452	.296	.34
September	7,860	7,180	7,598	452,100	+7,470	459,600	7,724	.307	.34
Water year 1939-40	56,600	4,850	16,930	12,290,000	-25,190	12,270,000	16,900	.671	9.12

a No gage-height record; discharge interpolated.
f Fragmentary gage-height record; discharge computed from partly or wholly estimated gage heights.

Smaller reservoirs in Pend Oreille River Basin, Mont.

(Location given is that of controlling dam or outlet work)

Georgetown Lake on Flint Creek, 2 miles west of Southern Cross, completed in 1905 to store water for release through Flint Creek or pumpage into Warm Springs Creek for use of reduction works of Anaconda Copper Mining Company at Anaconda, or for power development, has usable capacity of 33,000 acre-feet. Records furnished by The Montana Power Co.

East Fork of Rock Creek Reservoir on East Fork of Rock Creek, 14 miles southwest of Phillipsburg, completed in 1938 for irrigation in Flint Creek valley, has usable capacity of 16,200 acre-feet. Records furnished by Montana State Water Conservation Board.

Nevada Creek Reservoir on Nevada Creek, 7 miles west of Finn, completed in 1938 for irrigation, has usable capacity of 12,600 acre-feet. Records furnished by Montana State Water Conservation Board.

West Fork of Bitterroot River Reservoir on West Fork of Bitterroot River, 7 miles upstream from Nez Perce Creek and 23 miles south of Darby, completed June 14, 1940, for irrigation, has usable capacity of 31,600 acre-feet. Records furnished by Montana State Water Conservation Board.

Como Lake on Rock Creek, 4 miles northwest of Darby, Mont., completed in 1909 for irrigation, has usable capacity of 33,000 acre-feet. Records furnished by Bitterroot Valley Irrigation Co.

Thompson Falls Reservoir on Clark Fork, at Thompson Falls, for power development has usable capacity of 15,000 acre-feet. Records furnished by The Montana Power Co.

Other reservoirs of small capacity, principally on tributaries of the Bitterroot River, are operated for irrigation.

Monthly change in contents, in acre-feet, water year October 1939 to September 1940

Date	Georgetown Lake	East Fork of Rock Creek Reservoir	Nevada Creek Reservoir	West Fork of Bitterroot River Reservoir	Como Lake	Thompson Falls Reservoir
October	0	+1,500	*-2,890	-	-1,980	+750
November	-140	+700	-	-	+1,100	-600
December	+360	*+400	-	-	+1,900	+760
January	+390	+300	-	-	+1,600	-1,050
February	+330	*+500	*+970	-	+1,400	+730
March	+190	+500	*+3,380	-	+2,700	-5,330
April	+970	*+800	+1,950	-	+9,200	-2,330
May	+590	-900	*+50	-	+14,500	-3,070
June	-330	†-900	-900	†+4,900	-1,500	+6,740
July	-1,420	†-4,100	†-1,550	†+3,100	-10,900	+3,260
August	-1,990	-3,300	-2,650	-2,450	-15,000	-9,050
September	-550	-1,100	†-1,020	‡-3,750	-6,200	+6,430
Water year 1939-40	-1,600	-5,600	-2,010	+1,800	-2,180	-2,760

*Based on reading made on first day of following month.
†Interpolated on basis of weekly reading.
‡Interpolated on basis of bi-weekly reading.

Flint Creek near Philipsburg, Mont.

Location.- Wire-weight gage, lat. 46°23'45", long. 113°18'30", in NE¼ sec. 2, T. 7 N., R. 14 W., 1⅛ miles downstream from Marshall Creek and 4 miles north of Philipsburg.

Records available.- April 1939 to September 1940.

Extremes.- Maximum discharge observed during year, 119 second-feet Feb. 28 (gage height, 2.93 feet); minimum observed, 21 second-feet May 21 (gage height, 1.76 feet).
1939-40: Maximum discharge observed, 157 second-feet June 5, 1939 (gage height, 3.43 feet); minimum observed, that of May 21, 1940.

Remarks.- Records good except those for periods of ice effect, which are fair. Gage read twice daily. Many diversions above and below station for irrigation. During irrigation season flow is supplemented by water from East Fork of Rock Creek which is diverted in sec. 5, T. 4 N., R. 14 W., 500 feet below Rock Creek Dam, through a canal into Trout Creek, thence into Flint Creek. Some additional regulation from storage and release of water in Georgetown Lake.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	60	50	52	32	88	68	60	64	68	68	47
2	60	60	50	52	34	72	72	64	60	72	60	51
3	56	64	50	52	38	64	68	72	50	72	52	56
4	56	64	50	52	43	64	64	76	45	76	46	60
5	56	60	49	52	48	64	64	72	49	72	46	68
6	60	64	49	52	52	64	64	64	47	72	45	60
7	60	64	48	40	54	60	64	56	68	64	41	56
8	56	60	51	43	53	60	64	49	96	64	36	56
9	56	60	52	46	53	56	64	46	98	68	30	51
10	60	56	52	48	52	52	64	64	96	68	26	53
11	56	56	52	30	50	52	60	72	96	68	24	56
12	52	56	50	32	48	49	64	76	80	76	24	56
13	56	56	50	35	47	48	64	68	68	64	28	56
14	56	56	50	36	46	51	68	60	56	56	24	56
15	56	52	50	37	*46	56	68	56	50	56	22	56
16	56	*42	52	33	42	60	64	51	40	68	24	68
17	56	44	52	30	49	60	64	43	35	80	26	60
18	52	46	50	27	51	60	64	30	25	80	26	56
19	52	49	47	26	51	52	64	35	28	76	28	52
20	52	52	49	27	50	51	80	31	27	76	29	52
21	52	52	47	29	47	52	72	30	28	72	31	52
22	52	50	46	31	43	52	68	29	34	64	34	49
23	52	51	41	32	38	56	68	46	48	60	34	52
24	56	51	38	33	50	56	72	52	50	52	34	52
25	56	49	38	34	64	60	64	76	50	48	37	52
26	56	46	38	34	96	60	72	76	44	47	39	56
27	64	44	38	37	106	60	88	60	43	50	42	56
28	68	42	38	38	110	56	80	45	51	60	49	95
29	64	40	45	37	114	56	68	43	50	60	52	88
30	64	50	52	36	-	56	64	60	52	68	50	96
31	60	-	52	33	-	64	-	64	-	76	47	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,764	68	52	56.9	3,500
November	1,596	64	40	53.2	3,170
December	1,476	52	38	47.6	2,930
Calendar year	-	-	-	-	-
January	1,175	52	26	37.9	2,330
February	1,607	114	32	55.4	3,190
March	1,811	88	48	58.4	3,590
April	2,032	88	60	67.7	4,030
May	1,716	76	25	55.4	3,400
June	1,618	96	25	53.9	3,210
July	2,053	80	47	66.2	4,070
August	1,153	68	22	37.2	2,290
September	1,775	96	47	59.2	3,520
Water year 1939-40	19,776	114	22	54.0	39,230

*Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 16-19, 26-29, Dec. 24 to Jan. 1, Jan. 7 to Feb. 14, Feb. 16-24.

Flint Creek at Maxville, Mont.

Location.- Wire-weight gage, lat. 46°27'30", long. 113°14'30", in SW¼ sec. 9, T. 8 N., R. 13 W., about three-quarters of a mile southwest of Maxville and 1½ miles upstream from Boulder Creek.

Records available.- April 1939 to September 1940.

Extremes.- Maximum discharge observed during year, 120 second-feet Feb. 29 (gage height, 2.10 feet); minimum observed, 23 second-feet Aug. 15, 16 (gage height, 1.20 feet).
1939-40: Maximum discharge observed, 192 second-feet Apr. 30, 1939 (gage height, 2.62 feet); minimum observed, that of Aug. 15, 16, 1940.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Gage read once daily. Many diversions above and below station for irrigation. During irrigation season flow is supplemented by water from East Fork of Rock Creek which is diverted in sec. 5, T. 4 N., R. 14 W., 500 feet below Rock Creek Dam, through a canal into Trout Creek, thence into Flint Creek. Some additional regulation from storage and release of water in Georgetown Lake.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	57	60	47	56	b32	82	66	56	61	61	63	42
2	58	60	48	58	39	82	77	57	59	72	58	44
3	57	58	47	54	36	72	72	61	53	67	50	52
4	56	58	47	51	b42	64	64	67	47	77	43	57
5	58	58	47	50	b48	64	64	57	49	77	44	56
6	58	60	47	51	53	58	62	60	47	67	42	47
7	59	62	51	30	60	57	59	53	a74	57	41	45
8	56	58	47	42	54	63	61	49	100	61	36	46
9	54	56	51	45	51	56	61	43	88	64	32	46
10	58	54	49	52	55	54	64	52	94	64	26	49
11	56	55	56	25	53	61	62	62	94	62	28	55
12	56	54	36	b30	50	52	61	77	77	67	29	52
13	56	54	65	b34	47	60	62	63	72	61	27	51
14	56	54	49	b36	50	52	67	57	55	53	26	56
15	56	51	49	b37	49	60	63	51	49	52	23	51
16	55	42	52	b35	40	61	59	48	44	60	23	66
17	52	57	52	b30	46	58	57	42	40	72	29	58
18	53	38	49	25	48	56	57	32	29	72	27	53
19	53	42	55	24	47	54	54	30	29	72	32	48
20	52	45	49	b26	47	52	67	29	32	72	28	48
21	53	46	49	b28	45	51	61	41	29	72	29	51
22	51	51	47	b30	39	53	57	30	32	65	32	45
23	51	47	36	b32	35	55	58	33	47	56	35	51
24	52	42	41	b33	47	54	63	42	48	51	36	52
25	59	52	40	b32	53	59	60	61	47	49	37	53
26	58	41	40	b34	82	60	56	77	42	42	39	53
27	60	46	40	b36	77	61	77	63	43	48	37	54
28	66	36	26	b37	77	56	67	48	45	57	44	94
29	61	36	43	b36	120	56	64	42	46	60	48	82
30	60	46	59	b34	-	56	60	57	47	57	46	106
31	60	-	52	b33	-	66	-	63	-	77	44	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,747	66	51	56.4	3,470
November	1,519	62	36	50.6	3,010
December	1,466	65	26	47.3	2,910
Calendar year	-	-	-	-	-
January	1,156	58	24	37.3	2,290
February	1,522	120	32	52.5	3,020
March	1,845	82	51	59.5	3,660
April	1,882	77	54	62.7	3,730
May	1,603	77	29	51.7	3,180
June	1,619	100	29	54.0	3,210
July	1,944	77	42	62.7	3,860
August	1,134	63	33	36.6	2,250
September	1,663	106	42	55.4	3,300
Water year 1939-40	19,100	120	23	52.2	37,890

a No gage-height record; discharge interpolated.
b Stage-discharge relation affected by ice.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Trout Creek near Philipsburg, Mont.

Location.- Wire-weight gage, lat. 46°16'55", long. 113°20'25", in NW¼ sec. 15, T. 6 N., R. 14 W., 300 feet upstream from mouth and 4⅛ miles south of Philipsburg.

Records available.- May 1939 to September 1940 (irrigation seasons only).

Extremes.- Maximum discharge observed during period, 42 second-feet July 31 (gage height, 1.92 feet); minimum observed, 3.6 second-feet May 28-29, June 2 (gage height, 1.01 feet). 1939-40: Maximum discharge observed, 67 second-feet Aug. 7, 1939; minimum observed, that of May 26-29, June 2, 1940.

Remarks.- Records fair. Gage read once daily. Many diversions above station for irrigation. At times during irrigation season flow is supplemented by water from East Fork of Rock Creek which is diverted in sec. 5, T. 4 N., R. 14 W., 500 feet below Rock Creek Dam, through a canal into Trout Creek.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								12	3.8	40	40	22
2								12	3.6	40	39	23
3								12	5.7	41	37	24
4								12	5.7	38	29	24
5								12	6.3	36	22	24
6								12	6	36	20	24
7								12	6.6	36	20	24
8								12	8.1	38	21	24
9								12	7.5	38	19	24
10								12	10	37	18	24
11								12	16	37	18	24
12								12	15	37	20	22
13								12	16	14	20	23
14								12	16	14	20	24
15								12	15	25	20	23
16								12	16	25	18	22
17								12	18	26	18	22
18								12	19	24	18	21
19								12	18	24	18	21
20								12	17	24	18	20
21								12	16	24	18	21
22								12	14	25	18	21
23								4.1	26	26	18	21
24								4.1	30	26	18	20
25								4.1	32	26	22	20
26								3.6	35	25	22	20
27								3.6	36	24	21	19
28								3.6	38	35	22	28
29								3.6	36	40	22	30
30								3.8	38	39	22	31
31								3.8	-	42	22	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October					
November					
December					
Calendar year					
January	-	-	-	-	-
February	-	-	-	-	-
March	-	-	-	-	-
April	-	-	-	-	-
May	298.3	12	3.6	9.62	592
June	530.3	38	3.6	17.7	1,050
July	962	42	14	31.0	1,910
August	678	40	18	21.9	1,340
September	690	31	19	23.0	1,370
The period	-	-	-	-	6,260

Marshall Creek near Philipsburg, Mont.

Location.- Wire-weight gage, lat. 46°22'25", long. 113°19'25", in SW¼ sec. 11, T. 7 N., R. 14 W., a quarter of a mile upstream from mouth and 2½ miles north of Philipsburg.

Records available.- April 1939 to September 1940 (irrigation seasons only).

Extremes.- Maximum discharge observed during period, 23 second-feet Aug. 27-31, Sept. 11 (gage height, 1.48 feet); no flow May 17 to June 2.
1939-40: Maximum discharge observed, that of Aug. 27-31, Sept. 11, 1940; no flow at times.

Remarks.- Records fair. Gage read once daily. Small diversions above station for irrigation. At times during irrigation season flow is supplemented by water from East Fork of Rock Creek which is diverted in sec. 5, T. 4 N., R. 14 W., 500 feet below Rock Creek Dam, through a canal into Trout Creek, thence into Marshall Creek.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.6							6.9	0	14	3.4	22
2	5.2							7.6	0	11	2.8	22
3	6.1							6.8	.6	12	1.9	22
4	3.6							6.8	.2	13	1.7	20
5	4.4							6.4	.6	15	1.7	18
6	4.0							5.8	1.9	15	1.7	17
7	4.0							4.2	2.5	13	1.7	17
8	3.3							3.6	3.8	15	.9	17
9	1.8							1.3	11	15	.9	16
10	1.0							1.3	14	18	.9	16
11	.9							1.5	1.1	15	5.4	23
12	.9							1.3	.6	16	4.2	22
13	.9							.8	.1	14	4.0	19
14	.8							.4	.2	13	5.2	18
15	.9							.5	.3	7.8	5.2	16
16	.8							.6	2.5	10	5.2	18
17	.7							0	4.2	14	11	11
18	.7							0	3.6	12	11	11
19	.7							0	3.3	5.2	11	7.6
20	.7							0	4.2	5.2	14	7.1
21	.7							0	10	3.0	15	3.6
22	.7							0	11	4.0	17	4.8
23	.7							0	14	5.6	19	7.6
24	.7							0	14	4.4	19	6.6
25	.8							0	15	4.0	19	6.6
26	.8							0	7.8	3.6	22	7.6
27	1.0							0	3.8	3.0	23	7.6
28	1.2							0	5.4	3.0	23	7.1
29	1.0							0	6.4	2.6	23	7.1
30	.8							0	9.6	2.6	23	6.6
31	.7							0	-	4.8	23	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	57.1	6.6	0.7	1.84	113
November	-	-	-	-	-
December	-	-	-	-	-
Calendar year	-	-	-	-	-
January	-	-	-	-	-
February	-	-	-	-	-
March	-	-	-	-	-
April	-	-	-	-	-
May	55.7	7.6	0	1.80	110
June	151.9	15	0	5.06	301
July	293.8	18	2.6	9.48	583
August	319.8	23	.9	10.3	634
September	404.9	23	3.6	13.5	803
Water year	-	-	-	-	-

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Boulder Creek at Maxville, Mont.

Location.- Wire-weight gage, lat. 46°28'30", long. 113°14'00", in SE¼ sec. 4, T. 8 N., R. 13 W., an eighth of a mile upstream from mouth and three-quarters of a mile north of Maxville.

Records available.- April 1939 to September 1940 (irrigation seasons only).

Extremes.- Maximum discharge observed during period, 190 second-feet May 12 (gage height, 2.20 feet); minimum observed, 5.0 second-feet Sept. 8-17.
1939-40: Maximum discharge observed, that of May 12, 1940; minimum observed, that of Sept. 8-17, 1940.

Remarks.- Records poor. Gage read once daily. Several diversions above station for irrigation.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17							47	125	28	13	8.6
2	17							56	125	28	13	8.6
3	12							77	113	28	9.6	9.0
4	12							89	101	28	8.2	9.0
5	12							77	101	28	8.2	9.0
6	12							66	89	28	8.0	9.0
7	12							66	101	22	8.0	7.0
8	12							66	113	18	12	5.0
9	12							77	113	22	12	5.0
10	12							101	113	22	12	5.0
11	12							150	107	19	12	5.0
12	12							190	95	17	12	5.0
13	12							163	83	17	12	5.0
14	12							150	83	14	10	5.0
15	12							137	74	14	10	5.0
16	12							137	63	14	13	5.0
17	12							137	63	14	13	5.0
18	12							125	63	17	12	7.8
19	12							125	63	17	12	7.0
20	12							137	53	14	12	7.0
21	12							137	52	13	12	a7.0
22	9.0							125	52	13	10	7.0
23	9.0							137	52	16	10	7.8
24	9.0							137	43	16	10	7.8
25	12							163	38	16	10	7.8
26	12							163	35	16	10	7.8
27	12							137	35	16	9.0	7.8
28	12							125	35	16	9.0	31
29	12							125	31	16	9.0	52
30	12							137	29	16	9.0	52
31	12							125	-	13	9.0	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	373.0	17	9.0	12.0	740
November	-	-	-	-	-
December	-	-	-	-	-
Calendar year	-	-	-	-	-
January	-	-	-	-	-
February	-	-	-	-	-
March	-	-	-	-	-
April	-	-	-	-	-
May	3,684	190	47	119	7,310
June	2,243	125	29	74.8	4,450
July	576	28	13	18.6	1,140
August	329.0	13	8.0	10.6	653
September	320.0	52	5.0	10.7	635
Water year	-	-	-	-	-

a No gage-height record; discharge interpolated.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Middle Fork of Rock Creek near Philipsburg, Mont.

Location.- Wire-weight gage, lat. 46°11', long. 113°30', in NE¼ sec. 17, T. 5 N., R. 15 W., three-quarters of a mile upstream from East Fork, 2½ miles upstream from West Fork, and 15 miles southwest of Philipsburg.

Records available.- September 1937 to September 1940.

Extremes.- Maximum discharge observed during year, 395 second-feet May 26 (gage height, 2.60 feet); minimum observed, 18 second-feet Jan. 7 (gage height, 0.68 foot), but may have been less during periods of ice effect.
1937-40: Maximum discharge observed, 980 second-feet May 29, 1938 (gage height, 3.96 feet); minimum observed, that of Dec. 12, 1938.

Remarks.- Records fair except those for periods of ice effect, which are poor. Gage read twice daily. A few small diversions for irrigation.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	31	27			24	43	90	290	69	39	22
2	36	33	27			24	42	96	290	71	35	22
3	38	30	27	24		25	36	120	275	65	34	23
4	39	31	27			25	36	138	246	65	30	25
5	38	30	28		25	26	39	138	275	71	28	24
6	45	28	28	22		26	40	138	232	64	28	23
7	42	28	30	18		*28	40	120	218	61	26	22
8	38	28	27	20		28	40	129	218	55	27	23
9	37	28	28	23		26	43	148	205	52	28	23
10	37	30	30	25		26	40	169	180	51	28	23
11	36	28	30		25	27	42	218	169	51	28	22
12	35	28	30		25	28	43	290	169	49	26	22
13	36	29	29	26	26	31	45	340	169	46	25	23
14	36	28	29		26	29	53	322	169	43	24	26
15	34	31	29		*26	28	59	306	158	43	24	28
16	33	30	31	27	23	30	56	290	148	43	24	28
17	31	29	37	25	24	30	58	306	129	50	23	28
18	31	28	34	23	25	29	57	290	129	48	23	26
19	31	28	32	23	25	27	64	290	129	46	24	26
20	32	28	31	24	26	29	76	306	120	44	22	26
21	31				27	30	76	290	112	44	23	27
22	31				25	30	72	290	112	43	23	28
23	32		28	25	25	30	76	290	96	38	24	27
24	31				25	32	79	322	90	37	22	26
25	32	28			24	33	76	340	84	37	23	26
26	34				24	39	82	376	79	34	23	26
27	34				24	39	92	340	75	38	23	26
28	36				24	36	98	306	71	38	24	96
29	39		25	28	24	33	96	306	69	34	24	84
30	33				-	35	84	322	63	35	23	85
31	31	-			-	42	-	322	-	44	23	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,081	45	31	34.9	2,140
November	864	-	-	28.8	1,710
December	881	37	-	28.4	1,750
Calendar year 1939	32,716	566	-	89.6	64,890
January	773	-	-	24.9	1,530
February	723	-	-	24.9	1,430
March	925	42	24	29.8	1,830
April	1,783	98	36	59.4	3,540
May	7,748	376	90	250	15,370
June	4,769	290	63	159	9,460
July	1,509	71	34	48.7	2,990
August	801	39	22	25.8	1,590
September	936	96	22	31.2	1,860
Water year 1939-40	22,793	376	-	62.3	45,200

*Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Nov. 16 to Dec. 2, Dec. 12-14, Dec. 19 to Jan. 6, Jan. 8-17, Jan. 19 to Feb. 15, Feb. 17-20, Feb. 24 to Mar. 5.

9-232 February 1936 UNITED STATES DEPARTMENT OF THE INTERIOR Geological Survey

East Fork of Rock Creek near Philipsburg, Mont.

Location.- Staff gage, lat. 46°08'10", long. 113°23'10", in NW¼ sec. 5, T. 4 N., R. 14 W., 200 feet upstream from Flint Creek canal, 300 feet downstream from Rock Creek Dam, 3 miles upstream from Meadow Creek, and 14 miles southwest of Philipsburg.

Records available.- June 1935 to September 1940.

Extremes.- Maximum discharge observed during year, 148 second-feet June 22, 23, 25, from rating curve extended above 70 second-feet; minimum observed, 2.0 second-feet Sept. 30. 1935-40: Maximum discharge observed, 269 second-feet June 15, 1935 (gage height, 3.06 feet, former site and datum); minimum observed, that of Sept. 30, 1940.

Remarks.- Records fair. Discharge regulated by Rock Creek Reservoir (see p. 115). Gage ordinarily read once daily during irrigation season; twice weekly during other periods.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.4	6.4	6.1	6.0	5.0	5.0	5.5	6.0	106	140	42	a73
2	6.4	6.4	6.0	6.0	5.0	5.0	5.5	6.0	111	136	a42	73
3	6.4	6.4	6.0	6.0	5.0	5.0	5.5	6.0	111	132	42	64
4	6.4	6.4	6.0	6.0	5.0	5.0	5.5	6.0	111	114	42	62
5	6.4	6.4	6.0	6.0	5.0	5.0	5.5	6.4	a111	114	a42	57
6	6.4	6.4	6.0	6.0	5.0	5.0	5.5	6.8	a111	114	42	51
7	6.4	6.4	6.0	5.8	5.0	5.0	5.5	7.2	111	114	a42	51
8	6.4	6.4	6.0	5.7	5.0	5.0	5.5	7.6	111	a106	42	51
9	6.4	6.4	6.0	5.5	5.0	5.0	5.7	7.6	a111	a99	46	51
10	6.4	6.4	6.0	5.4	5.0	5.0	5.9	13	111	91	56	51
11	6.4	6.4	6.0	5.2	5.0	5.0	6.0	21	111	91	a62	49
12	7.2	6.4	6.0	5.2	5.0	5.0	6.0	23	a111	91	67	49
13	7.2	6.4	6.0	5.2	5.0	5.0	6.0	26	111	83	70	46
14	8.0	6.4	6.0	5.2	5.0	5.0	6.0	33	a111	80	76	46
15	9.6	6.4	6.0	5.2	5.0	5.0	6.0	37	111	80	84	36
16	9.6	6.4	6.0	5.2	5.0	5.0	6.0	35	111	80	88	36
17	9.6	6.4	6.0	5.2	5.0	5.0	6.0	32	116	80	100	a34
18	9.6	6.4	6.0	5.2	5.0	5.0	6.0	35	116	80	96	a32
19	9.6	6.4	5.9	5.2	5.0	5.0	6.0	39	124	80	93	30
20	9.6	6.4	5.9	5.2	5.0	5.0	6.0	54	124	80	89	29
21	9.6	6.4	5.8	5.2	5.0	5.0	6.0	88	128	51	89	27
22	9.6	6.4	5.8	5.2	5.0	5.0	6.0	111	134	51	94	a24
23	9.6	6.4	5.8	5.2	5.0	5.0	6.0	111	148	a57	96	a22
24	9.6	6.4	5.8	5.2	5.0	5.0	6.0	111	148	64	96	19
25	9.6	6.4	5.8	5.2	5.0	5.0	6.0	111	148	67	93	19
26	9.3	6.4	5.8	5.2	5.0	5.0	6.0	111	144	67	83	17
27	9.1	6.4	5.8	5.2	5.0	5.1	6.0	111	144	67	83	17
28	8.8	6.4	5.8	5.2	5.0	5.2	6.0	111	144	67	76	17
29	8.4	6.4	5.8	5.2	5.0	5.4	6.0	111	144	a54	76	11
30	8.0	6.3	5.8	5.1	-	5.5	6.0	101	144	42	69	2.0
31	6.4	-	5.8	5.1	-	5.5	-	101	-	a42	73	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	248.4	9.6	6.4	8.01	493
November	191.9	6.4	6.3	6.40	381
December	183.7	6.1	5.8	5.93	364
Calendar year 1939	13,769.1	138	5.8	37.7	27,310
January	167.4	6.0	5.1	5.40	332
February	145.0	5.0	5.0	5.00	288
March	156.7	5.5	5.0	5.05	311
April	175.6	6.0	5.5	5.85	348
May	1,585.6	111	6.0	51.1	3,140
June	3,677	148	106	123	7,290
July	2,614	140	42	84.3	5,180
August	2,191	100	42	70.7	4,350
September	1,146.0	73	2.0	38.2	2,270
Water year 1939-408	12,482.3	148	2.0	34.1	24,750

a No gage-height record; discharge interpolated.
Note.- Gage read about thrice weekly Oct. 23 to May 7; discharge for days of no gage-height record interpolated.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Blackfoot River near Bonner, Mont.

Location.- Staff gage, lat. 46°54', long. 113°47', in SW¼SW¼ sec. 8, T. 13 N., R. 17 W., 4 miles northeast of Bonner, 6 miles downstream from Union Creek, and 6 miles upstream from mouth.

Drainage area.- 2,280 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge observed during year, 3,800 second-feet (gage height, 4,94 feet); minimum observed, 220 second-feet Jan. 19 (gage height, 1.95 feet).

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair, and those for period Jan. 19 to Feb. 20, which are poor. Many diversions above station for irrigation.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

0.7	318	1.3	556	2.0	945	4.0	2,640
1.0	426	1.6	715	3.0	1,645	5.0	3,935

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a490	488	466	509	b375	509	1,200	2,000	3,120	885	607	370
2	a490	488	446	b520	b370	509	1,330	2,100	3,000	827	5e2	388
3	a490	488	446	b520	b380	556	1,330	2,520	2,880	827	556	388
4	488	488	446	488	b415	556	1,200	2,760	2,640	827	532	407
5	488	466	446	488	b455	582	1,200	2,760	2,520	827	532	407
6	466	466	*446	466	b480	556	1,200	2,420	2,420	827	509	407
7	466	488	426	466	b510	532	1,130	2,420	2,310	771	509	407
8	466	488	426	b435	b530	532	1,200	2,310	2,310	771	509	407
9	466	488	426	b400	b550	509	1,200	2,420	2,310	771	488	388
10	466	509	446	b430	b560	488	1,260	2,640	2,100	771	488	388
11	446	509	466	b380	b540	466	1,260	3,380	2,000	715	488	388
12	446	509	446	b350	b520	466	1,260	3,800	1,900	715	466	352
13	466	509	426	b390	b500	426	1,260	3,660	1,820	688	466	407
14	446	488	446	b430	b470	446	1,480	3,520	1,730	660	466	426
15	446	a477	446	b475	b450	446	1,730	3,380	1,640	634	446	407
16	466	466	446	b520	b430	466	1,730	3.380	1,560	660	426	407
17	466	466	509	b450	b425	582	1,730	3,260	1,480	660	426	407
18	466	b466	509	*b300	b435	688	1,730	3,120	1,400	660	407	446
19	466	466	488	b220	b450	715	1,900	3,120	1,330	660	407	426
20	466	466	466	b230	b425	771	2,100	3,120	1,260	660	407	407
21	446	466	466	b245	*b386	715	2,100	3,260	1,200	634	388	426
22	446	466	488	b265	b370	945	2,000	3,120	1,130	607	388	407
23	446	426	426	b290	b350	945	2,100	3,260	1,130	607	407	407
24	446	426	388	b300	b350	945	2,100	3,380	1,060	607	407	407
25	466	426	370	b290	b380	885	2,000	3,660	1,060	582	407	407
26	466	446	b340	b310	b420	885	2,000	3,660	1,000	582	407	407
27	466	446	b320	b345	446	827	2,100	3,380	945	634	407	407
28	466	b420	b300	b390	446	945	2,200	3,120	885	634	388	407
29	509	446	352	b385	466	945	2,200	3,000	885	607	388	407
30	488	488	b440	b380	-	945	2,100	3,120	885	607	388	407
31	488	-	b485	b380	-	1,000	-	3,260	-	607	388	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	14,489	509	446	467	28,740
November	14,135	509	420	471	28,040
December	13,443	509	300	434	26,660
Calendar year	-	-	-	-	-
January	12,047	520	220	389	23,890
February	12,884	560	350	444	25,560
March	20,783	1,000	426	670	41,220
April	49,330	2,200	1,130	1,644	97,840
May	94,310	3,800	2,000	3,042	187,100
June	51,910	3,120	885	1,730	103,000
July	21,524	885	582	694	42,690
August	14,080	607	388	454	27,930
September	12,119	446	352	404	24,040
Water year 1939-40	331,054	3,800	220	905	656,700

*Winter discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for Clark Fork above Missoula or interpolated.
b Stage-discharge relation affected by ice.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Nevada Creek above reservoir near Finn, Mont.

Location.- Wire-weight gage, lat. 46°47', long. 112°46', in NE¼ sec. 29, T. 12 N., R. 9 W., 2 miles upstream from Buffalo Creek and 3 miles west of Finn.

Drainage area.- 128 square miles.

Records available.- April 1939 to September 1940. May 1934 to February 1939 at site 3 miles downstream.

Extremes.- Maximum discharge observed during year, 320 second-feet Mar. 21 (gage height, 3.68 feet), from rating curve extended above 60 second-feet; minimum observed, 2.5 second-feet Sept. 12 (gage height, 1.40 feet).
1939-40: Maximum discharge observed, that of Mar. 21, 1940; minimum observed, that of Sept. 12, 1940.

Remarks.- Records fair except those for periods of ice effect, those for periods of no gage-height record, and those above 80 second-feet, all of which are poor. Gage read once daily. Several small diversions above station for irrigation.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.0	10		22			53	49	44	11	10	3.1
2	5.6	10		23			36	52	33	16	9.5	3.4
3	5.9	10	5	23	9	15	a40	71	30	12	e.5	4.0
4	5.9	10		21			41	116	27	12	e.0	4.4
5	6.2	10	5.0	18			36	103	23	12	7.3	4.0
6	6.2	10					36	76	22	11	6.6	3.6
7	5.6	14					34	66	33	10	e7	4.0
8	5.0	11	7	12	12	19	41	56	67	8.0	7.6	3.8
9	5.0	10					79	a60	48	7.3	6.6	3.4
10	4.8	10					38	a80	25	7.6	5.5	2.9
11	4.8	10	10		12	21	37	118	22	7.6	4.2	2.7
12	6.8	10	6.8		12	21	33	160	19	7.3	3.8	2.5
13	5.6	11	a9	10	12	22	38	130	17	8.0	3.6	3.1
14	5.6	12	12		*11	27	40	111	13	7.6	4.0	3.8
15	4.2	*9	12		11	a50	45	98	14	6.9	4.4	3.8
16	4.2	8	a14		10	81	40	89	12	6.0	4.2	4.4
17	4.0	8	16		4.6	115	35	82	11	11	4.8	3.8
18	3.8	7	12	7	7	122	42	67	9.0	10	4.2	4.0
19	4.0	7	12		9	98	47	65	10	8.0	4.8	3.8
20	4.2	7	10		10	160	68	58	16	6.9	4.4	3.8
21	4.2		8			320	76	53	11	7.3	4.2	3.6
22	3.8		7			270	61	49	12	6.9	e4	3.8
23	4.2	6	5.9	6	10	265	61	46	14	7.6	e4	3.6
24	4.0		6.8			158	61	41	12	6.9	e4	3.6
25	3.6					55	56	42	9.5	7.3	e4	3.8
26	5.0		7			50	58	41	7.6	10	3.8	4.0
27	6.2					79	66	41	6.9	14	4.0	3.8
28	6.8	5	6.8	10	12	50	67	46	6.9	12	3.6	3.6
29	11		9			a35	66	54	7.3	10	3.6	4.0
30	10		13		-	19	54	45	8.0	11	3.4	4.4
31	10	-	21		-	67	-	38	-	12	3.6	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	171.2	11	3.6	5.52	340
November	249	14	-	8.3	494
December	272.3	21	-	8.78	540
Calendar year	-	-	-	-	-
January	342	23	-	11.0	678
February	301.6	-	4.6	10.4	598
March	2,255	320	-	72.7	4,470
April	1,485	79	33	49.5	2,950
May	2,203	160	38	71.1	4,370
June	590.2	67	6.9	19.7	1,170
July	293.2	16	6.9	9.46	582
August	161.2	10	3.4	5.20	320
September	110.5	4.4	2.5	3.68	219
Water year 1939-40	8,434.2	320	2.5	23.0	16,730

*Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for Blackfoot River near Bonner.
Note.- Stage-discharge relation affected by ice Nov. 15 to Dec. 11, Dec. 20-22, 25-30, Jan. 5 to Feb. 16, Feb. 18 to Mar. 12.

9-232 February 1936 UNITED STATES DEPARTMENT OF THE INTERIOR Geological Survey

Bitterroot River near Darby, Mont.

Location.- Water-stage recorder, lat. 45°59', long. 114°09', in NE¼ sec. 36, T. 3 N., R. 21 W., just below bridge on U. S. Highway 93, a quarter of a mile downstream from Chaffin Creek, and 4 miles southeast of Darby.

Drainage area.- 1,050 square miles.

Records available.- April 1937 to September 1940.

Extremes.- Maximum discharge observed during year, 3,360 second-feet May 12 (gage height, 4.83 feet); minimum, 84 second-feet, probably Nov. 25 (gage height, 1.24 feet, from recorded range of stage).

1937-40: Maximum discharge observed, 5,480 second-feet May 29, 1938 (gage height, 6.51 feet); minimum observed, 71 second-feet Feb. 9, 1939 (stage-discharge relation affected by ice).

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Flow partly regulated by storage in West Fork of Bitterroot Reservoir (see p. 113) which was completed June 14, 1940. Many diversions above station for irrigation.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	160	210	128	218	133	180	848	2,020	2,140	284	190	131
2	169	206	128	226	435	180	716	1,340	2,020	312	171	134
3	182	203	238	206	291	174	662	1,160	1,780	328	152	142
4	186	200	282	160	287	164	632	1,300	1,670	288	139	149
5	192	175	139	144	139	174	678	1,150	1,670	307	131	155
6	238	178	130	130	144	164	590	1,010	1,560	446	126	152
7	242	206	128	106	147	161	748	1,430	1,450	298	124	147
8	222	203	133	95	136	186	1,030	2,230	1,500	260	124	144
9	206	192	141	b105	133	177	548	2,320	1,280	231	131	142
10	196	172	153	b120	141	171	372	2,380	1,170	211	136	144
11	192	175	278	b105	136	155	344	2,680	1,190	194	136	149
12	192	172	163	95	122	171	334	3,010	1,210	174	186	144
13	189	175	309	102	139	527	414	2,940	1,300	168	190	144
14	186	178	156	122	125	632	655	2,750	1,190	161	174	161
15	189	160	144	139	122	611	831	2,680	840	158	131	164
16	196	147	163	358	125	226	716	2,560	856	144	126	168
17	196	136	574	393	113	190	604	2,560	732	149	124	164
18	196	139	327	128	117	183	770	2,320	692	155	126	161
19	186	153	160	b125	139	180	2,020	2,320	655	147	126	164
20	166	h182	153	b120	506	183	2,140	2,440	716	139	129	174
21	186	a180	147	b120	583	186	1,570	2,320	604	134	131	190
22	186	a160	136	b120	218	204	756	2,320	527	180	134	194
23	182	a130	110	b120	149	222	700	2,440	440	211	134	183
24	182	a110	b105	b120	139	247	685	2,440	390	168	134	186
25	196	h95	b105	b120	147	288	f678	2,940	349	158	144	190
26	196	a100	b100	b135	168	355	685	2,750	360	171	136	190
27	200	a110	b100	b145	180	396	865	2,380	339	183	134	197
28	218	a125	b100	b130	180	366	840	2,140	302	190	142	433
29	264	110	156	117	194	334	1,450	2,080	274	183	139	700
30	234	122	200	128	-	334	2,260	2,200	269	177	134	772
31	214	-	206	133	-	708	-	2,320	-	208	131	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	6,159	264	160	199	0.190	0.22	12,220
November	4,804	210	95	160	.152	.17	9,530
December	5,492	574	100	177	.169	.19	10,890
Calendar year 1939	260,025	4,640	80	712	.678	9.21	515,800
January	4,585	393	95	148	.141	.16	9,090
February	5,588	583	113	193	.184	.20	11,080
March	8,429	708	155	272	.259	.30	16,720
April	26,141	2,260	334	871	.830	.93	51,850
May	68,930	3,010	1,010	2,224	2.12	2.44	136,700
June	29,475	2,140	269	982	-	-	58,460
July	6,517	446	134	210	-	-	12,930
August	4,365	190	124	141	-	-	8,660
September	6,268	772	131	209	-	-	12,430
Water year 1939-40	176,753	3,010	95	483	-	-	350,600

a No gage-height record; discharge computed on basis of temperatures at Missoula.
b Stage-discharge relation affected by ice.
f Computed on basis of partly estimated gage-height record.
h Computed from staff-gage reading.

East Fork of Bitterroot River at Conner, Mont.

Location.- Wire-weight gage, lat. 45°56', long. 114°08', in SE¼ sec. 7, T. 2 N., R. 20 W., at highway bridge at Conner, about half a mile upstream from confluence with West Fork.

Drainage area.- 404 square miles.

Records available.- April 1937 to September 1940. September 1910 to September 1916, at site 2½ miles upstream.

Extremes.- Maximum discharge observed during year, 738 second-feet May 13 (gage height, 3.74 feet); minimum observed, 4.5 second-feet Aug. 10, 11 (gage height, 1.11 feet).
1937-40: Maximum discharge observed, 1,810 second-feet May 29, 1938; minimum observed, 1.4 second-feet Aug. 17, 1937.

Remarks.- Records fair except those for periods of ice effect, which are poor. Gage read twice daily. Several diversions above station for irrigation.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	61	54	b36	b45	85	115	221	512	49	27	14
2	36	60	49	b40	b42	78	121	233	508	66	19	16
3	53	64	54	b45	b55	66	107	300	506	63	17	19
4	59	61	53	51	b70	62	94	357	437	68	17	21
5	59	62	53	59	b90	64	89	365	454	69	13	22
6	67	60	59	54	b110	62	86	341	413	69	12	22
7	80	59	51	42	b130	64	83	297	409	58	13	21
8	78	64	61	b40	b125	62	85	297	425	58	11	21
9	73	59	67	b44	b120	61	98	319	385	61	9.0	18
10	72	61	62	b50	b115	60	100	377	334	57	5.5	18
11	76	59	66	b51	b105	62	94	498	292	53	9.0	16
12	70	59	57	b52	b100	59	89	604	264	43	12	17
13	62	51	55	b60	b100	57	98	715	229	36	11	18
14	62	50	54	b70	b105	53	124	670	217	34	8.5	49
15	62	50	48	b80	105	54	146	648	192	32	8.0	43
16	62	46	55	b85	100	60	141	648	178	30	8.5	42
17	62	48	68	*b90	96	66	134	625	167	31	9.6	43
18	60	51	76	b90	83	62	141	571	146	31	9.6	41
19	60	51	55	b65	68	59	156	562	134	29	14	42
20	62	49	59	b35	64	61	181	670	134	27	21	46
21	61	53	60	b25	74	61	190	602	114	28	21	49
22	62	51	54	b25	78	64	174	580	116	29	22	49
23	60	47	43	b28	70	66	184	625	106	29	24	46
24	60	48	44	b32	59	76	192	670	108	27	24	42
25	60	56	41	b45	62	81	174	692	93	27	28	39
26	59	61	b40	b60	67	90	190	715	83	28	24	41
27	62	59	b31	b80	73	100	272	648	70	32	21	41
28	80	55	b20	b82	74	121	265	580	70	33	19	166
29	89	53	b25	b72	87	98	236	540	61	31	17	189
30	85	59	b30	b60	-	87	224	553	54	25	17	189
31	64	-	b32	b63	-	109	-	540	-	24	17	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	1,989	89	32	64.2	0.159	0.18	3,950
November	1,657	64	46	55.2	.137	.15	3,290
December	1,576	76	20	50.8	.126	.15	3,130
Calendar year 1939	66,099	1,260	20	181	.448	6.10	131,100
January	1,701	90	25	54.9	.136	.16	3,370
February	2,472	130	42	85.2	.211	.23	4,900
March	2,212	121	53	71.4	.177	.20	4,390
April	4,382	272	83	146	.361	.40	8,690
May	16,063	715	221	518	1.28	1.48	31,860
June	7,213	512	54	240	.594	.66	14,310
July	1,277	69	24	41.2	.102	.12	2,530
August	488.7	28	5.5	15.8	.039	.04	969
September	1,398	189	14	46.6	.115	.13	2,770
Water year 1939-40	42,428.7	715	5.5	116	.287	3.90	84,160

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

9-233 April 1936 UNITED STATES DEPARTMENT OF THE INTERIOR Geological Survey

Blodgett Creek near Hamilton, Mont.

Location.- Wire-weight gage, lat. 46°17', long. 114°10', in sec. 12, T. 6 N., R. 21 W., at highway bridge, about 1½ miles upstream from mouth and 2½ miles north of Hamilton.

Drainage area.- 29.2 square miles.

Records available.- April 1938 to September 1939 and November 1939 to September 1940.

Extremes.- Maximum discharge observed during period November 1939 to September 1940, 350 second-feet May 11 (gage height, 2.84 feet); minimum observed, 0.8 second-foot various days in July and August (gage height, 0.45 foot).
1938-40: Maximum discharge observed, 606 second-feet May 28, 29, 1938 (gage height, 3.45 feet); minimum observed, that of July and August 1940.

Remarks.- Records fair. Gage read once daily. Many diversions above station for irrigation.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		-	4.5		b9	18	50	67	145	3.6	2.0	0.8
2		-	4.0		b10	18	50	96	145	2.0	2.0	.8
3		-	5.0	b9	9.8	16	46	152	110	2.0	1.6	1.2
4		-	3.1		9.8	13	43	163	101	2.0	2.0	1.2
5		5.0	4.0		9.8	12	45	126	98	2.0	1.6	1.2
6		4.5	3.1	9.0	b11	11	41	101	90	1.6	1.6	1.2
7		3.6	3.1	9.8	b11	12	39	101	101	2.0	1.6	1.0
8		6.9	3.1	b10	b11	14	43	101	75	1.3	1.3	1.0
9		4.5	b8	b11	b11	12	45	137	75	2.0	1.3	1.0
10		3.6	b12	b11	b11	4.0	41	275	55	1.0	1.2	.8
11		4.0	b7	b11	b10	5.6	39	350	72	1.3	1.3	.8
12		3.1	3.6	b12	b10	5.0	33	312	70	1.0	1.3	.8
13		3.1	5.0	b13	b10	3.6	46	182	104	1.0	1.3	.8
14		3.1	5.0	14	b10	4.5	91	158	82	1.3	1.0	.8
15		3.6	5.0	15	b10	4.5	106	154	59	1.0	1.0	.8
16			b9	*12	9.8	5.6	71	137	59	1.3	1.3	.8
17			b14	12	b10	9.0	67	134	55	2.0	1.3	.8
18			b11	11	b10	9.0	96	126	55	1.6	1.3	1.2
19			9.0	b9	9.8	9.8	118	134	55	1.6	1.3	1.0
20		b5	9.8	b8	9.8	9.8	147	158	55	1.6	1.3	1.0
21			8.2	b6	8.2	11	108	134	45	1.6	1.3	1.0
22			9.0		b8	9.8	88	134	32	1.6	1.0	.8
23					8.2	18	86	158	23	2.0	1.3	.8
24			b7	b5	9.0	22	88	220	16	2.0	1.3	.8
25					13	31	78	211	14	2.6	1.3	.8
26		b5			14	39	76	158	15	3.1	1.0	.8
27		b5			18	47	88	137	9.8	4.0	1.3	1.0
28		*b5	b6	b8	18	42	83	116	5.0	3.1	1.0	62
29		b5			20	40	78	126	4.0	2.3	.9	30
30		b4			-	39	67	145	3.6	2.0	.8	54
31		-			-	42	-	158	-	2.0	.8	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	-	-	-	-	-
November 5-30	91.0	6.9	-	3.50	180
December	202.5	14	3.1	6.53	402
Calendar year	-	-	-	-	-
January	286.8	15	-	9.25	569
February	319.2	20	8	11.0	633
March	537.2	47	4.0	17.3	1,070
April	2,097	147	33	69.9	4,160
May	4,861	350	67	157	9,640
June	1,828.4	145	3.6	60.9	3,630
July	59.5	4.0	1.0	1.92	118
August	40.6	2.0	.8	1.31	81
September	171.0	62	.8	5.70	339
The period	-	-	-	-	20,820

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

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Willow Creek at Anfinson Ranch, near Corvallis, Mont.

Location.- Staff gage, lat. 46°18', long. 114°01', in NW¼ sec. 7, T. 6 N., R. 19 W., at Anfinson Ranch, 5 miles southeast of Corvallis.

Drainage area.- 23.2 square miles.

Records available.- April 1938 to September 1940. April 1920 to May 1924 at site about 1 mile upstream; records not equivalent.

Extremes.- Maximum discharge observed during year, 16.3 second-feet June 1; minimum observed, 0.2 second-foot Aug. 18 to Sept. 19.
1938-40: Maximum discharge observed, 73 second-feet June 19, 1938; minimum observed, 0.1 second-foot Sept. 11, 1938, Aug. 13 to Sept. 13, 1939.

Remarks.- Records good except those for periods of ice effect, which are fair. Gage read once daily. Many diversions above station for irrigation.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	1.9	5.6	4.8	b3.0	4.8	5.1	0.7	16	5.9	0.6	0.2
2	.4	1.9	5.6	4.6	b3.0	4.6	5.1	.4	14	5.1	.6	.2
3	.4	1.9	5.6	4.6	b3.0	4.6	5.4	.6	14	4.8	.5	.2
4	.4	1.9	5.6	4.6	b3.0	4.6	4.8	.7	15	4.6	.5	.2
5	.4	1.8	5.6	4.3	b3.5	4.3	5.1	1.0	15	4.3	.5	.2
6	.4	1.8	5.6	4.3	b3.5	4.3	5.1	2.4	15	3.7	.5	.2
7	.4	1.6	5.6	5.1	b3.5	4.1	4.8	2.8	14	3.7	.5	.2
8	.9	1.6	5.6	5.9	4.1	3.9	4.8	3.2	14	3.7	.5	.2
9	.9	1.6	5.6	5.1	4.3	3.9	4.8	3.7	13	3.9	.5	.2
10	2.6	1.5	5.6	5.4	4.3	3.9	4.8	3.7	12	3.0	.4	.2
11	2.6	1.5	5.6	5.6	4.3	4.1	4.8	3.7	12	2.6	.4	.2
12	2.6	1.5	5.6	5.6	4.3	4.1	3.9	5.1	11	2.2	.3	.2
13	2.6	1.4	5.6	5.4	4.3	4.1	3.9	3.7	10	1.6	.3	.2
14	2.6	3.2	5.6	5.1	4.3	4.1	7.0	3.7	10	1.2	.3	.2
15	2.6	3.2	5.6	4.8	4.3	4.1	6.5	3.7	10	1.0	.3	.2
16	2.6	3.2	5.6	4.6	4.3	4.1	5.9	4.6	9.4	.9	.3	.2
17	2.6	3.2	5.6	*4.6	4.3	4.1	5.6	5.4	9.1	.9	.3	.2
18	2.4	3.2	5.6	b4.0	4.3	4.1	5.6	6.2	8.8	.8	.2	.2
19	2.4	3.2	5.6	b3.0	4.3	4.1	5.6	6.7	8.5	.7	.2	.2
20	2.4	3.2	5.1	b2.5	4.3	4.1	5.6	7.3	8.2	.7	.2	1.0
21	2.4	4.6	4.8	b2.0	4.3	4.1	5.4	7.9	7.9	.7	.2	1.0
22	2.4	4.1	4.3	b2.0	4.3	4.1	5.4	7.3	7.9	.7	.2	1.0
23	2.4	3.7	4.3	b2.0	4.3	4.1	5.1	8.5	7.6	.6	.2	1.0
24	2.4	3.5	4.3	b2.5	4.3	4.1	4.6	9.4	7.3	.7	.2	1.0
25	2.2	3.2	4.3	b3.0	5.9	4.1	4.3	10	7.0	.7	.2	1.0
26	2.2	3.2	4.3	b3.5	5.9	4.3	1.6	11	6.7	.6	.2	1.0
27	2.0	3.2	b4.0	b4.0	5.4	4.8	1.6	12	6.5	.6	.2	1.0
28	2.0	3.7	b3.5	b4.0	5.1	5.1	1.6	13	6.2	.6	.2	1.0
29	1.9	5.6	b4.5	b4.0	5.1	5.1	1.5	13	6.2	.6	.2	1.0
30	1.9	5.6	5.4	b3.5	-	5.1	1.5	14	6.2	.6	.2	1.0
31	1.9	-	5.1	b3.5	-	5.1	-	16	-	.6	.2	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	56.3	2.6	0.4	1.82	112
November	84.7	5.6	1.4	2.82	168
December	160.3	5.6	3.5	5.17	318
Calendar year 1939	1,899.6	16	.1	5.20	3,770
January	127.9	5.9	2.0	4.13	254
February	122.8	5.9	3.0	4.23	244
March	134.0	5.1	3.9	4.32	266
April	136.8	7.0	1.5	4.56	271
May	191.4	16	.4	6.17	380
June	308.5	16	6.2	10.3	612
July	62.3	5.9	.6	2.01	124
August	10.1	.6	.2	.33	20
September	14.8	1.0	.2	.49	29
Water year 1939-40	1,409.9	16	.2	3.85	2,800

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

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Bear Creek near Victor, Mont.

Location.- Staff gage, lat. 46°23', long. 114°13', in NE¼ sec. 9, T. 7 N., R. 21 W., 5 miles southwest of Victor.

Drainage area.- 26.6 square miles.

Records available.- April 1938 to September 1940.

Extremes.- Maximum discharge observed during year, 578 second-feet May 11 (gage height, 2.38 feet); minimum observed, 1.1 second-feet Aug. 23, Sept. 9-12 (gage height, -0.15 foot).

1938-40: Maximum discharge observed, 865 second-feet Apr. 18, 1939 (gage height, 3.45 feet, from graph based on observer's readings); minimum observed, that of Aug. 23, Sept. 9-12, 1940.

Remarks.- Records fair except those for periods of ice effect and periods of backwater, which are fair. Gage read once or twice daily. No diversions or regulation above gage.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.3	16	b11		b9	20	51	68	309	46	6.2	a1.3
2	3.8	15	10		b10	18	58	121	318	36	6.0	a1.4
3	c5.7	13	11	b14	b11	17	55	224	271	30	4.7	1.5
4	c4.7	12	9		12	16	55	180	248	31	4.4	2.1
5	c5.2	12	b10		12	16	50	132	220	26	4.4	2.2
6	c5.7	c12	9.6		12	16	50	118	186	24	4.2	2.1
7	c5.0	c13	9.0		12	16	54	92	194	20	4.3	2.1
8	c4.3	c13	12	b11	12	16	46	97	186	18	4.3	1.5
9	c4.4	c13	20		12	b16	45	180	127	15	4.1	1.1
10	c4.4	c13	31		13	b15	40	309	135	16	3.2	1.1
11	4.1	13	32		12	b15	38	546	180	15	3.1	1.1
12	4.6	b12	22	b10	12	b15	36	421	212	14	2.7	1.1
13	4.6	b12	20		12	b16	54	333	240	13	2.7	1.3
14	c4.6	b11	19	b10	11	17	118	333	186	13	2.6	2.8
15	c4.4	b11	18	b11	b10	18	141	318	144	12	2.4	2.4
16	c5.0		24	b11	b10	18	95	266	132	12	2.1	2.6
17	c4.7		29	*b11	12	18	81	266	130	12	2.1	2.7
18	c4.4	b9	22	b10	12	20	141	244	116	11	1.8	3.1
19	c4.4		18	b8	12	20	157	289	124	11	1.9	3.6
20	c4.4		16	b5	12	20	180	328	106	9.3	a1.8	3.2
21	c4.4		17		12	20	124	276	90	8.8	a1.6	3.3
22	c4.4		20		12	26	101	299	77	8.5	1.5	2.9
23	c4.4	b8	b15	b4	12	30	95	365	64	8.2	1.1	3.0
24	c4.4		b14		b9	38	92	450	58	7.6	a1.4	2.8
25	c4.4		b14		b10	50	81	450	54	6.4	a1.6	2.6
26	c4.6	b6		b6	b10	58	81	299	51	6.4	1.9	2.3
27	c4.9	b7.5		b7	b12	66	95	232	46	9.9	1.6	2.9
28	c11	*b7.6		12	15	55	83	236	38	10	1.4	13
29	25	b8	b12	11	20	52	75	289	35	8.8	1.3	35
30	16	b10		b10	-	47	66	323	33	6.6	a1.3	32
31	18	-		b9	-	55	-	338	-	6.0	a1.4	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	194.2	25	3.8	6.26	0.235	0.27	385
November	317.1	16	-	10.6	.398	.44	629
December	504.6	32	9.0	16.3	.613	.71	1,000
Calendar year 1939	19,063.7	460	2.6	52.2	1.96	26.63	37,820
January	296	-	-	9.5	.357	.41	587
February	342	20	9	11.8	.444	.48	678
March	840	66	15	27.1	1.02	1.18	1,670
April	2,438	180	36	81.3	3.06	3.41	4,840
May	8,422	546	68	272	10.2	11.76	16,700
June	4,310	318	33	144	5.41	6.04	8,550
July	474.5	46	6.0	15.3	.575	.66	941
August	85.1	6.0	1.1	2.75	.103	.12	169
September	140.1	35	1.1	4.67	.176	.20	278
Water year 1939-40	18,363.6	546	1.1	50.2	1.89	25.68	36,430

*Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
b Stage-discharge relation affected by ice.
c Backwater from debris; discharge computed on basis of one discharge measurement and observer's notes.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Burnt Fork Creek near Stevensville, Mont.

Location.- Staff gage, lat. 46°28', long. 113°57', in SW¼ sec. 11, T. 8 N., R. 19 W., at highway bridge, 8 miles southeast of Stevensville.

Drainage area.- 74 square miles.

Records available.- May 1920 to August 1924, April 1938 to September 1940.

Extremes.- Maximum discharge observed during year, 121 second-feet May 25 (gage height, 1.40 feet); minimum observed, 5.6 second-feet (discharge measurement) Jan. 18. 1920-24, 1938-40: Maximum discharge observed, 641 second-feet May 28, 1938 (gage height, 2.92 feet); minimum observed, that of Jan. 18, 1940.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Gage read once daily. Several diversions above station for irrigation.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a18	19	18	a18	b15	16	38	41	95	31	22	a18
2	17	18	18	19	16	16	34	39	a88	31	21	a19
3	18	18	a18	17	16	a15	30	54	82	29	23	19
4	17	17	18	17	a16	14	27	57	75	a28	a24	19
5	18	a17	18	17	16	14	27	a50	80	27	24	20
6	19	17	17	17	16	14	26	43	72	26	23	20
7	19	18	17	a16	15	14	a26	40	68	a25	22	19
8	a18	18	17	b15	14	14	26	41	71	24	22	a18
9	16	17	20	b14	14	14	27	51	a66	24	22	17
10	17	14	a22	b13	16	a14	25	66	61	24	23	17
11	17	a15	23	b12	a15	b13	25	86	56	24	a22	17
12	18	a16	19	b10	14	14	24	a87	46	22	22	17
13	18	17	17	b14	13	b14	28	88	46	25	22	18
14	17	17	18	b18	14	17	a36	99	52	a26	22	18
15	a18	18	18	b20	12	14	44	83	52	27	22	a18
16	19	17	20	b20	12	14	37	85	a49	28	20	18
17	19	13	a20	b16	12	a14	36	85	46	28	20	18
18	18	13	20	*b6	a12	14	41	78	42	27	a20	18
19	18	b15	14	b6	13	14	48	a92	42	27	21	19
20	18	a17	19	b7	13	13	56	106	44	27	20	19
21	17	18	18	b8	12	16	a50	95	39	a26	21	18
22	a15	19	17	b8	a12	17	44	97	39	26	21	a18
23	13	a18	b15	b11	13	18	44	102	a39	25	20	19
24	19	17	b13	b13	14	a20	45	112	39	24	20	20
25	21	17	b12	b12	a14	23	44	121	37	23	a20	20
26	18	a17	b11	b10	14	27	45	a110	33	23	20	20
27	17	b17	b10	b18	16	34	49	99	32	26	20	18
28	18	16	*b8	b22	14	33	a47	95	32	a24	21	42
29	a18	b18	b10	b21	18	24	45	93	31	22	20	a38
30	18	b20	b15	b19	-	24	41	a95	a31	22	16	33
31	18	-	b17	b16	-	a31	-	97	-	22	17	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	549	21	13	17.7	1,090
November	508	20	13	16.9	1,010
December	517	23	8	16.7	1,030
Calendar year 1939	14,223	192	8	39.0	28,230
January	450	22	6	14.5	893
February	411	18	12	14.2	815
March	553	34	13	17.8	1,100
April	1,115	56	24	37.2	2,210
May	2,487	121	39	80.2	4,930
June	1,585	95	31	52.8	3,140
July	793	31	22	25.6	1,570
August	653	24	16	21.1	1,300
September	612	42	17	20.4	1,210
Water year 1939-40	10,233	121	6	28.0	20,300

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

9-232 February 1936

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Flathead River at Flathead, British Columbia

(International gaging station)

Location.- Staff gage, lat. 49°00', long. 114°29', at highway bridge 0.2 mile north of international boundary, 0.2 mile northwest of Flathead, British Columbia, and 7 miles northwest of Trail Creek, Mont.

Drainage area.- 450 square miles.

Records available.- March 1929 to September 1940 (except during winters).

Extremes.- Maximum daily discharge during year, 6,220 second-feet May 12 (gage height, 5.55 feet); minimum daily, 172 second-feet Oct. 4 (gage height, 1.12 feet), but lower discharge may have occurred during winter, when no records were obtained.
1929-40: Maximum discharge observed, 10,600 second-feet June 17, 1933 (gage height, 6.90 feet); minimum observed, 65 second-feet Apr. 9, 1929; minimum gage height observed, 0.76 foot Apr. 9, 1929, Apr. 2. 3, 1937.

Remarks.- Records good. Gage read twice daily.

Cooperation.- This station is one of the international gaging stations maintained by Canada under agreement with the United States.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

1.1	165	2.8	1,400	4.8	4,630
1.4	280	3.2	1,870	5.2	5,480
1.7	450	3.6	2,430	5.6	6,330
2.0	665	4.0	3,070		
2.4	1,000	4.4	3,790		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	193	224	186					1,740	2,580	583	336	208
2	186	224	186					1,790	2,210	562	320	216
3	179	220	190					2,360	2,110	534	300	216
4	172	216	193					2,980	1,990	513	295	228
5	176	216	196					3,000	1,960	492	280	256
6	176	220	220					2,300	1,840	478	272	264
7	176	252	236					2,080	1,790	457	264	264
8	179	264	256					1,880	1,770	450	256	260
9	179	268	285					2,280	1,690	438	248	256
10	179	272	384					3,290	1,640	426	240	240
11	179	264	336					4,970	1,600	426	232	228
12	176	256	300					6,220	1,540	414	224	208
13	179	248	280					4,630	1,490	414	220	208
14	179	240	285					3,850	1,470	414	216	208
15	179	240	280					3,420	1,440	402	208	208
16	179	240	272					3,170	1,420	402	204	200
17	179	248	272					2,900	1,380	390	200	196
18	176	244	264					2,640	1,310	366	196	193
19	176	240	264					2,900	1,260	354	193	193
20	176	208	260					3,730	1,210	342	186	193
21	179	208	272					3,470	1,150	336	186	200
22	179	200	-					3,400	1,070	330	182	212
23	186	196	-					3,530	982	315	179	244
24	200	193	-					3,600	809	320	179	272
25	208	193	-					3,730	761	310	179	264
26	216	190	-					3,370	729	315	179	248
27	224	193	-					3,220	713	320	193	240
28	232	193	-					2,520	642	342	200	232
29	232	190	-					2,340	620	372	208	224
30	224	186	-					2,430	605	372	204	224
31	224	-	-					2,740	-	366	208	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	5,877	232	172	190	0.42	0.48	11,660
November	6,746	272	186	225	.50	.56	13,380
December 1-21	5,417	384	186	258	.57	.45	10,740
Calendar year	-	-	-	-	-	-	-
January	-	-	-	-	-	-	-
February	-	-	-	-	-	-	-
March	-	-	-	-	-	-	-
April	-	-	-	-	-	-	-
May	96,480	6,220	1,740	3,110	6.91	7.97	191,400
June	41,731	2,580	605	1,390	3.09	3.45	82,870
July	12,555	583	310	405	.90	1.04	24,900
August	6,987	336	179	225	.50	.58	13,860
September	6,803	272	193	227	.50	.56	13,490
Water year	-	-	-	-	-	-	-

9-233 April 1936

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

101604-O U S GOVERNMENT PRINTING OFFICE 1936

Flathead River near Columbia Falls, Mont.

Location.- Water-stage recorder, lat. 48°29', long. 114°05', in NW¼ sec. 7, T. 31 N., R. 19 W., three-quarters of a mile upstream from Middle Fork and 10 miles northeast of Columbia Falls.

Drainage area.- 1,620 square miles.

Records available.- September 1910 to September 1917, April 1929 to September 1940.

Average discharge.- 12 years (1910-17, 1935-40) 2,820 second-feet.

Extremes.- Maximum discharge during year, 13,900 second-feet May 12 (gage height, 8.57 feet); minimum, 366 second-feet Jan. 18 (stage-discharge relation affected by ice). 1910-17, 1929-40: Maximum discharge, 29,500 second-feet June 20, 1916 (gage height, 9.8 feet, site and datum then in use); minimum, 323 second-feet Feb. 9, 1939 (stage-discharge relation affected by ice).

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

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	688	682	571	a910	615	701	1,520	4,070	9,300	2,220	1,160	645
2	675	663	560	a900	604	663	1,520	4,070	8,400	2,160	1,120	633
3	669	657	555	a880	627	639	1,520	5,420	7,830	2,050	1,080	639
4	651	657	545	a850	627	639	1,380	7,300	7,560	2,050	1,040	669
5	663	657	a540	a840	657	621	1,340	6,800	7,050	2,000	1,020	714
6	657	651	a560	a800	688	604	1,290	6,090	6,560	2,000	976	768
7	651	682	a560	a740	714	588	1,340	5,420	6,090	1,890	945	796
8	651	734	a640	a590	688	571	1,470	5,210	6,090	1,790	915	789
9	639	754	a780	a510	688	560	1,700	5,420	5,640	1,740	885	768
10	633	727	a900	a480	727	555	1,890	6,560	5,420	1,700	862	740
11	627	727	a1,000	a560	694	535	1,700	9,770	5,420	1,650	832	734
12	615	747	a1,070	a530	675	515	1,650	13,200	5,640	1,560	818	720
13	610	727	a1,100	a530	669	501	1,700	12,500	5,640	1,560	796	720
14	598	714	a1,050	*b560	633	501	2,100	10,800	5,640	1,520	775	782
15	598	688	a1,080	b565	639	510	2,800	9,900	5,420	1,520	761	775
16	598	682	a1,200	b585	610	566	2,950	9,000	4,800	1,520	754	775
17	598	669	a1,310	b590	615	682	2,800	8,700	4,610	1,560	740	768
18	593	657	a1,400	b425	615	701	2,950	8,110	4,240	1,520	727	789
19	588	645	a1,310	b410	571	701	3,410	8,110	4,070	1,470	708	810
20	593	639	a1,180	b395	550	701	3,900	9,900	3,900	1,420	701	796
21	593	610	a1,100	b380	530	740	4,610	10,500	3,900	1,380	694	803
22	582	604	a1,050	b400	506	796	4,800	9,900	3,730	1,340	688	803
23	588	598	a940	b450	437	878	4,420	10,500	3,570	1,290	669	832
24	657	582	a820	b500	445	960	4,240	11,200	3,250	1,250	669	862
25	708	566	a710	b530	515	1,020	4,070	12,200	2,950	1,250	657	915
26	727	555	a620	b560	525	1,030	3,900	11,800	2,800	1,250	657	922
27	714	540	a580	b585	530	1,160	3,900	10,200	2,730	1,340	657	900
28	720	545	a600	b595	593	1,340	4,070	9,000	2,600	1,290	694	870
29	747	545	a640	b605	694	1,380	4,420	8,110	2,400	1,290	701	840
30	720	560	a680	b615	-	1,420	4,240	8,110	2,280	1,250	675	818
31	701	-	a750	627	-	1,470	-	8,700	-	1,200	663	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	20,052	747	582	647	0.399	0.46	39,770
November	19,464	754	540	649	.401	.45	38,610
December	26,401	1,400	540	852	.526	.61	52,370
Calendar year 1939	872,331	14,000	325	2,390	1.48	20.03	1,730,000
January	18,497	910	380	597	.369	.43	36,690
February	17,681	727	437	610	.377	.41	35,070
March	24,248	1,470	501	782	.483	.55	48,100
April	83,600	4,800	1,290	2,787	1.72	1.93	165,800
May	266,570	13,200	4,070	8,599	5.31	6.12	528,700
June	149,530	9,300	2,280	4,984	3.08	3.44	296,600
July	49,030	2,220	1,200	1,582	.977	1.13	97,250
August	25,039	1,160	657	808	.499	.53	49,660
September	23,395	922	633	780	.481	.54	46,400
Water year 1939-40	723,507	13,200	380	1,977	1.22	16.65	1,435,900

*Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for station at Columbia Falls and records for intervening tributaries.
b Stage-discharge relation affected by ice.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
9-233 April 1936
101604-O U S GOVERNMENT PRINTING OFFICE 1936

Flathead River at Columbia Falls, Mont.

Location.- Water-stage recorder, lat. 48°22', long. 114°11', in SW¼ sec. 17, T. 30 N., R. 20 W., 200 feet downstream from highway bridge at Columbia Falls. Datum of gage is 2,978.00 feet above mean sea level (general adjustment of 1929; levels by Corps of Engineers, U. S. Army).

Drainage area.- 4,440 square miles.

Records available.- May 1922 to September 1923 (fragmentary), June 1928 to September 1940.

Average discharge.- 12 years (1928-40), 8,829 second-feet.

Extremes.- Maximum discharge during year, 41,300 second-feet May 12 (gage height, 11.67 feet); minimum daily, about 900 second-feet Jan. 21 (stage-discharge relation affected by ice).

1922-23, 1928-40: Maximum discharge, 102,000 second-feet June 1, 1923 (gage height, 17.3 feet); minimum, 798 second-feet Dec. 8, 1929 (gage height, -0.08 foot).

Maximum stage known, 22.7 feet in June 1894, from floodmarks (discharge, about 150,000 second-feet, from rating curve extended above 80,000 second-feet by logarithmic plotting).

Remarks.- Records excellent except those for periods of ice effect, which are fair. No diversion.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

0.1	920	3.0	4,630	9.0	25,900
.6	1,300	4.0	6,720	12.0	43,200
1.2	1,900	5.0	9,560		
2.0	2,970	7.0	16,800		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,680	g1,610	1,460	2,470	b1,520	2,340	5,820	13,400	30,600	6,720	3,040	1,620
2	1,670	g1,580	1,440	2,270	b1,470	2,340	6,250	14,500	28,400	6,480	2,970	1,590
3	1,640	1,560	1,440	2,200	b1,400	2,340	6,250	20,800	26,900	6,250	2,820	1,610
4	1,630	1,550	1,410	2,080	b1,450	2,270	5,820	26,400	24,900	6,030	2,680	1,660
5	1,650	1,540	1,380	2,020	b1,700	2,200	5,610	24,400	23,000	6,030	2,610	1,790
6	1,660	1,530	1,380	1,900	b2,000	2,140	5,410	21,100	21,600	5,820	2,540	1,900
7	1,630	1,660	1,410	1,840	b2,070	2,080	5,410	18,400	20,200	5,610	2,470	1,840
8	1,620	2,020	1,450	b1,600	b2,030	2,080	5,820	17,200	19,300	5,210	2,400	1,790
9	g1,630	1,960	1,680	b1,370	1,960	2,080	6,960	18,000	18,400	5,010	2,340	1,740
10	g1,600	1,900	2,140	b1,450	2,020	1,960	7,470	23,000	17,600	4,820	2,270	1,740
11	g1,540	1,840	2,540	b1,450	1,840	1,840	7,210	32,900	17,600	4,630	a2,200	1,680
12	g1,510	1,790	2,610	b1,400	b1,700	1,790	6,720	40,100	18,400	4,540	2,140	1,660
13	g1,470	1,740	2,540	b1,500	b1,600	1,740	6,480	37,700	19,300	4,440	2,140	1,660
14	g1,440	1,680	2,400	b1,600	1,510	1,680	8,310	33,500	19,300	4,260	2,020	1,900
15	g1,460	1,660	2,540	b1,650	b1,500	1,740	12,300	30,600	17,600	4,170	2,020	2,200
16	g1,510	1,640	2,970	*b1,630	1,470	2,020	12,600	28,900	16,000	4,080	1,960	2,080
17	g1,510	1,620	3,200	b1,630	1,440	2,400	11,600	27,900	14,800	4,170	1,960	1,960
18	g1,510	1,590	3,430	b1,300	1,440	2,680	11,200	25,900	13,700	4,080	1,900	1,960
19	g1,500	1,560	3,040	b1,100	b1,420	2,750	13,000	26,900	13,000	3,910	1,840	1,960
20	g1,480	1,540	2,900	b1,000	1,390	2,820	15,200	31,100	13,000	3,750	1,840	1,960
21	g1,460	1,490	2,820	b900	1,370	2,970	18,000	32,300	13,000	3,670	1,790	1,960
22	g1,470	1,510	2,680	b1,000	b1,270	3,270	17,200	31,700	11,900	3,590	1,790	2,470
23	g1,520	1,490	2,400	b1,100	b1,230	3,750	16,000	32,900	10,900	3,430	1,790	2,610
24	1,560	1,450	b2,150	b1,200	b1,210	4,260	15,200	35,300	9,890	3,350	1,740	2,540
25	1,590	1,380	b2,000	b1,300	b1,250	4,540	14,100	37,700	8,920	3,270	1,740	2,470
26	1,620	1,320	b1,850	b1,350	b1,380	4,540	13,700	37,100	8,610	3,200	1,680	2,400
27	1,660	1,310	b1,700	b1,450	1,510	5,010	13,700	32,900	8,310	3,510	1,680	2,270
28	1,680	1,320	b1,600	b1,500	1,670	5,610	14,500	28,400	7,740	3,590	1,740	2,200
29	1,740	1,360	b1,700	b1,500	2,140	5,610	15,200	26,900	7,210	3,430	1,740	2,140
30	g1,740	1,400	b1,800	b1,550	-	5,610	14,100	27,900	6,720	3,270	1,680	2,080
31	g1,670	-	b1,900	b1,550	-	5,820	-	30,000	-	3,120	1,650	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	49,050	1,740	1,440	1,582	0.356	0.41	97,290
November	47,600	2,020	1,310	1,587	.357	.40	94,410
December	65,960	3,430	1,380	2,128	.479	.55	130,800
Calendar year 1939	3,145,290	60,700	1,000	8,617	1.94	26.32	6,239,000
January	47,860	2,470	900	1,544	.348	.40	94,930
February	45,960	2,140	1,210	1,585	.357	.38	91,160
March	94,280	5,820	1,680	3,041	.685	.79	187,000
April	317,140	18,000	5,410	10,570	2.38	2.66	629,000
May	865,800	40,100	13,400	27,930	6.29	7.25	1,717,000
June	486,800	30,600	6,720	16,230	3.65	4.07	965,600
July	137,440	6,720	3,120	4,434	.999	1.15	272,600
August	65,180	3,040	1,650	2,103	.474	.55	129,300
September	59,440	2,610	1,590	1,981	.446	.50	117,900
Water year 1939-40	2,282,510	40,100	900	6,236	1.40	19.11	4,527,000

*Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
b Stage-discharge relation affected by ice.
g Discharge computed from graph based on gage readings.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geolo[illegible]cal Survey
101604-0 U.S. GOVERNMENT PRINTING OFFICE : 1936

Flathead River near Kalispell, Mont.

Location.- Chain gage, lat. 48°13', long. 114°15', in NE¼ sec. 10, T. 28 N., R. 21 W., at highway bridge, 3 miles east of Kalispell. Datum of gage is at mean sea level (Somers datum).

Records available.- May 1928 to September 1940.

Extremes.- Maximum elevation observed during year, 2,909.75 feet May 12, 14; minimum observed, 2,900.19 feet Jan. 22.
1928-40: Maximum elevation observed, 2,913.95 feet May 27, 1928; minimum observed, 2,900.16 feet Feb. 8, 1939.

Remarks.- Records fragmentary but reliable. They were collected for profile study of Flathead River above Flathead Lake. Gage read once daily.

Elevation, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	0.84	0.63	1.95	0.72	1.32	3.31	5.80	8.59	3.46	1.62	-
2	0.88	.82	.65	1.93	-	-	-	-	-	-	1.54	-
3	.88	.80	.67	1.27	.60	1.30	3.40	7.05	8.77	3.34	1.50	0.68
4	.86	.78	.67	-	.62	1.30	3.25	8.05	8.73	3.22	1.44	.68
5	-	.80	-	1.09	.66	1.26	3.13	8.05	-	3.12	1.34	.74
6	.84	-	.65	.99	.70	1.22	3.10	-	7.31	-	-	-
7	.82	.84	.67	-	.76	-	3.03	6.95	7.15	2.96	1.26	.86
8	-	1.12	.69	.81	-	1.34	3.47	-	7.00	2.82	1.22	-
9	.80	1.12	.83	.85	.78	-	3.67	6.73	-	2.72	1.18	.78
10	.78	1.06	-	.93	.80	1.10	3.79	8.77	6.67	2.62	1.14	.74
11	-	1.00	1.31	.99	-	1.08	3.91	8.80	6.55	2.54	-	.72
12	.76	-	1.37	.85	.72	1.10	-	9.[illegible]	6.67	2.48	1.06	-
13	.74	.96	1.49	-	.72	.92	3.53	9.73	6.85	-	1.02	.68
14	.72	.92	1.41	1.27	.68	.90	-	9.75	6.79	2.30	.99	.80
15	.70	.90	1.47	1.25	-	.88	5.39	8.77	6.65	2.24	-	-
16	-	.86	1.61	1.21	.64	-	5.31	8.77	6.23	2.18	.96	1.04
17	.70	.84	1.81	1.17	.60	-	5.20	8.80	6.11	-	.92	1.02
18	.76	.82	1.95	.95	-	1.10	5.35	8.13	-	2.14	.88	.98
19	.74	.78	1.87	.61	.56	1.48	5.55	8.05	5.51	2.12	.84	.92
20	.74	.78	1.69	-	.56	1.62	6.05	8.70	5.41	2.02	-	.92
21	.72	.74	1.65	-	.52	1.66	6.77	-	5.31	-	.82	.92
22	.72	.72	-	.19	.50	1.81	6.75	8.83	-	1.94	.80	-
23	.72	-	1.37	.25	-	1.98	6.45	8.89	5.00	1.86	.78	1.34
24	-	.70	-	.33	.50	-	6.25	9.05	4.71	1.80	.78	1.32
25	.74	.68	1.11	.51	-	2.46	6.05	9.43	4.47	-	.76	1.28
26	.76	-	1.11	-	.64	2.64	6.05	9.47	4.20	1.68	-	1.22
27	.80	.66	1.11	.49	.66	-	6.03	8.95	-	1.68	.70	1.16
28	-	.64	1.09	-	.88	3.14	6.00	8.45	3.91	1.92	.70	1.08
29	.88	.62	-	.87	1.12	3.16	6.00	-	-	1.86	.70	1.04
30	.88	.62	2.11	.79	-	3.18	5.87	8.20	3.53	1.78	-	1.00
31	.86	-	-	.77	-	3.26	-	8.49	-	1.66	.70	-

Note.- Add 2,900 feet to obtain elevations above mean sea level (Somers datum).

9-238 September 1937

UNITED STATES DEPARTMENT OF THE INTERIOR
Geolo[illegible]al Survey

Flathead River at Demersville, near Kalispell, Mont.

Location.- Wire-weight gage, lat. 48°10', long. 114°16', in NE¼ sec. 28, T. 28 N., R. 21 W., at Demersville, 3 miles south of Kalispell. Datum of gage is at mean sea level (Somers datum).

Records available.- April 1909 to July 1912, April 1928 to September 1940.

Extremes.- Maximum elevation observed during year, 2,894.49 feet (regulated) May 26; minimum, 2,883.10 feet (regulated) Feb. 24, 25.
1909-12, 1928-40: Maximum elevation observed, 2,904.94 feet June 17, 1933; minimum, 2,881.86 feet Dec. 18-26, 1936.

Remarks.- Records reliable. They were collected for profile study of Flathead River above Flathead Lake. Gage read once or twice daily. Since April 1938 elevation of water surface has been subject to regulation by Kerr Dam, below outlet of Flathead Lake.

Elevation, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	86.64	85.21	84.54	84.33	83.40	83.21	84.42	87.65	93.63	91.27	91.38	90.25
2	86.52	85.13	84.50	84.32	83.38	83.23	84.50	87.65	93.52	91.27	91.33	90.24
3	86.52	85.14	84.46	84.35	83.40	83.25	84.54	88.42	93.22	91.25	91.31	90.19
4	86.50	85.13	84.45	84.35	83.42	83.29	84.54	90.39	93.02	91.27	91.25	90.18
5	86.40	-	84.39	84.39	83.40	83.45	84.50	90.59	92.76	91.31	91.21	90.19
6	86.28	-	84.34	84.37	83.40	83.39	84.50	89.97	92.56	91.25	91.23	90.09
7	86.28	84.97	84.28	84.35	83.44	83.38	84.50	89.41	92.40	91.25	91.23	90.06
8	86.24	84.99	84.25	84.29	83.44	83.39	84.60	89.01	92.32	91.19	91.21	90.01
9	86.15	84.97	84.22	84.31	83.38	83.43	84.86	88.99	92.20	91.15	91.21	89.97
10	86.14	84.95	84.32	84.29	83.34	83.41	85.10	89.63	92.10	91.15	91.17	89.94
11	86.06	84.91	84.40	84.27	83.32	83.39	85.08	91.35	92.08	91.14	91.11	89.92
12	86.00	84.87	84.32	84.25	83.34	83.41	85.02	93.53	92.26	91.16	91.07	89.86
13	85.94	84.81	84.28	84.27	83.28	83.40	85.02	93.87	92.44	91.19	91.07	89.85
14	85.89	84.84	84.28	84.23	83.28	83.39	85.12	93.03	92.52	91.24	90.98	89.95
15	85.88	84.82	84.32	84.25	83.24	83.39	85.92	92.55	92.38	91.22	90.96	89.79
16	85.84	84.81	84.44	84.22	83.26	83.41	86.54	92.23	92.16	91.22	90.87	89.77
17	85.80	84.81	84.52	84.13	83.22	83.47	86.42	92.17	92.00	91.28	90.83	89.78
18	85.80	84.78	84.52	83.99	83.20	83.53	86.33	91.83	91.86	91.27	90.77	89.74
19	85.77	84.77	84.42	83.93	83.22	83.55	86.52	91.69	91.66	91.30	90.76	89.73
20	85.74	84.75	84.58	83.89	83.22	83.59	87.10	92.40	91.70	91.30	90.73	89.67
21	85.78	84.72	84.64	83.81	83.18	83.63	87.90	93.19	91.67	91.34	90.71	89.63
22	85.60	84.67	84.56	83.81	83.16	83.67	88.24	93.03	91.63	91.32	-	89.69
23	85.58	84.63	84.52	83.67	83.12	83.77	87.90	93.91	91.45	91.34	-	89.66
24	85.46	84.59	84.50	83.61	83.10	83.89	88.42	93.57	91.45	91.32	90.61	89.64
25	85.42	84.60	84.48	83.53	83.10	83.97	87.66	94.11	91.41	91.32	90.60	89.59
26	85.48	84.59	84.46	83.47	83.16	84.03	87.50	94.49	91.47	91.34	90.53	89.57
27	85.42	84.58	84.43	83.59	83.14	84.17	87.50	93.99	91.41	91.34	90.49	89.51
28	85.46	84.57	84.37	83.53	83.16	84.31	87.66	93.17	91.39	91.36	90.48	89.53
29	85.32	84.57	84.34	83.59	83.18	84.33	87.94	92.69	91.31	91.34	90.39	89.43
30	85.28	84.57	84.33	83.55	-	84.35	87.86	92.71	91.29	91.36	90.31	89.57
31	85.24	-	84.36	83.49	-	84.37	-	93.13	-	91.34	90.29	-

Note.- Add 2,800 feet to obtain elevations above mean sea level (Somers datum).

9-238 September 1937

UNITED STATES DEPARTMENT OF THE INTERIOR
Geolog al Survey

Flathead River at Damon Ranch, near Kalispell, Mont.

Location.- Staff gage, lat. 48°09', long. 114°08', in NW¼ sec. 32, T. 28 N., R. 20 W., at Damon Ranch, 7 miles southeast of Kalispell. Datum of gage is at mean sea level (Somers datum).

Records available.- April 1909 to July 1912, May 1928 to September 1940.

Extremes.- Maximum elevation observed during year, 2,891.83 feet (regulated) May 26; minimum observed, 2,883.01 feet (regulated) Feb. 23, 25.
1909-12, 1928-40: Maximum elevation observed, 2,900.94 feet June 17, 1933; minimum, 2,881.55 feet Jan. 27-31, 1937.

Remarks.- Records reliable. They are collected for profile study of Flathead River above Flathead Lake. Gage read twice daily. Since April 1938 elevation of water surface has been subject to regulation by Kerr Dam, below outlet of Flathead Lake.

Elevation, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	86.38	85.11	84.50	84.36	83.44	S3.11	84.06	S6.69	91.75	91.15	91.34	90.22
2	86.42	S5.09	84.47	84.39	83.40	S3.13	84.13	87.29	91.68	91.17	91.32	90.18
3	86.46	85.10	84.40	84.38	83.36	83.20	84.17	88.23	91.61	91.18	91.29	90.17
4	86.38	85.06	84.37	-	83.36	83.22	84.17	S8.41	91.58	91.18	91.27	90.19
5	86.26	84.S8	84.38	-	83.38	83.24	84.15	88.31	91.50	91.24	91.21	90.19
6	86.21	84.98	84.34	-	83.39	83.27	84.19	88.10	91.42	91.15	91.22	90.09
7	86.15	84.96	84.26	-	83.37	83.27	84.23	87.80	91.38	91.15	91.19	89.99
8	86.13	84.98	84.31	-	83.36	83.31	84.27	87.64	91.42	91.11	91.22	89.97
9	86.10	84.96	84.29	-	83.33	83.37	84.43	87.70	91.33	91.07	91.18	89.92
10	86.06	84.93	84.30	-	83.30	83.32	84.57	88.16	91.40	91.10	91.15	89.90
11	S5.99	84.84	84.31	-	83.30	83.34	84.58	89.25	91.39	91.12	91.08	S9.90
12	85.93	84.80	84.33	84.20	83.32	83.36	84.60	90.50	91.44	91.12	91.03	89.80
13	85.86	84.86	84.34	84.20	83.26	83.36	84.64	90.64	91.61	91.21	91.05	89.83
14	85.81	84.80	84.34	84.15	83.23	83.37	84.79	90.32	91.67	91.18	91.00	89.87
15	85.78	84.82	84.33	84.12	83.20	83.41	85.09	90.19	91.58	91.17	90.91	89.82
16	85.72	84.76	84.33	84.09	83.15	83.42	85.40	90.07	91.47	91.24	90.84	89.78
17	S5.72	84.75	84.43	83.98	83.15	83.43	85.42	90.06	91.43	91.27	90.80	89.77
18	85.75	84.73	84.45	83.95	83.19	83.50	85.43	89.93	91.33	91.27	90.76	89.71
19	85.71	84.73	84.47	83.86	83.17	83.47	85.60	89.98	91.32	91.28	90.74	89.67
20	85.64	84.73	84.45	83.84	83.19	83.51	85.93	90.37	91.29	91.28	90.71	89.66
21	85.62	84.67	84.53	83.82	83.15	83.55	86.37	90.75	91.29	91.29	90.70	89.63
22	S5.52	84.64	84.55	83.79	83.08	83.59	86.54	90.77	91.20	91.28	90.64	89.66
23	85.56	84.59	84.45	83.75	83.01	83.67	86.46	90.89	91.19	91.28	90.59	89.57
24	85.26	84.59	84.45	83.69	83.03	83.74	86.51	91.27	91.19	91.28	90.55	89.53
25	85.36	84.56	84.45	83.62	83.01	83.81	86.46	91.69	91.20	91.28	90.49	89.54
26	85.36	84.54	84.45	83.62	83.05	83.86	86.42	91.82	91.24	91.24	90.45	89.55
27	85.34	84.50	84.39	83.58	83.07	83.92	86.45	91.54	91.20	91.37	90.40	89.47
28	85.31	84.50	84.39	83.56	83.09	83.97	S6.58	91.13	91.19	91.44	90.38	89.46
29	85.24	84.54	84.36	83.54	83.11	84.01	86.75	90.95	91.17	91.35	90.36	89.42
30	85.21	84.53	84.36	83.54	-	84.01	86.65	91.15	91.19	91.32	90.30	89.41
31	85.16	-	84.34	83.48	-	84.04	-	91.49	-	91.33	90.25	-

Note.- Add 2,800 feet to obtain elevations above mean sea level (Somers datum).

9-238 September 1937

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Flathead River at Therriault Ferry, near Kalispell, Mont.

Location.- Staff gage, lat. 48°08', long. 114°09', in NW¼ sec. 4, T. 27 N., R. 20 W., at Therriault Ferry, 9 miles southeast of Kalispell. Datum of gage is at mean sea level (Somers datum).

Records available.- October 1934 to September 1940.

Extremes.- Maximum elevation observed during year, 2,891.32 feet (regulated) July 31, Aug. 1; minimum observed, 2,883.02 feet (regulated) Feb. 23, 27.
1934-40: Maximum elevation observed, 2,894.23 feet May 16, 1936; minimum observed, 2,881.28 feet Jan. 21-23, 1937.

Remarks.- Records reliable. They are collected for profile study of Flathead River above Flathead Lake. Gage read twice daily. Since April 1938 elevation of water surface has been subject to regulation by Kerr Dam, below outlet of Flathead Lake.

Elevation, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	86.47	85.12	84.43	84.32	83.41	83.08	83.92	86.18	90.76	91.10	91.31	90.21
2	86.43	85.08	84.40	84.32	83.38	83.10	84.00	86.21	90.81	91.11	91.27	90.17
3	86.41	85.05	84.37	84.32	83.36	83.13	84.01	86.55	90.85	91.08	91.26	90.01
4	86.36	85.02	84.34	84.32	83.36	83.18	84.03	87.17	90,90	91.08	91.22	89.99
5	86.31	84.98	84.30	84.33	83.34	83.31	84.10	87.34	90.94	91.09	91.19	89.98
6	86.25	84.93	84.26	84.29	83.34	83.26	84.13	87.22	90.92	91.11	91.19	89.96
7	86.17	84.93	84.23	84.28	83.34	83.28	84.13	87.12	90.92	91.09	91.16	89.94
8	86.10	84.92	84.23	84.26	83.34	83.36	84.21	87.06	90.91	91.02	91.16	89.93
9	86.07	84.88	84.25	84.24	83.33	83.33	84.29	87.10	90.95	91.02	91.11	89.91
10	86.06	84.86	84.25	84.25	83.32	83.30	84.37	87.36	90.96	91.04	91.11	89.89
11	86.04	84.84	84.26	84.16	83.32	83.33	84.39	88.08	91.03	91.04	91.07	89.87
12	85.93	84.83	84.30	84.16	83.29	83.32	84.43	88.42	91.11	91.06	91.05	89.86
13	85.86	84.81	84.30	84.14	83.26	83.34	84.45	89.15	91.25	91.09	91.00	89.84
14	85.82	84.79	84.29	84.12	83.23	83.32	84.52	89.06	91.28	91.14	90.94	89.82
15	85.78	84.77	84.29	84.10	83.20	83.36	84.70	89.05	91.26	91.14	90.91	89.79
16	85.73	84.75	84.29	84.09	83.18	83.39	84.92	89.04	91.25	91.16	90.85	89.75
17	85.73	84.73	84.29	83.96	83.16	83.39	85.05	89.08	91.20	91.21	90.76	89.71
18	85.71	84.71	84.30	83.96	83.15	83.40	85.08	89.03	91.14	91.24	90.74	89.67
19	85.68	84.69	84.39	83.96	83.14	83.42	85.18	89.09	91.09	91.24	90.74	89.63
20	85.64	84.68	84.46	83.92	83.14	83.47	85.44	89.34	91.09	91.24	90.69	89.60
21	85.61	84.67	84.51	83.85	83.12	83.51	85.70	89.63	91.09	91.23	90.64	89.58
22	85.56	84.64	84.52	83.77	83.09	83.55	85.85	89.68	91.06	91.22	90.64	89.56
23	85.47	84.60	84.53	83.65	83.03	83.61	85.85	89.81	91.05	91.24	90.57	89.54
24	85.31	84.56	84.52	83.62	83.04	83.65	85.95	89.98	91.08	91.23	90.53	89.52
25	85.32	84.54	84.48	83.60	83.04	83.70	85.94	90.31	91.09	91.19	90.52	89.50
26	85.33	84.51	84.44	83.59	83.05	83.75	85.95	90.50	91.11	91.17	90.46	89.47
27	85.30	84.49	84.37	83.57	83.02	83.84	85.99	90.41	91.15	91.23	90.43	89.44
28	85.26	84.49	84.36	83.55	83.04	83.89	86.08	90.24	91.12	91.28	90.36	89.41
29	85.23	84.47	84.33	83.53	83.06	83.90	86.22	90.11	91.10	91.28	90.29	89.39
430	85.20	84.45	84.31	83.49	-	83.91	86.21	90.21	91.10	91.30	90.25	89.35
31	85.15	-	84.29	83.45	-	83.89	-	90.54	-	91.32	90.23	-

Note.- Add 2,800 feet to obtain elevations above mean sea level (Somers datum).

9-238 September 1937

UNITED STATES DEPARTMENT OF THE INTERIOR
Geolog al Survey

Flathead River near Holt, Mont.

Location.- Staff gage, lat. 48°06', long. 114°06', in NE¼ sec. 22, T. 27 N., R. 20 W., at Keller Ranch near Holt, Mont. Datum of gage is at mean sea level (Somers datum).

Records available.- April 1909 to July 1912, June 1928 to September 1937, October 1939 to September 1940.

Extremes.- Maximum elevation observed during year, 2,891.30 feet (regulated) July 30, 31; minimum observed, 2,882.94 feet (regulated) Feb. 25, 26.
1909-12, 1928-37, 1939-40: Maximum elevation, 2,897.35 feet May 29, 30, 1928 (from floodmark); minimum observed, 2,881.24 feet Jan. 25-28, 1930.

Remarks.- Records reliable. They are collected for profile study of Flathead River above Flathead Lake. Since April 1938, elevation of water surface has been subject to regulation by Kerr Dam, below outlet of Flathead Lake.

Elevation, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	86.48	85.10	84.40	84.22	83.26	82.98	83.80	-	90.22	91.00	91.23	90.18
2	86.42	85.06	84.36	84.22	83.26	83.00	83.84	85.88	90.36	91.00	91.21	90.16
3	86.36	85.04	84.34	84.22	83.26	83.02	83.90	-	90.40	91.02	91.22	90.09
4	86.30	85.00	84.30	84.22	83.26	83.06	83.92	86.38	90.54	91.02	91.20	90.10
5	86.24	84.96	84.28	84.20	83.26	83.12	83.94	86.68	90.58	91.04	91.18	90.06
6	86.20	84.92	84.24	84.20	83.24	83.14	83.96	86.72	-	91.04	-	-
7	86.12	84.88	84.22	84.18	83.24	83.16	84.00	86.72	90.62	91.04	91.14	89.96
8	86.08	84.86	84.20	84.18	83.22	83.20	84.08	86.70	90.66	91.02	-	-
9	86.02	84.84	84.18	-	83.20	83.22	84.16	86.70	90.70	91.00	-	89.88
10	85.98	84.82	84.18	-	83.20	83.24	84.20	86.82	-	91.00	91.03	-
11	85.94	84.80	84.20	-	83.18	83.24	84.24	87.18	90.82	-	91.03	-
12	85.90	84.78	84.22	84.08	83.16	83.26	84.30	87.86	90.90	-	91.01	89.78
13	85.84	84.76	84.24	84.08	83.14	83.28	84.32	88.28	-	-	-	89.74
14	85.80	84.74	84.24	84.06	83.12	83.28	84.40	-	90.98	91.06	-	89.69
15	85.76	84.72	84.26	84.04	83.12	83.30	84.46	88.36	91.02	91.08	90.97	-
16	85.70	84.70	84.26	84.00	83.10	83.32	-	88.42	91.04	-	90.80	89.66
17	85.74	84.68	84.28	83.96	83.10	83.30	84.72	-	91.00	-	-	-
18	85.68	84.66	84.30	83.90	83.08	83.32	84.80	88.50	-	91.18	-	89.59
19	85.62	84.64	84.32	83.86	83.08	-	84.88	88.54	90.98	91.20	90.70	89.61
20	85.58	84.64	84.34	83.80	83.06	83.40	85.10	88.74	90.98	-	90.63	89.59
21	85.52	84.62	84.36	83.76	83.02	83.44	85.26	-	90.94	91.22	-	89.56
22	85.46	84.60	84.36	83.70	82.98	83.46	85.40	88.98	90.94	91.22	-	89.55
23	85.40	84.56	84.34	83.64	82.96	83.50	85.44	89.16	90.94	91.22	90.56	-
24	85.36	84.54	84.34	83.58	82.96	83.54	85.60	89.24	91.00	-	90.50	89.48
25	85.32	84.50	84.32	83.52	82.94	83.60	85.60	89.48	91.00	-	-	89.48
26	85.30	84.46	84.30	83.48	82.94	83.64	85.62	89.68	91.04	-	90.44	89.48
27	85.28	84.44	84.30	83.44	82.96	83.66	85.66	89.74	91.02	-	90.42	-
28	85.26	84.44	84.28	83.40	82.96	83.70	85.70	89.66	91.02	91.26	90.32	89.38
29	85.22	84.42	84.26	83.36	82.98	83.72	85.80	89.58	91.00	91.24	90.26	89.36
30	85.18	84.42	84.22	83.32	-	83.74	85.84	89.74	91.00	91.30	-	89.34
31	85.14	-	84.20	83.28	-	83.80	-	89.96	-	91.30	90.24	-

Note.- Add 2,800 feet to obtain elevations above mean sea level (Somers datum).

9-238 September 1937 UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Flathead Lake at Somers, Mont.

Location.- Water-stage recorder, lat. 48°04', long. 114°13', in NE¼ sec. 26, T. 27 N., R. 21 W., at steamboat dock at Somers. Datum of gage is at mean sea level (Somers datum).

Records available.- April 1922 to September 1940.

Extremes.- Maximum elevation during year, 2,891.30 feet (regulated) July 27; minimum observed, 2,882.90 feet (regulated) Feb. 29.
1922-40: Maximum elevation, 2,896.26 feet June 19, 1933; minimum, 2,881.07 feet Dec. 5, 1936.

Remarks.- Records excellent except those for periods of staff-gage readings, which are good. Since April 1938 the elevation of water-surface of lake has been subject to regulation by Kerr Dam, below outlet. Slight diversion and regulation above Flathead Lake.

Elevation, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	86.37	85.04	84.38	f84.21	83.31	82.96	83.72	85.67	89.78	91.00	91.21	90.16
2	86.30	85.01	84.37	84.23	83.27	82.99	83.77	85.68	89.94	90.99	91.20	90.11
3	86.30	84.98	84.30	84.23	83.22	83.01	83.80	85.76	90.09	91.01	91.18	90.09
4	86.30	84.97	84.30	84.22	83.22	83.08	83.80	85.88	90.28	91.04	91.15	90.08
5	86.28	84.90	84.26	84.21	83.24	83.10	f83.88	86.11	90.38	91.02	91.12	90.06
6	f86.14	84.88	84.26	84.18	83.26	83.10	83.90	86.26	90.42	91.02	91.10	89.98
7	86.10	84.85	84.20	84.19	83.23	83.15	83.93	86.35	90.48	91.02	91.09	89.93
8	86.04	84.87	84.18	84.18	83.23	83.25	83.98	86.41	90.56	90.98	91.07	89.90
9	86.00	84.81	84.16	84.15	83.20	83.23	84.05	86.44	90.58	90.97	91.03	89.85
10	85.96	84.76	84.16	84.14	83.18	83.20	84.07	86.49	90.64	90.98	91.02	89.82
11	85.90	84.71	84.16	84.11	83.24	83.20	84.13	86.63	90.71	90.99	90.97	89.81
12	85.84	84.70	84.20	84.08	83.18	83.24	84.17	86.98	90.78	91.02	90.91	89.78
13	85.79	84.71	84.20	84.04	83.12	83.24	84.22	87.25	90.87	91.07	90.90	89.76
14	85.75	84.70	84.20	84.02	83.08	83.24	84.25	87.53	90.91	91.08	f90.88	89.78
15	85.70	84.68	84.21	83.98	83.08	83.24	84.28	87.74	90.92	91.06	f90.84	89.69
16	85.66	84.67	84.25	83.94	83.07	83.26	84.42	87.86	90.93	91.12	90.79	89.68
17	85.64	84.64	84.27	83.87	83.04	83.26	84.53	88.00	90.95	91.15	90.73	89.67
18	85.61	84.63	84.30	83.83	83.04	83.28	84.60	88.06	90.93	91.13	90.71	89.60
19	85.58	84.62	84.35	83.79	83.06	83.32	84.64	88.13	90.89	91.17	90.68	89.59
20	85.55	84.60	84.37	83.73	83.04	83.34	84.79	88.20	90.90	91.18	90.65	89.55
21	85.50	84.55	84.36	83.68	83.04	83.38	84.91	88.33	90.92	91.18	90.63	89.52
22	85.46	84.53	84.35	83.61	83.00	83.42	85.04	88.47	90.89	91.17	90.58	89.55
23	85.42	f84.51	84.34	f83.55	82.96	83.46	85.17	88.58	90.92	91.17	90.53	89.52
24	85.28	84.50	84.32	83.53	82.94	83.49	85.28	88.70	90.93	91.17	90.48	89.47
25	85.28	84.50	84.28	83.52	82.94	83.53	85.35	88.87	90.95	91.16	90.47	89.47
26	85.26	84.50	84.28	83.48	82.96	83.58	85.43	89.04	90.98	91.12	90.43	89.46
27	85.23	84.45	84.26	83.46	82.96	83.64	85.47	89.16	91.00	91.23	90.38	89.42
28	85.21	84.32	84.22	83.46	82.96	83.65	85.53	89.24	90.99	91.24	90.35	89.38
29	85.16	84.34	84.20	83.44	82.91	83.66	85.61	89.27	90.97	91.20	90.27	89.33
30	85.11	84.36	84.21	83.40	-	83.68	85.64	89.38	90.99	91.22	90.23	89.35
31	85.08	-	84.24	83.35	-	83.69	-	89.62	-	91.20	90.21	-

f Elevation partially estimated.
Note.- Add 2,800 feet to obtain elevations above mean sea level (Somers datum). Twice-daily staff-gage readings used Oct. 1-5, Nov. 24 to Dec. 16, Dec. 29-31, Jan. 24 to Mar. 20, Apr. 2-4.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Flathead Lake at Polson, Mont.

Location.- Water-stage recorder, lat. 47°42', long. 114°09', in E½ sec. 4, T. 22 N., R. 20 W., at south end of lake at Polson. Datum of gage is at mean sea level (Somers datum).

Records available.- August 1908 to September 1926, June 1928 to September 1940.

Extremes.- Maximum elevation during year, 2,891.52 feet (regulated) July 20; minimum, 2,882.77 feet (regulated) Feb. 26.
1908-26, 1928-40: Maximum elevation, 2,896.26 feet June 19, 1933; minimum, 2,881.12 feet Dec. 13, 1936.

Remarks.- Records reliable. Since April 1938 elevation of water surface has been subject to regulation by Kerr Dam, 4 miles below outlet. Acceptable capacity table not available. Slight diversion and regulation above Flathead Lake.

Elevation, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	86.41	84.96	84.28	h84.21	83.32	82.88	83.66	85.58	89.69	90,94	91.17	90.11
2	86.38	84.98	84.22	f84.19	83.28	82.92	83.67	85.61	89.81	90.95	91.14	90.08
3	86.27	84.95	84.23	84.18	83.25	82.97	83.77	85.64	89.98	90.96	91.13	90.04
4	86.18	84.90	84.22	84.16	83.23	83.01	83.81	85.80	90.18	90.98	91.14	89.99
5	86.08	84.87	84.18	f84.16	83.22	83.02	83.84	85.97	90.28	90.98	91.11	89.93
6	86.11	84.80	84.10	h84.11	83.21	83.06	83.84	86.17	90.34	90.98	91.07	89.94
7	86.04	84.80	84.12	h84.10	83.21	83.10	83.87	86.27	90.35	90.97	91.05	89.93
8	85.98	84.64	84.07	f84.11	83.20	83.12	83.89	86.32	90.38	90.97	91.02	89.89
9	85.92	84.68	f84.11	84.09	83.18	83.15	83.93	86.36	90.45	90.95	90.98	89.88
10	85.86	84.65	h84.12	84.08	83.16	83.16	84.06	86.41	90.52	90.97	90.93	89.82
11	85.82	84.66	h84.09	84.08	83.15	83.16	84.13	86.55	90.59	90.99	90.93	89.77
12	85.78	84.65	h84.10	84.05	83.14	83.17	84.12	86.82	90.67	90.96	90.89	89.75
13	85.74	84.67	h84.09	84.01	83.12	83.18	84.14	87.17	90.68	90.97	90.82	89.69
14	85.68	84.64	h84.11	83.97	83.10	83.17	84.18	87.46	90.75	90.95	90.80	89.62
15	85.62	84.64	h84.09	83.94	83.06	83.18	84.34	87.65	90.80	91.09	90.77	89.66
16	85.58	84.63	h84.11	f83.86	83.03	83.16	84.37	87.82	90.83	91.03	90.76	89.58
17	85.48	84.60	h84.05	f84.01	83.01	83.19	84.43	87.93	90.85	91.15	90.72	89.54
18	85.46	84.58	h84.13	83.87	83.00	83.22	84.50	88.00	90.84	91.16	90.66	89.55
19	85.40	84.57	h84.17	83.79	83.01	83.25	84.61	88.05	90.80	91.15	90.62	89.51
20	85.33	84.53	h84.19	83.73	82.98	83.29	84.65	88.15	90.77	91.16	90.58	89.50
21	85.30	84.50	h84.23	83.68	82.97	83.32	84.83	88.25	90.77	91.17	90.54	89.49
22	85.30	84.45	h84.29	83.63	82.98	83.38	85.00	88.37	90.84	91.18	90.50	89.51
23	85.25	84.47	h84.27	83.63	82.94	83.41	85.13	88.48	90.84	91.16	90.48	89.51
24	85.42	84.43	h84.30	83.54	82.88	83.48	85.23	88.61	90.86	91.13	90.44	89.49
25	85.26	84.40	h84.23	83.48	82.87	83.56	85.30	88.77	90.87	91.11	90.35	89.44
26	85.15	84.38	h84.21	83.44	82.85	83.58	85.35	88.94	90.87	91.13	90.31	89.41
27	85.12	84.35	h84.19	83.42	82.88	83.55	85.40	89.08	90.94	91.13	90.25	89.39
28	85.05	84.33	h84.17	83.40	82.89	83.57	85.43	89.16	90.97	91.20	90.19	89.38
29	85.07	84.28	h84.15	83.39	82.87	83.58	85.45	89.18	90.95	91.21	90.21	89.39
30	85.04	84.23	h84.17	83.37	-	83.58	85.53	89.32	90.93	91.20	90.18	89.29
31	85.00	-	h84.18	83.35	-	83.61	-	89.53	-	91.19	90.13	-

f Elevation partially estimated.
h Twice-daily staff gage readings.
Note.- Add 2,800 feet to obtain elevations above mean sea level (Somers datum).

9-238 September 1937 UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Flathead River near Polson, Mont.

Location.- Water-stage recorder, lat. 47°39', long. 114°20', in sec. 19, T. 22 N., R. 21 W., at highway bridge at Norrisvale, 12 miles downstream from Polson. Datum of gage is 2,629 feet above sea level (river-profile survey).

Drainage area.- 7,010 square miles.

Records available.- July 1907 to September 1940.

Average discharge.- 33 years, 11,330 second-feet.

Extremes.- Maximum discharge during year, 38,400 second-feet May 27 (gage height, 11.20 feet); minimum, about 300 second-feet (regulated) Feb. 11 (gage height, -0.65 foot); minimum daily, 738 second-feet Mar. 3.
1907-40: Maximum discharge, 82,100 second-feet May 29, 30, 1928 (gage height, 17.1 feet); minimum, probably less than 5 second-feet Apr. 13, 1938 (caused by power regulation); minimum daily, 32 second-feet Apr. 12, 1938.

Remarks.- Records excellent except those for periods of fragmentary or no gage-height record, which are good. Several small diversions from tributaries above Flathead Lake. Flow regulated since April 1938 by Kerr Dam, 4 miles below Flathead Lake. (see p. 138).

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,190	4,060	3,080	f2,030	3,420	f1,720	6,070	14,100	25,800	7,700	3,910	4,020
2	5,000	4,080	3,470	3,010	4,080	f1,130	6,310	14,500	24,600	7,220	3,940	4,020
3	4,910	4,070	3,300	3,590	3,330	f738	5,040	14,500	20,700	6,730	3,950	4,020
4	4,280	4,090	3,130	3,590	f2,920	f1,240	5,260	15,000	18,000	6,100	3,940	4,020
5	4,810	4,070	3,750	3,800	2,780	f1,280	6,250	15,900	23,400	7,290	3,960	4,020
6	4,830	4,070	3,410	3,870	3,280	1,980	5,430	16,900	23,400	8,060	4,010	4,020
7	4,850	4,030	3,010	f2,070	3,080	1,800	5,020	17,400	23,400	6,070	4,060	4,020
8	4,710	4,040	3,220	2,650	2,950	2,400	5,100	17,900	20,500	8,340	3,940	4,020
9	4,770	4,130	2,520	3,920	3,440	2,660	5,450	17,900	18,400	5,430	4,020	4,020
10	4,690	3,910	2,100	3,430	3,590	2,400	5,820	17,900	16,900	3,610	4,020	4,020
11	4,760	3,260	2,040	4,070	f2,510	2,360	6,140	18,900	15,900	3,750	4,020	4,020
12	4,690	2,350	2,630	3,310	2,600	2,650	6,170	20,000	16,900	3,520	4,020	4,020
13	4,590	f2,400	2,590	4,070	3,390	2,710	6,510	22,200	17,900	3,690	4,020	4,020
14	4,820	3,150	2,550	3,570	3,290	2,370	6,620	23,400	18,900	3,550	4,020	4,020
15	4,490	2,800	2,810	3,450	3,570	2,070	7,260	24,600	18,400	3,890	4,020	4,020
16	4,460	2,870	2,750	3,060	3,470	1,750	7,570	25,000	17,400	3,480	4,020	4,020
17	4,240	3,090	2,330	2,940	3,080	1,600	7,820	26,300	17,900	3,950	4,020	4,020
18	4,230	3,070	f2,360	3,730	3,110	f1,830	10,200	26,500	18,400	3,990	4,020	4,020
19	4,260	3,150	2,300	a4,090	3,160	2,120	10,100	26,300	16,900	3,970	4,020	4,020
20	4,190	3,520	2,560	a4,090	3,180	1,740	10,100	27,700	15,900	3,960	4,020	4,020
21	4,120	3,480	2,830	a4,090	3,240	1,620	10,600	28,300	14,100	3,980	4,020	4,020
22	3,900	3,290	2,880	a4,090	3,990	1,930	11,600	28,900	12,800	3,960	4,020	3,870
23	3,530	2,690	3,600	a4,090	3,670	2,230	12,000	29,600	11,600	3,940	4,020	4,020
24	4,060	3,070	3,800	a4,080	4,040	2,640	12,400	30,200	10,100	3,900	4,020	4,020
25	4,070	3,160	3,520	a4,080	4,010	3,470	12,800	30,800	9,100	3,960	4,020	4,020
26	4,070	2,710	3,310	a4,080	3,040	5,180	13,100	32,100	7,720	3,920	4,020	4,020
27	4,110	2,750	f2,650	3,730	2,810	6,190	13,200	32,500	7,780	3,940	4,020	4,020
28	4,090	3,260	3,590	f1,980	3,210	6,890	13,600	29,900	9,780	3,990	4,020	4,020
29	4,110	2,890	3,820	f2,860	2,660	6,450	13,600	29,100	9,440	3,960	4,020	4,020
30	3,980	2,750	3,860	3,620	-	6,570	14,100	28,700	8,200	3,870	4,020	4,020
31	4,080	-	2,850	3,980	-	5,760	-	21,200	-	3,930	4,020	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	135,890	5,000	3,530	4,384	269,500
November	100,260	4,130	2,350	3,342	198,900
December	92,620	3,860	2,040	2,988	183,700
Calendar year 1933	3,692,100	45,200	2,040	10,120	7,324,000
January	109,020	4,090	1,980	3,517	216,200
February	94,900	4,080	2,510	3,272	188,200
March	87,478	6,890	738	2,822	173,500
April	261,240	14,100	5,020	8,708	518,200
May	714,200	32,500	14,100	23,040	1,417,000
June	490,220	25,800	7,720	16,340	972,300
July	147,650	8,340	3,480	4,763	292,900
August	124,170	4,060	3,910	4,005	246,300
September	120,450	4,020	3,870	4,015	238,900
Water year 1939-40	2,478,098	32,500	738	6,771	4,916,000

a No gage-height record; discharge computed on basis of power-plant records at Kerr Dam 7 miles upstream.
f Fragmentary gage-height record; discharge computed from gage heights which were partly estimated on basis of power-plant records.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Middle Fork of Flathead River at Essex, Mont.

Location.- Water-stage recorder, lat. 48°16', long. 113°36', in SW¼ sec. 14, T. 29 N., R. 16 W., 0.6 mile upstream from Ole Creek, 0.7 mile southeast of Essex, and 4 miles downstream from Bear Creek.

Drainage area.- 517 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge during period, 6,140 second-feet May 11 (gage height, 7.09 feet); minimum, 30 second-feet (estimated) Jan. 22 (stage-discharge relation affected by ice).

Remarks.- Records good except those for periods of ice effect, which are poor. No regulation or diversions.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used July 14 to Sept. 30)

1.9	75	3.5	715	5.5	2,750
2.2	150	4.0	1,080	6.0	3,600
2.6	272	4.5	1,520	7.0	5,870
3.0	430	5.0	2,060		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	145	121	155	90	156	440	1,420	2,750	460	227	121
2	-	134	119	150	80	156	455	2,120	2,600	450	227	116
3	-	140	124	145	75	150	445	3,410	2,390	421	218	121
4	-	140	116	140	80	142	412	3,500	2,120	416	208	127
5	-	140	114	130	90	140	403	2,820	1,940	408	202	134
6	-	132	121	120	110	134	408	2,320	1,830	403	196	132
7	-	145	119	110	105	129	426	2,000	1,670	377	190	127
8	-	161	124	105	110	134	480	1,940	1,620	356	187	121
9	-	150	156	50	103	129	614	2,320	1,520	344	178	116
10	-	145	167	100	114	124	650	3,410	1,470	340	172	116
11	-	142	199	95	106	111	f568	f5,610	1,520	325	167	116
12	-	145	196	95	103	116	562	f5,610	1,520	314	164	111
13	-	142	172	120	101	114	602	f4,540	1,520	303	161	116
14	-	140	178	125	101	119	1,160	f3,800	1,380	296	158	175
15	-	140	205	*130	98	127	1,620	3,410	1,240	289	156	187
16	-	137	246	130	98	172	1,380	3,320	1,120	282	156	158
17	-	132	282	115	96	227	1,200	3,060	1,040	292	153	145
18	-	127	266	70	96	230	1,280	2,820	955	282	153	137
19	-	127	234	60	98	221	1,720	3,060	895	269	150	145
20	-	127	218	50	98	218	2,000	3,700	902	259	147	142
21	-	119	214	40	98	230	2,120	3,500	836	256	145	153
22	-	124	196	30	93	269	1,830	3,410	767	253	145	234
23	-	127	170	35	91	310	1,720	3,600	715	243	142	230
24	-	116	145	45	80	352	1,570	3,800	638	237	142	202
25	-	106	120	55	100	377	1,420	4,000	608	237	140	187
26	-	103	100	60	110	373	1,380	3,800	579	237	134	172
27	-	96	90	70	100	381	1,420	3,140	552	253	134	161
28	-	98	130	80	120	394	1,570	2,680	524	259	140	153
29	150	108	170	90	150	390	1,620	2,600	491	250	134	147
30	150	119	165	100	-	394	1,470	2,750	465	240	129	145
31	145	-	160	95	-	430	-	2,980	-	227	127	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October 29-31	445	-	-	-	-	-	883
November	3,907	161	96	130	0.251	0.28	7,750
December	5,137	282	90	166	.321	.37	10,190
Calendar year	-	-	-	-	-	-	-
January	2,895	155	30	93.4	.181	.21	5,740
February	2,894	150	75	99.8	.193	.21	5,740
March	6,949	430	111	224	.433	.50	13,780
April	32,945	2,120	403	1,098	2.12	2.36	65,350
May	100,450	5,610	1,420	3,240	6.27	7.23	199,200
June	38,177	2,750	465	1,273	2.46	2.74	75,720
July	9,578	460	227	309	.598	.69	19,000
August	5,082	227	127	164	.317	.37	10,080
September	4,447	234	111	148	.286	.32	8,820
The period	-	-	-	-	-	-	422,300

*Winter discharge measurement made on this day.
f Discharge computed on basis of partly estimated gage-height record.
Note.- Stage-discharge relation affected by ice Dec. 24 to Feb. 8, Feb. 24-29. Discharge Oct. 29 to Nov. 18 computed on basis of once-daily gage readings.

9-233 April 1936 UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Middle Fork of Flathead River near Belton, Mont.

Location.- Staff gage, lat. 48°29'50", long. 114°00'30", in NE¼ sec. 34, T. 32 N., R. 19 W., three-quarters of a mile downstream from McDonald Creek, 1¼ miles west of Belton, and 3½ miles upstream from mouth.

Drainage area.- 1,140 square miles.

Records available.- October 1939 to September 1940.

Extremes.- Maximum discharge observed during period, 12,800 second-feet May 12 (gage height, 6.66 feet); minimum observed, 232 second-feet Jan. 21 (gage height, 1.08 feet).

Remarks.- Records good. No regulation or diversion.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

1.2	280	2.5	1,370	4.5	5,250
1.5	450	3.0	2,040	5.0	6,740
1.8	660	3.5	2,890	6.0	10,100
2.1	940	4.0	3,970	6.7	12,800

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a400	354	354	566	320	492	1,600	3,740	8,900	2,040	840	432
2		354	330	552	b320	492	1,630	3,970	8,040	2,040	840	420
3		354	330	538	320	524	1,700	6,760	7,710	1,970	804	420
4		354	325	524	320	510	1,580	8,040	7,060	1,970	768	432
5		354	320	498	320	498	1,500	7,060	6,740	1,900	732	438
6	a380	342	330	486	342	486	1,470	6,120	6,280	1,830	750	504
7		354	330	474	354	462	1,470	5,250	5,680	1,830	696	468
8		426	336	450	342	474	1,550	4,850	5,530	1,630	678	444
9		426	438	320	342	462	1,830	5,120	5,120	1,550	660	444
10		414	504	420	378	438	2,040	7,380	4,980	1,500	644	438
11		408	580	384	372	426	1,900	10,500	5,250	1,470	580	432
12		402	628	b380	354	408	1,900	12,400	5,820	1,400	612	438
13	348	396	612	402	342	402	1,830	10,900	5,970	1,420	596	420
14	348	390	596	402	330	396	2,190	a9,810	5,970	1,370	580	432
15	354	390	644	408	330	414	3,150	8,720	5,250	1,320	552	795
16	354	384	786	414	330	462	3,630	8,380	4,720	1,270	538	687
17	354	378	900	426	320	596	3,200	8,040	4,460	1,270	524	620
18	348	378	960	b300	320	660	3,090	7,380	4,210	1,230	510	573
19	360	366	880	b280	315	696	3,740	7,710	3,970	1,190	498	573
20	360	366	840	264	310	696	4,210	9,070	4,090	1,140	498	559
21	360	354	840	232	310	768	5,390	9,070	4,090	1,190	486	588
22	348	366	786	260	280	840	5,250	8,900	3,630	1,080	486	1,070
23	336	354	696	b285	280	960	4,720	9,420	3,300	1,040	486	1,130
24	342	354	596	b310	264	1,080	4,460	9,780	2,890	1,000	480	990
25	342	330	580	b315	320	1,140	3,970	10,500	2,800	980	474	930
26	342	300	596	b320	330	1,180	3,740	10,500	2,800	920	462	831
27	342	305	531	330	320	1,270	3,740	9,070	2,610	960	450	777
28	366	320	426	336	354	1,400	3,970	8,040	2,350	1,080	474	723
29	378	325	510	342	474	1,400	4,090	7,710	2,190	1,000	456	669
30	378	330	596	354	-	1,470	3,970	8,040	2,120	940	444	636
31	366	-	580	330	-	1,550	-	8,720	-	900	432	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	11,386	-	336	367	0.322	0.37	22,580
November	10,928	426	300	364	.319	.36	21,680
December	17,760	960	320	573	.503	.58	35,230
Calendar year	-	-	-	-	-	-	-
January	11,902	566	232	384	.337	.39	23,610
February	9,613	474	264	331	.290	.31	19,070
March	23,052	1,550	396	744	.653	.75	45,720
April	88,510	5,390	1,470	2,950	2.59	2.89	175,600
May	250,950	12,400	3,740	8,095	7.10	8.19	497,800
June	144,530	8,900	2,120	4,818	4.23	4.72	286,700
July	42,350	2,040	900	1,366	1.20	1.38	84,000
August	18,030	840	432	582	.511	.59	35,760
September	18,313	1,130	420	610	.535	.60	36,320
Water year 1939-40	647,324	12,400	232	1,769	1.55	21.13	1,284,070

a No gage-height record; discharge interpolated.
b Stage-discharge relation affected by ice.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

South Fork of Flathead River near Columbia Falls, Mont.

Location.- Water-stage recorder, lat. 48°22', long. 114°03', in NE¼ sec. 17, T. 30 N., R. 19 W., 2 miles upstream from mouth and 9 miles east of Columbia Falls. Datum of gage is 3,031.3 feet above mean sea level (general adjustment of 1929).

Drainage area.- 1,640 square miles.

Records available.- September 1910 to September 1916, April 1923 to September 1940.

Average discharge.- 11 years (1928-32, 1933-40), 3,020 second-feet.

Extremes.- Maximum discharge during year, 14,700 second-feet May 12, 25 (gage height, 10.84 feet); minimum, about 350 second-feet Jan. 21 (ice present); minimum gage height, 1.03 feet Nov. 30.

1910-16, 1923-40: Maximum discharge observed, about 46,200 second-feet June 19, 1916 (gage height, 16.6 feet, site and datum then in use), from rating curve extended above 20,000 second-feet; minimum discharge, 206 second-feet Dec. 6, 1935 (stage-discharge relation affected by ice).

Remarks.- Records excellent except those for periods of ice effect, which are fair.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	493	473	453	700	490	1,080	2,760	5,140	11,600	2,080	877	465
2	485	465	445	740	455	1,040	3,000	6,060	10,700	2,080	870	457
3	477	461	441	783	470	1,010	3,060	9,280	9,900	1,970	816	465
4	477	457	422	699	495	865	2,820	10,700	8,900	1,860	776	465
5	493	445	411	666	510	870	2,580	9,300	8,330	1,810	746	497
6	497	445	418	633	530	e30	2,520	7,790	7,790	1,810	728	518
7	485	550	418	600	585	822	2,460	6,710	7,430	1,720	704	493
8	477	776	449	565	595	863	2,820	6,380	7,070	1,590	682	477
9	473	650	600	535	605	849	3,510	7,070	6,710	1,510	660	465
10	465	595	796	555	630	790	3,510	9,500	6,380	1,470	644	457
11	457	555	940	505	605	740	3,250	13,300	6,380	1,390	633	449
12	449	528	905	485	580	728	3,000	14,500	6,890	1,350	622	441
13	441	510	822	570	530	694	3,000	13,100	7,070	1,310	606	441
14	437	497	758	*570	530	683	4,280	11,800	7,070	1,270	590	532
15	445	489	809	610	530	688	5,900	10,900	6,220	1,230	585	565
16	469	477	940	688	550	776	5,440	10,500	5,590	1,190	575	528
17	465	465	1,080	672	555	1,010	4,840	10,100	4,990	1,190	565	510
18	461	453	1,150	640	590	1,150	4,990	9,500	4,700	1,190	555	493
19	461	453	1,010	495	590	1,230	5,900	10,100	4,420	1,150	546	489
20	469	437	940	400	570	1,230	6,540	11,800	4,420	1,080	532	514
21	457	457	905	350	580	1,310	7,610	12,400	4,420	1,080	528	510
22	445	441	849	380	540	1,510	6,890	12,000	4,030	1,010	518	560
23	437	437	758	430	490	1,760	6,220	12,400	3,510	975	510	570
24	433	418	740	470	495	2,140	5,900	13,300	3,120	940	505	570
25	433	400	710	490	510	2,300	5,590	14,500	2,880	940	501	546
26	437	380	635	500	640	2,240	5,440	14,000	2,760	905	497	528
27	441	375	585	500	720	2,520	5,590	12,200	2,640	1,040	497	514
28	477	390	540	510	810	2,820	5,900	10,500	2,460	1,080	505	497
29	523	400	515	510	1,010	2,760	6,060	10,300	2,300	1,010	493	485
30	514	418	550	495	-	2,700	5,440	10,700	2,140	975	485	481
31	489	-	600	490	-	2,700	-	11,600	-	905	477	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	14,462	523	433	467	0.285	0.33	28,680
November	14,297	776	375	477	.291	.32	28,360
December	21,594	1,150	411	697	.425	.49	42,830
Calendar year 1939	1,206,154	26,000	375	3,305	2.02	27.36	2,392,000
January	17,236	783	350	556	.339	.39	34,190
February	16,790	1,010	455	579	.353	.39	33,300
March	42,708	2,820	683	1,378	.840	.97	84,710
April	136,820	7,610	2,460	4,561	2.78	3.10	271,400
May	327,430	14,500	5,140	10,560	6.44	7.42	649,400
June	172,820	11,600	2,140	5,761	3.51	3.92	342,800
July	41,110	2,080	905	1,326	.809	.93	81,540
August	18,828	877	477	607	.370	.43	37,340
September	14,982	570	441	499	.304	.34	29,720
Water year 1939-40	839,077	14,500	350	2,293	1.40	19.03	1,664,000

*Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Nov. 25-29, Dec. 24 to Jan. 2, Jan. 8-15, Jan. 18 to Mar. 6.

9-233 April 1936

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Stillwater River near Whitefish, Mont.

Location.- Water-stage recorder, lat. 48°19', long. 114°23', in SW¼ sec. 34, T. 30 N., R. 22 W., 600 feet downstream from highway bridge, 7 miles southwest of Whitefish, and 10 miles upstream from Whitefish Creek.

Records available.- November 1930 to September 1940.

Extremes.- Maximum discharge during year, 688 second-feet May 16 (gage height, 5.62 feet); minimum, probably less than 50 second-feet during period of ice effect, Jan. 21-31.

1930-40: Maximum discharge, 2,680 second-feet Apr. 28, 1934 (gage height, 14.47 feet); minimum, probably less than 50 second-feet during period of ice effect, Jan. 21-31, 1940.

Remarks.- Records good except those for periods of ice effect and those computed on basis of once-daily gage readings, which are poor. Some water stored during high-water periods and released for logging operations during summer. No diversions.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Mar. 17-31)

0.7	55	2.0	160	5.0	581
.9	64	2.5	215	5.6	688
1.2	85	3.0	276		
1.6	119	4.0	420		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	83	71	#67	70		80	221	500	548	154	109	55
2	81	73	f65	75		85	239	500	548	154	107	55
3	81	74	f64	75	55	85	257	484	548	154	100	55
4	79	74	65	75		90	257	500	548	160	99	56
5	79	73	66	75		90	257	516	532	160	99	56
6	79	73	66	65		90	251	532	500	160	99	57
7	79	77	68	60		90	251	564	484	160	92	56
8	73	73	66	60	65	90	251	581	484	160	91	56
9	73	73	67	55		95	270	581	484	160	91	56
10	73	73	73	50		95	296	548	468	144	75	55
11	71	70	79	60		95	336	548	452	154	75	54
12	70	70	81	f60		95	366	548	420	149	75	55
13	70	70	76	#60	70	100	373	581	404	144	f67	54
14	70	70	74	60		105	366	598	380	134	69	56
15	70	70	76	65		110	373	652	343	134	68	57
16	70	85	82	70		120	388	688	296	120	67	58
17	70	77	89	70		126	396	652	302	134	65	57
18	70	77	95	65	70	128	404	616	302	134	66	56
19	71	77	95	60		116	404	581	296	134	65	57
20	73	93	91	55		f104	420	581	289	126	65	61
21	73	96	97			106	436	564	276	99	62	62
22	71	96	97			111	452	532	263	91	62	62
23	70	95	90	50	65	117	484	532	251	91	61	63
24	70	93	80			123	516	564	245	91	57	64
25	70	91	65			134	532	598	233	91	59	63
26	77	90	60			139	532	581	227	99	59	62
27	70	87	60			149	516	581	215	99	58	62
28	70	85	60	50	65	166	516	581	204	99	57	62
29	70	83	60			182	516	581	193	116	57	62
30	73	80	60		-	198	516	564	166	107	57	62
31	71	-	70		-	215	-	564	-	107	56	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,270	83	70	73.2	4,500
November	2,389	96	70	79.6	4,740
December	2,304	97	60	74.3	4,570
Calendar year 1939	94,596	1,280	60	259	187,600
January	1,835	75	-	59.2	3,640
February	1,885	-	-	65.0	3,740
March	3,629	215	80	117	7,200
April	11,392	532	221	380	22,600
May	17,593	688	484	568	34,900
June	10,901	548	166	363	21,620
July	4,019	160	91	130	7,970
August	2,289	109	56	73.8	4,540
September	1,746	64	54	58.2	3,460
Water year 1939-40	62,252	688	-	170	123,500

#Winter discharge measurement made on this day.
f Gage-height record partly estimated.

Note.- Discharge computed on basis of once-daily gage readings Oct. 1 to Nov. 30, Feb. 20 to Mar. 19, July 8 to Aug. 12. Stage-discharge relation affected by ice Nov. 25 to Dec. 9, Dec. 22 to Mar. 16.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Logan Creek at Tally Lake, near Whitefish, Mont.

Location.- Staff gage, lat. 48°27', long. 114°34', in NW¼ sec. 17, T. 31 N., R. 23 W., about 2½ miles north of Tally Lake and 10 miles west of Whitefish.

Records available.- April 1936 to September 1940. August 1931 to April 1933 and May to September 1934 at site about 2½ miles upstream.

Extremes.- Maximum discharge observed during year, 165 second-feet May 6, 7 (gage height, 2.33 feet); minimum observed, 0.7 second-foot Sept. 1, 2.
1931-33, 1934, 1936-39: Maximum gage height, 7.22 feet May 28, 29, 1933, site and datum then in use (discharge not determined); minimum discharge observed, that of Sept. 1, 2, 1940.

Remarks.- Records good except those for periods of backwater from beaver dam, which are poor. Gage read twice daily. Natural storage in Tally Lake.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.0	10	13	15	11	16	47	154	58	16	6	0.7
2	6.0	11	12	15	11	18	48	150	55	14	6	.7
3	6.0	11	12	14	10	18	52	150	52	14	6.	.8
4	6.0	11	13	14	10	18	58	150	52	13	6	1.1
5	5.8	12	13	14	10	18	58	154	50	13	6	1.4
6	5.8	12	14	14	10	17	58	160	45	12	5	1.4
7	5.2	14	14	14	10	18	58	165	44	12	5	1.2
8	5.2	14	14	14	10	18	61	165	44	12	4	1.2
9	5.2	14	14	13	10	18	68	157	44	10	4	1.2
10	5.8	15	14	13	10	18	102	150	44	9.8	4	1.2
11	5.8	16	14	13	11	18	110	144	44	9.8	4	1.2
12	6.0	17	15	14	11	18	108	144	43	9.8	7	1.2
13	6.2	17	15	14	10	18	108	142	42	9.0	6.0	1.2
14	6.2	17	16	14	9.8	18	108	142	40	8.6	4.8	1.2
15	6.2	18	16	14	11	18	112	135	37	8.2	4.5	1.2
16	6.2	18	16	14	11	18	119	132	34	8.2	4	1.2
17	6.2	19	17	14	11	20	123	128	32	8.2	4	1.2
18	6.5	18	17	14	10	20	123	126	30	8.2	4	1.2
19	6.5	17	18	13	10	20	123	121	28	8.2	3	1.6
20	6.5	16	18	13	10	20	126	116	27	7.8	3	1.8
21	7.0	16	18	12	10	20	130	108	25	7.4	2	2.2
22	7.4	16	17	12	10	21	142	100	24	7.0	2	2.2
23	7.8	16	17	12	10	23	150	92	22	6.8	2	2.5
24	8.2	15	16	12	10	24	160	88	20	6.2	1	2.5
25	8.6	14	16	12	11	25	160	84	19	6.2	1	2.5
26	8.6	14	16	12	11	27	160	81	18	6	1	2.7
27	9.0	13	16	12	12	31	160	75	17	6	1	2.5
28	9.0	13	16	12	13	34	160	70	16	6	1	2.4
29	9.4	13	16	12	14	37	157	66	16	6	1	1.8
30	10	13	16	12	-	41	157	60	15	7	1	1.8
31	10	-	16	11	-	44	-	57	-	7	1	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	214.3	10	5.2	6.91	425
November	440	19	10	14.7	873
December	475	18	12	15.3	942
Calendar year 1939	20,511.7	465	5.2	56.2	40,680
January	408	15	11	13.2	809
February	307.8	14	9.8	10.6	611
March	692	44	16	22.3	1,370
April	3,306	160	47	110	6,560
May	3,766	165	57	121	7,470
June	1,037	58	15	34.6	2,060
July	283.4	16	6	9.14	562
August	110.3	7	1	3.56	219
September	47.0	2.7	.7	1.57	93
Water year 1939-40	11,086.8	165	.7	30.3	21,990

Note.- Discharge for periods of backwater from beaver dams, July 26 to Aug. 12, Aug. 16-31, computed on basis of one discharge measurement, gage heights, and records for Stillwater River near Whitefish; that for Sept. 1-30 computed from readings on temporary staff gage 400 feet downstream.

Whitefish Creek near Kalispell, Mont.

Location.- Water-stage recorder, lat. 48°19', long. 114°16', in SW¼ sec. 34, T. 30 N., R. 21 W., 8 miles north of Kalispell and 8 miles upstream from mouth. Datum of gage is 2,969.7 feet above mean sea level (general adjustment of 1929).

Records available.- November to December 1906, July 1928 to September 1940.

Average discharge.- 11 years (1929-40), 181 second-feet.

Extremes.- Maximum discharge during year, 552 second-feet May 26 (gage height, 2.73 feet); minimum, 11 second-feet Nov. 24-29 (gage height, 0.96 foot).
1906, 1928-40: Maximum discharge, 1,260 second-feet June 3, 1932 (gage height, 4.26 feet); minimum, 4.5 second-feet Oct. 18, 1934 (gage height, 0.83 foot).

Remarks.- Records good except those for periods of ice effect, which are poor. Some regulation at Whitefish Lake. No diversion.

Rating tables, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1-13)

Oct. 1 to Mar. 3				Mar. 4 to Sept. 30			
0.9	6	1.5	104	1.0	15	1.8	202
1.0	15	1.8	188	1.1	28	2.2	337
1.1	28	2.2	329	1.3	65	2.5	448
1.3	63			1.5	113	2.8	573

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	h22	56	59	75		150	146	270	517	110	88	57
2	h19	56	59	80		150	158	274	513	108	86	57
3	h22	54	59	85	75	130	161	281	513	106	83	59
4	h22	54	59	80		108	158	288	505	106	81	57
5	h22	52	58	77		76	183	298	496	108	81	61
6	h22	52	56	49		74	183	306	480	106	79	61
7	h19	52	56	47		76	180	306	472	100	76	61
8	20	54	56	50	100	76	192	306	464	98	76	57
9	20	54	54	50		76	234	309	452	98	74	57
10	20	52	56	50		70	247	312	437	96	72	57
11	20	52	56	55		65	241	323	425	93	72	57
12	19	54	54	*55		70	234	344	410	90	70	59
13	19	52	54	60	100	135	231	359	399	88	70	59
14	36	52	54	60		135	234	373	384	88	67	61
15	198	52	54	65		132	244	392	373	86	67	63
16	201	52	54	65		135	244	403	362	90	67	63
17	195	31	54	60		135	237	414	351	90	65	61
18	185	16	54	55	95	135	234	421	341	90	65	59
19	176	15	54	55		129	234	425	330	88	65	61
20	166	15	54	55		126	241	437	323	88	63	59
21	160	14	56			121	257	444	312	88	63	61
22	151	14	56			118	260	452	298	86	63	63
23	134	13	56	55	85	118	257	464	288	86	61	63
24	126	11	55			116	267	480	278	86	61	61
25	123	11	55			118	264	517	270	83	61	59
26	123	11	55			118	260	530	260	81	59	57
27	118	11	55			124	260	530	250	90	61	55
28	73	11	55	60	100	137	267	530	241	98	63	55
29	61	13	60			140	270	522	208	96	59	55
30	59	54	65		-	140	270	522	118	93	57	55
31	58	-	70		-	143	-	517	-	90	57	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,609	201	19	84.2	5,170
November	1,090	56	11	36.3	2,160
December	1,752	70	54	56.6	3,480
Calendar year 1939	62,894	757	11	172	124,700
January	1,863	85	47	60.1	3,700
February	2,675	-	-	92.2	5,310
March	3,576	150	65	115	7,090
April	6,848	270	146	228	13,580
May	12,349	530	270	398	24,490
June	11,070	517	118	369	21,960
July	2,904	110	81	93.7	5,760
August	2,132	88	57	68.8	4,230
September	1,770	63	55	59.0	3,510
Water year 1939-40	50,638	530	11	138	100,400

*Winter discharge measurement made on this day.
h Discharge computed on basis of once-daily gage readings.
Note.- Stage-discharge relation affected by ice Dec. 24 to Jan. 4, Jan. 8 to Mar. 3.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Ashley Creek near Kalispell, Mont.

Location.- Wire-weight gage and Cippoletti weir, lat. 48°11', long. 114°24', in SE¼ sec. 16, T. 28 N., R. 22 W., 4 miles west of Kalispell.

Records available.- April 1931 to March 1933, April 1934 to September 1940.

Extremes.- Maximum discharge observed during year, 28 second-feet May 3, 4 (gage height, 3.99 feet); no flow at times.
1931-40: Maximum discharge observed, 285 second-feet Apr. 26, 1934 (gage height, 9.30 feet, former control and datum); no flow at times.

Remarks.- Records good. Gage read twice daily. Some diversions. Storage in Ashley and Smith Lakes.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Apr. 9				Apr. 10 to Sept. 30			
2.46	0	3.3	7.2	2.5	0	3.4	7.8
2.5	.1	3.5	10	2.6	.3	3.5	9.6
2.6	.5	3.6	12	2.8	1.4	3.6	12
2.8	1.7	3.8	19	3.0	2.9	3.8	19
2.9	2.6	4.0	29	3.2	5.0	4.0	29
3.1	4.7						

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.2	0.8	1.1	0.8	0	1.4	19	24	13	1.2		
2	.2	1.0	1.8	1.0	0	1.4	22	24	13	.9		
3	.1	1.1	2.1	.9	0	1.1	16	26	13	1.0		
4	.1	1.0	2.0	1.0	0	.7	16	28	11	.8		
5	1.3	.8	1.5	1.2	0	.6	19	25	9.9	.9		
6	.6	.8	2.8	1.5	0	.7	17	23	9.4	.7		
7	.4	1.5	2.9	1.6	0	.7	14	23	9.9	.8		
8	.3	2.1	3.0	1.6	0	.5	19	23	11	.4		
9	.3	1.8	3.4	1.1	.1	.4	18	23	11	.6		
10	.3	1.5	3.6	1.1	.4	.4	8.9	24	11	.4		
11	.3	1.4	5.8	1.1	0	.4	10	26	11	.2		
12	.3	1.2	2.0	1.0	0	.5	11	25	12	.1		
13	.2	1.2	1.7	1.0	0	.5	17	27	12	.2		
14	.2	1.2	1.8	.9	0	.6	16	26	12	.2		
15	.3	1.2	2.7	.9	0	1.7	8.7	27	11	.2		
16	.3	1.1	4.0	1.0	0	2.8	13	23	9.2	.1		
17	.1	1.0	6.7	1.0	0	3.1	15	24	8.7	.1		
18	.5	1.0	2.7	1.1	0	5.2	16	24	6.4	.1		
19	.9	1.0	2.8	.8	0	12	8.0	25	7.5	.1		
20	1.4	1.0	4.0	.8	0	11	9.6	23	7.6	.1		
21	3.6	1.0	5.1	.3	0	24	6.8	22	6.3	.1		
22	2.2	1.0	2.6	.2	0	23	10	22	3.8	.1		
23	1.4	1.1	2.2	0	0	22	10	22	1.8	0		
24	.9	1.0	1.1	0	0	24	16	19	3.8	0		
25	.5	1.1	.8	0	0	22	16	19	4.3	0		
26	.1	1.0	.8	0	0	24	22	19	3.8	0		
27	.1	.9	.9	0	0	27	22	17	2.4	0		
28	.2	.9	.8	0	.3	25	24	13	2.0	0		
29	.2	.9	.7	0	1.0	23	27	13	1.8	0		
30	.3	1.1	.6	0	-	19	26	11	1.5	.1		
31	.6	-	.6	0	-	18	-	13	-	.1		

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	18.4	3.6	0.1	0.59	36
November	33.7	2.1	.8	1.12	67
December	74.6	6.7	.6	2.41	148
Calendar year 1939	3,992.3	45	.1	10.9	7,910
January	21.9	1.6	0	.71	43
February	1.8	1.0	0	.06	3.6
March	296.7	27	.4	9.57	588
April	473.0	27	6.8	15.8	938
May	683	28	11	22.0	1,350
June	241.1	13	1.5	8.04	478
July	9.5	1.2	0	.31	19
August	0	0	0	0	0
September	0	0	0	0	0
Water year 1939-40	1,853.7	28	0	5.06	3,670

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Swan River near Big Fork, Mont.

Location.- Water-stage recorder, lat. 48°01', long. 113°59', 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 1940. October 1910 to May 1911 at site 2 miles upstream from Swan Lake.

Average discharge.- 14 years (1922-24, 1928-40), 1,000 second-feet.

Extremes.- Maximum discharge during year, 3,650 second-feet May 27 (gage height, 4.82 feet); minimum, 284 second-feet Jan. 22, 25, 26 (gage height, 2.05 feet).
1922-40: Maximum discharge, 8,280 second-feet June 18, 1933 (gage height, 7.00 feet); minimum, 85 second-feet Jan. 26-29, 1930 (gage height, 0.04 foot).

Remarks.- Records good. No diversion above station. Natural storage in Swan Lake.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	335	340	321	354	326	512	1,230	1,440	3,170	1,220	605	326
2	335	340	321	354	326	547	1,270	1,420	3,260	1,180	591	321
3	335	340	317	354	317	562	1,310	1,440	3,260	1,140	576	326
4	335	340	321	349	321	576	1,320	1,640	3,170	1,110	555	331
5	335	340	312	349	321	576	1,250	1,830	2,990	1,090	540	335
6	335	340	312	344	335	569	1,210	1,830	2,820	1,060	519	340
7	321	371	312	349	340	569	1,160	1,830	2,730	1,040	505	340
8	321	349	321	349	349	576	1,140	1,760	2,640	990	492	335
9	321	371	335	349	354	575	1,160	1,700	2,560	960	471	331
10	321	371	360	354	360	576	1,220	1,700	2,480	912	452	331
11	321	392	376	344	371	569	1,230	1,630	2,320	886	440	321
12	321	403	392	354	376	562	1,220	2,180	2,320	861	434	317
13	321	392	398	349	376	547	1,200	2,480	2,320	820	409	317
14	331	381	392	349	360	519	1,160	2,730	2,320	796	403	321
15	331	381	403	349	360	512	1,210	2,640	2,400	765	392	331
16	331	371	415	354	360	512	1,260	2,640	2,400	765	381	340
17	340	360	427	365	354	533	1,320	2,640	2,320	757	376	340
18	340	360	458	360	354	605	1,320	2,560	2,180	734	376	335
19	331	349	478	331	360	658	1,330	2,480	2,110	703	365	335
20	331	340	471	312	354	672	1,400	2,560	2,040	695	360	340
21	321	321	485	296	354	703	1,510	2,730	1,970	672	360	365
22	321	331	485	296	354	726	1,640	2,900	1,970	650	349	376
23	321	331	471	299	340	757	1,700	2,990	1,900	635	349	381
24	321	340	440	296	340	804	1,700	3,080	1,760	628	344	387
25	312	331	415	296	344	844	1,640	3,260	1,640	605	344	381
26	312	321	398	296	381	903	1,570	3,550	1,510	598	344	381
27	331	321	387	303	403	990	1,510	3,650	1,450	612	340	376
28	340	321	371	312	440	1,110	1,510	3,450	1,400	635	340	371
29	340	312	354	312	478	1,200	1,510	3,260	1,340	642	340	365
30	340	321	354	317	-	1,230	1,450	3,170	1,280	628	335	371
31	340	-	360	321	-	1,230	-	3,080	-	605	331	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	10,191	340	312	329	0.509	0.59	20,210
November	10,481	403	312	349	.539	.60	20,790
December	11,962	485	312	386	.597	.69	23,730
Calendar year 1939	336,871	4,250	281	923	1.43	19.39	668,100
January	10,316	365	296	333	.515	.59	20,460
February	10,408	478	317	359	.555	.60	20,640
March	21,825	1,230	512	704	1.09	1.25	43,290
April	40,660	1,700	1,140	1,355	2.09	2.34	80,650
May	76,450	3,650	1,420	2,466	3.81	4.39	151,600
June	68,030	3,260	1,280	2,268	3.51	3.91	134,900
July	25,394	1,220	598	819	1.27	1.46	50,370
August	13,018	605	331	420	.649	.75	25,820
September	10,377	387	317	346	.535	.60	20,580
Water year 1939-40	309,112	3,650	296	845	1.31	17.77	613,000

Note.- Discharge Oct. 7 to Dec. 2 computed on basis of daily staff gage readings.

9-233 April 1936

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Priest Lake at outlet, near Coolin, Idaho

Location.- Water-stage recorder, lat. 48°29'30", long. 116°53'00", in SE¼ sec. 5, T. 59 N., R. 4 W., half a mile east of outlet and 1¾ miles northwest of Coolin. Prior to Oct. 19 staff gage, lat. 48°29'30", long. 116°54'00", in W½ sec. 5, T. 59 N., R. 4 W., 400 feet north of lake outlet and 2 miles northwest of Coolin. Datum of gages 2,435.06 feet (Coast and Geodetic Survey datum) or 2,437.99 feet (Geological Survey datum), above mean sea level.

Drainage area.- 572 square miles.

Records available.- April 1928 to September 1940. June 1911 to September 1913 (fragmentary gage-height records at Coolin) published as part of records for Priest River at outlet of Priest Lake, at Coolin.

Extremes.- Maximum gage height during year, 4.06 feet May 15; minimum, 0.03 foot Oct. 23. 1928-40: Maximum gage height observed, 5.94 feet May 23, 1932; minimum, -0.16 foot Nov. 23-25, Dec. 4-6, 1936.

Remarks.- Records good. Staff gage read once daily Oct. 1-18.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.06	0.10	0.20	0.99	0.66	0.85	2.01	3.41	3.55	1.62	0.65	0.08
2	.06	.10	.21	1.00	.65	.88	2.11	3.40	3.50	1.57	.63	.07
3	.08	.10	.22	1.00	.65	.88	2.18	3.49	3.46	1.52	.62	.07
4	.08	.10	.22	1.00	.65	.88	2.23	3.57	3.39	1.47	.60	.06
5	.10	.10	.22	1.01	.66	.90	2.29	3.52	3.31	1.43	.58	.15
6	.10	.11	.21	1.00	.70	.90	2.32	3.65	3.23	1.38	.55	.17
7	.10	.14	.21	.99	.74	.93	2.35	3.65	3.17	1.34	.53	.17
8	.10	.17	.26	.96	.74	.95	2.47	3.64	3.12	1.30	.50	.18
9	.10	.20	.35	.95	.75	.96	2.51	3.64	3.06	1.26	.47	.16
10	.08	.21	.47	.94	.76	.95	2.58	3.69	2.98	1.22	.45	.16
11	.08	.22	.53	.92	.76	.94	2.63	3.80	2.92	1.18	.43	.15
12	.08	.22	.59	.89	.75	.93	2.67	3.92	2.85	1.14	.40	.14
13	.08	.23	.62	.87	.75	.92	2.69	4.00	2.76	1.08	.37	.14
14	.08	.23	.69	.86	.74	.92	2.76	4.02	2.70	1.07	.36	.17
15	.08	.23	.82	.85	.73	.91	2.84	4.04	2.62	1.04	.34	.18
16	.08	.23	.92	.85	.72	.91	2.90	4.03	2.55	1.00	.32	.17
17	.08	.23	.97	.85	.75	.92	2.93	4.01	2.48	.98	.30	.17
18	.08	.23	1.00	.83	.77	.92	2.97	3.96	2.42	.95	.29	.20
19	.06	.22	1.01	.80	.77	.93	3.02	3.95	2.35	.92	.28	.21
20	.06	.21	1.05	.78	.76	.93	3.07	3.95	2.25	.89	.27	.21
21	.06	.21	1.06	.76	.75	.95	3.10	3.95	2.20	.86	.24	.21
22	.06	.21	1.06	.73	.74	.97	3.12	3.95	2.14	.84	.23	.20
23	.05	.21	1.05	.72	.73	.99	3.17	3.94	2.08	.82	.22	.20
24	.09	.21	1.04	.70	.72	1.03	3.23	3.94	2.02	.78	.20	.19
25	.08	.20	1.03	.67	.74	1.09	3.26	3.96	1.96	.76	.18	.18
26	.10	.20	1.01	.66	.76	1.19	3.27	3.96	1.90	.73	.16	.17
27	.11	.20	1.00	.69	.77	1.34	3.30	3.90	1.84	.71	.13	.15
28	.12	.20	.98	.70	.81	1.51	3.36	3.82	1.77	.71	.13	.15
29	.11	.20	.97	.69	.84	1.54	3.39	3.72	1.71	.69	.12	.15
30	.11	.20	.96	.68	-	1.80	3.40	3.66	1.66	.68	.12	.15
31	.11	-	.97	.67	-	1.90	-	3.60	-	.67	.10	-

9-238 September 1937 UNITED STATES DEPARTMENT OF THE INTERIOR Geological Survey

Priest River at outlet of Priest Lake, near Coolin, Idaho

Location.- Water-stage recorder, lat. 48°29', long. 116°54', in SW¼ sec. 5, T. 59 N., R. 4 W., at southwest end of Priest Lake, 2 miles northwest of Coolin. Datum of gage is 2,435.06 feet (Coast and Geodetic Survey datum) or 2,437.99 feet (Geological Survey datum) above mean sea level.

Drainage area.- 572 square miles.

Records available.- June 1911 to September 1918 (fragmentary); May 1919 to September 1940.

Average discharge.- 26 years (1913-18, 1919-40) 1,068 second-feet.

Extremes.- Maximum discharge during year, 3,760 second-feet May 15 (gage height, 3.46 feet); minimum daily, 167 second-feet Oct. 20, 21 (gage height, -0.17 foot).
1911-40: Maximum discharge, 7,290 second-feet May 30, 1917 (gage height, 6.83 feet); minimum, 118 second-feet Nov. 25, 1936 (gage height, -0.32 foot).

Remarks.- Records good except those for period of ice effect and of incomplete or no gage-height record, which are fair. No diversions above station.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	184	194	210	557	385	a475	1,260	2,870	2,870	978	395	202
2	194	194	215	564	380	487	1,370	2,870	2,870	945	395	202
3	189	194	215	570	374	487	1,420	2,940	2,800	921	385	200
4	189	194	215	570	385	457	1,470	3,100	2,720	889	374	200
5	189	194	215	577	385	a495	1,520	3,100	2,640	866	364	222
6	192	197	215	570	411	a504	1,590	3,180	2,500	835	354	227
7	189	205	215	564	428	a512	1,600	3,160	2,430	812	345	227
8	189	213	225	550	a431	a520	a1,690	3,180	2,360	789	336	227
9	187	222	255	537	a434	a529	1,780	3,100	2,290	760	323	222
10	187	227	295	531	a436	537	1,840	3,180	2,220	745	314	219
11	184	227	320	524	439	531	1,900	3,340	2,160	723	314	216
12	184	227	345	505	434	524	1,900	3,500	2,100	702	299	207
13	184	230	360	505	434	518	1,960	3,670	1,960	659	283	207
14	184	230	390	493	428	a516	2,030	3,670	1,900	652	280	213
15	182	a229	f460	493	422	a515	2,160	3,670	1,840	638	276	216
16	179	a228	512	487	416	a514	2,220	3,670	1,720	624	272	210
17	177	a228	537	487	422	512	2,220	3,670	1,660	597	252	210
18	177	227	557	474	439	516	2,290	3,580	1,610	577	246	222
19	170	224	570	451	a434	524	2,360	3,580	1,570	550	239	222
20	167	222	583	445	a430	a534	2,430	3,580	1,470	524	236	222
21	167	219	590	434	a425	a544	2,500	3,580	1,420	499	224	219
22	170	219	590	422	a420	a554	2,500	3,500	1,360	493	224	219
23	170	216	583	b405	a416	564	2,570	3,500	1,310	481	219	216
24	179	a214	577	b395	411	577	2,640	3,500	1,270	456	219	216
25	177	213	570	380	416	625	2,640	3,500	1,220	445	213	213
26	184	210	564	375	428	680	2,720	3,500	1,150	439	207	210
27	187	210	550	390	439	780	2,720	3,420	1,120	434	205	205
28	192	210	544	400	a451	895	2,800	3,260	1,080	428	205	205
29	192	210	544	395	a463	995	2,870	3,180	1,040	422	205	202
30	192	210	544	390	-	1,130	2,870	3,020	1,010	416	205	202
31	192	-	544	385	-	1,170	-	2,940	-	411	202	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	5,679	194	167	183	0.320	0.37	11,260
November	6,437	230	194	215	.374	.42	12,770
December	13,109	590	210	423	.740	.85	26,000
Calendar year 1939	322,416	4,010	167	883	1.54	20.97	639,500
January	14,825	577	375	478	.833	.96	29,400
February	12,216	463	374	421	.733	.79	24,230
March	18,753	1,170	475	605	1.06	1.22	37,200
April	63,860	2,870	1,280	2,129	3.72	4.15	126,700
May	103,530	3,670	2,870	3,340	5.84	6.73	205,300
June	55,680	2,870	1,010	1,856	3.24	3.62	110,400
July	19,710	978	411	636	1.11	1.28	39,090
August	8,610	395	202	278	.486	.56	17,080
September	6,400	227	200	213	.372	.42	12,690
Water year 1939-40	328,809	3,670	167	898	1.57	21.37	652,100

a No gage-height record; discharge interpolated.
b Stage-discharge relation affected by ice.
f Fragmentary gage-height record; discharge computed on basis of weather records, and comparison with records for station near Priest River.

Note.- No gage-height record at river gage Nov. 26, Dec. 14, Jan. 25-27, Mar. 25-29, and Apr. 1-5; discharge computed on basis of relation curve between gage readings at Priest Lake and Priest River stations.

Priest River near Priest River, Idaho

Location.- Water-stage recorder, lat. 48°13', long. 116°55', in NE¼SE¼ sec. 11, T. 56, N., R. 5 W.; 500 feet downstream from Saddler Creek, a quarter of a mile downstream from Lower West Branch, 2⅝ miles north of Priest River, and 3⅝ miles upstream from mouth.

Drainage area.- 902 square miles.

Records available.- October 1930 to September 1940. June 1903 to April 1905, November 1910 to April 1911, May to December 1923, and February 1929 to September 1930 at site 3 miles downstream.

Average discharge.- 10 years (1930-40), 1,474 second-feet.

Extremes.- Maximum discharge during year, 4,540 second-feet May 15-15; maximum gage height, 5.28 feet, May 14; minimum discharge, 268 second-feet Oct. 1, 18 (gage height, 0.80 foot).

1903-5, 1910-11, 1923, 1929-40: Maximum discharge, 8,890 second-feet May 25, 1932 (gage height, 8.03 feet); minimum discharge recorded, 184 second-feet Jan. 7, 1937 (gage height, 0.54 foot).

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

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

(Shifting-control method used, Dec. 8-23, Apr. 8 to May 4, Aug. 15-23, Sept. 5-30)

0.8	269	1.6	701	2.5	1,370	3.7	2,560	4.9	4,000
1.0	357	1.9	904	2.9	1,730	4.1	3,010	5.3	4,540
1.3	518	2.2	1,130	3.3	2,130	4.5	3,490		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	268	306	343	746	595	962	2,890	3,680	3,430	1,150	507	285
2	306	306	357	766	589	1,190	3,070	3,610	3,370	1,110	490	281
3	310	306	357	786	542	1,200	3,010	3,870	3,310	1,070	479	281
4	310	306	352	793	542	1,130	2,890	3,950	3,190	1,030	473	281
5	367	306	352	786	542	1,210	2,840	3,940	3,070	998	457	393
6	329	306	352	773	595	1,180	2,780	4,060	2,950	969	446	372
7	310	343	348	753	651	1,160	2,780	4,060	2,890	933	435	343
8	302	398	382	701	632	1,200	2,920	4,000	2,840	904	424	319
9	293	403	462	701	651	1,160	3,190	3,940	2,780	869	413	315
10	289	377	626	701	734	1,080	3,190	4,000	2,720	848	398	310
11	289	362	651	688	695	1,020	3,130	4,130	a2,610	820	388	302
12	285	362	542	688	663	969	3,070	4,400	a2,500	800	388	297
13	285	357	501	670	651	933	3,010	4,400	a2,390	766	372	297
14	281	352	559	651	638	918	3,070	4,540	2,280	740	357	324
15	281	348	933	644	626	933	3,190	4,540	2,180	727	355	329
16	281	348	1,130	644	614	1,040	3,250	4,400	2,130	714	352	324
17	276	348	1,040	638	626	1,110	3,190	4,400	2,030	695	352	315
18	272	348	890	614	638	1,140	3,190	4,260	1,930	670	348	329
19	285	348	814	548	651	1,150	3,250	4,260	1,880	651	343	382
20	285	343	827	b540	638	1,190	3,310	4,260	1,780	632	338	367
21	281	338	827	b540	626	1,250	3,370	4,260	1,680	614	334	357
22	276	343	800	b540	620	1,300	3,370	4,130	1,630	595	324	352
23	281	338	774	b540	614	1,350	3,370	4,130	1,570	589	317	348
24	285	324	780	b500	601	1,430	3,550	4,130	1,500	571	315	338
25	293	334	780	b540	608	1,630	3,550	4,130	1,440	548	310	329
26	306	334	766	b570	626	2,080	3,490	4,130	1,380	542	306	324
27	310	334	746	b600	676	2,620	3,490	4,060	1,340	548	310	319
28	319	338	708	b600	780	2,720	3,610	3,870	1,280	553	319	310
29	324	338	720	614	947	2,620	3,740	3,740	1,230	542	306	310
30	319	343	734	595	-	2,840	3,680	3,610	1,190	542	297	306
31	310	-	727	589	-	2,840	-	3,550	-	530	289	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	9,208	367	268	297	0.329	0.38	18,260
November	10,247	403	306	342	.379	.42	20,320
December	20,180	1,130	343	651	.722	.83	40,030
Calendar year 1939	420,167	5,000	268	1,151	1.28	17.32	833,400
January	20,059	793	500	647	.717	.83	39,790
February	18,611	947	542	642	.712	.77	36,910
March	44,555	2,840	918	1,437	1.59	1.83	88,370
April	96,440	3,740	2,780	3,215	3.56	3.97	191,300
May	126,440	4,540	3,550	4,079	4.52	5.21	250,800
June	66,500	3,430	1,190	2,217	2.46	2.74	131,900
July	23,270	1,150	530	751	.833	.96	46,160
August	11,542	507	289	372	.415	.48	22,890
September	9,739	393	281	325	.360	.40	19,320
Water year 1939-40	456,791	4,540	268	1,248	1.38	18.82	906,000

a No gage-height record; discharge interpolated.
b Stage-discharge relation affected by ice.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Salmon River near Waneta, British Columbia

Location.- Staff gage, lat. 49°01'30", long. 117°22'30", three-quarters of a mile upstream from mouth and 15 miles upstream from Waneta.

Records available.- March 1936 to September 1940.

Extremes.- Maximum discharge observed during year, 6,190 second-feet May 11 (gage height, 11.60 feet); minimum observed, 118 second-feet Sept. 4 (gage height, 2.17 feet).
1936-40: Maximum discharge observed, 9,060 second-feet May 26, 1938 (gage height, 14.55 feet); minimum, 78 second-feet Feb. 19, 1937 (result of discharge measurement during period of ice effect), discharge may have been less sometime during periods of ice effect.

Remarks.- Records good except those for periods of ice effect or no gage-height record, which are fair. Gage read twice daily except Dec. 22 to Mar. 8, when it was read once daily.

Cooperation.- Complete record furnished by Dominion Water and Power Bureau, Canada. Some discharge measurements made by the U. S. Geological Survey.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

2.2	122	2.9	281	4.0	645	6.0	1,540	9.0	3,700
2.4	159	3.2	370	4.5	836	7.0	2,150	11.0	5,600
2.6	204	3.5	470	5.0	1,050	8.0	2,880		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	151	249	265	466	b246	333	1,960	2,370	3,060	533	251	125
2	163	249	265	449	b241	354	1,970	2,490	3,060	512	270	122
3	157	249	259	460	b257	364	1,820	4,230	2,860	477	244	120
4	177	249	262	463	b273	349	1,660	3,900	2,660	449	233	119
5	281	233	259	432	292	392	1,650	3,550	2,560	442	221	211
6	244	238	262	409	301	383	1,620	3,200	2,280	425	209	261
7	204	254	270	399	330	396	1,600	2,940	2,620	405	199	174
8	195	354	333	249	301	415	1,840	3,040	2,520	383	195	166
9	186	505	723	268	295	422	2,220	3,430	2,320	354	190	161
10	181	392	851	488	333	402	2,230	4,580	2,180	358	172	147
11	177	345	*1,190	257	327	380	2,160	6,190	2,290	348	163	141
12	170	327	899	276	a310	370	2,120	5,980	2,300	324	172	136
13	166	333	803	324	292	367	2,420	4,940	2,210	315	166	143
14	166	321	1,150	b324	*289	364	3,060	4,490	1,870	303	163	195
15	166	315	759	b309	273	376	2,880	4,040	1,630	292	159	218
16	166	315	a805	b287	273	422	2,560	3,860	1,500	303	155	192
17	163	309	851	b268	276	533	2,470	3,510	1,370	345	153	174
18	159	301	767	b246	287	558	2,600	3,550	1,280	315	153	135
19	172	303	701	b214	276	561	3,000	4,330	1,290	292	151	221
20	223	276	755	b228	273	610	2,860	4,610	1,170	259	149	190
21	238	273	670	b246	270	680	2,770	4,360	1,120	281	147	181
22	324	295	634	b262	268	775	2,690	4,460	1,030	265	143	168
23	273	276	561	b298	*254	875	3,000	4,770	915	249	141	163
24	533	262	494	b309	244	927	3,000	4,940	807	254	139	151
25	402	241	491	b315	251	1,140	2,880	4,870	763	254	136	149
26	330	257	463	b315	270	1,580	2,880	4,170	723	315	134	145
27	315	257	348	b309	276	2,020	3,100	3,320	652	327	136	143
28	301	257	370	b308	266	2,140	3,220	2,960	631	330	137	141
29	288	249	488	b301	303	1,920	3,040	2,840	596	376	143	139
30	273	254	519	b287	-	1,960	2,620	3,040	561	293	136	137
31	259	-	477	b268	-	2,020	-	3,040	-	270	129	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	7,213	533	151	233	14,300
November	8,738	505	233	291	17,300
December	17,944	1,190	259	579	35,600
Calendar year 1939	361,819	6,720	90	991	718,000
January	10,041	488	214	324	19,900
February	8,149	333	241	281	16,200
March	24,477	2,140	333	790	48,500
April	73,920	3,220	1,600	2,460	147,000
May	122,000	6,190	2,370	3,940	242,000
June	50,828	3,060	561	1,690	101,000
July	10,662	533	249	344	21,100
August	5,289	270	129	171	10,500
September	4,928	261	119	164	9,770
Water year 1939-40	344,189	6,190	119	940	683,000

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

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Sheep Creek near Northport, Wash.

Location.- Water-stage recorder, lat. 48°56'40", long. 117°46'40", in NE¼NE¼ sec. 25, T. 40 N., R. 39 E., at county highway bridge, 1 mile upstream from mouth and 1½ miles north of Northport. Datum of gage is 1,300 feet above mean sea level (subject to correction for general adjustment of 1929).

Drainage area.- 225 square miles.

Records available.- June 1929 to September 1940.

Average discharge.- 11 years, 204 second-feet.

Extremes.- Maximum discharge during year, 1,620 second-feet May 12 (gage height, 26.33 feet), from rating curve extended above 1,200 second-feet; minimum, not determined, probably occurred during period of ice effect.

1929-40: Maximum discharge, 2,450 second-feet Apr. 29, 1933 (gage height, 27.46 feet), from rating curve extended above 1,200 second-feet; minimum, not determined, probably less than 8 second-feet sometime during period of ice effect, Dec. 25, 1929, to Apr. 7, 1930.

Remarks.- Records good except those for periods of ice effect, which are poor. Flow partly regulated by flash dam 6½ miles upstream occasionally used for logging operations. No diversions.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

22.8	37	23.4	130	24.0	283	25.0	705
23.0	61	23.6	174	24.3	385	25.5	1,000
23.2	93	23.8	226	24.6	513	26.0	1,350

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	28	72	53	b25	50	845	970	434	83	34	23
2	27	28	43	61	b25	53	906	875	438	78	37	22
3	27	28	30	61	b30	54	875	970	413	76	39	22
4	28	27	29	61	b30	59	786	1,210	381	73	38	22
5	29	27	28	61	b35	67	732	1,210	348	70	36	27
6	29	28	27	b55	b35	67	705	1,100	320	69	35	29
7	28	30	27	b50	b40	70	705	1,040	324	67	34	28
8	27	33	*31	b45	b40	70	758	1,000	341	64	34	27
9	27	34	36	b35	b45	70	845	1,000	328	60	34	24
10	27	32	41	b20	46	70	906	1,100	302	60	33	24
11	27	31	47	b20	*48	69	906	1,350	280	57	32	23
12	27	30	46	b25	47	69	875	1,500	266	56	32	22
13	26	30	43	b25	46	67	906	1,350	251	52	31	23
14	26	29	46	b25	46	69	1,040	1,170	234	49	30	24
15	26	29	50	b30	44	70	1,140	1,040	218	46	30	24
16	26	28	56	b30	44	75	1,100	938	202	46	28	26
17	26	28	61	b30	46	86	1,000	875	186	46	28	26
18	26	28	64	b25	46	98	970	815	169	38	28	27
19	26	27	64	b25	46	113	1,100	815	160	25	29	27
20	26	27	69	b25	44	130	1,170	906	151	44	29	27
21	27	27	70	b25	44	160	1,100	906	145	43	28	26
22	27	28	69	b25	44	207	1,070	845	142	40	27	25
23	28	28	64	b25	44	254	1,070	815	109	39	27	24
24	30	27	b40	b25	43	302	1,140	815	119	39	27	24
25	29	27	b40	b30	43	366	1,140	815	113	42	27	24
26	30	27	b40	b30	44	508	1,070	786	106	44	25	23
27	30	27	b45	b30	46	815	1,100	680	100	41	25	23
28	30	27	b45	b30	48	1,000	1,210	568	83	39	24	22
29	30	25	b45	b30	50	906	1,170	504	90	43	24	22
30	29	26	b45	b30	-	845	1,070	459	86	51	23	22
31	28	-	b50	b25	-	845	-	434	-	43	23	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	853	30	24	27.5	0.122	0.14	1,690
November	851	34	25	28.4	.126	.14	1,690
December	1,463	72	27	47.2	.210	.24	2,900
Calendar year 1939	62,265	1,280	20	171	.760	10.23	123,500
January	1,067	61	20	34.4	.153	.18	2,120
February	1,214	50	25	41.9	.186	.20	2,410
March	7,684	1,000	50	248	1.10	1.27	15,240
April	29,410	1,210	705	980	4.36	4.83	58,330
May	28,861	1,500	434	931	4.14	4.77	57,240
June	6,839	438	83	228	1.01	1.13	13,560
July	1,823	83	25	52.4	.233	.27	3,220
August	932	39	23	30.1	.134	.15	1,850
September	732	29	22	24.4	.108	.12	1,450
Water year 1939-40	81,529	1,500	20	223	.991	13.47	161,700

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

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Kettle River near Ferry, Wash.

(International gaging station)

Location.- Water-stage recorder, lat. 48°58'40", long. 118°46'10", in lot 7, sec. 10, T. 40 N., R. 32 E., 1½ miles south of international boundary and Ferry and 3 miles upstream from Toroda Creek. Datum of gage is 1,840.00 feet above mean sea level (subject to correction for general adjustment of 1929).

Drainage area.- 2,200 square miles.

Records available.- August 1928 to September 1940.

Average discharge.- 12 years, 1,266 second-feet.

Extremes.- Maximum discharge during year, 9,930 second-feet May 26 (gage height, 16.83 feet); minimum not determined (occurred during period of ice effect).
1928-40: Maximum discharge, 14,000 second-feet June 17, 1933 (gage height, 18.4 feet); minimum, 14 second-feet (discharge measurement) Jan. 23, 1930, but may have been less during period of ice effect, Jan. 18-23, 1930.

Remarks.- Records excellent except those for period of shifting control, which are good, and those for periods of ice effect, which are poor. Several small diversions above station for irrigation.

Cooperation.- This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	144	239	147	193	b120	166	2,010	3,820	6,490	762	371	94
2	150	231	156	202	b100	177	2,070	3,820	6,110	719	350	91
3	144	219	153	219	b80	177	1,950	4,420	5,750	678	330	89
4	144	211	147	219	b90	189	1,850	4,740	5,060	639	335	89
5	144	215	150	206	b90	227	1,850	4,740	4,580	600	306	105
6	153	211	153	198	b100	219	1,900	4,740	4,120	569	274	110
7	156	223	*154	185	117	223	1,950	4,740	3,970	520	247	108
8	173	235	169	b130	121	223	2,120	4,900	4,420	491	226	105
9	176	239	198	b40	128	214	2,360	5,060	4,120	462	206	102
10	176	251	223	b30	b130	210	2,550	6,110	3,820	431	191	100
11	173	256	268	b30	b140	198	2,610	8,100	3,820	412	179	91
12	176	251	282	b30	b140	189	2,740	8,760	3,820	391	168	86
13	169	235	301	b30	135	189	3,060	7,890	3,680	360	158	84
14	169	227	296	b30	139	198	3,680	7,070	3,260	340	148	94
15	173	215	286	b30	*146	210	3,820	6,490	2,870	316	141	105
16	169	207	301	b30	132	236	3,540	6,300	2,570	326	135	108
17	169	203	286	b30	139	272	3,470	5,750	2,330	321	128	110
18	169	203	272	b30	139	315	3,540	5,750	2,110	330	119	122
19	173	192	268	b30	139	336	3,680	6,490	2,000	355	113	125
20	169	188	272	b30	142	351	3,680	7,270	1,890	326	110	116
21	162	184	258	b30	135	394	3,680	7,270	1,740	306	108	105
22	150	173	250	b30	121	452	3,820	7,070	1,540	292	108	100
23	156	169	236	b30	128	507	3,970	7,680	1,440	278	105	91
24	192	180	210	b30	135	579	4,120	8,320	1,310	269	108	89
25	277	169	b50	b40	135	745	4,120	8,990	1,170	269	105	89
26	354	159	b70	b60	135	946	4,270	9,220	1,090	278	105	86
27	321	141	b110	b80	135	1,340	4,740	6,490	1,030	288	105	91
28	294	138	b130	b100	142	1,740	4,740	5,230	983	297	102	97
29	272	144	b150	b110	150	1,790	4,740	4,740	923	330	102	91
30	268	144	b170	b120	-	1,790	4,270	4,740	848	350	100	89
31	260	-	b180	b130	-	1,950	-	4,900	-	371	97	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	5,975	354	144	193	11,850
November	6,052	256	138	202	12,000
December	6,296	301	50	203	12,490
Calendar year 1939	456,362	9,940	50	1,250	905,200
January	2,682	219	30	86.5	5,320
February	3,683	150	80	127	7,310
March	16,752	1,950	166	540	33,230
April	96,900	4,740	1,850	3,230	192,200
May	191,610	9,220	3,820	6,181	380,100
June	88,874	6,490	848	2,962	176,300
July	12,699	782	269	410	25,190
August	5,380	371	97	174	10,670
September	2,962	125	84	98.7	5,880
Water year 1939-40	439,865	9,220	30	1,202	872,500

Peak discharge.- May 26 (5:30 a.m.) 9,930 sec.-ft.; June 1 (6:30 p.m.) 7,680 sec.-ft.
*Winter discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.- Shifting-control method used Oct. 1 to Dec. 6.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Kettle River near Laurier, Wash.

(International gaging station)

Location.- Water-stage recorder, lat. 48°50'50", long. 118°13'00", in SW¼ sec. 11, T. 40 N., R. 36 E., 500 feet downstream from Deep Creek, 1½ miles southeast of Laurier, and 12 miles upstream from Boulder Creek.
Drainage area.- 3,800 square miles.
Records available.- September 1929 to September 1940.
Average discharge.- 11 years, 2,499 second-feet.
Extremes.- Maximum discharge during year, 17,200 second-feet May 26 (gage height, 12.33 feet); minimum, 190 second-feet Sept. 30 (gage height, 2.58 feet).
1929-40: Maximum discharge, 23,800 second-feet June 17, 1933 (gage height, 14.48 feet); minimum, not determined, probably occurred sometime during winter of 1929-30.
Maximum stage known, about 22 feet sometime in May or June 1894, from information furnished by local residents.
Remarks.- Records excellent except those for periods of ice effect, which are poor, and those for periods of no gage-height record, which are fair. North Fork regulated by reservoir at Grand Forks, British Columbia. Many small diversions for irrigation and domestic supply.
Cooperation.- This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

2.6	197	3.6	680	5.5	2,360	9.0	8,520
2.8	277	4.0	942	6.0	3,000	10.0	10,900
3.0	365	4.5	1,340	7.0	4,520	11.0	13,500
3.3	512	5.0	1,810	8.0	6,370	12.0	16,300

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	252	316	303	583	b420	502	5,400	a8,000	10,700	1,470	583	265
2	248	311	307	594	b410	517	5,590	a8,000	11,700	1,380	588	261
3	248	311	316	622	b400	555	5,220	a8,400	10,400	1,250	561	256
4	248	307	316	622	b420	555	5,040	a8,800	9,450	1,210	523	261
5	248	303	316	611	436	628	4,860	a8,900	8,520	1,170	534	281
6	244	303	338	594	481	663	4,860	f8,980	7,850	1,090	507	277
7	216	316	*320	577	486	651	5,040	8,980	7,200	1,020	476	273
8	197	320	352	517	497	668	5,220	9,210	7,410	978	451	269
9	201	320	379	b400	502	663	5,780	9,450	7,410	907	422	261
10	252	320	436	b380	512	657	6,170	11,200	6,990	872	403	236
11	269	329	497	b370	492	645	6,370	14,100	6,780	838	384	213
12	265	334	741	b360	451	628	6,370	16,300	6,990	812	374	205
13	261	329	942	b350	451	616	6,780	15,600	6,990	760	365	201
14	256	329	872	b340	436	616	7,850	13,500	6,780	710	352	220
15	261	324	865	b340	*427	628	8,520	12,500	5,780	686	334	209
16	256	324	852	b330	417	657	8,070	11,900	5,220	657	334	220
17	265	329	859	b330	427	717	7,630	11,400	4,690	657	334	205
18	224	338	805	b330	451	818	7,630	10,900	4,190	639	316	213
19	197	338	729	b330	456	942	8,070	11,700	3,940	634	320	216
20	193	338	792	b330	451	1,050	8,070	13,300	3,720	616	311	228
21	197	338	799	b330	441	1,170	8,070	13,000	3,420	566	316	224
22	197	342	779	b330	422	1,340	7,850	13,300	3,070	555	298	220
23	197	334	741	b340	393	2,230	8,290	14,100	2,800	528	303	215
24	248	329	b600	b350	422	2,360	8,750	15,200	2,480	523	298	209
25	281	334	b520	b390	427	2,240	8,980	16,300	1,710	512	294	220
26	252	329	b480	b420	427	3,000	8,750	16,900	1,610	512	294	197
27	316	316	b460	b460	436	4,030	9,210	13,500	1,660	512	286	197
28	316	316	b470	b490	446	5,040	9,690	10,400	1,760	528	286	201
29	298	303	b490	b490	476	5,220	f9,930	8,980	1,810	517	277	205
30	281	303	b540	b480	-	4,860	a9,100	8,980	1,560	534	269	193
31	281	-	b570	b440	-	5,220	-	9,210	-	566	269	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	7,665	316	193	247	15,200
November	9,663	342	303	323	19,210
December	17,786	942	303	574	35,280
Calendar year 1939	861,638	16,000	193	2,361	1,709,000
January	13,430	622	330	433	26,640
February	13,913	512	393	445	25,610
March	50,086	5,220	502	1,616	99,340
April	217,160	9,930	4,860	7,239	430,700
May	360,890	16,900	8,000	11,640	715,800
June	164,590	11,700	1,560	5,486	326,500
July	24,209	1,470	512	781	48,020
August	11,662	588	269	376	23,130
September	6,849	281	193	228	13,580
Water year 1939-40	896,923	16,900	193	2,451	1,779,000

*Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for station near Ferry.
b Stage-discharge relation affected by ice.
f Computed from partly estimated gage-height record.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Myers Creek near Myncaster, British Columbia

(International gaging station)

Location.- Water-stage recorder and 4-foot Cippoletti weir, lat. 49°00'00", long. 119°01' 15", 50 feet north of international boundary, a quarter of a mile south of Myncaster, British Columbia, and 4½ miles downstream from Mary Ann Creek.

Drainage area.- 80 square miles.

Records available.- October 1929 to September 1940 (fragmentary), in water-supply papers of U. S. Geological Survey. May 1923 to September 1929, in bulletins of Dominion Water and Power Bureau, Canada.

Extremes.- Maximum discharge recorded during periods Oct. 1 to Nov. 3, Apr. 1 to Sept. 30, 37.4 second-feet May 26; minimum, 0.4 second-foot Oct. 1.
1923-40: Maximum discharge recorded, 99 second-feet June 14, 1923; no flow July 16-18, 25, 1926, Aug. 15-25, 1939.

Remarks.- Records good. Diversions above station for irrigation. No record during winter.

Cooperation.- This station is one of the international gaging stations maintained by Canada under agreement with the United States.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	1.7					6.8	14.4	21.2	4.7	3.0	0.7
2	.7	1.7					7.7	14.4	23.2	4.3	2.3	.7
3	.6	1.7					5.0	14.8	19.7	4.0	2.1	.9
4	.6	-					3.7	16.6	17.7	3.9	1.9	2.0
5	.6	-					2.8	21.6	20.4	3.9	1.7	2.4
6	.7	-					4.7	22.4	24.5	3.5	1.4	2.5
7	.8	-					3.5	19.3	25.3	3.1	1.2	2.2
8	.8	-					4.0	17.0	24.5	2.9	1.1	1.8
9	.8	-					5.0	17.7	20.4	2.8	1.1	1.4
10	.8	-					5.0	22.0	17.4	2.9	1.1	1.2
11	.8	-					4.2	28.2	15.1	2.8	.9	1.1
12	.8	-					4.0	30.3	13.7	2.5	.9	1.2
13	.8	-					4.5	29.5	12.7	2.3	1.1	a1.4
14	.9	-					6.5	28.6	12.0	2.3	.9	1.6
15	.9	-					7.1	28.6	11.7	2.2	a.8	1.5
16	.9	-					6.5	27.4	11.0	4.3	a.8	1.4
17	.9	-					6.2	25.7	10.7	4.6	a.8	1.3
18	.9	-					6.5	25.3	10.0	3.1	.9	1.3
19	.9	-					7.7	27.4	9.4	2.8	.9	1.3
20	.9	-					8.7	29.0	9.4	2.5	.9	a1.4
21	1.0	-					8.7	29.5	8.8	3.2	.9	a1.6
22	1.2	-					8.7	29.5	8.8	2.6	.9	a1.7
23	1.5	-					10.0	30.7	8.4	2.4	.9	a1.9
24	1.8	-					14.8	32.0	7.9	2.2	.9	a2.0
25	1.5	-					17.7	34.9	7.6	2.1	a.9	a2.1
26	1.8	-					18.5	33.2	6.8	2.6	a.9	a2.3
27	1.8	-					20.0	27.4	6.5	3.4	.9	2.4
28	1.8	-					18.1	23.6	6.3	6.2	.9	3.1
29	1.8	-					a16.6	20.8	5.7	6.2	.9	8.1
30	1.8	-					15.1	20.0	5.0	4.6	.9	6.2
31	1.7	-					-	20.8	-	3.5	.8	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	33.2	1.8	0.4	1.1	66
November 1-3	5.1	-	-	1.7	10
December	-	-	-	-	-
Calendar year	-	-	-	-	-
January	-	-	-	-	-
February	-	-	-	-	-
March	-	-	-	-	-
April	258.3	20.0	2.8	8.6	512
May	762.6	34.9	14.4	24.6	1,510
June	401.8	25.3	5.0	13.4	797
July	104.4	6.2	2.1	3.4	207
August	35.6	3.0	.8	1.1	71
September	60.7	8.1	.7	2.0	120
Water year	-	-	-	-	-

a No gage-height record; discharge interpolated.
Note.- Discharge Oct. 1-20, June 21 to Sept. 30 computed by weir formula.

9-2: 400455 O - 41 - 11 UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Colville River at Kettle Falls, Wash.

Location.- Staff gage, lat. 48°36', long. 118°04', in sec. 29, T. 36 N., R. 38 E., 500 feet downstream from Stevens County Light & Power Co.'s plant at foot of Meyers Falls, half a mile south of town of Kettle Falls, and 5 miles upstream from mouth.

Records available.- October 1922 to September 1940.

Average discharge.- 18 years, 234 second-feet.

Extremes.- Maximum discharge observed during year, 1,450 second-feet Apr. 4 (gage height, 8.25 feet); minimum observed, 31 second-feet July 24.
1922-40: Maximum discharge observed, 2,720 second-feet Apr. 20, 1938: minimum observed, 0.5 second-foot Aug. 15, 1930.

Remarks.- Records fair except those for periods of ice or mud effect, which are poor. Gage read twice daily. Several ditches divert water above station for irrigation. Slight regulation for power by small reservoir above falls.

Cooperation.- Gage-height record and three discharge measurements furnished by Washington Water Power Co.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43		65	117	b80	332	1,160	706	219	45	55	36
2	47		65	117	86	352	1,270	660	233	46	54	36
3	47		65	169	101	434	1,390	660	219	46	52	35
4	57		65	125	109	434	1,450	660	219	45	48	39
5	66		70	150	117	496	1,420	660	219	52	41	51
6			80	150	117	537	1,360	660	219	46	43	54
7			90	160	133	578	1,300	660	219	38	43	74
8			100	160	150	620	1,240	615	219	46	44	67
9			117	133	180	578	1,300	615	219	40	41	63
10			142	b110	192	578	1,300	572	206	44	36	63
11			160	b90	192	537	1,240	572	206	42	42	53
12			169	b80	180	537	1,180	572	180	36	36	52
13			160	b70	220	537	1,120	530	167	47	40	52
14			150	b80	180	496	1,120	509	192	41	38	52
15			160	b90	169	496	1,120	489	144	37	37	52
16		80	180	b100	150	455	1,070	450	138	36	36	59
17			220	b90	169	434	1,070	450	123	37	34	56
18	65		220	b70	180	434	1,010	431	108	38	34	60
19			273	b60	192	414	960	394	99	36	35	60
20			206	b50	180	414	907	376	97	35	34	76
21			180	b40	180	414	855	359	88	38	35	76
22			160	b40	192	434	855	342	79	36	35	76
23			169	b40	192	455	804	320	80	35	36	70
24			160	b40	169	476	804	309	78	33	34	102
25			133	b50	180	516	804	293	66	36	36	74
26			b110	b50	169	537	750	252	66	39	36	83
27			b100	b60	169	664	750	248	60	41	36	64
28			b90	78	180	810	706	248	52	45	45	72
29			101	98	237	860	706	248	47	61	41	79
30			117	109	-	960	706	233	45	66	39	83
31		-	117	94	-	1,060	-	233	-	56	35	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,950	-	43	62.9	3,870
November	2,400	-	-	80	4,760
December	4,194	273	65	135	8,320
Calendar year 1939	58,402	620	19	160	115,800
January	2,870	169	40	92.6	5,690
February	4,745	237	80	164	9,410
March	16,879	1,060	332	544	33,480
April	31,727	1,450	706	1,058	62,930
May	14,326	706	233	462	28,420
June	4,306	233	45	144	8,540
July	1,319	66	33	42.5	2,620
August	1,231	55	34	39.7	2,440
September	1,869	102	35	62.3	3,710
Water year 1939-40	87,816	1,450	33	240	174,200

b Stage discharge relation affected by ice.
Note.- Stage-discharge relation not defined Oct. 6 to Dec. 8; seriously affected by mud left on control after cleaning reservoir; discharge based on estimates made by Washington Water Power Co.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Mill Creek near Colville, Wash.

Location.- Water-stage recorder, lat. 48°34'55", long. 117°51'00", in lot 3, NW¼ sec. 35, T. 36 N., R. 39 E., 3 miles northeast of Colville and 5 miles downstream from North Fork. Datum of gage is 1,964.3 feet above mean sea level (Stevens County bench mark, subject to correction for general adjustment of 1929). Prior to Mar. 2, 1940, staff gage at same site, readings reduced to present datum.

Drainage area.- 82 square miles.

Records available.- February to September 1940.

Extremes.- Maximum discharge during period February to September, 454 second-feet Mar. 27 (gage height, 4.55 feet); minimum discharge recorded, 3.6 second-feet Aug. 28, 31, Sept. 1 (gage height, 1.69 feet); stage and discharge may have been less sometime during period of no gage-height record, Feb. 1-4.

Remarks.- Records excellent except those for period of shifting control, which are good, and those for periods of no gage-height record, which are poor. Some diversion for irrigation above gage. No regulation.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					a5.0	23	269	127	45	15	11	4.2
2					a5.0	31	294	121	46	14	10	4.2
3					a5.5	30	251	130	42	13	9.2	4.2
4					a6.0	28	212	127	40	12	9.2	4.8
5					7.2	38	200	135	38	13	8.8	7.6
6					10	36	191	127	38	12	8.8	7.6
7					12	35	187	120	42	12	8.0	6.0
8					10	34	222	114	42	12	7.6	5.4
9					10	31	241	109	37	12	7.2	5.4
10					12	28	232	105	35	12	6.8	5.7
11					a11	26	216	101	34	12	6.4	6.0
12					9.2	23	198	98	31	11	5.7	6.4
13					10	23	200	93	30	10	4.8	6.8
14					9.2	21	218	90	28	10	4.8	7.6
15					9.2	21	204	89	26	10	5.1	7.6
16					8.4	26	189	84	26	10	4.8	7.6
17					11	34	178	80	26	9.2	4.5	7.6
18					12	37	174	76	24	9.2	5.1	8.4
19					10	38	169	73	24	8.8	4.8	9.6
20					9.6	39	161	69	22	8.8	4.5	9.6
21					9.6	54	154	68	21	9.2	4.8	9.2
22					a9.2	60	146	65	21	8.8	5.4	9.2
23					9.2	68	146	62	20	8.4	5.7	8.8
24					8.8	78	149	59	19	8.4	5.7	8.4
25					a8.8	101	142	58	18	9.2	5.7	8.4
26					8.8	137	136	56	17	9.6	5.1	8.0
27					10	353	133	54	17	10	5.1	9.6
28					17	254	140	51	16	14	4.8	7.6
29					23	210	139	48	15	14	4.5	7.6
30					-	267	130	47	15	12	4.2	7.6
31					-	256	-	48	-	12	4.2	

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October							
November							
December							
Calendar year							
January	-	-	-	-	-	-	-
February	286.7	23	5.0	9.69	0.121	0.13	569
March	2,440	353	21	78.7	.960	1.11	4,840
April	5,621	294	130	187	2.28	2.55	11,150
May	2,684	135	47	86.6	1.06	1.22	5,320
June	857	46	15	28.6	.349	.39	1,700
July	341.6	15	8.4	11.0	.134	.15	678
August	192.3	11	4.2	6.20	.076	.09	381
September	216.7	9.6	4.2	7.22	.088	.10	430
The period	-	-	-	-	-	-	25,070

a No gage-height record; discharge computed on basis of records for Sheep Creek near Northport.
Note.- Discharge computed from twice-daily staff-gage readings Feb. 6-10, 12-17, 19-21, 23, 24, Feb. 26 to Mar. 1; once-daily staff-gage reading, Feb. 5, 18.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Coeur d'Alene River at Enaville, Idaho

Location.- Water-stage recorder, lat. 47°34', long. 116°15', in NW¼ sec. 30. T. 49 N., R. 2 E., 800 feet upstream from highway bridge, a quarter of a mile northwest of Enaville post office, 1.1 miles upstream from South Fork of Coeur d'Alene R'ver, and 3.5 miles downstream from North Fork of Coeur d'Alene River. Prior to Dec. 23, 1939, staff gage at same site and datum. Datum of gage is 2,100.00 feet above mean sea level.

Drainage area.- 895 square miles.

Records available.- October 1939 to September 1940. March 1911 to April 1913 (fragmentary records collected at site a quarter of a mile downstream and published as North Fork of Coeur d'Alene River at Enaville).

Extremes.- Maximum discharge during period of record, 10,000 second-feet Mar. 28 (gage height, 68.13 feet), from rating curve extended above 8,000 second-feet; minimum, 160 second-feet Aug. 26, 27, Sept. 3, 4 (gage height, 60.55 feet).
From local information obtained concerning high-water marks, the flood in December 1933 reached a stage of 79.47 feet and that in April 1938 a stage of 78.16 feet.

Remarks.- Records good except those for period of no gage height record, which are fair. Staff gage read twice daily prior to Dec. 23, 1939. No appreciable diversions or regulation above station.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 18 to Mar. 28

61.0	189	62.2	810	64.4	3,210
61.2	245	62.6	1,160	65.2	4,420
61.5	360	63.0	1,560	66.5	6,740
61.8	520	63.6	2,210	68.0	9,790

Mar. 29 to Sept. 30

60.5	152	61.3	375	62.5	1,140
60.7	187	61.6	525	63.0	1,580
61.0	263	62.0	775	63.6	2,210

Note.- Same as preceding table above 63.6 feet.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		227	215	514	351	5,800	6,170	2,940	1,060	375	270	165
2		221	227	599	347	5,440	6,360	2,880	1,040	367	254	162
3		215	227	738	356	5,440	5,980	3,490	1,000	354	243	162
4		215	224	844	408	4,580	5,090	3,860	938	341	234	166
5		215	218	878	473	4,100	4,500	3,640	880	333	226	224
6		212	212	844	700	3,790	4,260	3,280	831	329	222	289
7		259	210	794	1,470	3,640	4,100	3,000	831	322	216	270
8		334	221	715	1,560	4,500	4,420	2,880	859	311	209	234
9		374	389	613	1,720	4,920	5,620	2,810	810	311	205	212
10	a210	343	730	692	2,560	4,180	7,720	3,000	742	311	200	198
11		302	1,030	566	2,560	3,490	6,930	3,350	697	303	196	189
12		272	827	520	2,160	2,940	5,620	3,350	664	293	191	185
13		248	613	546	1,780	2,560	5,090	2,940	633	283	189	189
14		236	508	526	1,560	2,260	5,800	2,620	603	273	183	207
15		227	861	496	1,350	2,160	6,170	2,440	579	270	181	212
16		221	2,680	473	1,160	2,260	5,260	2,210	567	280	181	202
17		210	2,440	461	1,050	3,000	4,500	2,040	549	283	178	198
18	207	210	2,500	356	1,040	3,720	4,100	1,940	531	273	174	209
19	215	199	1,990	227	1,020	3,790	4,180	1,830	514	260	172	219
20	239	199	1,670	269	954	3,720	4,260	1,780	498	254	170	224
21	227	197	1,560	272	912	3,790	4,100	1,730	481	251	168	226
22	221	194	1,330	290	886	4,180	3,720	1,680	465	246	165	229
23	215	194	1,130	330	878	4,500	3,560	1,580	455	240	163	216
24	218	194	929	330	818	4,840	3,560	1,520	440	232	163	205
25	242	189	786	338	938	5,260	3,350	1,530	430	226	162	196
26	248	187	722	343	1,620	6,930	3,210	1,480	416	226	162	191
27	245	189	634	370	2,740	8,530	3,210	1,330	402	263	163	189
28	252	187	473	408	3,280	9,790	3,280	1,220	393	358	172	194
29	259	187	479	424	5,620	8,740	3,210	1,130	384	371	174	194
30	259	194	585	394	-	7,120	3,000	1,090	380	322	172	194
31	245	-	533	374	-	6,360	-	1,110	-	286	170	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	6,862	-	-	221	0.247	0.28	13,610
November	6,851	374	187	228	.255	.28	13,590
December	27,153	2,680	210	876	.979	1.13	53,860
Calendar year	-	-	-	-	-	-	-
January	15,544	878	227	501	.560	.65	30,830
February	42,271	5,620	347	1,458	1.63	1.76	83,840
March	146,330	9,790	2,160	4,720	5.27	6.03	290,200
April	140,330	7,720	3,000	4,678	5.23	5.84	278,300
May	71,680	3,860	1,090	2,312	2.58	2.97	142,200
June	19,072	1,060	380	636	.711	.79	37,830
July	9,147	375	226	295	.330	.38	18,140
August	5,928	270	162	191	.213	.25	11,760
September	6,150	289	162	205	.229	.26	12,200
Water year 1939-40	497,318	9,790	162	1,359	1.59	20.67	986,400

a No gage-height record; discharge computed on basis of subsequent record.

Coeur d'Alene River near Cataldo, Idaho

Location.- Water-stage recorder, lat. 47°34', long. 116°18', in sec. 26, T. 49 N., R. 1 E., 1⅛ miles upstream from Cataldo and 3 miles downstream from South Fork of Coeur d'Alene River. Datum 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 1940.

Average discharge.- 21 years, 2,392 second-feet.

Extremes.- Maximum discharge during year, 10,700 second-feet Mar. 28 (gage height, 45.11 feet); minimum, 230 second-feet Aug. 26, Sept. 2, 3 (gage height, 37.64 feet).
1911-12, 1920-40: Maximum discharge, 55,300 second-feet Dec. 22 or 23, 1933 (gage height, 56.9 feet, from floodmark), from logarithmic extension of rating curve above 24,000 second-feet; minimum, 122 second-feet Dec. 4, 1929; minimum gage height, 37.03 feet Sept. 6, 1931.

Remarks.- Records good. No appreciable diversion or regulation above station.

Cooperation.- Gage-height record and results of six discharge measurements furnished by Washington Water Power Co.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

37.6	200	39.1	1,190	42.0	4,400
37.9	355	39.4	1,450	43.0	6,050
38.2	530	39.7	1,720	44.0	8,120
38.5	730	40.0	2,010	45.0	10,490
38.8	950	41.0	3,080		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	275	328	306	758	488	6,840	7,470	3,970	1,630	542	377	240
2	295	311	322	870	482	6,440	7,680	3,970	1,580	530	360	235
3	306	311	328	1,090	500	6,240	7,260	5,020	1,540	518	344	235
4	311	311	322	1,230	584	5,520	6,440	5,690	1,400	506	322	250
5	360	306	322	1,270	674	5,020	5,520	5,180	1,320	494	316	311
6	366	306	316	1,230	1,090	4,550	5,350	4,700	1,270	482	311	360
7	350	355	306	1,150	2,060	4,400	5,180	4,250	1,270	470	300	338
8	322	452	333	1,080	2,060	5,690	5,520	3,970	1,270	458	290	306
9	306	494	542	966	2,160	6,050	6,840	3,970	1,190	458	285	285
10	295	464	942	1,040	3,080	5,180	8,800	4,400	1,110	452	280	275
11	290	416	1,110	878	3,020	4,400	8,120	5,180	1,050	434	275	265
12	290	377	1,040	814	2,520	3,700	7,050	5,020	998	428	270	260
13	280	355	878	814	2,260	3,080	6,440	4,400	958	410	265	275
14	280	338	779	793	2,060	2,800	7,470	3,970	918	399	265	295
15	280	322	1,150	751	1,860	2,630	7,900	3,570	878	394	260	295
16	285	316	2,580	716	1,630	2,800	6,840	3,320	856	404	260	290
17	285	300	2,850	695	1,540	3,700	5,870	3,080	828	404	255	285
18	295	290	2,900	b550	1,540	4,550	5,520	2,850	793	399	250	300
19	306	290	2,310	b400	1,500	4,700	5,690	2,800	772	382	250	311
20	328	285	2,010	b420	1,450	4,550	5,870	2,800	751	372	250	311
21	322	285	1,860	b430	1,360	4,700	5,690	2,740	723	372	245	316
22	306	280	1,680	434	1,360	5,020	5,180	2,630	695	360	245	322
23	300	280	1,450	464	1,320	5,520	5,020	2,460	667	350	240	306
24	311	280	1,230	b460	1,270	5,690	4,860	2,410	646	338	240	290
25	333	275	1,090	b470	1,540	6,440	4,550	2,460	632	333	240	280
26	350	270	1,010	464	2,630	8,120	4,400	2,310	611	333	235	270
27	350	275	894	494	3,970	9,510	4,400	2,060	590	399	245	275
28	355	275	723	560	4,550	10,500	4,550	1,860	578	488	250	285
29	366	270	709	566	7,260	9,750	4,400	1,760	560	488	250	280
30	366	280	821	536	-	8,570	4,110	1,680	548	434	250	280
31	350	-	779	512	-	7,680	-	1,720	-	399	245	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	9,814	366	275	317	0.260	0.30	19,470
November	9,697	494	270	323	.265	.30	19,230
December	33,892	2,900	306	1,093	.896	1.03	67,220
Calendar year 1939	653,537	12,500	270	1,791	1.47	19.92	1,296,000
January	22,905	1,270	400	739	.606	.70	45,430
February	57,818	7,260	482	1,994	1.63	1.76	114,700
March	174,340	10,500	2,630	5,624	4.61	5.32	345,800
April	179,990	8,800	4,110	6,000	4.92	5.49	357,000
May	106,200	5,690	1,680	3,426	2.81	3.24	210,600
June	28,632	1,630	548	954	.782	.87	56,790
July	13,230	542	333	427	.350	.40	26,240
August	8,470	377	235	273	.224	.26	16,800
September	8,626	360	235	288	.236	.26	17,110
Water year 1939-40	653,614	10,500	235	1,786	1.46	19.93	1,296,000

b Stage-discharge relation affected by ice.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Coeur d'Alene Lake at Coeur d'Alene, Idaho

Location.- Water-stage recorder, lat. 47°40', long. 116°46', in sec. 24, T. 50 N., R. 4 W., 500 feet southwest of south end of Eleventh Street, Coeur d'Alene. Datum of gage is 2,100.00 feet above mean sea level, referred to originally accepted elevation (2,157.40 feet) of Geological Survey bench mark in southeast corner of Merriam Building (see Water-Supply Paper 882).

Drainage area.- 3,750 square miles.

Records available.- February 1905 to September 1940. April 1903 to February 1905, from St. Joe Boom Co.'s gage at mouth of St. Joe River.

Extremes.- Maximum gage height during year, 28.42 feet Apr. 16, 17; minimum, 21.37 feet Nov. 7.

1903-40: Maximum gage height, 39.05 feet Dec. 25, 1933; minimum, 19.9 feet Oct. 10-12, 1904, Sept. 24, 25, 1905, and Oct. 14 to Nov. 3, 1906.

Maximum stage known prior to 1903, 37.6 feet, May 31, 1894, from high-water marks.

Remarks.- Washington Water Power Co. stores considerable water in lake. Stage regulated by operation of Taintor gates and bear-trap dam at Post Falls.

Cooperation.- Gage-height record furnished by Washington Water Power Co.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22.16	21.53	21.59	23.62	23.16	26.98	28.14	27.37	26.50	26.47	25.59	24.09
2	22.15	21.54	21.58	23.73	23.12	27.39	28.23	27.30	26.48	26.43	25.56	24.05
3	22.11	21.54	21.55	23.88	23.06	27.72	28.31	27.27	26.48	26.45	25.53	24.01
4	22.11	21.53	21.52	24.00	23.05	27.87	28.31	27.34	26.45	26.42	25.51	23.97
5	22.09	21.53	21.49	24.12	23.02	27.93	28.26	27.42	26.46	26.39	25.49	24.01
6	22.05	21.53	21.43	24.19	23.21	27.87	28.16	27.45	26.44	26.35	25.47	23.99
7	22.02	21.58	21.39	24.25	23.61	27.80	28.03	27.40	26.47	26.30	25.46	23.99
8	22.00	21.64	21.40	24.29	23.95	27.97	27.92	27.32	26.49	26.28	25.43	23.98
9	21.98	21.65	21.41	24.31	24.24	28.16	27.88	27.22	26.48	26.26	25.39	23.96
10	21.95	21.67	21.51	24.35	24.56	28.22	28.01	27.13	26.49	26.22	25.34	23.92
11	21.92	21.68	21.60	24.37	24.79	28.15	28.18	27.15	26.52	26.20	25.29	23.88
12	21.89	21.70	21.63	24.37	24.85	27.96	28.28	27.23	26.52	26.19	25.24	23.85
13	21.87	21.71	21.66	24.36	24.83	27.71	28.30	27.27	26.53	26.18	25.19	23.83
14	21.83	21.71	21.71	24.35	24.77	27.42	28.30	27.25	26.52	26.12	25.10	23.80
15	21.80	21.71	21.82	24.33	24.66	27.14	28.34	27.18	26.51	26.08	25.03	23.74
16	21.76	21.71	21.99	24.31	24.51	26.88	28.41	27.06	26.50	26.05	24.96	23.71
17	21.75	21.70	22.26	24.28	24.40	26.72	28.40	26.92	26.50	26.01	24.89	23.68
18	21.72	21.70	22.53	24.22	24.36	26.65	28.32	26.79	26.50	25.98	24.84	23.68
19	21.70	21.69	22.74	24.13	24.30	26.59	28.21	26.65	26.51	25.92	24.80	23.70
20	21.68	21.69	22.92	24.04	24.22	26.52	28.16	26.52	26.53	25.90	24.76	23.68
21	21.65	21.68	23.04	23.98	24.12	26.47	28.11	26.52	26.51	25.86	24.73	23.70
22	21.62	21.68	23.14	23.89	24.02	26.42	28.05	26.51	26.48	25.79	24.69	23.70
23	21.60	21.68	23.22	23.80	23.96	26.41	27.99	26.46	26.47	25.75	24.65	23.67
24	21.57	21.68	23.30	23.71	23.88	26.43	27.92	26.45	26.47	25.71	24.58	23.64
25	21.53	21.67	23.35	23.62	23.91	26.52	27.84	26.48	26.49	25.63	24.54	23.61
26	21.52	21.66	23.38	23.55	24.43	26.70	27.75	26.50	26.50	25.55	24.47	23.57
27	21.52	21.63	23.41	23.51	25.16	27.00	27.66	26.49	26.46	25.60	24.40	23.57
28	21.52	21.63	23.42	23.44	25.74	27.33	27.60	26.43	26.44	25.63	24.33	23.57
29	21.52	21.61	23.43	23.38	26.41	27.64	27.53	26.43	26.46	25.64	24.25	23.57
30	21.52	21.61	23.49	23.30	-	27.88	27.46	26.48	26.47	25.62	24.20	23.58
31	21.52	-	23.54	23.23	-	28.02	-	26.55	-	25.60	24.15	-

9-238 September 1937 UNITED STATES DEPARTMENT OF THE INTERIOR Geological Survey

Spokane River at Post Falls, Idaho

Location.- Water-stage recorder, lat. 47°42', long. 116°58', in sec. 4, T. 50 N., R. 5 W., 1,500 feet downstream from power plant of Washington Water Power Co., 3,300 feet downstream from intake of Spokane Valley Farms Co.'s canal, and 1 mile west of Post Falls. Datum of gage is 2,000 feet above mean sea level.

Drainage area.- 3,880 square miles.

Records available.- January 1913 to September 1940.

Average discharge.- River alone, 27 years, 5,938 second-feet; river and Spokane Valley Farms Co.'s canal, 27 years, 6,021 second-feet.

Extremes.- Maximum discharge during year, 17,500 second-feet Apr. 17 (gage height, 73.57 feet); minimum, 444 second-feet Nov. 11 (gage height, 65.29 feet).
1913-40: Maximum discharge, 50,100 second-feet Dec. 25, 1933 (determined from unpublished records collected by Washington Water Power Co. for station at Liberty Bridge); minimum, 422 second-feet Nov. 26, 1935, Oct. 14, 1937; minimum gage height, 65.29 feet Nov. 11, 1939.

Remarks.- Records good. Spokane Valley Farms Co.'s canal diverts water 3,300 feet above gage for irrigation (see p.169). Flow partly regulated by storage in Coeur d'Alene Lake.

Cooperation.- Gage-height record and results of two discharge measurements furnished by Washington Water Power Co.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,210	630	1,050	1,210	2,200	12,500	15,200	13,000	5,990	799	760	818
2	1,190	630	1,180	1,270	2,000	13,500	15,500	13,000	4,100	923	760	812
3	1,180	636	1,170	1,430	2,280	14,500	15,500	12,700	5,460	1,210	618	1,170
4	1,200	636	1,210	1,480	2,220	15,000	15,500	13,000	4,480	1,380	540	1,160
5	1,200	630	1,310	1,520	2,280	15,000	15,500	13,000	3,740	1,310	643	867
6	1,210	630	1,310	1,560	1,750	15,000	15,200	13,000	2,950	1,130	643	558
7	1,120	630	1,310	1,520	1,550	14,500	14,800	13,000	3,150	1,040	702	594
8	1,060	636	1,350	1,610	2,220	15,000	14,400	13,000	3,560	1,020	760	669
9	1,070	643	1,350	1,660	3,490	16,000	14,400	12,700	2,840	1,010	825	881
10	1,080	630	1,310	1,560	5,780	15,500	14,800	12,300	2,510	972	881	1,090
11	1,090	624	1,310	1,660	6,650	15,000	15,200	12,300	2,450	902	1,030	993
12	1,090	624	1,310	1,660	6,870	14,500	15,500	12,700	2,280	916	1,170	1,120
13	1,090	636	1,310	1,700	6,870	14,000	15,900	12,700	2,220	923	1,240	1,230
14	1,090	624	1,310	1,800	6,650	13,500	15,500	12,700	2,110	909	1,240	1,240
15	1,100	630	1,310	1,900	6,650	12,800	15,900	12,300	2,060	986	1,160	1,270
16	1,100	630	1,310	1,850	6,430	12,200	16,300	12,300	1,850	1,180	1,100	1,160
17	1,080	618	1,310	1,950	6,210	11,800	16,300	11,700	1,660	1,250	1,040	909
18	1,100	624	1,270	2,060	5,990	11,400	15,900	11,400	1,610	1,260	1,050	773
19	1,100	624	1,270	2,160	6,000	11,400	15,500	11,100	1,560	1,250	1,050	773
20	1,100	630	1,270	2,160	5,850	11,100	15,200	8,980	1,520	1,260	1,010	734
21	1,100	624	1,270	2,160	5,700	11,100	15,200	8,010	1,520	1,240	832	708
22	1,110	618	1,130	2,220	5,300	10,800	15,200	8,980	1,350	1,250	839	695
23	1,110	624	1,050	2,400	5,100	10,800	14,800	8,490	1,270	1,260	958	1,100
24	1,120	708	1,060	2,500	5,000	10,800	14,400	7,780	1,070	1,260	1,060	1,100
25	1,030	747	1,060	2,600	5,000	11,100	14,400	7,550	1,050	1,270	1,120	1,100
26	839	747	1,060	2,600	6,000	11,400	14,000	7,090	1,040	1,220	1,350	1,260
27	754	760	1,070	2,600	8,500	12,300	13,700	7,090	902	923	1,260	1,100
28	754	832	1,060	2,600	9,500	13,000	13,700	6,210	780	708	1,170	993
29	754	881	1,060	2,600	11,500	13,700	13,700	4,760	728	944	1,140	688
30	773	881	1,060	2,600	-	14,400	13,300	4,100	682	839	1,160	1,190
31	688	-	1,100	2,400	-	14,800	-	5,160	-	766	1,070	-

Month	Observed				Diversion through Spokane Valley Farms Co.'s canal (acre-feet)	Adjusted for diversion			
	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	1,210	688	1,048	64,450	389	64,839	1.054	-	-
November	881	618	667	39,700	0	39,700	667	-	-
December	1,350	1,050	1,210	74,400	0	74,400	1.210	-	-
Calendar year 1939	23,200	618	4,403	3,186,970	77,196	3,264,166	4.509	1.16	15.74
January	2,600	1,210	1,968	121,000	0	121,000	1.968	-	-
February	11,500	1,750	5,236	301,200	0	301,200	5,236	-	-
March	16,000	10,800	13,170	810,000	0	810,000	13.170	-	-
April	16,300	13,300	15,010	893,400	1,460	894,860	15,040	-	-
May	13,000	4,100	10,390	638,900	12,000	650,900	10.590	-	-
June	5,990	682	2,283	135,900	16,280	152,180	2,557	-	-
July	1,390	708	1,075	66,070	15,980	82,050	1.334	-	-
August	1,350	540	974	59,860	15,370	75,230	1.224	-	-
September	1,270	558	958	57,030	7,020	64,050	1.076	-	-
Water year 1939-40	16,300	540	4,493	3,261,910	68,499	3,330,409	4.588	1.18	16.06

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 flow. No gage-height record Jan. 24 to Feb. 1, Feb. 19 to 28, Mar. 1-17; discharge computed on basis of unpublished records collected by Washington Water Power Co. and station at Spokane, Wash.

Spokane River at Spokane, Wash.

Location.- Water-stage recorder, lat. 47°39'30", long. 117°26'50", in sec. 13, T. 25 N., R. 42 E., at Cochran Street, Spokane, half a mile upstream from Latah Creek. Datum of gage is about 1,700 feet above mean sea level (subject to correction for general adjustment of 1929).
Drainage area.- 4,350 square miles.
Records available.- April 1891 to September 1940.
Average discharge.- 49 years, 6,832 second-feet (adjusted for storage).
Extremes.- Maximum discharge during year, 16,500 second-feet (regulated) Apr. 17 (gage height, 23.53 feet); minimum, 646 second-feet (regulated) July 13 (gage height, 16.94 feet); minimum daily discharge, 1,060 second-feet (regulated) Nov. 20.
1891-1940: Maximum discharge, 49,000 second-feet May 31, 1894; minimum, 268 second-feet (regulated) Dec. 28, 1935 (gage height, 16.37 feet); minimum daily discharge, 1,040 second-feet (regulated) Nov. 28, 1935.
Remarks.- Records excellent. Water for irrigation diverted above station by Spokane Valley Farms Co. Flow partly regulated by storage in Coeur d'Alene Lake and by pondage at Spokane. Capacity in Coeur d'Alene Lake between elevations 2,117 and 2,135 feet, 770,000 acre-feet.
Cooperation.- Gage-height record collected in cooperation with Washington Water Power Co., which also furnished results of two discharge measurements.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

17.3	1,010	18.5	2,560	21.0	8,010
17.6	1,360	19.0	3,400	22.0	11,000
18.0	1,870	20.0	5,450	23.0	14,500

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	†1,640	1,130	1,340	1,620	2,590	11,500	15,300	13,400	6,340	1,510	1,480	†1,460
2	1,740	1,220	1,600	1,710	2,310	12,400	15,300	13,400	†5,160	1,550	1,400	1,330
3	1,670	1,150	†1,620	1,740	2,820	†13,400	15,700	13,100	5,690	1,660	1,420	1,520
4	1,770	1,120	1,640	1,910	†2,750	13,800	15,700	13,100	5,150	1,910	†1,160	1,620
5	1,700	†1,180	1,700	1,880	2,800	14,200	15,300	†13,100	4,480	1,970	1,170	1,680
6	1,700	1,120	1,710	1,910	2,740	14,200	15,300	13,400	4,130	1,550	1,220	1,320
7	1,670	1,160	1,700	†1,900	2,210	14,200	†14,900	13,400	3,880	†1,810	1,230	1,240
8	†1,600	1,140	1,800	1,950	2,540	14,200	14,500	13,400	4,280	1,760	1,340	†1,280
9	1,580	1,150	1,810	1,980	3,200	14,900	14,500	13,100	†3,980	1,650	1,350	1,350
10	1,600	1,140	†1,770	2,000	5,090	†15,300	14,900	12,700	3,470	1,720	1,360	1,470
11	1,590	1,130	1,740	2,000	†6,470	15,300	15,300	12,700	3,290	1,600	†1,410	1,500
12	1,550	†1,070	1,780	2,060	6,700	14,900	15,700	†12,700	3,380	1,490	1,640	1,520
13	1,570	1,250	1,740	2,080	6,760	14,200	15,700	13,100	3,110	1,540	1,690	1,710
14	1,540	1,120	1,800	†2,240	6,680	13,800	†15,700	13,100	3,130	†1,570	1,700	1,720
15	†1,490	1,130	1,780	2,160	6,540	13,100	15,700	13,100	2,910	1,550	1,700	†1,870
16	1,570	1,160	1,710	2,280	6,400	12,400	16,100	12,700	†2,820	1,630	1,650	1,690
17	1,500	1,080	†1,780	2,300	6,280	†12,000	16,100	12,400	2,490	1,720	1,630	1,610
18	1,540	1,100	1,670	2,410	†6,110	11,900	16,100	12,000	2,440	1,810	†1,540	1,360
19	1,530	†1,120	1,740	2,430	6,110	11,700	15,700	†11,600	2,390	1,810	1,590	1,350
20	1,490	1,080	1,720	2,530	5,980	11,500	15,700	10,400	2,300	1,820	1,590	1,380
21	1,500	1,110	1,740	†2,510	5,830	11,400	†15,300	8,130	2,290	†1,810	1,440	1,330
22	†1,530	1,080	1,700	2,520	5,470	11,200	15,300	9,230	2,240	1,760	1,380	†1,280
23	1,510	1,160	1,470	2,650	5,220	11,200	14,900	9,010	†2,100	1,750	1,370	1,470
24	1,550	1,090	†1,460	2,730	5,120	†11,300	14,900	8,340	2,020	1,770	1,600	1,590
25	1,530	1,140	1,480	2,970	†5,160	11,400	14,500	7,720	1,780	1,750	†1,500	1,600
26	1,460	†1,180	1,460	2,870	5,770	11,800	14,500	†7,370	1,890	1,830	1,710	1,600
27	1,270	1,160	1,560	2,910	7,540	12,400	14,200	7,560	1,670	1,780	1,780	1,760
28	1,260	1,280	1,430	†2,790	8,930	13,100	†13,800	6,810	1,720	†1,330	1,670	1,580
29	†1,300	1,320	1,520	2,840	10,200	13,800	13,800	5,620	1,530	1,500	1,660	†1,370
30	1,270	1,270	1,530	2,950	-	14,200	13,800	4,760	†1,410	1,440	1,620	1,370
31	1,310	-	†1,480	2,770	-	†14,500	-	5,390	-	1,390	1,680	-

Month	Observed				Change in contents in Coeur d'Alene Lake (acre-feet)‡	Adjusted for change in lake contents			
	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	1,770	1,260	1,533	94,270	-18,360	75,910	1,235	0.284	0.33
November	1,320	1,060	1,151	68,470	+2,430	70,900	1,192	.274	.31
December	1,810	1,340	1,645	101,100	+52,210	153,300	2,493	.573	.66
Calendar year 1939	22,800	1,060	4,774	3,456,000	-5,160	3,451,000	4,767	1.10	14.89
January	2,970	1,620	2,310	142,000	-8,470	133,500	2,171	.499	.58
February	10,200	2,210	5,252	302,100	+88,200	390,300	6,785	1.56	1.68
March	15,300	11,200	13,070	803,700	+64,350	868,000	14,120	3.25	3.75
April	16,100	13,800	15,140	900,900	-25,780	875,100	14,710	3.38	3.77
May	13,400	4,760	10,830	666,100	-34,180	631,900	10,280	2.36	2.72
June	6,340	1,410	3,116	185,400	-2,530	182,900	3,074	.707	.79
July	1,970	1,330	1,679	103,200	-25,270	77,930	1,267	.291	.34
August	1,780	1,160	1,506	92,590	-39,700	52,890	860	.198	.23
September	1,870	1,240	1,498	89,120	-15,540	73,580	1,237	.284	.32
Water year 1939-40	16,100	1,060	4,889	3,549,000	+37,360	3,586,000	4,940	1.14	15.48

† Sunday.
‡ Based on mean gage-heights for last day of each month.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

101605-O U.S. GOVERNMENT PRINTING OFFICE 1936

Spokane River at Long Lake, Wash.

Location.- Water-stage recorder, lat. 47°50', long. 117°50', in SW¼ sec. 13, T. 27 N., R. 39 E., at Long Lake power plant, 12 miles north of Reardan. Datum of gage is 1,300.00 feet above mean sea level (subject to correction for general adjustment of 1929).

Drainage area.- 6,100 square miles.

Records available.- April 1939 to September 1940.

Extremes (regulated).- 1939: Maximum discharge during period April to September, 29,300 second-feet May 6 (gage height, 70.95 feet); minimum, 130 second-feet Sept. 27 (gage height, 57.73 feet); minimum daily, 1,260 second-feet Sept. 4.
1939-40: Maximum discharge during water year, 26,100 second-feet Mar. 8 (gage height, 70.08 feet), but may have been greater during period of doubtful gage-height record on Feb. 6; minimum, 115 second-feet Oct. 6 (gage height, 57.66 feet); minimum daily, 523 second-feet Oct. 29.

Remarks.- Records good. Water diverted above station for irrigation. Flow affected considerably by power regulation and by storage in Coeur d'Alene Lake. Capacity of Coeur d'Alene Lake between elevations 2,117 and 2,135 feet, 770,000 acre-feet. Capacity of Long Lake between elevations 1,512 and 1,531 feet, 79,600 acre-feet.

Cooperation.- Gage-height record collected in cooperation with Washington Water Power Co., which also furnished some discharge measurements and month-end gage heights for Long Lake.

Rating table for period April 1939 to September 1940 (gage height, in feet, and discharge, in second-feet)

57.7	123	58.7	506	60.5	2,170	66.0	13,400
57.9	170	59.0	698	61.0	2,840	68.0	19,200
58.1	230	59.3	926	62.0	4,440	70.0	25,900
58.3	306	59.6	1,190	63.0	6,340		
58.5	398	60.0	1,520	64.0	8,480		

Discharge, in second-feet, 1939-40

1939

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							a15,000	21,400	7,870	3,630	2,680	2,630
2							†a16,000	23,700	8,070	†3,330	2,640	2,290
3							a16,000	24,400	4,630	3,580	2,750	†1,400
4							a17,000	24,200	†4,270	3,980	2,520	1,260
5							a17,000	24,300	5,530	2,740	1,840	2,520
6							a17,000	25,800	7,540	3,390	†1,760	2,970
7							19,000	†25,100	6,350	3,240	2,500	2,970
8							17,900	24,200	4,960	2,870	3,010	3,000
9							†17,000	23,100	4,720	†2,460	3,120	2,710
10							17,400	21,800	4,000	3,130	3,140	†1,630
11							16,400	21,500	†5,370	2,580	3,310	3,050
12							17,000	20,300	5,180	2,230	2,360	3,080
13							17,400	20,600	5,080	2,190	†2,010	3,320
14							14,900	†18,800	4,270	3,040	2,930	3,150
15							17,300	18,800	4,580	3,030	2,890	2,930
16							†15,400	17,700	4,210	†2,410	3,070	2,530
17							15,900	16,900	5,970	2,850	3,090	†1,730
18							14,200	17,300	†4,380	2,400	2,900	2,270
19							14,900	18,100	4,900	2,410	2,610	2,220
20							15,800	17,300	4,660	2,490	†2,300	2,060
21							17,400	†15,500	4,370	2,540	2,960	2,720
22							17,300	15,000	4,240	2,500	3,180	3,010
23							†17,900	14,600	4,830	†1,440	3,210	2,480
24							19,400	14,300	3,890	2,620	3,310	†1,900
25							19,900	14,300	†4,150	2,970	3,050	2,920
26							20,600	11,900	3,960	3,300	3,510	2,870
27							20,900	11,700	3,660	2,870	†2,270	2,670
28							21,100	†10,700	3,400	2,910	2,980	2,530
29							21,200	6,850	3,490	2,300	3,000	2,480
30							†20,600	6,600	3,080	†1,410	2,960	1,980
31							-	8,180	-	2,400	3,070	-

†Sunday
a No gage-height record; discharge computed on basis of records for station below Little Falls, near Long Lake.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geol ical Survey

Discharge, in second-feet, of Spokane River at Long Lake, Wash., 1939-40--Continued

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	†812	2,070	2,300	1,200	3,330	17,900	17,300	15,900	7,240	3,170	2,680	†604
2	2,390	2,100	1,450	2,390	3,980	16,800	18,700	14,800	†7,150	3,270	2,410	1,180
3	2,590	2,180	†696	2,510	3,280	†19,100	18,300	14,300	6,270	3,340	1,470	2,240
4	2,300	1,450	2,040	2,430	†2,450	18,000	17,700	15,200	6,460	1,300	†1,600	2,860
5	2,000	†792	3,000	2,310	3,660	17,700	17,400	†15,000	5,480	1,810	2,470	2,260
6	2,340	2,080	2,560	2,030	d14,400	f17,400	17,100	15,000	5,290	2,270	2,070	2,350
7	1,810	2,490	2,970	†1,590	d8,000	f17,400	†17,200	14,400	4,630	†1,510	2,130	2,350
8	†716	2,360	2,730	2,920	4,320	20,600	16,600	14,900	5,390	2,850	2,730	†717
9	2,370	2,250	2,460	3,180	4,310	19,600	15,600	14,300	†5,250	2,570	2.380	3,140
10	2,440	2,280	†1,220	3,010	7,100	†17,600	17,200	14,300	4,580	2,140	2,280	2,640
11	2,540	1,200	2,430	3,160	†8,530	17,300	17,500	14,200	4,050	2,770	†2,110	2,500
12	2,490	†650	2,790	3,060	7,810	17,000	17,600	†13,800	4,300	3,000	2,220	2,820
13	2,510	2,040	2,960	2,560	8,840	16,100	17,600	14,600	4,040	2,930	2,480	2,490
14	2,110	2,260	3,100	†1,870	7,190	15,200	†17,800	13,600	3,990	†2,210	2,260	1,890
15	†1,030	2,370	2,520	2,830	8,130	13,400	16,800	14,200	3,900	2,870	2,140	†604
16	2,600	2,490	2,080	3,100	8,430	13,200	18,000	14,000	†3,300	2,850	1,830	1,770
17	2,470	2,570	†1,230	3,640	7,480	†13,300	17,400	13,800	4,440	2,570	1,770	2,360
18	2,450	1,890	2,880	4,010	†8,890	13,400	17,500	13,600	3,880	2,410	†853	2,150
19	2,600	†998	2,860	4,400	7,730	9,170	17,100	†12,900	3,310	2,390	1,950	2,140
20	2,570	2,430	2,720	3,910	8,090	12,500	16,700	9,860	3,270	1,270	2,310	3,080
21	1,850	2,740	2,470	†3,560	8,080	11,500	†16,900	8,990	3,610	†1,010	2,120	2,600
22	†528	2,400	2,650	3,530	6,400	12,400	16,800	10,200	2,990	2,500	2,840	†875
23	1,940	2,080	2,130	3,610	5,680	11,600	16,000	10,900	†2,820	2,660	3,290	2,620
24	2,030	2,610	†1,270	3,600	6,910	†12,400	17,400	9,930	3,390	2,840	2,340	2,680
25	2,090	2,380	1,060	3,780	†7,990	12,100	16,500	8,890	3,370	2,860	†1,650	2,660
26	2,360	†1,300	2,250	3,570	11,400	13,300	16,700	†8,790	2,420	2,430	2,750	2,980
27	2,290	2,680	2,990	2,520	15,800	13,800	15,000	8,280	2,540	1,420	2,650	2,520
28	1,510	2,310	3,200	†2,490	14,500	14,600	†15,900	8,280	2,460	†836	2,560	1,640
29	†523	2,270	3,110	3,330	16,800	15,400	14,800	7,470	2,120	1,890	2,650	†674
30	1,700	2,040	2,870	3,290	-	16,200	15,700	5,670	†1,140	2,530	2.750	1,860
31	1,930	-	1,570	3,330	-	16,900	-	6,400	-	2,620	1,840	

†Sunday.
d Doubtful gage-height record; discharge computed by Washington Water Power Co. engineers and by comparison with records for station below Little Falls, near Long Lake.
f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

Monthly discharge, 1939-40

Month	Observed				Change in contents in Coeur d'Alene and Long Lakes (acre-feet)	Adjusted for change in lake contents			
	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	
April 1939	21,200	14,200	17,490	1,041,000	+112,000	1,153,000	19,380	3.18	3.55
May	25,800	6,600	17,900	1,101,000	-153,500	947,500	15,410	2.53	2.91
June	8,070	3,080	4,854	288,800	+6,080	294,900	4,956	.812	.91
July	3,980	1,410	2,750	169,100	-21,360	147,700	2,402	.394	.45
August	3,310	1,760	2,772	170,400	-69,060	101,300	1,647	.270	.31
September	3,320	1,260	2,516	149,700	-43,880	105,800	1,778	.291	.33
The period	-	-	-	2,920,000	169,700	2,750,000	-	-	-
October 1939	2,600	523	1,996	122,800	-7,760	115,000	1,870	0.307	0.35
November	2,740	650	2,059	122,500	-7,970	114,500	1,924	.315	.35
December	3,200	696	2,341	143,900	+55,760	199,700	3,248	.532	.61
Calendar year	-	-	-	-	-	-	-	-	-
January 1940	4,400	1,200	2,991	183,900	-4,920	179,000	2,911	.477	.55
February	16,800	2,450	7,914	455,200	+83,700	538,900	9,369	1.54	1.66
March	20,600	9,170	15,250	937,900	+69,500	1,007,000	16,380	2.69	3.10
April	18,700	14,800	16,960	1,009,000	-25,530	983,500	16,530	2.71	3.02
May	15,900	5,670	12,140	746,700	-30,280	716,400	11,650	1.91	2.20
June	7,240	1,140	4,103	244,100	-6,180	237,900	3,998	.655	.73
July	3,340	836	2,358	145,000	-23,120	121,900	1,983	.325	.37
August	3,290	853	2,245	138,000	-44,400	93,600	1,522	.250	.29
September	3,140	604	2,108	125,500	-11,540	114,000	1,916	.314	.35
Water year 1939-40	20,600	523	6,026	4,374,000	+47,260	4,421,000	6,090	.998	13.58

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Spokane River below Little Falls, near Long Lake, Wash.

Location.- Water-stage recorder, lat. 47°50', long. 117°56', in NW¼ sec. 19, T. 27 N., R. 39 E., 1½ miles downstream from Little Falls power plant of Washington Water Power Co., 4 miles downstream from Chamokane Creek, and 5 miles downstream from Long Lake. Datum of gage is 1,200 feet above mean sea level (subject to correction for general adjustment of 1929).

Drainage area.- 6,380 square miles.

Records available.- October 1912 to September 1940.

Average discharge.- 28 years, 7,595 second-feet (adjusted for storage in Coeur d'Alene Lake since October 1912 and Long Lake since December 1914).

Extremes (regulated).- Maximum discharge during year, 25,400 second-feet Feb. 6 (gage height, 86.2 feet); minimum, not determined (water below intakes frequently because of regulation); minimum daily, 492 second-feet Dec. 3.

1912-40: Maximum discharge, 48,000 second-feet Dec. 26, 1933 (gage height, 93.10 feet); minimum discharge observed, 169 second-feet Sept. 30, 1931 (discharge measurement); minimum daily discharge, 442 second-feet Aug. 1, 1937.

Remarks.- Records excellent except those for October to January and July to September, which are good. Water diverted above station for irrigation. Flow affected considerably by regulation for power and by storage in Coeur d'Alene Lake. Capacity of Coeur d'Alene Lake between elevations 2,117 and 2,135 feet, 770,000 acre-feet. Capacity of Long Lake between elevations 1,512 and 1,531 feet, 79,600 acre-feet.

Cooperation.- Gage-height record collected in cooperation with Washington Water Power Co., which also furnished some discharge measurements and gage heights for Long Lake.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	†867	2,250	2,260	1,250	3,390	16,900	17,300	15,500	7,100	3,150	2,630	†802
2	2,460	2,220	1,550	2,340	3,890	16,200	18,500	14,600	†7,180	3,250	2,380	1,390
3	2,640	2,260	†492	2,680	3,310	†18,100	18,400	14,100	6,060	3,110	1,500	2,260
4	2,380	1,630	2,110	2,340	†2,550	17,400	17,800	14,900	6,710	1,330	†1,630	2,830
5	1,970	†788	2,800	2,280	3,710	16,900	17,500	†14,900	5,460	1,780	2,570	2,350
6	2,330	2,420	2,570	1,970	12,800	16,700	17,300	14,800	5,380	2,310	2,150	2,350
7	1,780	2,450	2,970	†1,640	8,350	17,000	†17,300	14,200	4,660	†1,570	2,090	2,390
8	†651	2,520	2,680	2,920	4,320	19,500	17,000	14,700	5,300	2,650	2,690	†1,040
9	2,440	2,120	2,530	3,160	4,470	18,900	16,000	14,200	†5,220	2,570	2,360	3,020
10	2,490	2,250	†1,270	3,050	6,690	†17,500	17,300	14,200	4,620	2,150	2,280	2,680
11	2,470	1,260	2,380	3,110	†a8,640	17,100	17,700	14,100	4,040	2,740	†2,200	2,630
12	2,440	†598	2,770	3,020	a7,920	16,500	17,700	†13,800	4,270	2,960	2,190	2,500
13	2,590	2,120	2,920	2,510	a8,450	16,500	17,700	14,400	4,100	2,860	2,500	2,420
14	2,140	2,170	3,060	†1,950	7,080	15,900	†17,900	13,400	4,050	†2,260	2,320	2,050
15	†1,120	2,270	2,540	2,830	7,920	14,400	17,000	13,800	3,800	2,840	2,170	†856
16	2,630	2,320	2,080	3,060	8,250	14,500	18,000	13,600	†3,410	2,920	1,930	1,870
17	2,490	2,400	†1,290	3,530	7,280	†14,200	17,500	13,200	4,490	2,540	1,910	2,430
18	2,420	1,790	2,740	4,010	†8,780	14,300	17,500	13,200	3,940	2,370	†848	2,280
19	2,610	†987	2,810	4,510	7,650	10,600	17,200	†12,700	3,230	2,370	1,990	2,220
20	2,490	2,530	2,660	3,930	8,070	13,300	16,700	10,000	3,270	1,380	2,360	3,010
21	1,930	2,490	2,440	†3,490	7,950	12,700	†17,000	8,680	3,590	†1,240	2,250	2,590
22	†566	2,240	2,610	3,660	6,360	13,500	16,700	10,000	2,950	2,440	2,840	†1,130
23	2,230	1,980	2,150	3,620	5,590	12,600	15,600	10,500	†2,840	2,650	3,230	2,620
24	2,260	2,520	†1,290	3,640	6,930	†13,500	16,800	9,700	3,560	2,880	2,340	2,760
25	2,290	2,320	1,070	3,870	†7,790	13,300	16,000	8,610	3,260	2,900	†1,780	2,710
26	2,530	†1,290	2,300	3,610	10,500	14,300	16,100	†8,690	2,550	2,320	2,800	2,960
27	2,500	2,600	2,950	2,560	15,500	14,900	14,900	8,220	2,550	1,560	2,590	2,630
28	1,480	2,290	3,100	†2,420	14,700	15,500	†15,800	8,280	2,560	†1,010	2,580	1,820
29	†550	2,300	3,020	3,240	16,200	15,900	14,600	7,470	2,170	1,780	2,620	†864
30	2,000	1,970	2,860	3,380	-	16,700	15,600	5,730	†1,110	2,600	2,700	1,950
31	2,150	-	†1,580	3,370	-	†17,200	-	6,210	-	2,640	1,850	-

Month	Observed: Discharge in second-feet: Maximum	Minimum	Mean	Observed: Run-off in acre-feet	Change in contents in Coeur d'Alene and Long Lakes (acre-feet)	Adjusted for change in lake contents: Run-off in acre-feet	Discharge in second-feet: Mean	Per square mile	Run-off in inches
October	2,640	550	2,061	126,700	-7,760	118,900	1,934	0.303	0.35
November	2,600	598	2,045	121,700	-7,970	113,700	1,911	.300	.33
December	3,100	492	2,318	142,500	+55,760	198,300	3,225	.505	.58
Calendar year 1939	23,700	492	5,747	4,161,000	-11,560	4,149,000	5,731	.898	12.19
January	4,510	1,250	2,998	184,400	-4,920	179,500	2,919	.458	.53
February	16,200	2,550	7,760	446,400	+83,700	530,100	9,216	1.44	1.55
March	19,500	10,600	15,560	957,000	+69,500	1,026,000	16,690	2.62	3.02
April	18,500	14,600	16,950	1,008,000	-25,530	982,500	16,510	2.59	2.89
May	15,500	5,730	11,950	734,700	-30,280	704,400	11,460	1.80	2.08
June	7,180	1,110	4,114	244,800	-6,180	238,600	4,010	.629	.70
July	3,250	1,010	2,359	145,100	-23,120	122,000	1,984	.311	.36
August	3,230	848	2,267	139,400	-44,400	95,000	1,545	.242	.28
September	3,020	802	2,191	130,400	-11,540	118,900	1,998	.313	.35
Water year 1939-40	19,500	492	6,035	4,381,000	+47,260	4,428,000	6,099	.956	13.02

a No gage-height record; discharge computed by Washington Water Power Co. engineers from record of tail race gage heights at the Little Falls power plant and turbine ratings.

† Sunday.

Note.- Contents of Coeur d'Alene Lake based on mean gage heights for last day of each month, and for Long Lake on midnight gage readings.

St. Joe River at Calder, Idaho

Location.- Water-stage recorder, lat. 47°16', long. 116°11', in sec. 3, T. 45 N., R. 2 E., 150 feet southwest of Chicago, Milwaukee, St. Paul & Pacific Railway station at Calder. Altitude of gage, about 2,100 feet above mean sea level.

Drainage area.- 1,080 square miles.

Records available.- July 1920 to September 1940. April 1911 to September 1912, at station 2½ miles downstream.

Average discharge.- 20 years (1920-40), 2,274 second-feet.

Extremes.- Maximum discharge during year, 8,140 second-feet May 11 (gage height, 85.21 feet); minimum discharge recorded, 216 second-feet Nov. 17 (gage height, 78.98 feet). 1911-12, 1920-40: Maximum discharge, 53,000 second-feet Dec. 23, 1933, computed on basis of slope between gages downstream; maximum gage height, 93.1 feet Apr. 18, 1938, from floodmark; minimum discharge, 96 second-feet Dec. 5, 1928 (gage height, 78.43 feet).

Remarks.- Records good except those for period of ice effect, which are fair. No diversion above gage. Operation of splash dam on Marble Creek causes some diurnal fluctuation during log-driving season.

Cooperation.- Gage-height record and results of six discharge measurements furnished by Washington Water Power Co.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	298	382	352			3,860	5,100	4,750	3,200	978	449	301
2	316	316	339			3,780	5,280	5,280	3,140	978	440	298
3	310	301	345			3,480	4,580	6,920	2,880	978	424	301
4	301	310	307			2,940	4,090	6,920	2,640	915	412	386
5	424	298	275			2,640	4,010	6,270	2,520	825	404	520
6	412	292	275			2,350	3,860	5,470	2,400	765	396	404
7	332	379	289			2,460	3,700	5,100	2,460	747	393	352
8	310	490	304			3,860	4,090	4,920	2,300	723	386	329
9	304	408	699	650		3,200	5,100	5,100	2,130	711	376	323
10	304	352	825			2,640	5,280	6,270	2,030	693	368	313
11	304	320	855			2,240	4,920	7,880	1,930	657	365	310
12	301	313	747			1,930	4,580	7,630	1,930	628	362	307
13	298	298	606			1,740	4,920	6,480	1,830	601	358	332
14	295	286	562			1,600	6,480	6,060	1,740	590	355	365
15	298	272	855		1,400	1,600	6,700	5,470	1,650	568	352	339
16	310	250	1,740			2,300	5,860	5,280	1,600	584	348	323
17	310	232	2,350	*592		3,070	5,280	4,920	1,560	562	345	348
18	304	248	1,830			3,000	5,470	4,750	1,470	552	339	404
19	313	281	1,270			2,880	5,860	4,920	1,390	520	335	386
20	355	272	1,150			2,820	6,700	5,100	1,350	546	329	345
21	329	250	1,120			2,940	6,480	5,100	1,270	510	326	368
22	307	295	978			3,200	5,860	4,920	1,230	485	320	382
23	298	320	825			3,340	5,860	4,920	1,190	467	320	345
24	307	278	705	400		3,630	5,660	5,100	1,150	449	316	326
25	352	248				4,250	5,280	5,100	1,120	440	316	313
26	365	250				5,100	5,470	4,500	1,080	440	313	307
27	358	281				5,860	5,470	3,930	1,040	606	316	339
28	396	272	550			5,660	5,280	3,560	1,010	759	329	530
29	500	275				5,100	5,100	3,410	978	540	323	400
30	408	289			-	4,750	4,750	3,410	945	490	313	428
31	396	-			-	4,750	-	3,340	-	458	307	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	10,415	500	295	336	0.311	0.36	20,660
November	9,058	490	232	302	.280	.31	17,970
December	23,453	2,350	-	757	.701	.81	46,520
Calendar year 1939	646,708	13,000	232	1,772	1.64	22.28	1,283,000
January	16,592	-	-	535	.495	.57	32,910
February	40,600	-	-	1,400	1.30	1.40	80,530
March	102,970	5,860	1,600	3,322	3.08	3.55	204,200
April	157,070	6,700	3,700	5,236	4.85	5.41	311,500
May	162,780	7,880	3,340	5,251	4.86	5.60	322,900
June	53,163	3,200	945	1,772	1.64	1.83	105,400
July	19,765	978	440	638	.591	.68	39,200
August	11,035	449	307	356	.330	.38	21,890
September	10,724	530	298	357	.331	.37	21,270
Water year 1939-40	617,625	7,880	232	1,688	1.56	21.27	1,225,000

*Winter discharge measurement made on this day.
Note.- Stage-discharge relation affected by ice Dec. 25 to Feb. 29.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

St. Maries River at Lotus, Idaho

Location.- Staff gage, lat. 47°14', long. 116°37', in sec. 20, T. 45 N., R. 2 W., just downstream from Lotus. Altitude of gage, about 2,160 feet above mean sea level.

Drainage area.- 420 square miles.

Records available.- July 1911 to October 1912, July 1920 to September 1940.

Average discharge.- 20 years (1920-40), 490 second-feet.

Extremes.- Maximum discharge observed during year, 4,220 second-feet Feb. 26 (gage height, 6.87 feet); minimum observed, 26 second-feet Nov. 29 (gage height, 3.28 feet). 1911-12, 1920-40: Maximum discharge observed, 23,800 second-feet Dec. 22, 23, 1933 (gage height, 12.1 feet), from rating curve extended logarithmically above 4,000 second-feet; minimum discharge, 16 second-feet (estimated) Nov. 21, 1929; minimum gage height, 2.71 feet Nov. 20, 1929.

Remarks.- Records good except those for period Dec. 28 to Mar. 16, which are fair. Gage read once daily. No diversion above gage.

Cooperation.- Gage-height record and results of six discharge measurements furnished by Washington Water Power Co.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	56	56	300	100	3,160	1,130	893	215	66	52	31
2	43	54	59	400	100	2,360	1,260	884	210	63	52	31
3	68	54	59	450	100	2,120	1,150	967	210	61	50	31
4	54	54	66	441	300	1,700	1,010	902	185	59	48	32
5	54	56	76	397	500	1,440	884	967	176	59	43	38
6	101	52	43	296	900	1,200	884	884	160	54	43	138
7	59	61	52	215	2,200	1,100	760	786	168	52	39	79
8	50	86	61	134	1,260	3,780	743	693	224	52	38	48
9	48	86	84	168	939	2,700	856	623	181	52	36	41
10	43	68	168	142	2,120	1,700	1,630	578	172	52	36	39
11	43	59	181	120	1,150	1,200	1,380	578	142	50	36	38
12	43	54	120	100	838	930	1,200	585	134	48	34	36
13	41	52	92	110	563	751	1,070	556	131	45	34	38
14	41	52	81	120	507	669	996	520	117	41	32	48
15	43	50	181	120	434	592	958	500	108	41	32	59
16	43	73	391	*120	334	623	856	453	104	41	32	52
17	48	38	422	100	323	1,010	760	416	104	41	32	45
18	50	45	313	80	693	939	685	391	101	43	32	66
19	50	56	262	60	585	847	646	362	98	45	32	104
20	50	34	160	70	507	786	615	340	89	41	32	81
21	50	41	210	70	500	760	654	334	86	41	31	66
22	50	61	164	80	441	726	585	313	86	39	31	71
23	48	50	127	90	403	760	563	286	86	39	31	76
24	50	61	108	90	340	760	735	276	81	36	31	66
25	54	59	98	80	638	830	677	276	73	34	31	54
26	66	54	89	90	4,220	1,260	718	286	73	34	31	50
27	63	54	84	100	3,260	1,500	735	262	73	81	31	48
28	66	43	80	110	2,530	1,440	693	242	71	210	31	117
29	89	26	80	120	3,460	1,320	893	228	66	92	34	172
30	81	56	100	110	-	1,260	821	215	66	68	31	98
31	59	-	200	110	-	1,110	-	215	-	59	31	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	1,682	101	34	54.3	0.129	0.15	3,340
November	1,645	86	26	54.8	.130	.14	3,260
December	4,267	422	43	138	.329	.38	8,460
Calendar year 1939	124,079	3,460	26	340	.810	10.99	246,100
January	4,993	450	60	161	.383	.44	9,900
February	30,245	4,220	100	1,043	2.48	2.68	59,990
March	41,333	3,780	592	1,333	3.17	3.66	81,980
April	26,547	1,630	563	885	2.11	2.35	52,660
May	15,811	967	215	510	1.21	1.40	31,360
June	3,790	224	66	126	.300	.33	7,520
July	1,739	210	34	56.1	.134	.15	3,450
August	1,109	52	31	35.8	.085	.10	2,200
September	1,893	172	31	63.1	.150	.17	3,750
Water year 1939-40	135,054	4,220	26	369	.879	11.96	267,900

*Winter discharge measurement made on this day.

Note.- Stage-discharge relation affected by ice Dec. 28 to Jan. 3, Jan. 11 to Feb. 6. Doubtful gage-height record Mar. 12-16; discharge computed on basis of assumption that gage heights as reported were 1.00 foot low.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Hayden Lake at Hayden Lake, Idaho

Location.- Staff gage, lat. 47°46', long. 116°45', 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. Datum of gage is 2,200.21 feet above mean sea level (general adjustment of 1929).

Records available.- May 1920 to September 1940.

Extremes.- Maximum gage height observed during year, 28.37 feet May 12, 13; minimum observed, 20.88 feet Dec. 8.

1920-40: Maximum gage height, 40.41 feet Apr. 30 to May 18, 1921; minimum observed, 19.38 feet Dec. 16, 1931.

Elevations previously published subject to correction for general adjustment of 1929. Add 0.21 foot to reduce to that adjustment.

Remarks.- Gage read once daily. Water is pumped from lake for irrigation and domestic supply.

Gage height, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21.78	21.34	20.95	21.25	21.03	22.75	26.43	28.22	27.68	25.88	24.26	22.40
2	21.76	21.32	20.94	21.24	21.01	23.05	26.52	28.24	27.63	25.82	24.21	22.34
3	21.81	21.30	20.95	21.26	20.98	23.37	26.64	28.28	27.60	25.77	24.17	22.28
4	21.81	21.30	20.94	21.25	20.98	23.60	26.72	28.30	27.58	25.72	24.14	22.24
5	21.82	21.28	20.93	21.26	21.00	23.78	26.80	28.32	27.54	25.66	24.09	22.24
6	21.80	21.26	20.92	21.25	21.08	23.91	26.86	28.32	27.48	25.60	24.03	22.28
7	21.76	21.27	20.90	21.25	21.18	24.02	26.91	28.34	27.42	25.52	23.96	22.26
8	21.73	21.27	20.88	21.24	21.22	24.30	26.98	28.35	27.36	25.47	23.90	22.26
9	21.71	21.27	20.95	21.24	21.30	24.45	27.07	28.35	27.32	25.40	23.84	22.24
10	21.69	21.25	21.01	21.25	21.40	24.61	27.24	28.36	27.28	25.34	23.77	22.22
11	21.67	21.23	21.02	21.25	21.48	24.73	27.44	28.36	27.22	25.28	23.72	22.20
12	21.65	21.23	21.01	21.23	21.54	24.81	27.60	28.37	27.16	25.22	23.66	22.18
13	21.63	21.20	21.01	21.22	21.54	24.89	27.70	28.37	27.10	25.16	23.60	22.16
14	21.62	21.19	21.02	21.22	21.59	24.94	27.78	28.35	27.02	25.10	23.52	22.18
15	21.62	21.18	-	21.22	21.60	24.98	27.84	28.34	26.96	25.02	23.45	22.18
16	21.60	21.16	21.12	21.20	21.61	25.01	27.90	28.34	26.90	24.97	23.38	22.16
17	21.58	21.14	21.17	21.18	21.65	25.06	27.94	28.32	26.84	24.90	23.32	22.14
18	21.56	21.12	21.22	21.16	21.70	25.12	27.96	28.29	26.76	24.82	23.26	22.16
19	21.54	21.10	21.22	21.13	21.76	25.17	27.99	28.28	26.70	24.76	23.19	22.18
20	21.52	21.08	21.24	21.10	21.78	25.23	28.02	28.26	26.62	24.70	23.13	22.16
21	21.51	21.06	21.26	21.09	21.78	25.28	28.04	28.24	26.56	24.66	23.08	22.16
22	21.48	21.06	21.25	21.08	21.78	25.32	28.04	28.18	26.48	24.58	23.02	22.16
23	21.47	21.05	21.23	21.07	21.78	25.37	28.06	28.15	26.42	24.54	22.96	22.14
24	21.46	21.04	21.22	21.05	21.84	25.42	28.10	28.10	26.36	24.52	22.90	22.12
25	21.44	21.04	21.20	21.01	21.90	25.52	28.12	28.06	26.30	24.43	22.84	22.10
26	21.42	21.00	21.20	20.98	21.98	25.64	28.12	28.02	26.22	24.36	22.76	22.08
27	21.42	21.00	21.20	20.98	22.11	25.80	28.14	27.98	26.14	24.32	22.70	22.06
28	21.40	20.98	21.18	21.07	22.27	25.98	28.18	27.92	26.06	24.38	22.64	22.06
29	21.39	20.97	21.18	21.05	22.50	26.10	28.20	27.85	26.00	24.36	22.58	22.04
30	21.38	20.96	21.19	21.05	-	26.26	28.22	27.78	25.94	24.31	22.52	22.04
31	21.36	-	21.18	21.03	-	26.32	-	27.72	-	24.30	22.46	-

9-238 September 1937 UNITED STATES DEPARTMENT OF THE INTERIOR Geolog. .l Survey

11176 O U S GOVERNMENT PRINTING OFFICE 1937

Spokane Valley Farms Co.'s canal at Post Falls, Idaho

Location.- Water-stage recorder, lat. 47°43', long. 116°57', in sec. 3, T. 50 N., R. 5 W., 300 feet downstream from headgate and half a mile northwest of Post Falls.

Records available.- May 1911 to September 1917, September 1919 to September 1940.

Extremes.- Maximum discharge during year, 290 second-feet May 28 (gage height, 5.56 feet); no flow Oct. 31 to Apr. 10, Apr. 12-19.
1911-17, 1919-40: Maximum discharge observed, 304 second-feet May 28, 1936; no flow during non irrigation seasons.

Remarks.- Records good. Canal diverts water for irrigation from Spokane River in SE¼ sec. 3, T. 50 N., R. 5 W.

Cooperation.- Gage-height record furnished by Spokane Valley Farms Co. Results of two discharge measurements furnished by Washington Water Power Co.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8						0	63	275	276	261	244
2	8						0	103	278	274	260	243
3	8						0	117	274	274	258	229
4	8						0	118	276	274	258	220
5	8						0	119	274	271	258	221
6	7						0	118	272	272	257	215
7	7						0	118	271	272	256	215
8	7						0	117	271	272	256	215
9	7						0	117	275	272	257	214
10	7						0	119	274	272	255	213
11	7						2	119	272	270	254	210
12	7						0	119	274	270	256	208
13	7						0	148	272	269	257	208
14	7						0	192	270	266	253	208
15	7						0	207	270	261	247	205
16	7						0	209	271	258	245	94
17	7						0	206	271	255	242	27
18	7						0	212	273	247	241	23
19	7						0	241	276	214	242	14
20	7						56	242	277	214	241	11
21	7						72	260	276	214	244	11
22	7						71	273	274	230	244	10
23	6						70	281	273	256	245	10
24	6						70	280	273	255	245	10
25	6						70	281	274	260	245	10
26	6						68	281	273	264	245	10
27	5						65	278	273	265	246	10
28	3						65	281	273	266	246	10
29	3						64	279	275	266	245	10
30	2						63	278	277	266	245	10
31	0						-	275	-	264	244	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	196	8	0	6.3	389
November	0	0	0	0	0
December	0	0	0	0	0
Calendar year 1939	38,920	282	0	107	77,200
January	0	0	0	0	0
February	0	0	0	0	0
March	0	0	0	0	0
April	736	72	0	24.5	1,460
May	6,051	281	63	195	12,000
June	8,207	278	270	274	16,280
July	8,059	276	214	260	15,980
August	7,748	261	241	250	15,370
September	3,538	244	10	118	7,020
Water year 1939-40	34,535	281	0	94.4	68,500

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Okanogan River at Okanagan Falls, British Columbia

(International gaging station)

Location.- Water-stage recorder, lat. 49°21', long. 119°35', 400 feet downstream from falls at Okanagan Falls, British Columbia, and 800 feet downstream from Dog Lake.

Drainage area.- 2,550 square miles.

Records available.- October 1930 to September 1940 in water-supply papers of Geological Survey; March 1915 to September 1930 in bulletins of Dominion Water and Power Bureau, Canada.

Average discharge.- 25 years, 447 second-feet.

Extremes.- Maximum discharge during year, 292 second-feet Oct. 1, 2, 6, 12 (gage height, 1.45 feet); minimum, 52 second-feet Feb. 24, 26, 27 (gage height, 0.57 foot).
1915-40: Maximum discharge observed, 2,680 second-feet June 10, 1928; minimum discharge, 4.6 second-feet Mar. 14, 1931.

Remarks.- Records good except those for period of ice effect, which are fair. Diversions above station for irrigation. Flow regulated by control dam at outlet of Okanagan Lake.

Cooperation.- This station is one of the international gaging stations maintained by Canada under agreement with the United States.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

0.6	57	1.2	196
.8	94	1.4	271
1.0	135		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	292	200	203	179	83	88	151	165	203	186	176	151
2	292	207	214	172	77	109	154	189	200	186	169	157
3	279	214	196	189	75	111	159	196	196	186	172	154
4	267	218	186	211	71	115	162	203	189	186	169	157
5	279	200	186	222	71	135	172	189	179	186	162	151
6	292	186	207	229	75	148	176	186	172	182	162	154
7	283	214	214	211	73	169	165	179	196	186	165	157
8	287	226	222	186	68	179	162	193	214	179	159	162
9	279	222	241	196	68	162	169	200	233	179	165	157
10	283	218	233	b190	70	148	172	211	244	179	154	157
11	287	214	214	b185	68	140	172	222	260	179	151	159
12	292	196	203	b180	62	146	179	226	263	186	157	162
13	283	186	214	b175	61	148	182	222	263	186	151	165
14	267	189	222	b170	62	154	176	214	256	186	151	165
15	252	196	233	b165	62	162	169	226	252	186	151	176
16	226	207	252	b160	62	176	169	226	248	189	148	179
17	214	222	233	b155	64	162	172	218	241	196	148	169
18	200	226	218	b150	62	154	179	211	241	189	140	176
19	193	214	218	b145	61	157	182	214	241	189	146	165
20	179	189	233	b140	59	162	189	203	241	189	146	165
21	179	186	244	b135	59	169	182	203	226	193	140	162
22	182	214	248	b130	57	162	165	203	214	189	148	162
23	196	222	244	b125	55	148	169	196	211	189	148	162
24	200	226	211	b120	52	131	169	196	211	189	148	169
25	179	244	179	b115	54	120	176	196	214	186	148	169
26	169	222	169	113	52	115	186	193	214	176	148	169
27	169	196	179	100	52	131	193	189	203	176	148	162
28	186	196	186	98	59	138	179	182	196	176	146	169
29	169	203	200	94	77	151	169	179	200	179	146	169
30	169	203	214	94	-	159	162	172	196	179	151	169
31	186	-	203	88	-	159	-	186	-	176	157	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	7,210	292	169	233	14,300
November	6,256	244	186	209	12,400
December	6,619	252	169	214	13,100
Calendar year 1939	108,896	532	117	298	216,000
January	4,822	229	88	156	9,560
February	1,871	83	52	65	3,710
March	4,508	179	88	145	8,940
April	5,161	193	151	172	10,200
May	6,188	226	165	200	12,300
June	6,617	263	172	221	13,100
July	5,718	196	176	184	11,300
August	4,770	176	140	154	9,460
September	4,900	179	151	163	9,720
Water year 1939-40	64,640	292	52	177	128,000

b Stage-discharge relation affected by ice.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Osoyoos Lake near Oroville, Wash.

(International gaging station)

Location.- Water-stage recorder, lat. 48°59'15", long. 119°27'15", in lot 1, sec. 8, T. 40 N., R. 27 E., on west shore, 1 mile south of international boundary and 3 miles north of Oroville. Datum of gage is at mean sea level (subject to correction for general adjustment of 1929).

Drainage area.- 3,250 square miles.

Records available.- July 1928 to September 1940.

Extremes.- Maximum elevation during year, 914.90 feet May 15, 16; minimum, 912.88 feet Feb. 27, 28, 29, Mar. 1.
1928-40: Maximum elevation recorded, 917.23 feet Apr. 28, 1934; minimum recorded, 911.21 feet Oct. 14, 1929.

Remarks.- Records excellent. Diversion in Canada for irrigation. Okanogan River is subject to natural regulation in several lakes, and to artificial regulation, in Okanagan Lake as an aid to navigation.

Cooperation.- This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Elevation, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13.98	13.82	13.69	13.50	13.28	12.89	14.25	14.75	14.35	13.50	13.46	13.54
2	13.97	13.82	13.68	13.51	13.24	12.92	14.26	14.75	14.33	13.50	13.46	13.56
3	13.96	13.83	13.66	13.50	13.23	12.95	14.28	14.74	14.30	13.46	13.48	13.57
4	13.96	13.83	13.65	13.48	13.21	13.00	14.30	14.75	14.27	13.43	13.47	13.58
5	13.97	13.82	13.63	13.47	13.19	13.06	14.33	14.78	14.21	13.42	13.47	13.58
6	13.98	13.84	13.63	13.46	13.20	13.10	14.35	14.78	14.15	13.37	13.48	13.60
7	13.99	13.85	13.61	13.45	13.19	13.17	14.39	14.79	14.13	13.35	13.50	13.63
8	14.00	13.87	13.63	13.44	13.16	13.23	14.42	14.78	14.09	13.33	13.50	13.65
9	14.00	13.87	13.64	13.44	13.14	13.28	14.44	14.78	14.06	13.31	13.51	13.66
10	14.00	13.88	13.66	13.43	13.13	13.33	14.47	14.79	14.04	13.29	13.50	13.69
11	14.01	13.88	13.66	13.41	13.12	13.38	14.47	14.83	14.02	13.29	13.50	13.71
12	14.02	13.89	13.64	13.41	13.09	13.44	14.49	14.87	13.98	13.30	13.51	13.72
13	14.02	13.90	13.63	13.41	13.09	13.47	14.54	14.88	13.98	13.29	13.51	13.74
14	14.03	13.91	13.64	13.41	13.07	13.52	14.56	14.87	13.95	13.29	13.50	13.76
15	14.04	13.90	13.66	13.40	13.05	13.57	14.58	14.88	13.93	13.29	13.48	13.78
16	14.02	13.90	13.66	13.41	13.04	13.64	14.59	14.88	13.91	13.31	13.48	13.80
17	14.02	13.89	13.67	13.41	13.04	13.69	14.59	14.83	13.88	13.33	13.47	13.81
18	14.01	13.88	13.66	13.38	13.03	13.74	14.62	14.82	13.86	13.33	13.47	13.82
19	13.99	13.87	13.65	13.39	13.01	13.79	14.63	14.81	13.86	13.33	13.48	13.82
20	13.98	13.87	13.66	13.39	13.00	13.83	14.64	14.78	13.84	13.34	13.49	13.83
21	13.97	13.86	13.66	13.39	12.98	13.86	14.64	14.77	13.80	13.32	13.49	f13.83
22	13.95	13.86	13.65	13.41	12.95	13.90	14.64	14.74	13.75	13.32	13.50	a13.83
23	13.95	13.85	13.63	13.40	12.94	13.93	14.65	14.72	13.72	13.34	13.49	a13.83
24	13.96	13.84	13.63	13.39	12.92	13.97	14.66	14.71	13.70	13.34	13.49	a13.84
25	13.90	13.84	13.62	13.38	12.92	13.99	14.68	14.67	13.70	13.32	13.49	f13.84
26	13.89	13.81	13.61	13.38	12.90	14.04	14.71	14.61	13.67	13.33	13.49	13.84
27	13.88	13.79	13.59	13.37	12.89	14.10	14.74	14.56	13.60	13.36	13.50	13.88
28	13.87	13.77	13.57	13.36	12.89	14.13	14.76	14.50	13.56	13.40	13.51	13.90
29	13.85	13.73	13.55	13.35	12.88	14.15	14.77	14.44	13.56	13.43	13.52	13.91
30	13.84	13.71	13.54	13.33	-	14.18	14.76	14.40	13.52	13.46	13.54	13.92
31	13.82	-	13.52	13.31	-	14.21	-	14.37	-	13.47	13.54	-

a No gage-height record; gage-height interpolated.
f Fragmentary gage-height record.
Note.- Add 900 feet to obtain elevation above mean sea-level. Gage heights are mean for day.

9-238 September 1937 UNITED STATES DEPARTMENT OF THE INTERIOR Geolog ıl Survey

400455 O - 41 - 12

Okanogan River near Tonasket, Wash.

(International gaging station)

Location.- Water-stage recorder, lat. 48°38'00", long. 119°27'50", in lot 3, sec. 8, T. 36 N., R. 27 E., 1,000 feet upstream from Chewilliken Creek and 5⅛ miles south of Tonasket.

Drainage area.- 7,250 square miles.

Records available.- April 1929 to September 1940. May 1911 to September 1925 (equivalent records at site a quarter of a mile upstream from Salmon Creek at Okanogan, published as Okanogan River at Okanogan) in reports of Geological Survey. June 1911 to September 1933 in State Water-Supply Bulletin 5.

Average discharge.- 25 years (1911-25, 1929-40), 2,712 second-feet.

Extremes.- Maximum discharge during year, 7,540 second-feet May 26 (gage height, 10.61 feet); minimum, 164 second-feet Sept. 2.
1911-25, 1929-40: Maximum discharge recorded, 25,400 second-feet Apr. 27, 1934 (gage height, 18.3 feet); minimum recorded, 126 second-feet Sept. 5, 1931 (gage height, 3.43 feet).

Remarks.- Records excellent except those for period of ice effect, which are poor, and those for periods of shifting control and backwater, which are good. Many diversions above station for irrigation. Flow subject to natural regulation in several lakes, and, as an aid to navigation, to artificial regulation in Okanagan Lake. Power plant on Similkameen River affects low flow slightly.

Cooperation.- This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	507	869	990	964	722	702	1,070	3,290	5,150	1,020	427	199
2	535	825	1,070	964	741	665	1,100	3,170	5,620	981	427	182
3	521	825	1,220	940	722	630	1,100	3,420	5,150	921	427	197
4	521	825	*1,320	940	684	614	1,160	3,950	4,850	884	413	199
5	535	825	1,320	940	648	648	1,190	3,950	4,420	831	413	199
6	535	804	*1,420	915	702	630	1,160	3,680	4,150	782	399	208
7	535	804	1,580	869	702	614	1,190	3,550	3,890	738	386	199
8	550	804	1,580	847	702	614	1,220	3,680	3,760	696	386	189
9	581	804	1,500	804	702	614	1,250	3,810	3,640	635	359	203
10	581	892	1,620	702	702	614	1,350	4,230	3,520	635	346	206
11	581	964	1,620	b660	684	597	1,460	5,290	3,400	623	346	208
12	581	940	1,500	b640	684	597	1,500	6,640	3,280	601	334	208
13	565	915	1,460	b630	684	581	1,620	6,290	3,280	580	334	203
14	581	892	1,380	b620	684	597	1,970	5,780	3,280	551	322	203
15	597	892	1,380	b620	665	614	2,640	5,610	3,050	517	322	206
16	665	915	1,350	b620	665	665	2,760	5,450	2,830	551	322	217
17	684	964	1,350	b620	*684	648	2,590	5,450	2,660	542	311	226
18	684	940	1,320	b620	665	648	2,420	5,450	2,460	542	299	234
19	684	940	1,280	b610	648	702	2,540	5,610	2,310	525	288	230
20	665	964	1,250	b610	665	702	2,870	6,120	2,210	525	271	225
21	648	940	1,220	b610	648	684	2,810	6,290	2,160	517	275	256
22	648	915	1,190	b610	648	702	2,760	6,120	2,060	502	311	260
23	684	915	1,190	b610	630	702	2,760	6,460	1,880	504	277	266
24	762	1,070	1,130	b610	702	741	2,890	7,000	1,760	488	273	266
25	825	1,160	1,040	b610	648	741	3,290	7,360	1,610	457	266	273
26	915	1,160	940	b610	630	762	3,680	7,360	1,480	442	250	275
27	869	1,070	869	b620	630	847	3,680	6,460	1,410	427	252	273
28	825	1,040	915	b630	630	915	3,950	5,620	1,320	427	226	299
29	804	1,020	940	665	665	964	3,680	5,150	1,210	427	213	311
30	804	964	940	722	-	1,020	3,420	4,850	1,110	442	206	311
31	915	-	964	741	-	1,040	-	4,700	-	442	203	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	20,387	915	507	658	40,440
November	27,857	1,160	804	929	55,250
December	38,848	1,620	869	1,253	77,050
Calendar year 1939	750,703	11,000	476	2,057	1,489,000
January	22,173	964	610	715	43,980
February	19,586	741	630	675	38,850
March	21,814	1,040	581	704	43,270
April	67,080	3,950	1,070	2,236	133,100
May	161,790	7,360	3,170	5,219	320,900
June	88,910	5,620	1,110	2,964	176,400
July	18,755	1,020	427	605	37,200
August	9,884	427	203	319	19,600
September	6,931	311	182	231	13,750
Water year 1939-40	504,015	7,360	182	1,377	999,800

*Winter-discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.- Shifting-control method used June 24 to July 22. Stage-discharge relation affected by backwater Aug. 15 to Sept. 30.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Similkameen River near Nighthawk, Wash.

(International gaging station)

Location.- Water-stage recorder, lat. 48°59'10", long. 119°37'00", in NW¼ sec. 7, T. 40 N., R. 26 E., about 1¼ miles downstream from Nighthawk and 12 miles upstream from mouth.

Drainage area.- 3,420 square miles.

Records available.- September 1928 to September 1940. May 1911 to September 1928 (mean monthly discharge including that of Oroville-Tonasket irrigation district canal, at site 4 miles upstream from Oroville, published as Similkameen River near Oroville).

Average discharge.- 29 years, 2,091 second-feet.

Extremes.- Maximum discharge during year, 7,550 second-feet May 25 (gage height, 8.74 feet); minimum, 199 second-feet Sept. 12, 27 (gage height, 2.54 feet).
1928-40: Maximum discharge, 27,200 second-feet Apr. 26, 1934 (gage height, 14.96 feet); minimum, 120 second-feet Jan. 6, 1930 (gage height, 2.05 feet).

Remarks.- Records excellent except those for period of ice effect, which are poor. Flow at high stages regulated by natural diversion into and release from Palmer Lake. Small diversions above station for irrigation.

Cooperation.- This station is one of the international gaging stations maintained by the United States under agreement with Canada.

Rating table, water year 1939-40, except period of ice effect (gage height, in feet, and discharge, in second-feet)

2.6	215	3.0	365	3.5	625	4.0	955	5.0	1,870	6.0	3,010	S.0	6,170
2.8	282	3.2	460	3.7	748	4.5	1,380	5.5	2,400	7.0	4,430	S.5	7,150

Discharge, in second-feet, water year October 1939 to September 1940.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	268	528	673	637	523	397	933	2,940	5,610	1,070	465	212
2	264	518	862	625	502	397	941	3,010	5,080	1,030	465	210
3	268	496	919	643	455	406	948	3,550	4,750	955	455	210
4	271	486	955	685	426	421	941	3,690	4,430	941	436	210
5	282	476	*1,030	655	450	421	955	3,550	4,130	897	411	210
6	282	470	1,240	619	486	416	948	3,410	3,830	843	388	215
7	310	460	1,240	567	486	436	955	3,340	3,550	807	370	227
8	339	470	1,160	481	486	440	993	3,410	3,550	769	352	224
9	326	545	1,200	416	476	436	1,070	3,830	3,410	729	335	215
10	314	661	1,340	b380	476	426	1,200	4,590	3,270	704	322	215
11	306	608	1,200	b340	476	416	1,240	6,170	3,200	673	314	207
12	302	573	1,160	b300	470	402	1,290	6,360	3,200	643	298	205
13	306	550	1,070	b280	460	402	1,570	5,790	3,140	619	290	205
14	302	562	993	b270	440	402	2,240	5,430	3,080	602	275	210
15	298	573	993	b260	436	397	2,640	5,250	2,820	596	268	221
16	298	562	955	b260	*421	397	2,400	5,430	2,580	584	264	237
17	294	556	993	b260	411	421	2,240	5,250	2,400	602	257	240
18	294	562	955	b260	411	481	2,180	5,250	2,240	596	253	234
19	294	573	897	b260	426	502	2,580	5,610	2,120	590	246	224
20	294	567	862	b260	426	496	2,640	6,170	2,070	586	243	218
21	306	550	855	b260	416	491	2,580	6,170	2,020	540	237	212
22	339	540	848	b260	402	512	2,460	6,170	1,870	584	230	212
23	431	685	807	b260	402	540	2,640	6,550	1,720	625	230	210
24	534	835	723	b260	397	567	2,880	7,150	1,620	567	227	207
25	613	748	608	b260	397	602	3,340	7,350	1,520	512	227	205
26	579	673	550	b280	397	723	3,480	6,950	1,470	502	218	202
27	518	649	596	b300	393	794	3,550	5,790	1,420	491	218	215
28	486	613	625	b360	397	828	3,550	5,080	1,340	502	218	227
29	476	573	649	476	402	883	3,340	4,750	1,240	507	215	243
30	608	602	643	502	-	905	3,080	4,430	1,160	507	215	282
31	579	-	649	507	-	912	-	4,590	-	481	215	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	11,381	613	264	367	0.107	0.12	22,570
November	17,264	835	460	575	.168	.19	34,240
December	28,250	1,340	550	911	.266	.31	56,030
Calendar year 1939	639,889	10,000	264	1,753	.513	6.97	1,269,000
January	12,183	685	260	393	.115	.13	24,160
February	12,746	523	393	440	.129	.14	25,280
March	16,269	912	397	525	.154	.18	32,270
April	61,804	3,550	933	2,060	.602	.67	122,600
May	157,010	7,350	2,940	5,065	1.48	1.71	311,400
June	83,840	5,610	1,160	2,795	.817	.91	166,300
July	20,628	1,070	481	665	.194	.22	40,920
August	9,157	465	215	295	.086	.10	18,160
September	6,564	282	202	219	.064	.07	13,020
Water year 1939-40	437,096	7,350	202	1,194	.349	4.75	867,000

Peak discharge.- May 11 (7 to 9 p.m.) 6,950 sec.-ft.; May 25 (7 to 8 p.m.) 7,550 sec.-ft.
*Winter-discharge measurement made on this day.
b Stage-discharge relation affected by ice.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Methow River at Twisp, Wash.

Location.- Water-stage recorder, lat. 48°21'40", long. 120°06'50", in sec. 17, T. 33 N., R. 22 E., at highway bridge at Twisp, a quarter of a mile downstream from Twisp River.

Drainage area.- 1,330 square miles.

Records available.- June 1919 to September 1929, October 1933 to September 1940.

Average discharge.- 17 years, 1,159 second-feet.

Extremes.- Maximum discharge during year, 9,020 second-feet May 24 (gage height, 7.57 feet); minimum, 160 second-feet Sept. 23.
1919-29, 1933-40: Maximum discharge observed, 15,200 second-feet Apr. 24, 25, 1934; maximum gage height observed, 10.4 feet June 5, 1921; minimum discharge observed, 134 second-feet Sept. 4, 5, 1926, Sept. 9, 10, 1929 (gage height, 1.42 feet), but may have been less sometime during period of ice effect, Jan. 6 to Mar. 4, 1937.

Remarks.- Records excellent except those for period of shifting control, which are good, and those for periods of ice effect, which are poor. Water diverted above station for irrigation by two canals of Methow Valley Irrigation District, Risley ditch, and many other ditches.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used June 24 to Sept. 30)

1.4	174	2.5	580	4.0	1,930	6.0	5,020
1.7	235	3.0	930	4.5	2,550	7.0	7,460
2.0	330	3.5	1,380	5.0	3,230		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	188	224	251	259	190	235	773	1,990	5,240	874	301	164
2	190	221	251	259	200	235	759	2,050	4,490	801	301	164
3	187	224	251	259	210	236	766	2,230	4,020	787	291	162
4	194	230	251	259	220	235	752	2,360	3,850	745	281	164
5	198	233	248	257	230	235	738	2,290	3,530	703	291	164
6	198	230	248	251	238	238	724	2,170	3,300	661	254	166
7	198	230	254	240	233	248	738	2,170	3,090	610	243	167
8	200	230	265	220	233	246	773	2,290	2,880	562	224	176
9	198	230	284	210	235	246	780	2,620	2,810	514	210	183
10	198	230	298	200	243	243	801	3,830	2,880	504	198	178
11	192	235	291	200	238	240	822	5,940	3,230	467	196	167
12	188	235	278	200	233	240	874	5,470	3,380	435	194	166
13	188	233	272	190	238	238	1,010	4,910	3,380	410	192	167
14	190	235	272	190	233	240	1,280	4,490	2,950	410	190	167
15	194	233	278	190	228	246	1,380	4,390	2,620	410	188	169
16	198	230	294	190	243	254	1,380	4,200	2,420	388	187	167
17	198	226	288	190	240	268	1,330	4,110	2,170	388	185	166
18	198	228	278	190	235	281	1,430	4,490	2,050	392	183	167
19	200	226	281	190	230	288	1,590	5,470	2,110	370	181	171
20	202	226	275	190	230	298	1,590	6,180	2,110	358	178	167
21	208	226	275	190	226	312	1,590	6,180	1,870	358	174	164
22	214	230	262	190	230	330	1,640	6,680	1,700	370	178	162
23	214	248	262	190	235	334	1,930	7,720	1,540	358	176	164
24	214	254	238	190	228	354	2,110	8,500	1,430	338	174	166
25	217	251	220	190	233	397	2,110	8,500	1,430	323	171	167
26	226	248	220	190	233	440	2,170	6,300	1,380	312	169	178
27	226	246	230	190	230	470	2,290	4,910	1,240	330	169	221
28	224	243	230	200	235	504	2,230	4,200	1,130	346	171	240
29	226	246	240	200	235	628	2,170	4,020	1,020	338	167	246
30	224	251	254	200	-	731	2,050	4,020	938	319	166	224
31	224	-	254	200	-	766	-	5,020	-	301	166	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	6,314	226	187	204	12,520
November	7,032	254	221	234	13,950
December	8,093	298	220	261	16,050
Calendar year 1939	278,992	4,800	181	764	553,300
January	6,464	259	190	209	12,820
February	6,665	243	190	230	13,220
March	10,258	766	235	331	20,350
April	40,580	2,290	724	1,353	80,490
May	139,700	8,500	1,990	4,506	277,100
June	76,188	5,240	938	2,540	151,100
July	14,502	874	301	468	28,760
August	6,349	301	166	205	12,590
September	5,294	246	162	176	10,500
Water year 1939-40	327,439	8,500	162	895	649,400

Note.- Stage-discharge relation affected by ice Dec. 25-29, Jan. 7 to Feb. 5.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Stehekin River at Stehekin, Wash.

Location.- Water-stage recorder, lat. 48°19'50", long. 120°41'40", in SE¼ sec. 26, T. 33 N., R. 17 E., 1,200 feet upstream from Boulder Creek and 2 miles upstream from Lake Chelan and Stehekin.

Drainage area.- 372 square miles.

Records available.- October 1910 to October 1915 and January 1927 to September 1940 (including flow of Boulder Creek).

Average discharge.- 18 years, 1,347 second-feet.

Extremes.- Maximum discharge during year, 7,990 second-feet May 23, 24 (gage height, 25.1 feet); minimum, 235 second-feet Feb. 2 (gage height, 19.07 feet).
1910-15, 1927-40: Maximum discharge, 12,900 second-feet June 2, 1936 (gage height, 27.18 feet), from rating curve extended above 8,500 second-feet; minimum, 56 second-feet Jan. 12, 1930.

Remarks.- Records good except those for periods of ice effect, which are poor, and those for periods of no gage-height record, which are fair. At very high stages a small part of flow is diverted above gage by natural slough; quantity diverted included in daily discharge.

Cooperation.- Gage-height record collected in cooperation with Washington Water Power Co., who furnished 7 discharge measurements.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

19.1	243	19.7	482	21.0	1,490	23.0	4,210
19.3	306	20.0	656	21.5	2,040	24.0	5,970
19.5	386	20.5	1,020	22.0	2,690	25.0	7,730

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	328	503	564	a400	262	295	1,340	1,860	4,210	2,100	843	582
2	321	467	600	a360	251	306	1,290	2,100	3,650	2,160	792	553
3	302	442	582	b360	b240	302	1,200	2,220	3,650	1,920	785	582
4	416	404	736	b340	b250	309	1,160	2,220	3,420	f1,700	814	525
5	462	391	814	b310	268	298	1,110	2,040	3,120	a1,630	851	462
6	352	378	814	b290	268	317	1,080	2,040	2,970	a1,590	936	498
7	321	1,070	764	b280	265	336	1,140	2,100	a2,830	a1,550	1,020	553
8	298	1,030	778	b280	262	328	1,200	2,360	a2,950	f1,540	985	619
9	306	743	736	b280	261	317	1,290	3,120	a3,200	1,490	928	f656
10	344	663	750	b290	332	313	1,340	5,220	a3,780	1,440	821	a750
11	313	669	701	302	298	309	1,340	5,560	4,210	a1,630	807	a850
12	317	644	638	*302	288	306	1,490	4,540	4,540	a1,910	866	a920
13	317	600	607	302	298	302	1,860	3,730	4,370	a2,120	729	a930
14	309	559	594	295	286	306	2,290	3,500	3,420	a1,870	675	a730
15	309	514	619	295	285	361	2,160	3,340	3,040	f1,700	663	a580
16	291	493	631	298	295	442	1,980	3,340	2,900	1,700	701	f503
17	309	477	613	296	291	472	1,860	3,500	2,690	f1,540	743	488
18	295	452	564	291	265	488	2,290	3,970	3,040	1,340	757	477
19	404	427	553	278	281	514	2,290	4,880	3,730	1,290	851	404
20	516	413	536	b270	281	588	2,160	4,860	3,340	1,450	936	378
21	1,290	442	514	b260	*275	695	2,100	4,880	2,690	a1,350	836	404
22	1,290	631	488	b250	281	778	2,160	5,560	2,290	f1,290	675	488
23	1,490	541	472	b250	285	814	2,480	6,830	2,360	1,240	656	498
24	977	498	b400	b250	281	1,060	2,550	7,020	2,760	f1,160	743	498
25	695	472	b400	b250	281	1,240	2,480	5,730	3,120	f1,090	736	472
26	582	457	422	b260	281	1,340	2,620	4,050	2,620	1,010	631	498
27	519	432	413	268	278	1,440	2,550	3,270	2,040	1,150	644	952
28	1,160	422	413	278	285	1,390	2,420	3,040	1,980	1,020	675	559
29	736	427	408	265	281	1,390	2,160	3,200	2,040	960	607	514
30	619	625	a390	265	-	1,490	1,920	3,650	2,040	985	650	482
31	541	-	a390	262	-	1,440	-	5,220	-	873	644	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	16,729	1,490	291	540	1.45	1.67	33,180
November	16,286	1,070	378	543	1.46	1.63	32,300
December	17,904	814	390	578	1.55	1.79	35,510
Calendar year 1939	449,534	7,050	207	1,232	3.31	44.93	891,700
January	8,999	400	250	290	.780	.90	17,850
February	8,097	332	240	279	.750	.81	16,060
March	20,286	1,490	295	654	1.76	2.03	40,240
April	55,310	2,620	1,080	1,844	4.96	5.53	109,700
May	118,970	7,020	1,860	3,838	10.3	11.89	236,000
June	93,000	4,540	1,980	3,100	8.33	9.30	184,500
July	45,798	2,160	873	1,477	3.97	4.58	90,840
August	24,000	1,020	607	774	2.08	2.40	47,600
September	17,405	952	378	580	1.56	1.74	34,520
Water year 1939-40	442,784	7,020	240	1,210	3.25	44.27	878,300

Peak discharge.- May 10 (10 to 11 p.m.) 6,450 sec.-ft.; May 19 (11:50 p.m.) 5,390 sec.-ft.; May 23 (11 to 12 p.m.) 7,990 sec.-ft.; June 12 (10:30 to 11 p.m.) 5,220 sec.-ft.

*Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of records for Railroad Creek at Lucerne.

b Stage-discharge relation affected by ice.

f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

Lake Chelan at Chelan, Wash.

Location.- Water-stage recorder, lat. 47°50'00", long. 120°03'40", in lot 3, sec. 15, T. 27 N., R. 22 E., 2 miles west of Chelan. Datum of gage is at mean sea level (general adjustment of 1912).

Drainage area.- 950 square miles.

Records available.- September 1897 to December 1899, January to June 1905, December 1910 to September 1940.

Extremes.- Maximum elevation during year, 1,100.0 feet June 19; minimum, 1,083.0 feet Mar. 19, 20, 21, 22.
1897-99, 1905, 1910-40: Maximum elevation, 1,100.0 feet July 19, 1937, July 1, 8, 1938, July 28, 1939, June 19, 1940; minimum, 1,076.78 feet Jan. 27, 28, Dec. 2, 3, 1898.

Remarks.- Records excellent. Reservoir is formed on natural lake by a concrete dam completed in 1927. Regulation between elevations 1,079 feet and 1,100 feet above mean sea level allowed, by stipulation of Federal Power Commission. Usable capacity, 676,100 acre-feet between those elevations. Water is used for power development. Elevation of lake maintained between elevation 1,092 and 1,100 feet above mean sea level during period Aug. 16 to Sept. 15 for scenic effect and recreational purposes.

Cooperation.- Gage-height record collected in cooperation with Washington Water Power Co.

Elevation, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	94.74	91.58	88.81	86.58	84.07	83.40	83.59	86.77	96.36	99.87	99.03	96.41
2	94.63	91.49	88.73	86.52	84.03	83.39	83.59	86.91	96.71	99.93	98.92	96.37
3	94.52	91.39	88.63	86.41	83.99	83.38	83.60	87.04	97.05	99.89	98.84	96.32
4	94.40	91.27	88.55	86.32	83.97	83.39	83.62	87.21	97.37	99.86	98.73	96.22
5	94.31	91.16	88.48	86.23	83.94	83.38	83.66	87.37	97.60	99.90	98.66	96.10
6	94.20	91.05	88.40	86.13	83.94	83.31	83.67	87.50	97.82	99.85	98.61	95.97
7	94.07	90.97	88.33	86.03	83.89	83.31	83.72	87.62	98.02	99.81	98.57	95.89
8	93.95	90.97	88.32	85.90	83.84	83.29	83.81	87.77	98.16	99.78	98.49	95.81
9	93.82	90.87	88.28	85.79	83.81	83.28	83.88	87.93	98.33	99.76	98.43	95.72
10	93.73	90.77	88.28	85.69	83.81	83.31	83.91	88.22	98.54	99.74	98.34	95.67
11	93.59	90.68	88.24	85.57	83.79	83.33	83.92	88.67	98.80	99.73	98.22	95.59
12	93.46	90.60	88.12	85.46	83.77	83.26	83.99	89.10	99.08	99.76	98.19	95.52
13	93.36	90.51	88.02	85.34	83.74	83.20	84.08	89.38	99.35	99.82	98.09	95.48
14	93.24	90.42	87.97	85.23	83.72	83.14	84.22	89.65	99.48	99.77	97.98	95.40
15	93.11	90.31	87.97	85.14	83.69	83.08	84.39	89.93	99.60	99.76	97.87	95.31
16	92.99	90.22	87.97	85.05	83.66	83.06	84.48	90.17	99.69	99.75	97.75	95.22
17	92.90	90.11	87.93	84.98	83.68	83.04	84.59	90.42	99.75	99.76	97.65	95.13
18	92.77	90.01	87.81	84.91	83.68	83.04	84.72	90.72	99.83	99.72	97.58	95.04
19	92.66	89.93	87.73	84.86	83.65	83.02	84.85	91.13	99.96	99.68	97.49	94.94
20	92.54	89.82	87.68	84.83	83.63	83.01	85.00	91.55	99.82	99.65	97.41	94.79
21	92.46	89.71	87.59	84.79	83.58	83.01	85.11	91.92	99.73	99.63	97.35	94.69
22	92.42	89.64	87.49	84.73	83.53	83.00	85.25	92.37	99.71	99.59	97.28	94.58
23	92.39	89.57	87.39	84.63	83.50	83.02	85.45	92.89	99.76	99.56	97.17	94.47
24	92.30	89.47	87.26	84.52	83.48	83.07	85.62	93.52	99.81	99.56	97.09	94.41
25	92.19	89.36	87.17	84.43	83.49	83.12	85.80	94.13	99.90	99.48	97.03	94.31
26	92.10	89.26	87.08	84.37	83.49	83.18	86.00	94.50	99.82	99.36	96.94	94.21
27	92.02	89.15	86.97	84.28	83.46	83.23	86.20	94.78	99.77	99.32	96.83	94.19
28	91.94	89.04	86.89	84.24	83.46	83.26	86.42	95.02	99.77	99.26	96.74	94.11
29	91.87	88.94	86.82	84.19	83.42	83.33	86.54	95.26	99.80	99.22	96.64	94.05
30	91.78	88.90	86.73	84.15	-	83.43	86.64	95.56	99.83	99.16	96.57	93.98
31	91.68	-	86.65	84.11	-	83.50	-	95.96	-	99.08	96.51	-

Note.- Add 1,000 feet to obtain elevation above mean sea-level.

9-238 September 1937

UNITED STATES DEPARTMENT OF THE INTERIOR
Geolog. al Survey

Chelan River at Chelan, Wash.

Location.- Water-stage recorder, lat. 47°50'05", long. 120°00'40", in SE¼ sec. 12, T. 27 N., R. 22 E., in forebay upstream from control dam at Chelan. Datum of gage is at mean sea level (subject to correction for general adjustment of 1929).

Drainage area.- 950 square miles.

Records available.- October 1903 to September 1940.

Average discharge.- 37 years, 2,037 second-feet (adjusted).

Extremes.- Maximum daily discharge during year, 7,200 second-feet (regulated) June 20; no flow Mar. 10, result of regulation.
1903-40: Maximum daily discharge, 12,800 second-feet June 3, 1936; no flow part of day Jan. 30, 1917, when lake outlet was blocked with ice, and at other times because of artificial regulation.

Remarks.- Records excellent. Unmeasured quantity that is diverted for irrigation above station is small percentage of total run-off. Washington Water Power Co. diverts water at Chelan for power and irrigation, which quantity is included in records of daily discharge. Flow regulated by power plant and storage in Chelan Lake.

Cooperation.- Records furnished by Washington Water Power Co.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	†2,150	2,230	2,210	2,180	984	1,070	1,520	864	291	2,310	2,290	†1,810
2	2,190	2,220	2,200	2,150	992	624	1,480	768	†174	2,940	2,290	1,780
3	2,170	2,230	†2,210	2,200	990	†412	1,390	854	434	2,790	2,290	2,000
4	2,160	2,230	2,210	2,200	†976	1,290	1,440	618	512	2,170	†1,940	2,030
5	2,160	†2,220	2,210	2,150	1,130	1,250	1,410	†248	592	2,250	2,210	2,120
6	2,150	2,220	2,210	2,160	1,230	1,150	975	868	856	2,300	2,290	2,100
7	2,150	2,210	2,210	†2,180	1,400	1,140	†488	816	1,030	†2,290	2,250	2,120
8	†2,120	2,220	2,190	2,190	1,100	1,010	1,050	810	890	2,300	2,290	†2,000
9	2,120	2,220	2,210	2,190	980	18	1,290	964	†460	2,300	2,290	2,130
10	2,130	2,220	†2,180	2,190	876	†0	1,220	956	1,420	2,300	2,260	2,090
11	2,140	2,220	2,140	2,190	†480	1,180	1,130	320	1,760	2,300	†2,280	2,150
12	2,190	†2,220	2,200	2,190	1,050	1,520	1,010	†198	2,260	2,300	2,280	2,220
13	2,240	2,220	2,210	2,140	1,110	1,550	620	866	2,460	2,080	2,280	2,220
14	2,240	2,230	2,200	†1,850	972	1,630	†388	898	3,160	†2,300	2,250	2,260
15	†2,240	2,230	2,200	2,030	960	1,500	992	775	3,000	2,300	2,190	†2,080
16	2,240	2,230	2,200	1,820	922	1,070	988	510	†2,990	2,210	2,220	1,970
17	2,240	2,230	†2,120	1,530	848	†520	852	508	2,580	2,150	2,190	2,080
18	2,240	2,230	2,100	1,140	†378	1,250	822	278	2,310	2,300	†2,120	2,100
19	2,220	†2,220	2,190	1,200	1,080	1,260	918	†154	5,660	2,300	2,190	2,060
20	2,230	2,220	2,220	1,020	1,060	1,240	426	487	7,200	2,300	2,240	2,060
21	2,230	2,220	2,200	†768	1,210	1,240	†272	528	3,970	†2,230	2,190	2,270
22	†2,230	2,220	2,200	1,810	1,080	1,290	766	547	2,520	2,300	2,150	†2,190
23	2,210	2,220	2,200	1,980	920	888	1,040	644	†2,290	2,310	2,150	2,150
24	2,220	2,220	†2,200	2,020	798	†462	720	665	2,290	2,310	2,150	2,230
25	2,220	2,220	2,080	2,000	†376	1,340	672	318	5,360	2,300	†2,170	2,220
26	2,220	†2,220	2,140	2,180	1,140	1,520	624	†160	3,670	2,230	2,150	2,140
27	2,220	2,220	2,210	1,910	1,140	1,530	336	715	2,500	2,230	2,100	2,030
28	2,220	2,210	2,190	†958	1,210	1,390	†238	672	2,310	†2,250	2,200	2,210
29	†2,220	2,210	2,210	966	1,040	1,350	1,080	666	2,310	2,160	2,090	†1,700
30	2,220	2,200	2,210	976	-	1,020	1,310	314	†2,310	2,230	2,130	2,070
31	2,220	-	†2,210	972	-	†540	-	506	-	2,290	2,080	-

Month	Observed: Discharge in second-feet: Maximum	Minimum	Mean	Observed: Run-off in acre-feet	Change in contents in Lake Chelan (acre-feet)	Adjusted for change in lake contents: Run-off in acre-feet	Discharge in second-feet: Mean	Per square mile	Run-off in inches
October	2,240	2,120	2,198	135,200	-99,820	35,380	575	0.605	0.70
November	2,230	2,200	2,221	132,200	-90,170	42,030	706	.743	.83
December	2,220	2,080	2,189	134,600	-69,940	64,660	1,052	1.11	1.28
Calendar year 1939	6,500	130	1,579	1,143,000	+39,670	1,183,000	1,634	1.72	23.35
January	2,200	768	1,788	110,000	-81,430	28,570	465	.489	.56
February	1,400	376	980	56,390	-21,940	34,450	599	.631	.68
March	1,630	0	1,073	65,960	+2,540	68,500	1,114	1.17	1.35
April	1,520	238	916	54,480	+97,630	152,100	2,556	2.69	3.00
May	964	154	597	36,680	+300,600	337,308	5,486	5.77	6.65
June	7,200	174	2,319	138,000	+126,000	264,000	4,437	4.67	5.21
July	2,940	2,080	2,308	141,900	-25,580	116,300	1,891	1.99	2.29
August	2,290	1,940	2,200	135,300	-85,130	50,170	816	859	.99
September	2,270	1,700	2,086	124,100	-80,520	43,580	732	.771	.86
Water year 1939-40	7,200	0	1,742	1,265,000	-27,760	1,237,000	1,704	1.79	24.40

†Sunday.
Note.- Discharges are combined flows of river and power conduit.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
10'609-0 U.S. GOVERNMENT PRINTING OFFICE 1936

Railroad Creek at Lucerne, Wash.

Location.- Water-stage recorder, lat. 48°11'40", long. 120°35'50", in sec. 9, T. 31 N., R. 18 E., half a mile upstream from mouth and half a mile southwest of Lucerne.

Drainage area.- 64 square miles.

Records available.- December 1910 to June 1913, January 1927 to September 1940.

Average discharge.- 13 years (1927-40), 192 second-feet.

Extremes.- Maximum discharge during year, 1,250 second-feet May 23, 24 (gage height, 4.43 feet); minimum, 23 second-feet Feb. 2, 21, 22, but may have been less during periods of ice effect.

1910-13, 1927-40: Maximum discharge, 1,910 second-feet June 8, 1927 (gage height, 5.3 feet); minimum, less than 9.4 second-feet (occurred sometime during period of ice effect, Jan. 15-25, 1930).

Remarks.- Records fair except those for periods of ice effect, which are poor. No diversion or regulation.

Cooperation.- Water-stage recorder inspected and results of 7 discharge measurements furnished by Washington Water Power Co.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used June 8 to July 6)

2.7	31	3.2	172	3.8	489
2.8	48	3.4	256	4.0	660
3.0	97	3.6	359	4.4	1,200

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	72	75	54	36	33	136	236	670	383	144	97
2	56	65	77	52	28	34	132	256	536	395	136	91
3	52	61	72	b47	b26	33	132	271	504	365	132	91
4	58	58	72	b42	b28	31	132	271	504	321	136	83
5	67	54	77	b38	b35	33	128	256	468	301	132	75
6	61	54	77	b35	37	33	128	241	440	271	132	72
7	50	75	77	b33	37	34	128	241	413	256	140	75
8	46	114	94	b31	37	34	136	261	395	256	144	83
9	44	94	86	b31	37	34	140	321	407	251	136	97
10	44	85	91	b32	4e	31	140	454	468	251	124	110
11	44	77	83	b34	42	33	140	568	604	261	114	121
12	42	75	72	b37	41	31	152	482	721	301	132	136
13	44	72	65	*b41	41	31	192	401	765	326	124	140
14	42	67	65	b43	39	31	228	389	577	296	114	114
15	41	63	75	44	39	37	224	383	504	276	110	100
16	41	61	83	44	39	44	220	389	489	276	107	88
17	41	61	77	44	39	46	216	395	454	251	107	83
18	39	58	67	44	37	50	241	419	475	228	114	77
19	39	54	65	41	36	50	256	560	560	212	117	70
20	41	52	61	b38	*34	58	241	613	586	224	124	67
21	88	56	61	b38	33	67	232	595	482	236	132	65
22	132	70	54	b38	34	75	241	743	447	212	114	72
23	152	70	b48	b38	34	77	286	1,060	426	204	104	75
24	128	65	b45	b38	33	91	306	1,130	440	204	104	77
25	94	51	b47	b39	33	107	301	1,030	475	188	110	75
26	80	56	b50	b41	34	121	301	613	489	184	110	83
27	67	54	52	42	33	128	306	482	426	188	110	156
28	110	52	54	42	33	124	296	440	389	184	104	124
29	104	52	52	41	31	124	276	447	389	164	104	94
30	88	72	52	39	-	140	251	489	389	160	104	86
31	77	-	52	39	-	136	-	765	-	152	104	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	2,068	152	39	66.7	1.04	1.20	4,100
November	1,978	114	52	65.9	1.03	1.15	3,920
December	2,078	94	45	67.0	1.05	1.21	4,120
Calendar year 1939	60,132	1,060	26	165	2.58	34.91	119,300
January	1,240	54	31	40.0	.625	.72	2,460
February	1,034	48	26	35.7	.558	.60	2,050
March	1,931	140	31	62.3	.973	1.12	3,830
April	6,238	306	128	208	3.25	3.62	12,370
May	15,201	1,130	236	490	7.66	8.83	30,150
June	14,892	765	389	496	7.75	8.65	29,540
July	7,777	395	152	251	3.92	4.52	15,430
August	3,719	144	104	120	1.88	2.16	7,380
September	2,777	156	65	92.6	1.45	1.61	5,510
Water year 1939-40	60,933	1,130	26	166	2.59	35.39	120,900

Peak discharge.- May 23 (8 to 9:30 p.m., 11:30 to 12 p.m.) 1,250 sec.-ft.; May 24 (12 p.m. to 1 a.m.) 1,250 sec.-ft.; May 31 (12 m. to 2 p.m.) 862 sec.-ft.; June 13 (2 to 4:30 a.m.) 901 sec.-ft.

* Winter discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Wenatchee Lake near Plain, Wash.

Location.- Water-stage recorder, lat. 47°49'50", long. 120°46'30", in sec. 19, T. 27 N., R. 17 E., on north shore of lake, 2⅝ miles upstream from outlet, 7½ miles northwest of Plain, and 33 miles upstream from Leavenworth. Datum of gage is 1,860.00 feet above mean sea level (subject to correction for general adjustment of 1929). Gage readings have been reduced to elevations above mean sea level.

Drainage area.- 277 square miles.

Records available.- January 1932 to September 1940.

Extremes.- Maximum elevation during year, 1,874.46 feet May 24; minimum, 1,869.62 feet Sept. 21, 22.
1932-40: Maximum elevation recorded, 1,876.57 feet June 16, 1933; minimum, 1,869.27 feet Dec. 1, 1936.

Remarks.- Records excellent. No diversion or regulation.

Elevation, in feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69.78	70.42	70.79	70.29	69.97	70.06	71.55	71.73	73.12	71.15	70.07	69.78
2	69.76	70.33	70.85	70.26	69.95	70.10	71.49	71.82	f72.83	71.11	70.05	69.77
3	69.73	70.25	70.88	70.22	69.96	70.12	71.41	72.02	-	71.08	f70.03	69.75
4	69.76	70.24	70.81	70.19	69.97	70.15	71.32	72.04	-	70.99	f70.01	69.73
5	70.02	70.21	70.82	70.16	69.97	70.16	71.24	72.01	-	70.89	70.01	69.70
6	70.06	70.18	70.79	70.14	70.02	70.16	71.16	71.92	f72.16	70.80	70.02	69.70
7	70.02	70.31	70.78	70.10	70.02	70.22	71.15	71.86	72.07	70.75	70.03	69.70
8	69.96	70.76	70.90	70.07	70.00	70.24	71.22	71.92	71.96	70.71	70.05	69.71
9	69.93	70.84	71.16	70.05	70.03	70.23	71.30	72.21	71.99	70.66	70.05	69.74
10	69.88	70.76	71.19	70.03	70.16	70.22	71.36	72.98	72.15	70.61	70.00	69.78
11	69.87	70.76	71.26	69.99	70.19	70.18	71.37	73.72	72.39	70.58	69.98	69.82
12	69.85	70.88	71.14	69.98	70.17	70.15	71.42	73.66	72.60	70.65	69.97	69.86
13	69.85	70.86	71.00	69.97	70.17	70.13	71.61	73.24	72.74	70.70	69.92	69.93
14	69.84	70.78	70.92	69.95	70.16	70.12	71.91	72.94	72.50	70.69	69.88	69.90
15	69.82	70.69	70.88	69.94	70.12	70.13	71.99	72.81	72.22	70.64	69.85	69.85
16	69.84	70.62	70.93	69.94	70.12	70.24	71.93	72.76	72.09	70.62	69.84	69.81
17	69.85	70.54	70.94	69.94	70.12	70.38	71.81	72.74	71.94	70.54	69.85	69.77
18	69.85	70.49	70.88	69.94	70.10	70.43	71.86	72.84	71.92	70.44	69.86	69.73
19	69.89	70.45	70.80	69.93	70.09	70.47	72.00	73.14	72.09	70.35	69.87	69.68
20	70.02	70.38	70.74	69.91	70.07	70.52	71.93	73.33	72.10	70.31	69.88	69.65
21	70.11	70.29	70.68	69.90	70.05	70.60	71.84	73.32	71.91	70.39	69.88	69.64
22	70.19	70.44	70.62	69.90	70.04	70.70	71.80	73.58	71.70	70.33	69.85	69.63
23	70.24	70.48	70.55	69.89	70.04	70.78	72.02	74.03	71.58	70.27	69.82	69.64
24	70.35	70.41	70.47	69.89	70.04	70.91	72.32	74.40	71.59	70.21	69.81	69.67
25	70.33	70.33	70.42	69.87	70.05	71.13	72.27	74.25	71.67	70.16	69.81	69.68
26	70.30	70.27	70.37	69.89	70.05	71.27	72.22	73.56	71.69	70.12	69.81	69.69
27	70.26	70.21	70.33	69.91	70.04	71.41	72.14	72.91	71.49	70.14	69.79	69.81
28	70.41	70.17	70.32	69.93	70.06	71.50	72.05	72.53	71.32	70.16	69.79	69.94
29	70.63	70.12	70.32	69.94	70.05	71.51	71.97	72.42	71.23	70.13	69.80	-
30	70.63	70.42	70.31	69.96	-	71.58	71.80	72.57	71.19	70.12	69.80	-
31	70.53	-	70.31	69.97	-	71.62	-	73.02	-	70.10	69.80	-

f Fragmentary gage-height record.
Note.- Add 1,e00 feet to obtain elevation above mean sea-level. Gage heights are mean for day.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geolog al Survey

Wenatchee River below Wenatchee Lake, Wash.

Location.- Water-stage recorder, lat. 47°49'50", long. 120°46'30", in sec. 19, T. 27 N., R. 17 E., on north shore of Wenatchee Lake, 2¾ miles upstream from outlet, 7⅞ miles northwest of Plain, and 33 miles upstream from Leavenworth. Datum of gage is 1,860.00 feet above mean sea level (subject to correction for general adjustment of 1929). Gage readings have been reduced to elevations above mean sea level. Discharge measurements made at highway bridge half a mile downstream from lake outlet.

Drainage area.- 277 square miles.

Records available.- January 1932 to September 1940.

Extremes.- Maximum discharge during year, 5,690 second-feet May 24 (elevation of lake surface, 1,874.46 feet); minimum, 150 second-feet Oct. 3, 4.
1932-40: Maximum discharge recorded, 8,310 second-feet June 16, 1933 (elevation of lake surface, 1,876.57 feet); minimum, 134 second-feet Dec. 1, 1936 (elevation of lake surface, 1,869.27 feet).

Remarks.- Records good. No diversion above station. Flow subject to natural regulation in Wenatchee Lake.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1 to Nov. 28, Dec. 8-11)

Oct. 1 to Dec. 7				Dec. 8 to Sept. 30					
1,869.4	164	1,870.4	719	1,869.6	203	1,870.6	790	1,872.0	2,270
1,869.6	242	1,870.6	890	1,869.8	280	1,870.8	970	1,872.5	2,870
1,869.8	332	1,870.8	1,070	1,870.0	380	1,871.0	1,170	1,873.0	3,550
1,870.0	441	1,871.0	1,270	1,870.2	497	1,871.3	1,480	1,874.0	5,000
1,870.2	570			1,870.4	634	1,871.7	1,920		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	168	599	1,060	556	364	414	1,760	1,950	3,720	1,320	419	272
2	160	543	1,120	537	354	436	1,690	2,050	f3,510	1,280	408	267
3	153	491	1,150	510	359	448	1,600	2,290	a3,100	1,250	f397	259
4	168	491	1,080	491	364	466	1,500	2,320	a2,880	1,160	f386	251
5	272	472	1,090	473	364	473	1,410	2,280	a2,670	1,060	386	238
6	294	460	1,060	460	391	473	1,330	2,170	f2,460	970	391	238
7	281	543	1,050	436	391	510	1,320	2,100	2,350	925	397	238
8	255	908	1,170	419	380	523	1,390	2,170	2,220	889	408	242
9	246	989	1,410	408	397	517	1,480	2,520	2,260	844	408	255
10	230	917	1,410	397	473	510	1,550	3,520	2,450	799	380	272
11	226	926	1,460	375	491	485	1,560	4,580	2,740	774	370	290
12	222	1,040	1,310	370	479	466	1,610	4,490	3,000	835	364	309
13	226	1,020	1,170	364	479	454	1,820	3,890	3,190	e80	338	344
14	222	962	1,090	354	473	448	2,160	3,470	2,870	871	318	328
15	218	890	1,050	349	448	454	2,260	3,280	2,530	826	304	304
16	230	827	1,100	349	448	523	2,190	3,210	2,380	808	299	285
17	234	768	1,110	349	448	620	2,040	3,190	2,200	742	304	267
18	238	735	1,050	349	436	657	2,100	3,330	2,170	664	309	251
19	259	704	970	344	430	687	2,270	3,750	2,380	598	314	231
20	318	657	916	333	419	726	2,190	4,010	2,390	570	318	220
21	368	599	862	328	408	790	2,080	4,000	2,160	627	318	217
22	418	711	808	328	402	880	2,030	4,370	1,920	584	304	214
23	447	751	750	323	402	952	2,290	5,040	1,790	543	290	217
24	523	704	687	323	402	1,080	2,650	5,600	1,800	504	285	228
25	516	642	649	314	408	1,300	2,590	5,380	1,890	473	285	231
26	497	606	613	323	408	1,450	2,530	4,340	1,910	448	285	234
27	478	570	584	333	402	1,600	2,440	3,420	1,690	460	276	285
28	577	543	577	344	414	1,700	2,330	2,910	1,500	473	276	f349
29	751	516	577	349	408	1,710	2,230	2,770	1,400	454	280	a325
30	751	735	570	359	-	1,790	2,030	2,960	1,360	448	280	a300
31	680	-	570	364	-	1,830	-	3,580	-	436	280	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	10,626	751	153	343	1.24	1.43	21,080
November	21,319	1,040	460	711	2.57	2.85	42,290
December	30,073	1,460	570	970	3.50	4.04	59,650
Calendar year 1939	428,554	5,930	153	1,174	4.24	57.55	850,100
January	11,911	556	314	384	1.39	1.60	23,630
February	12,042	491	354	415	1.50	1.62	23,880
March	25,372	1,830	414	818	2.95	3.41	50,320
April	58,430	2,650	1,320	1,948	7.03	7.84	115,900
May	104,940	5,600	1,950	3,385	12.2	14.09	208,100
June	70,690	3,720	1,360	2,356	8.51	9.49	140,200
July	23,515	1,320	436	759	2.74	3.16	46,640
August	10,377	419	276	335	1.21	1.39	20,580
September	7,961	349	214	265	.957	1.07	15,790
Water year 1939-40	387,256	5,600	153	1,058	3.82	52.00	768,100

a No gage-height record; discharge interpolated or computed on basis of records for station at Plain and Chiwawa River near Plain.
f Gage-height partly estimated.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Wenatchee River at Plain, Wash.

Location.- Water-stage recorder, lat. 47°45'50", long. 120°39'30", in lot 8, sec. 12, T. 26 N., R. 17 E., at Plain, a quarter of a mile downstream from Beaver Creek, 7½ miles downstream from Nason Creek, and 12 miles north of Leavenworth. Datum of gage is 1,805 feet above mean sea level (from river-profile map).

Drainage area.- 591 square miles.

Records available.- November 1910 to September 1929, and August 1931 to September 1940 in reports of Geological Survey. August 1904 to September 1933 (monthly discharge), in State Water-Supply Bulletin 5.

Average discharge.- 36 years (1904-40), 2,198 second-feet.

Extremes.- Maximum discharge during year, 8,770 second-feet May 24 (gage height, 7.72 feet); minimum, 312 second-feet Oct. 4 (gage height, 1.63 feet).
1910-29, 1931-40: Maximum discharge observed, 20,800 second-feet Dec. 13, 1921 (gage height, 11.8 feet, site and datum then in use); minimum discharge, 191 second-feet Dec. 1, 1936 (gage height, 1.34 feet).

Remarks.- Records excellent. Wenatchee Park Land & Irrigation Co. diverts a maximum of about 12 second-feet from Chiwawa River during irrigation seasons. Natural regulation in Wenatchee Lake.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

1.7	340	2.7	960	4.0	2,260	6.0	5,310
1.9	435	3.0	1,200	4.5	2,920	6.5	6,220
2.1	545	3.3	1,470	5.0	3,650	7.0	7,200
2.4	740	3.6	1,780	5.5	4,460	7.5	8,270

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	340	691	1,490	944	587	684	2,720	3,400	5,940	2,070	705	415
2	336	624	1,570	896	575	733	2,610	3,670	5,290	2,070	670	410
3	324	575	1,570	852	581	754	2,470	3,920	4,970	1,990	644	405
4	340	528	1,430	824	593	768	2,340	3,940	4,830	1,840	618	395
5	563	518	1,430	796	599	796	2,210	3,860	4,490	1,710	605	367
6	518	518	1,420	761	644	782	2,110	3,670	4,180	1,570	612	354
7	474	650	1,400	733	650	824	2,130	3,640	4,100	1,480	618	354
8	430	1,100	1,670	698	638	866	2,310	3,790	3,810	1,430	618	358
9	405	1,060	2,060	684	664	852	2,440	4,380	3,890	1,380	612	372
10	390	992	2,050	677	845	817	2,520	5,870	4,160	1,300	581	400
11	367	1,040	2,170	624	845	789	2,520	7,330	4,720	1,270	551	425
12	344	1,230	1,900	624	803	761	2,650	7,080	5,000	1,380	557	452
13	340	1,170	1,700	618	796	740	3,050	6,200	5,290	1,430	534	506
14	328	1,080	1,600	599	768	726	3,620	5,720	4,730	1,370	501	490
15	320	992	1,570	593	726	747	3,710	5,470	4,160	1,300	484	457
16	316	920	1,740	587	726	912	3,580	5,350	3,890	1,300	468	425
17	324	852	1,720	587	719	1,090	3,380	5,350	3,560	1,230	462	400
18	340	803	1,630	587	705	1,110	3,700	5,540	3,480	1,110	462	385
19	354	761	1,510	563	677	1,140	3,870	6,180	3,860	1,020	468	354
20	415	768	1,420	563	657	1,210	3,710	6,520	3,870	1,000	501	336
21	440	782	1,350	545	638	1,320	3,520	6,470	3,420	1,090	490	324
22	518	1,050	1,260	551	631	1,420	3,540	6,920	2,990	1,020	468	324
23	523	1,040	1,190	557	638	1,530	4,160	7,830	2,810	960	452	328
24	605	944	1,100	528	631	1,780	4,580	8,600	2,780	928	440	336
25	587	873	1,040	506	644	2,140	4,430	8,250	2,990	873	462	336
26	575	817	1,010	523	644	2,320	4,340	6,700	2,990	838	452	340
27	563	768	976	551	644	2,570	4,190	5,400	2,580	859	430	457
28	719	719	968	581	670	2,640	4,030	4,730	2,310	852	435	557
29	810	691	960	593	664	2,650	3,840	4,580	2,180	803	435	490
30	754	1,140	952	593	-	2,840	3,530	4,900	2,130	789	435	452
31	754	-	960	593	-	2,850	-	5,890	-	740	435	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	14,416	810	316	465	0.787	0.91	28,590
November	25,696	1,230	518	857	1.45	1.62	50,970
December	44,816	2,170	952	1,446	2.45	2.82	88,890
Calendar year 1939	688,058	8,810	316	1,885	3.19	43.31	1,365,000
January	19,931	944	506	643	1.09	1.26	39,530
February	19,602	845	575	676	1.14	1.23	38,880
March	41,161	2,850	684	1,328	2.25	2.59	81,640
April	97,810	4,580	2,110	3,260	5.52	6.16	194,000
May	171,150	8,600	3,400	5,521	9.34	10.77	339,500
June	115,400	5,940	2,130	3,847	6.51	7.26	228,900
July	39,002	2,070	740	1,258	2.13	2.46	77,360
August	16,205	705	430	523	.885	1.02	32,140
September	12,004	557	324	400	.677	.76	23,810
Water year 1939-40	617,193	8,600	316	1,686	2.85	38.86	1,224,000

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Wenatchee River at Peshastin, Wash.

Location.- Water-stage recorder, lat. 47°34'50", long. 120°37'00", in SE¼SW¼ sec. 8, T. 24 N., R. 18 E., 1 mile northwest of Peshastin and 3½ miles upstream from Peshastin Creek. Datum of gage is 1,026 feet above mean sea level (from river-profile map).

Drainage area.- 1,000 square miles.

Records available.- February 1929 to September 1940 in reports of Geological Survey. October 1928 to February 1929 (monthly discharge), in Washington State Water-Supply Bulletin 5.

Average discharge.- 12 years (1928-40), 2,823 second-feet.

Extremes.- Maximum discharge during year, 12,700 second-feet May 24 (gage height, 9.09 feet); minimum, 183 second-feet Oct. 14 (gage height, 1.26 feet).
1929-40: Maximum discharge, 20,400 second-feet June 16, 1933 (gage height, 11.82 feet); minimum, that of Oct. 14, 1940.

Remarks.- Records excellent. Several diversions above station for irrigation. Slight artificial regulation at mill pond at Leavenworth and at power plant in Tumwater Canyon, and natural regulation in Wenatchee Lake.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

1.3	195	3.3	1,560	6.0	5,550
1.7	365	3.7	2,020	6.5	6,530
2.0	525	4.0	2,400	7.0	7,550
2.3	705	4.5	3,070	7.5	8,670
2.7	990	5.0	3,800	8.0	9,850
3.0	1,250	5.5	4,650	9.0	12,400

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	426	938	2,080	1,240	819	938	3,650	4,650	8,440	2,720	862	547
2	432	848	2,140	1,200	798	990	3,500	5,010	7,550	2,660	819	525
3	442	784	2,140	1,140	796	1,030	3,350	5,370	6,930	2,600	805	525
4	442	744	1,960	1,100	798	1,070	3,210	5,370	6,730	2,400	784	525
5	666	705	1,900	1,070	798	1,120	3,000	5,190	6,130	2,200	744	503
6	738	686	1,900	1,020	840	1,130	2,860	5,010	5,740	2,020	744	486
7	653	855	1,900	982	885	1,140	2,930	5,010	5,550	1,900	764	481
8	804	1,500	2,400	952	892	1,210	3,140	5,190	5,190	1,840	750	486
9	569	1,500	3,000	938	885	1,200	3,280	6,130	5,190	1,780	744	498
10	564	1,350	2,930	915	1,120	1,160	3,350	8,440	5,740	1,670	724	547
11	520	1,400	3,140	840	1,130	1,110	3,350	10,600	6,330	1,620	692	558
12	486	1,670	2,720	878	1,070	1,070	3,500	9,850	6,930	1,670	672	580
13	470	1,620	2,400	855	1,050	1,050	4,120	8,670	7,130	1,780	686	640
14	405	1,500	2,270	855	1,020	1,040	4,830	7,990	6,530	1,720	646	653
15	432	1,350	2,340	812	990	1,070	5,010	7,550	5,550	1,620	610	628
16	432	1,220	2,720	833	982	1,300	4,830	7,340	5,190	1,620	598	592
17	426	1,120	2,600	805	998	1,560	4,470	7,550	4,830	1,560	574	558
18	442	1,050	2,400	833	952	1,620	5,010	7,990	4,650	1,450	592	542
19	442	1,010	2,200	738	945	1,670	5,190	8,900	5,010	1,300	586	514
20	536	952	2,080	777	900	1,720	5,010	9,370	5,190	1,230	604	464
21	564	1,010	1,900	718	870	1,900	4,830	9,130	4,650	1,300	660	448
22	666	1,350	1,780	784	885	2,080	4,830	10,100	3,960	1,250	628	442
23	686	1,500	1,670	764	885	2,200	5,550	11,400	3,720	1,160	604	454
24	731	1,300	1,500	750	885	2,530	6,130	12,400	3,650	1,110	586	464
25	770	1,200	1,400	672	885	3,000	5,930	11,600	3,800	1,050	580	470
26	738	1,110	1,400	764	922	3,280	5,930	9,370	3,960	1,010	580	481
27	731	1,030	1,300	791	885	3,580	5,550	7,550	3,420	1,050	569	622
28	848	975	1,250	805	930	3,580	5,370	6,530	3,070	1,040	569	750
29	1,130	945	1,250	855	938	3,580	5,190	6,330	2,860	982	574	672
30	990	1,310	1,250	840	-	3,800	4,650	6,930	2,790	945	558	628
31	968	-	1,240	855	-	3,800	-	8,440	-	908	547	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	18,949	1,130	405	611	37,580
November	34,532	1,670	686	1,151	68,490
December	63,160	3,140	1,240	2,037	125,300
Calendar year 1939	918,027	12,400	405	2,515	1,821,000
January	27,381	1,240	672	883	54,310
February	26,755	1,130	798	923	53,070
March	57,528	3,800	938	1,856	114,100
April	131,550	6,130	2,860	4,385	260,900
May	240,960	12,400	4,650	7,773	477,900
June	166,410	8,440	2,790	5,214	310,200
July	49,165	2,720	908	1,586	97,520
August	20,455	862	547	660	40,570
September	16,283	750	442	543	32,300
Water year 1939-40	843,128	12,400	405	2,304	1,672,000

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Chiwawa River near Plain, Wash.

Location.- Water-stage recorder, lat. 47°50'30", long. 120°39'40", in SE¼ sec. 13, T. 27 N., R. 17 E., half a mile upstream from Goose Creek, 6 miles north of Plain, 7 miles upstream from mouth, and 11 miles northeast of Chiwaukum. Datum of gage is 2,100 feet above mean sea level (from river-profile map).

Drainage area.- 169 square miles.

Records available.- August 1936 to September 1940. May 1911 to October 1914, at site 4 miles downstream, published as Chiwawa Creek near Leavenworth.

Extremes.- Maximum discharge during year, 2,540 second-feet May 24 (gage height, 7.14 feet); minimum, 79 second-feet Sept. 24, 25, 26 (gage height, 3.80 feet).
1911-14, 1936-40: Maximum discharge recorded, 3,210 second-feet May 25, 26, 1938 (gage height, 7.66 feet); minimum recorded, 67 second-feet Nov. 28, 1936 (gage height, 3.74 feet), but may have been less during periods of ice effect.

Remarks.- Records excellent except those for periods of ice effect and no gage-height record, which are poor, and those computed on basis of shifting-control method, which are good. No diversion or regulation.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Feb. 7 to Apr. 10)

3.9	102	4.7	420	6.0	1,330
4.1	161	5.0	595	6.3	1,600
4.3	235	5.3	790	6.6	1,910
4.5	320	5.6	1,000	7.0	2,370

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	88	116	208	139	b95	a100	448	867	1,700	640	201	107
2	86	110	216	132	b90	a110	442	902	1,470	654	193	105
3	86	105	201	129	b90	a115	436	f930	1,400	614	190	105
4	100	100	183	129	b90	a115	431	a930	1,390	559	186	102
5	168	97	190	129	b95	a130	415	a900	1,290	529	179	100
6	124	97	193	126	b95	a125	410	a880	1,220	487	179	97
7	110	126	201	124	97	a125	436	a900	1,180	464	175	97
8	97	205	306	124	93	a140	475	a950	1,080	458	175	95
9	93	172	325	118	95	a135	499	a1,200	1,110	442	172	95
10	93	145	340	121	116	a120	505	a1,700	1,220	415	161	100
11	90	148	335	b110	107	a120	511	a2,150	1,400	415	151	100
12	88	155	271	b110	102	a115	547	a1,950	1,470	453	151	102
13	88	145	247	b110	97	a110	660	a1,650	1,530	475	148	116
14	88	135	235	b105	95	a105	764	a1,550	1,310	431	142	107
15	86	126	231	b105	90	f116	764	a1,450	1,140	405	139	102
16	84	118	247	b105	90	151	751	f1,350	1,090	400	135	97
17	84	116	243	b105	93	172	725	1,390	1,000	380	132	95
18	84	107	231	102	93	168	811	1,480	1,020	340	132	90
19	90	102	212	b100	*93	168	839	1,670	1,150	316	129	88
20	100	97	201	b105	88	179	811	1,810	1,110	316	129	86
21	102	100	193	b100	90	201	790	1,770	958	330	129	86
22	124	151	183	b105	86	224	825	1,920	853	208	121	86
23	124	132	172	b110	*90	231	986	2,200	818	275	118	84
24	135	121	b155	b95	a90	271	1,050	2,470	846	275	118	81
25	116	113	b140	b85	a90	335	1,020	2,330	916	259	121	81
26	113	110	b145	b95	a90	365	1,010	1,780	867	231	121	81
27	110	110	b145	b100	a95	415	1,010	1,450	738	237	118	151
28	148	107	142	b110	a95	410	993	1,300	680	231	121	142
29	155	113	142	b115	a95	420	916	1,280	666	227	116	107
30	129	*212	139	b105	-	487	860	1,400	660	224	113	97
31	118	-	139	b95	-	464	-	1,800	-	208	110	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	3,301	168	84	106	0.627	0.73	6,550
November	3,791	212	97	126	.746	.83	7,520
December	6,511	340	139	210	1.24	1.43	12,910
Calendar year 1939	140,959	2,100	70	386	2.28	31.04	279,600
January	3,443	139	85	111	.657	.76	6,830
February	2,725	116	86	94.0	.556	.60	5,400
March	6,442	487	100	208	1.23	1.42	12,780
April	21,140	1,050	410	705	4.17	4.65	41,930
May	46,309	2,470	867	1,494	8.84	10.19	91,850
June	33,282	1,700	660	1,109	6.56	7.32	66,010
July	12,058	654	208	389	2.30	2.65	23,920
August	4,505	201	110	145	.858	.99	8,940
September	2,962	142	81	98.7	.584	.65	5,880
Water year 1939-40	146,469	2,470	81	400	2.37	32.22	290,500

*Winter-discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for Wenatchee River below Wenatchee Lake and at Plain.
b Stage-discharge relation affected by ice.
f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Icicle Creek above Snow Creek, near Leavenworth, Wash.

Location.- Water-stage recorder, lat. 47°32'25", long. 120°42'55", in SE¼ sec. 28, T. 24 N., R. 17 E., three-eighths of a mile upstream from Snow Creek and 4½ miles southwest of Leavenworth.

Drainage area.- 193 square miles.

Records available.- September 1936 to September 1940.

Extremes.- Maximum discharge during year, 3,170 second-feet May 23 (gage height, 9.12 feet); minimum, 90 second-feet Sept. 24, 25, 26.
1936-40: Maximum discharge, 4,320 second-feet June 3, 1937 (gage height, 10.10 feet), from rating curve extended above 3,000 second-feet; minimum, may have been less than 55 second-feet sometime during period Nov. 29 to Dec. 2, 1936, or Jan. 2 to Mar. 10, 1937, when stage-discharge relation was affected by ice.

Remarks.- Records good except those for periods of ice effect, which are poor. No diversion. Some regulation in headwater lakes for irrigation.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1-3)

2.3	96	3.5	231	6.0	990
2.5	107	4.0	333	7.0	1,520
2.7	122	4.5	453	8.0	2,150
3.0	153	5.0	598	9.0	3,070

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	103	140	372	246	130	172	647	835	1,810	494	161	113
2	104	131	476	240	130	179	614	1,090	1,520	480	157	109
3	103	129	390	226	135	179	582	1,110	1,460	453	148	110
4	110	123	344	218	140	185	552	1,090	1,380	414	143	108
5	210	118	333	208	145	198	522	1,010	1,240	378	140	104
6	138	120	333	188	155	191	494	944	1,140	355	137	104
7	116	277	349	198	165	196	522	990	1,160	333	135	109
8	108	390	701	182	177	201	582	1,160	1,010	322	131	108
9	104	290	682	183	194	194	598	1,580	1,090	311	129	108
10	102	242	736	179	260	188	598	2,400	1,270	300	126	116
11	100	311	699	150	222	182	614	2,490	1,430	290	124	114
12	98	355	552	135	203	177	682	2,000	1,520	300	126	113
13	97	290	480	130	203	176	899	1,690	1,520	311	126	124
14	96	250	440	130	191	174	1,010	1,640	1,240	290	122	118
15	94	224	602	125	183	190	922	1,640	1,090	280	119	111
16	94	203	682	125	183	260	856	1,580	990	270	116	107
17	95	194	582	120	182	270	835	1,640	899	250	115	103
18	98	180	494	120	179	270	1,040	1,810	922	235	113	103
19	109	170	440	120	176	280	990	2,070	1,040	222	113	100
20	126	160	402	125	167	300	922	2,000	967	239	113	95
21	133	163	378	120	156	344	856	2,070	814	235	119	94
22	131	388	344	125	173	378	922	2,490	718	218	120	92
23	120	280	322	130	167	414	1,240	2,770	682	204	119	92
24	147	239	260	120	163	522	1,210	2,770	699	194	117	91
25	125	217	235	115	166	614	1,140	2,310	755	185	116	90
26	122	199	240	120	170	664	1,110	1,750	718	194	113	90
27	123	183	240	125	166	718	1,010	1,430	598	224	113	132
28	248	173	242	130	169	682	967	1,380	537	199	116	130
29	233	167	250	135	167	664	878	1,430	508	183	112	106
30	177	411	260	125	-	699	814	1,640	508	179	108	99
31	154	-	246	125	-	682	-	2,310	-	167	108	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off	
						Inches	Acre-feet
October	3,918	248	94	126	0.653	0.75	7,770
November	6,717	411	118	224	1.16	1.29	13,320
December	13,106	736	235	423	2.19	2.53	26,000
Calendar year 1939	194,537	3,200	94	533	2.76	37.49	385,900
January	4,718	246	115	152	.788	.91	9,360
February	5,017	260	130	173	.896	.97	9,950
March	10,543	718	172	340	1.76	2.03	20,910
April	24,628	1,240	494	821	4.25	4.75	48,850
May	53,119	2,770	835	1,714	8.88	10.24	105,400
June	31,235	1,810	508	1,041	5.39	6.02	61,950
July	8,709	494	167	281	1.46	1.63	17,270
August	3,855	161	108	124	.642	.74	7,650
September	3,193	132	90	106	.549	.62	6,330
Water year 1939-40	168,758	2,770	90	461	2.39	32.53	334,800

Peak discharge.- May 10 (10 to 12 p.m.) 2,770 sec.-ft.; May 23 (10:30 p.m.) 3,170 sec.-ft.
Note.- Stage-discharge relation affected by ice Dec. 25-27, Jan. 12 to Feb. 7.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Yakima River near Martin, Wash.

Location.- Water-stage recorder, lat. 47°19'10", long. 121°20'10", just downstream from dam at outlet of Keechelus Lake, 3⅛ miles northwest of Martin, Kittitas County, and 12 miles upstream from Easton.

Drainage area.- 55 square miles.

Records available.- October 1903 to September 1940.

Average discharge.- 36 years (1904-40), 327 second-feet (adjusted for storage since January 1906).

Extremes.- Maximum discharge during year, 1,030 second-feet (regulated) May 11 (computed from combined flow past gage and over lake spillway); minimum, 2 second-feet(regulated) Dec. 8-14.

1903-40: Maximum discharge, 7,370 second-feet Mar. 26, 1915, when temporary crib dam was washed out; practically no flow when gates in Keechelus Lake Dam were closed.

Remarks.- Records excellent except those for extremely low flow, which are poor. Records include flow over reservoir spillway which by-passes gage. Flow partly regulated by storage in Keechelus Lake. Records of daily discharge not adjusted for change in contents of Keechelus Lake.

Cooperation.- Records furnished by Bureau of Reclamation. Three discharge measurements made by Geological Survey.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	550	16	4	3	3	3	6	546	442	820	588	614
2	550	16	4	3	3	3	5	636	442	789	588	614
3	550	16	3	3	3	3	5	689	442	820	588	588
4	525	16	3	3	3	3	5	689	397	820	601	562
5	513	16	3	3	3	3	5	676	376	820	614	513
6	477	16	3	3	3	3	5	649	397	789	614	489
7	419	9	3	3	3	3	5	596	397	820	628	477
8	397	5	2	3	3	4	5	571	397	820	686	442
9	376	5	2	3	3	3	5	649	397	820	700	430
10	356	5	2	3	4	3	5	788	397	820	700	386
11	356	5	2	3	3	3	5	952	454	820	700	366
12	356	5	2	3	3	3	5	846	501	820	700	346
13	356	4	2	3	3	3	5	676	525	820	700	306
14	356	4	3	3	3	3	5	583	550	820	700	288
15	356	4	4	3	3	3	5	546	588	820	700	288
16	356	4	5	3	3	3	5	534	642	820	700	288
17	356	4	5	3	3	4	5	522	686	820	700	288
18	356	4	4	3	3	4	118	585	744	789	700	288
19	230	4	3	3	3	4	326	630	759	820	700	288
20	155	3	3	3	3	4	316	637	789	820	700	288
21	155	3	3	3	3	4	316	699	789	820	700	288
22	155	4	3	3	3	4	316	825	820	820	700	288
23	72	4	3	3	3	4	316	868	820	789	700	306
24	17	4	3	3	3	4	326	831	789	759	700	326
25	16	4	3	3	3	4	326	820	820	744	686	336
26	16	3	3	3	3	4	333	820	820	700	671	346
27	16	3	3	3	3	5	388	820	820	614	671	356
28	16	3	3	3	3	5	494	613	789	588	671	356
29	16	3	3	3	3	5	404	454	820	588	671	356
30	16	7	3	3	-	6	418	442	820	588	656	356
31	16	-	3	3	-	6	-	442	-	588	628	-

Month	Observed				Change in contents in Keechelus Lake (acre-feet)	Adjusted for change in reservoir contents			
	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	550	16	273	16,770	-10,030	6,740	110	2.00	2.31
November	16	3	6.6	395	+13,610	14,000	235	4.27	4.76
December	5	2	3.1	188	+28,380	28,570	465	8.45	9.74
Calendar year 1939	1,390	2	333	241,300	-28,070	213,200	294	5.35	72.69
January	3	3	3.0	184	+7,400	7,580	123	2.24	2.58
February	4	3	3.0	175	+15,080	15,260	265	4.82	5.20
March	6	3	3.7	230	+22,610	22,840	371	6.75	7.78
April	494	5	149	8,890	+24,550	33,440	562	10.2	11.38
May	952	442	666	40,930	-5,340	35,590	579	10.5	12.11
June	820	376	614	36,550	-24,100	12,450	209	3.80	4.24
July	820	588	771	47,410	-42,460	4,950	80.5	1.46	1.68
August	700	588	670	41,180	-37,320	3,860	62.8	1.14	1.31
September	614	288	382	22,740	-20,710	2,030	34.1	.620	.69
Water year 1939-40	952	2	297	215,600	-28,330	187,300	258	4.69	63.78

Note.- Flow over spillway of Keechelus Lake Dam Apr. 26 to May 24.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Yakima River at Cle Elum, Wash.

Location.- Water-stage recorder, lat. 47°11'20", long. 120°56'40", in sec. 27, E. 20 N., R. 15 E., at highway bridge at Cle Elum, just upstream from Roslyn Creek and 7 miles upstream from Teanaway River.
Drainage area.- 500 square miles.
Records available.- August 1906 to September 1940.
Average discharge.- 34 years, 1,958 second-feet (adjusted for storage since October 1906 and diversions since 1930).
Extremes.- Maximum discharge during year, 5,560 second-feet (regulated) May 11 (gage height, 7.85 feet); minimum, 119 second-feet (regulated) Nov. 6 (gage height, 3.36 feet).
1906-40: Maximum discharge, 25,600 second-feet Nov. 14, 1906 (gage height, 12.5 feet, from floodmarks); minimum, 64 second-feet (regulated) Nov. 16, 17, 1929, Dec. 4, 1936.
Remarks.- Records excellent. Kittitas high-line canal diverts water above gage for irrigation. Flow partly regulated by Keechelus Lake, Kachess Lake, and Cle Elum Lake. Records of daily discharge not adjusted for amount of diversion or for change in contents of lakes.
Cooperation.- Records furnished by Bureau of Reclamation. Three discharge measurements made by the Geological Survey.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Nov. 21				Nov. 22 to Sept. 30					
3.4	131	4.3	633	3.4	125	4.3	592	6.0	2,370
3.6	209	4.6	875	3.6	200	4.6	820	6.5	3,120
3.8	310	4.9	1,160	3.8	292	5.0	1,180	7.0	4,000
4.0	428	5.2	1,480	4.0	400	5.5	1,740	7.5	4,950

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,480	163	180	249	168	400	846	2,110	2,300	2,440	2,300	2,580
2	1,340	153	188	240	168	473	804	2,300	2,300	2,440	2,370	2,370
3	1,130	145	196	231	164	551	740	2,370	2,240	2,510	2,370	2,240
4	1,150	138	328	226	164	551	687	2,300	2,240	2,440	2,440	2,240
5	1,140	131	344	222	172	572	650	2,510	2,180	2,440	2,440	2,180
6	1,000	125	378	209	218	585	606	2,650	2,040	2,510	2,440	2,180
7	920	171	344	200	282	592	606	2,300	1,920	2,510	2,510	2,180
8	875	228	394	200	339	621	642	2,510	1,920	2,580	2,650	2,180
9	832	228	424	188	400	592	679	3,040	1,920	2,580	2,650	2,180
10	824	205	486	184	614	551	717	4,090	1,860	2,580	2,650	2,180
11	832	209	498	168	672	518	702	5,350	1,860	2,650	2,650	2,110
12	832	238	424	168	592	492	717	4,560	1,740	2,650	2,650	2,040
13	832	228	565	172	531	460	772	3,200	1,620	2,650	2,650	1,920
14	832	205	406	180	479	448	854	3,120	1,560	2,650	2,720	1,860
15	841	188	355	184	442	442	796	2,800	1,680	2,720	2,650	1,980
16	733	171	578	192	418	460	657	2,720	1,800	2,720	2,650	1,860
17	725	163	679	200	400	511	592	2,650	1,860	2,720	2,650	1,740
18	709	160	710	196	394	531	578	2,580	1,860	2,800	2,650	1,740
19	701	153	614	192	394	544	740	2,720	1,980	2,880	2,720	1,740
20	467	142	544	184	389	544	837	2,960	1,980	2,880	2,720	1,740
21	373	138	505	180	366	572	772	3,200	1,980	2,880	2,720	1,680
22	356	160	460	180	355	565	932	2,800	1,980	2,800	2,720	1,680
23	356	172	406	180	350	442	1,370	2,580	2,040	2,720	2,720	1,680
24	278	160	378	176	339	424	1,440	2,580	2,040	2,650	2,720	1,740
25	223	153	339	204	339	657	1,350	2,580	2,040	2,650	2,720	1,680
26	205	146	313	196	339	572	1,260	2,510	2,110	2,650	2,720	1,620
27	171	139	297	176	339	614	1,500	2,440	2,110	2,510	2,720	1,680
28	180	132	287	168	383	621	2,240	2,440	2,240	2,510	2,650	1,560
29	192	146	282	168	400	606	2,300	2,370	2,370	2,370	2,650	905
30	175	164	268	164	-	657	1,980	2,370	2,370	2,240	2,650	780
31	160	-	263	164	-	820	-	2,370	-	2,240	2,580	-

Month	Observed				†Change in contents (acre-feet)	Diverted by Kittitas canal (acre-feet)	Adjusted			
	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	1,480	160	673	41,380	-20,500	12,840	33,720	548	1.10	1.27
November	238	125	168	10,020	+48,940	206	59,170	994	1.99	2.22
December	710	180	401	24,660	+104,000	359	129,000	2,098	4.20	4.84
Calendar year 1939	4,980	125	1,384	1,002,000	-24,440	287,200	1,265,000	1,747	3.49	47.44
January	249	164	192	11,780	+29,710	0	41,490	675	1.35	1.56
February	672	164	366	21,040	+48,570	0	69,610	1,210	2.42	2.61
March	820	400	548	33,700	+88,520	0	122,200	1,987	3.97	4.58
April	2,300	578	979	58,250	+130,000	7,310	195,600	3,287	6.57	7.33
May	5,350	2,110	2,809	172,700	+29,000	37,930	239,600	3,897	7.79	8.98
June	2,370	1,560	2,005	119,300	-74,060	64,280	99,520	1,672	3.34	3.73
July	2,880	2,240	2,599	159,800	-194,800	64,980	29,980	488	.976	1.13
August	2,720	2,300	2,616	160,900	-197,000	52,540	16,440	267	.534	.62
September	2,580	780	1,875	111,600	-130,200	35,020	16,420	276	.552	.62
Water year 1939-40	5,350	125	1,274	925,100	-137,800	265,500	1,053,000	1,450	2.90	39.49

†Change in contents in Keechelus Lake, Kachess Lake, and Cle Elum Lake.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
101695-O U. S. GOVERNMENT PRINTING OFFICE 1936

Yakima River at Umtanum, Wash.

Location.- Water-stage recorder, lat. 46°51', long. 120°29', in NW¼ sec. 20, T. 16 N., R. 19 E., at Umtanum, half a mile upstream from Umtanum Creek and 10 miles south of Ellensburg. Datum of gage is 1,300.0 feet above mean sea level (general adjustment of 1929).

Drainage area.- 1,620 square miles.

Records available.- August 1906 to September 1921 (fragmentary) and October 1935 to September 1940 in reports of Geological Survey. September 1906 to October 1928 (fragmentary) in State Water-Supply Bulletin 5.

Extremes.- Maximum discharge during year, 6,770 second-feet (regulated) May 12 (gage height, 33.83 feet); minimum, 294 second-feet (regulated) Nov. 8 (gage height, 30.00 feet).

1906-21, 1935-40: Maximum discharge, 41,000 second-feet Nov. 15 or 16, 1906 (gage height, 41.1 feet, from floodmarks, present datum); minimum, 138 second-feet (regulated) Oct. 3, 1915 (gage height, 2.86 feet, datum then in use).

Remarks.- Records excellent. Flow partly regulated by Keechelus, Kachess, and Cle Elum Lakes. Water diverted above station for irrigation of about 91,000 acres.

Cooperation.- Records furnished by Bureau of Reclamation. Three discharge measurements made by Geological Survey.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Sept. 25-30)

30.3	498	31.6	1,880
30.5	657	32.0	2,500
30.7	835	32.5	3,410
31.0	1,140	33.0	4,510
31.3	1,480	33.5	5,760

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,620	426	455	624	405	1,330	2,330	3,120	3,020	2,420	2,580	2,840
2	1,660	405	498	624	378	1,280	2,170	3,410	3,020	2,420	2,580	2,840
3	1,480	398	551	591	392	1,360	2,020	3,730	2,930	2,420	2,580	2,500
4	1,410	364	566	591	405	1,400	1,880	3,620	2,840	2,420	2,580	2,500
5	1,470	351	657	574	398	1,420	1,740	3,620	2,760	2,500	2,580	2,500
6	1,370	357	649	574	536	1,440	1,600	4,060	2,670	2,500	2,580	2,420
7	1,300	357	632	551	657	1,460	1,560	3,620	2,330	2,580	2,500	2,420
8	1,240	392	657	536	692	1,520	1,670	3,410	2,330	2,580	2,580	2,420
9	1,190	476	719	521	727	1,460	1,740	4,060	2,250	2,670	2,670	2,420
10	1,140	484	799	506	1,070	1,370	1,800	4,740	2,250	2,670	2,760	2,580
11	1,140	476	902	469	1,350	1,270	1,800	6,180	2,170	2,670	2,760	2,500
12	1,140	491	920	426	1,230	1,190	1,800	6,480	2,020	2,670	2,840	2,420
13	1,140	506	873	469	1,170	1,120	1,880	4,280	1,880	2,760	2,840	2,500
14	1,140	498	920	491	1,140	1,060	2,170	3,950	1,710	2,760	2,840	2,250
15	1,140	476	799	484	1,030	1,030	2,170	3,620	1,720	2,840	2,840	2,420
16	1,140	440	960	491	970	1,100	1,880	3,410	1,800	2,840	2,840	2,330
17	1,020	426	1,240	498	1,030	1,330	1,700	3,210	1,950	2,840	2,840	2,100
18	990	405	1,280	498	1,110	1,460	1,540	3,020	1,950	2,930	2,840	2,100
19	940	392	1,220	484	1,010	1,480	1,580	3,020	2,020	2,930	2,840	2,020
20	902	371	1,080	462	920	1,560	1,660	3,310	2,020	3,020	2,840	2,020
21	736	364	1,010	426	864	1,680	1,540	3,410	2,020	3,120	2,840	2,020
22	632	357	930	426	854	1,740	1,460	3,410	2,020	3,120	2,840	2,020
23	582	398	873	426	835	1,720	1,880	2,930	2,100	3,120	2,840	1,950
24	574	412	817	469	817	1,720	2,500	3,210	2,170	2,930	2,840	1,950
25	498	412	772	498	826	2,100	2,500	3,020	2,100	2,930	2,840	1,950
26	455	398	745	426	854	2,170	2,500	3,020	2,100	3,020	2,840	1,880
27	440	378	710	378	940	2,500	2,330	2,930	2,170	3,120	2,840	2,100
28	426	371	675	405	1,410	2,330	3,210	2,760	2,170	3,020	2,840	2,020
29	426	378	657	385	1,590	2,100	3,310	2,670	2,330	2,930	2,840	1,800
30	455	385	649	385	-	2,170	3,210	2,670	2,420	2,760	2,840	1,370
31	455	-	632	378	-	2,330	-	2,840	-	2,580	2,840	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	30,251	1,660	426	976	60,000
November	12,344	506	351	411	24,480
December	24,847	1,280	455	802	49,280
Calendar year 1939	674,586	5,760	351	1,848	1,338,000
January	15,066	624	378	486	29,880
February	25,610	1,590	378	883	50,800
March	49,200	2,500	1,030	1,587	97,590
April	61,130	3,310	1,460	2,038	121,200
May	110,740	6,480	2,670	3,572	219,600
June	67,240	3,020	1,710	2,241	133,400
July	86,090	3,120	2,420	2,777	170,800
August	85,550	2,840	2,500	2,760	169,700
September	67,160	2,840	1,370	2,239	133,200
Water year 1939-40	635,228	6,480	351	1,736	1,260,000

400455 O - 41 - 13 UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Yakima River near Parker, Wash.

Location.- Water-stage recorder, lat. 46°29'40", long. 120°26'10", in sec. 28, T. 12 N., R. 19 E., just downstream from Sunnyside diversion dam, 1½ miles east of Parker, and about 3 miles downstream from Ahtanum Creek.
Drainage area.- 3,560 square miles.
Records available.- April 1908 to September 1921, October 1931 to September 1940.
Extremes.- Maximum discharge during year, 7,760 second-feet (regulated) May 12 (gage height, 7.40 feet); minimum, 10 second-feet (regulated) June 26 (gage height, 0.75 foot).
1908-21, 1931-40: Maximum discharge, 54,300 second-feet Dec. 23, 1933 (gage height, 15.0 feet, from floodmarks); practically no flow several days during latter part of irrigation seasons as result of diversions.
Remarks.- Records good except those below 50 second-feet, which are poor. Water diverted above station for irrigation of a large area. Flow partly regulated by diversions and by storage in Keechelus, Kachess, Cle Elum, and Bumping Lakes, and Tieton Reservoir. Record of daily discharge not adjusted for diversions or for change in contents of reservoirs.
Cooperation.- Records for river station furnished by Bureau of Reclamation. Records of monthly discharge of canals furnished by Office of Indian Affairs and by Bureau of Reclamation or computed from base data furnished by them. Records reviewed and some discharge measurements made by the Geological Survey.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	462	828	948	1,060	940	2,540	3,690	1,740	2,390	59	23	88
2	450	796	1,030	1,110	908	2,320	3,510	2,320	2,250	74	88	105
3	372	804	1,060	1,140	948	2,460	3,340	3,600	1,860	76	26	128
4	148	780	1,030	1,170	972	2,460	2,920	3,880	1,520	36	64	150
5	158	740	1,070	1,120	1,020	2,540	2,680	3,780	1,260	56	114	143
6	200	740	1,120	1,060	1,520	2,460	2,050	3,600	980	39	93	63
7	86	740	1,110	1,120	1,800	2,460	1,860	3,160	635	72	23	72
8	85	740	1,130	1,170	1,740	2,680	1,860	2,540	510	90	70	42
9	176	844	1,310	1,130	1,680	2,610	1,920	3,000	438	79	206	85
10	90	956	1,520	1,090	1,860	2,460	1,740	4,460	355	39	113	325
11	37	892	1,680	1,020	2,390	2,250	1,570	6,770	258	14	168	315
12	50	892	1,680	940	2,320	1,620	1,460	7,760	203	78	185	221
13	88	956	1,410	948	2,120	1,740	1,520	5,630	185	12	203	250
14	26	964	1,570	989	1,980	1,680	2,180	4,060	80	66	168	122
15	35	940	1,410	1,010	1,860	1,570	2,250	3,510	11	168	160	95
16	105	916	1,860	980	1,740	1,740	1,520	2,920	84	274	155	34
17	118	948	2,250	998	1,860	1,980	820	2,680	148	218	54	45
18	139	860	2,250	1,010	1,920	2,180	528	2,460	46	209	111	197
19	114	836	2,050	980	1,800	2,120	788	2,760	90	242	165	22
20	253	828	1,800	932	1,620	2,180	1,210	3,420	155	270	158	49
21	552	828	1,620	924	1,570	2,320	360	3,600	86	426	80	26
22	474	828	1,460	940	1,570	2,390	170	3,600	16	432	116	32
23	396	844	1,360	940	1,570	2,540	516	3,420	47	325	168	30
24	420	884	1,080	868	1,570	2,610	1,570	3,970	98	152	88	43
25	408	844	900	788	1,520	3,160	1,680	3,780	84	130	155	54
26	408	844	972	948	1,620	3,420	1,620	3,000	13	282	170	80
27	426	828	1,310	908	1,860	3,690	1,310	2,250	26	498	162	306
28	360	844	1,100	916	2,390	3,690	1,570	1,620	29	355	212	221
29	355	820	998	916	3,160	3,420	1,980	1,360	41	270	200	139
30	1,070	812	1,020	948	-	3,510	1,620	1,260	45	80	246	114
31	635	-	1,110	948	-	3,780	-	1,800	-	28	85	-

Monthly discharge of Yakima River and canals, water year October 1939 to September 1940

Month	Mean discharge in second-feet						Change in contents (equivalent mean (sec.-ft.)*	Combined flow of Yakima River and canals adjusted for change in contents†	
	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
October....	281	10	639	9.95	498	1,438	-377	1,061	65,240
November...	846	-	22.2	8.49	-	877	+825	1,702	101,300
December...	1,362	-	-	11.6	-	1,374	+2,208	3,582	220,200
Calendar year 1939	1,117	-	-	43.3	-	2,778	-9.5	2,768	2,004,000
January....	1,001	-	-	11.4	-	1,012	+736	1,748	107,500
February...	1,718	-	-	4.90	1	1,724	+1,251	2,975	171,100
March.....	2,535	10	104	22.0	214	2,885	+2,056	4,941	303,800
April.....	1,727	35	1,227	106	978	4,073	+2,666	6,739	401,000
May.....	3,545	45	1,900	129	1,267	6,686	+522	7,208	443,200
June.....	465	40	1,702	74.4	1,276	3,557	-1,585	1,972	117,300
July.....	166	40	1,812	58.4	1,279	3,355	-3,897	‡-542	‡-33,330
August.....	130	35	1,744	39.5	1,231	3,180	-4,052	‡-872	‡-53,620
September..	120	40	1,372	13.7	1,050	2,596	-2,599	‡-3	‡-179
Water year 1939-40	1,142	-	-	40.9	-	2,734	-195	2,539	1,844,000

*Change in contents in Keechelus, Kachess, Cle Elum, and Bumping Lakes, and Tieton Reservoir.
†Totals are equivalent with monthly results previously determined for Yakima River at Union Gap, near Yakima, Wash.
‡Negative results due to unrecorded diversions.
Note.- Shifting-control method used Jan. 1 to Apr. 16, Apr. 23 to May 21, June 3 to Aug. 28, Sept. 7-30.

Yakima River at Kiona, Wash.

Location.- Water-stage recorder, lat. 46°15'10", long. 119°28'50", in sec. 19, T. 9 N., R. 27 E., at highway bridge at Kiona, 3½ miles downstream from intake of Kiona canal and 25 miles upstream from mouth.
Drainage area.- 5,520 square miles.
Records available.- August 1896 to March 1915, February 1933 to September 1940.
Average discharge.- 25 years (1896-1914, 1933-40), 4,301 second-feet.
Extremes.- Maximum discharge during year, 8,850 second-feet (regulated) May 13 (gage height, 8.32 feet); minimum, 1.030 second-feet (regulated) June 29 (gage height, 3.18 feet).
1896-1915, 1933-40: Maximum discharge, 71,100 second-feet Dec. 23, 1933 (gage height, 21.57 feet): minimum, 105 second-feet (regulated) Sept., 11, 1906 (gage height, 2,35 feet).
Remarks.- Records excellent. Water diverted upstream from gage for irrigation of large acreage. Flow partly regulated by diversions and by storage in Keechelus, Kachess, Cle Elum, and Bumping Lakes, and Tieton Reservoir.
Cooperation.- Records furnished by Bureau of Reclamation. Three discharge measurements made by Geological Survey.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

3.5	1,270	5.0	3,120	6.5	5,530
4.0	1,800	5.5	3,880	7.0	6,420
4.5	2,430	6.0	4,680	8.0	8,280

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,570	1,740	1,570	1,920	1,570	5,530	5,530	2,980	3,420	1,060	1,520	1,620
2	1,740	1,980	1,680	1,980	1,620	4,680	5,360	3,050	4,040	1,060	1,410	1,620
3	1,740	1,980	1,800	1,980	1,570	4,520	5,190	3,640	3,960	1,060	1,410	1,620
4	1,740	1,980	1,740	2,040	1,570	4,520	5,020	4,680	3,720	1,030	1,410	1,620
5	1,570	1,920	1,860	2,040	1,620	4,520	4,680	5,020	3,270	1,030	1,360	1,620
6	1,520	1,920	1,800	1,980	2,100	4,360	4,200	5,020	2,980	1,100	1,360	1,680
7	1,520	1,860	1,920	1,920	2,770	4,360	3,720	5,020	2,770	1,180	1,360	1,520
8	1,520	1,860	1,920	1,860	3,880	4,200	3,420	4,680	2,430	1,130	1,320	1,360
9	1,520	1,740	1,920	1,860	3,270	4,360	3,340	4,200	2,170	1,270	1,270	1,410
10	1,520	1,800	2,040	1,800	3,120	4,200	3,270	4,520	2,040	1,220	1,270	1,410
11	1,520	1,920	2,240	1,740	3,420	3,960	3,050	5,700	1,860	1,180	1,270	1,520
12	1,460	1,860	2,360	1,680	3,500	3,720	2,840	7,710	1,740	1,140	1,270	1,680
13	1,410	1,860	2,430	1,620	3,420	3,270	2,700	8,660	1,520	1,180	1,360	1,680
14	1,460	1,860	2,240	1,620	3,120	3,200	2,700	7,140	1,460	1,220	1,360	1,680
15	1,520	1,920	2,300	1,620	3,050	3,120	3,200	5,530	1,360	1,270	1,360	1,680
16	1,460	1,860	2,170	1,620	2,840	2,980	3,270	5,020	1,220	1,320	1,410	1,620
17	1,460	1,860	2,560	1,620	2,770	3,050	2,700	4,520	1,180	1,460	1,460	1,570
18	1,520	1,860	2,910	1,620	2,840	3,270	2,100	4,200	1,270	1,460	1,460	1,570
19	1,570	1,740	2,980	1,620	2,910	3,420	1,680	4,040	1,220	1,410	1,410	1,570
20	1,520	1,740	2,840	1,620	2,910	3,500	1,740	4,200	1,180	1,360	1,460	1,520
21	1,570	1,680	2,560	1,570	2,700	3,500	2,170	4,680	1,220	1,320	1,460	1,460
22	1,920	1,680	2,430	1,520	2,630	3,640	1,520	4,850	1,220	1,520	1,410	1,570
23	1,860	1,680	2,300	1,520	2,630	3,880	1,320	4,850	1,140	1,570	1,410	1,570
24	1,680	1,680	2,170	1,570	2,560	4,040	1,270	4,680	1,100	1,570	1,410	1,570
25	1,680	1,680	2,040	1,520	2,560	4,200	2,300	5,020	1,100	1,460	1,360	1,570
26	1,680	1,680	1,680	1,460	2,700	4,680	2,700	4,850	1,100	1,410	1,360	1,520
27	1,680	1,620	1,800	1,520	3,570	5,020	2,700	4,360	1,060	1,460	1,360	1,620
28	1,680	1,620	1,980	1,520	4,200	5,190	2,500	3,800	1,060	1,740	1,410	1,680
29	1,620	1,620	2,040	1,570	5,360	5,360	2,700	3,270	1,030	1,740	1,410	1,860
30	1,620	1,620	1,860	1,620	-	5,190	3,120	3,120	1,060	1,680	1,460	1,800
31	1,570	-	1,860	1,620	-	5,360	-	3,050	-	1,570	1,620	-

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October	49,420	1,920	1,410	1,594	98,020
November	53,820	1,980	1,620	1,794	106,800
December	66,000	2,980	1,570	2,129	130,900
Calendar year 1939	760,010	7,140	1,140	2,082	1,507,000
January	52,770	2,040	1,460	1,702	104,700
February	82,780	5,360	1,570	2,854	164,200
March	128,800	5,530	2,980	4,155	255,500
April	92,010	5,530	1,270	3,067	182,500
May	146,060	8,660	2,980	4,712	289,700
June	55,900	4,040	1,030	1,863	110,900
July	41,290	1,740	1,060	1,332	81,900
August	43,180	1,620	1,270	1,393	85,650
September	47,790	1,860	1,360	1,593	94,790
Water year 1939-40	859,820	8,660	1,030	2,349	1,706,000

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Reservoirs in Yakima River Basin, Wash.

(Location given is that of controlling dam or outlet work)

Keechelus Lake, on Yakima River, 3½ miles northwest of Martin, completed in 1917 for irrigation, has usable capacity of 153,000 acre-feet at spillway crest. Records furnished by Bureau of Reclamation.

Kachess Lake, on Kachess River, 2½ miles northwest of Easton, completed in 1912 for irrigation, has usable capacity of 239,000 acre-feet at spillway crest. Records furnished by Bureau of Reclamation.

Cle Elum Lake, on Cle Elum River, 4 miles northwest of Roslyn, completed in 1933 for irrigation, has usable capacity of 436,000 acre-feet at spillway crest. Records furnished by Bureau of Reclamation.

Bumping Lake, on Bumping River, 12 miles upstream from American River, 19 miles west of Nile, completed in 1910 for irrigation, has usable capacity of 33,800 acre-feet at spillway crest. Records furnished by Bureau of Reclamation.

Tieton Reservoir, on Tieton River just upstream from Wild Cat Creek at Rimrock, 22⅛ miles southwest of Naches, completed in 1925 for irrigation, has usable capacity of 197,000 acre-feet at spillway crest. Records furnished by Bureau of Reclamation.

Other reservoirs.- Clear Creek Reservoir, on North Fork of Tieton River, 28 miles southwest of Naches, completed in 1918 for irrigation, has usable capacity of 5,300 acre-feet at spillway crest. No records for this reservoir.

Monthly gage height and contents, water year October 1939 to September 1940

Date	Keechelus Lake			Kachess Lake			Cle Elum Lake		
	Gage height† (feet)	Contents (acre-feet)	Change in contents during month (acre-feet)	Gage height† (feet)	Contents (acre-feet)	Change in contents during month (acre-feet)	Gage height† (feet)	Contents (acre-feet)	Change in contents during month (acre-feet)
Sept.30	64.54	52,510	-	28.12	101,860	-	83.59	199,890	-
Oct. 31	57.50	42,480	-10,030	26.80	97,230	-4,630	81.97	194,050	-5,840
Nov. 30	66.96	56,090	+13,610	29.41	106,440	+9,210	89.10	220,170	+26,120
Dec. 31	83.95	84,470	+28,380	35.20	127,510	+21,070	103.13	274,720	+54,550
Calendar year 1939	-	-	-28,070	-	-	-12,770	-	-	+16,420
Jan. 31	87.85	91,570	+7,400	36.90	133,880	+6,370	107.05	290,660	+15,940
Feb. 29	95.30	106,950	+15,080	40.01	145,780	+11,900	112.26	312,250	+21,590
Mar. 31	105.49	129,560	+22,610	45.04	165,760	+19,980	122.93	358,180	+45,930
Apr. 30	115.56	154,110	+24,550	52.26	196,000	+30,240	139.25	433,340	+75,160
May 31	113.44	148,770	-5,340	59.17	226,250	+30,250	140.10	437,430	+4,090
June 30	103.37	124,670	-24,100	56.04	212,400	-13,850	132.46	401,320	-36,110
July 31	82.72	82,210	-42,460	46.18	170,420	-41,980	107.11	290,910	-110,410
Aug. 31	59.22	44,890	-37,320	36.32	131,700	-38,720	75.12	169,960	-120,950
Sept.30	43.92	24,180	-20,710	26.73	96.980	-34,720	51.50	95,190	-74,770
Water year 1939-40	-	-	-28,330	-	-	-4,880	-	-	-104,700

Date	Bumping Lake			Tieton Reservoir		
Sept.30	93.35	2,770	-	76.21	94,140	-
Oct. 31	93.10	2,610	-160	74.70	91,590	-2,550
Nov. 30	93.22	2,680	+70	74.74	91,660	+70
Dec. 31	110.06	15,660	+12,980	85.43	110,460	+18,800
Calendar year 1939	-	-	+10,040	-	-	+7,550
Jan. 31	111.90	17,460	+1,800	92.68	124,210	+13,750
Feb. 29	117.41	23,300	+5,840	101.38	141,750	+17,540
Mar. 31	126.85	34,820	+11,520	113.53	168,140	+26,390
Apr. 30	126.84	34,810	-10	125.55	196,860	+28,720
May 31	127.03	35,060	+250	126.67	199,690	+2,830
June 30	122.85	29,710	-5,350	120.65	184,800	-14,890
July 31	109.90	15,510	-14,200	107.26	154,230	-30,570
Aug. 31	93.45	2,830	-12,680	87.73	114,730	-39,500
Sept.30	93.00	2,540	-290	74.07	90,540	-24,190
Water year 1939-40	-	-	-230	-	-	-3,600

†Gage height is mean for the day.

Kachess River near Easton, Wash.

Location.- Water-stage recorder, lat. 47°15'30", long. 121°11'50", in sec. 3, T. 20 N., R. 13 E., three-quarters of a mile downstream from Kachess Lake and 2 miles northwest of Easton.
Drainage area.- 64 square miles.
Records available.- October 1903 to September 1940.
Average discharge.- 37 years, 285 second-feet (adjusted for storage since October 1905).
Extremes.- Maximum discharge during year, 795 second-feet (regulated) July 6 to 15 (gage height, 4.3 feet); no flow Nov. 4, 5, 14-16, 19-21, 23-30, Dec. 7, 8, 13, 14.
1903-40: Maximum discharge, 2,240 second-feet (computed from gate opening) Aug. 27, 1920; no flow when gates in dam are closed.
Remarks.- Records excellent except those for extremely low flow, which are poor. No diversion. Flow regulated by Kachess Lake. Record of daily discharge not adjusted for change in contents of Kachess Lake.
Cooperation.- Records furnished by Bureau of Reclamation. Four discharge measurements made by the Geological Survey.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used July 17 to Aug. 7)

Oct. 1 to July 16				Aug. 8 to Sept. 30	
0.6	0.7	2.0	46	2.5	119
.8	2.5	2.5	108	3.0	245
1.0	4.7	3.0	238	3.5	420
1.3	11	3.5	451	4.0	620
1.6	21	4.0	666		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	238	26	1	1	1	3	2	2	494	688	490	705
2	238	20	1	1	1	4	2	2	451	709	480	705
3	217	4	1	1	1	4	2	2	425	730	470	705
4	203	0	1	1	1	4	2	2	404	752	476	705
5	203	0	1	1	1	5	2	2	386	774	483	705
6	203	1	1	1	1	5	2	2	386	795	500	705
7	203	1	0	1	1	4	2	2	373	795	539	705
8	203	1	0	1	2	5	2	2	338	795	558	705
9	203	1	1	1	2	4	2	2	324	795	599	705
10	203	1	1	1	2	4	2	2	320	795	620	705
11	203	1	1	1	3	3	2	2	324	795	662	705
12	203	1	1	1	4	3	2	2	320	795	662	705
13	203	1	0	1	3	2	2	2	320	795	684	705
14	203	0	0	1	3	2	2	2	320	795	705	705
15	224	0	1	1	2	2	1	2	324	795	705	662
16	238	0	3	1	2	3	1	2	324	774	705	641
17	217	1	4	1	2	3	1	2	329	750	705	620
18	203	1	4	1	2	3	1	2	355	726	705	578
19	126	0	4	1	2	3	1	2	404	703	705	558
20	63	0	3	1	2	3	1	2	442	680	726	537
21	64	0	3	1	2	3	1	2	451	656	726	537
22	64	1	2	1	2	3	1	3	477	654	705	517
23	64	0	2	1	2	2	2	3	520	652	705	517
24	64	0	2	1	2	2	2	59	537	650	705	517
25	45	0	2	1	2	2	2	80	580	648	705	517
26	25	0	1	1	2	2	2	55	580	646	705	517
27	26	0	1	1	2	2	1	68	602	644	705	400
28	26	0	1	1	2	2	1	285	623	621	705	284
29	26	0	1	1	2	2	2	494	666	598	705	227
30	26	0	1	1	-	2	2	507	709	554	705	215
31	26	-	1	1	-	2	-	507	-	499	705	-

Month	Observed				Change in contents in Kachess Lake (acre-feet)	Adjusted for change in reservoir contents			
	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	238	25	144	8,830	-4,630	4,200	68.3	1.07	1.23
November	26	0	2.0	121	+9,210	9,330	157	2.45	2.73
December	4	0	1.5	91	+21,070	21,160	344	5.38	6.20
Calendar year 1939	1,540	0	269	195,000	-12,770	182,200	252	3.94	53.34
January	1	1	1.0	61	+6,370	6,430	105	1.64	1.89
February	4	1	1.9	111	+11,900	12,010	209	3.27	3.53
March	5	2	3.0	184	+19,980	20,160	328	5.12	5.90
April	2	1	1.7	99	+30,240	30,340	510	7.97	8.89
May	507	2	68.5	4,210	+30,250	34,460	560	8.75	10.09
June	709	320	437	26,000	-13,850	12,150	204	3.19	3.56
July	795	499	712	43,750	-41,980	1,770	28.8	.450	.52
August	726	470	644	39,580	-38,720	860	14.0	.219	.25
September	705	215	590	35,140	-34,720	420	7.1	.111	.12
Water year 1939-40	795	0	218	158,200	-4,880	153,300	211	3.30	44.91

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Cle Elum River near Roslyn, Wash.

Location.- Water-stage recorder, lat. 47°14'00", long. 121°03'30", in SW¼ sec. 11, T. 20 N., R. 14 E., 1,000 feet downstream from dam at Cle Elum Lake and 4 miles northwest of Roslyn.
Drainage area.- 202 square miles.
Records available.- October 1903 to September 1940.
Average discharge.- 37 years, 905 second-feet (adjusted for storage since January 1906).
Extremes.- Maximum discharge during year, 4,100 second-feet (regulated) May 11 (gage height, 10.03 feet); minimum, 2 second-feet (estimated) Oct. 16 to Jan. 10, when gates in dam at Cle Elum Lake were closed.
1903-40: Maximum discharge, 18,700 second-feet Nov. 15, 1906 (gage height, 14.05 feet); practically no flow when gates in dam are closed.
Remarks.- Records excellent except those between 10 and 100 second-feet, which are fair, and those below 10 second-feet, which are poor. No diversions above station. Flow partly regulated by Cle Elum Lake. Record of daily discharge not adjusted for change in contents of Cle Elum Lake.
Cooperation.- Records furnished by Bureau of Reclamation. Three discharge measurements made by Geological Survey.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used May 22 to June 3)

Oct. 1 to May 21								June 4 to Sept. 30			
4.1	6	4.7	107	5.6	443	7.0	1,220	6.0	660	7.7	1,780
4.3	23	5.0	206	6.0	630	8.0	1,980	6.5	930	8.4	2,410
4.5	56	5.3	317	6.5	900	9.0	2,960	7.0	1,250		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,020	2	2	2	37	39	41	1,250	2,030	2,040	1,870	2,000
2	830	2	2	2	37	39	41	1,250	2,030	2,040	1,870	1,740
3	706	2	2	2	37	39	41	1,150	2,040	2,040	1,950	1,620
4	706	2	2	2	37	39	43	1,080	2,000	2,040	2,000	1,620
5	655	2	2	2	37	39	43	1,440	2,000	2,040	2,000	1,620
6	562	2	2	2	37	39	43	1,540	1,920	2,080	2,000	1,580
7	529	2	2	2	37	39	43	1,320	1,700	2,080	2,080	1,580
8	511	2	2	2	37	39	43	1,580	1,700	2,130	2,130	1,580
9	488	2	2	2	37	39	43	2,120	1,700	2,130	2,130	1,580
10	488	2	2	24	37	39	45	2,840	1,660	2,130	2,130	1,580
11	488	2	2	36	37	39	45	3,900	1,660	2,180	2,180	1,500
12	488	2	2	36	37	39	45	2,920	1,540	2,180	2,180	1,470
13	488	2	2	36	37	39	45	2,090	1,390	2,220	2,180	1,250
14	493	2	2	36	37	39	45	2,200	1,360	2,220	2,180	1,280
15	304	2	2	36	37	39	45	2,070	1,500	2,270	2,180	1,430
16	11	2	2	37	37	39	45	2,070	1,660	2,270	2,180	1,220
17	2	2	2	37	37	39	45	2,070	1,660	2,320	2,180	1,150
18	2	2	2	37	37	39	45	2,070	1,660	2,410	2,180	1,150
19	2	2	2	37	37	39	45	2,300	1,700	2,410	2,180	1,150
20	2	2	2	37	37	39	45	2,650	1,700	2,410	2,180	1,150
21	2	2	2	37	37	39	45	2,750	1,700	2,410	2,180	1,150
22	2	2	2	37	37	39	434	2,400	1,740	2,410	2,180	1,150
23	2	2	2	37	37	39	516	2,130	1,740	2,270	2,180	1,180
24	2	2	2	37	37	39	516	2,170	1,740	2,180	2,180	1,180
25	2	2	2	37	37	39	520	2,220	1,740	2,180	2,180	1,150
26	2	2	2	37	39	39	493	2,220	1,780	2,130	2,130	1,150
27	2	2	2	37	39	39	980	2,150	1,780	2,040	2,130	1,150
28	2	2	2	37	39	39	1,500	2,100	1,950	2,000	2,080	1,080
29	2	2	2	37	39	39	1,460	2,060	2,000	1,870	2,080	547
30	2	2	2	37	-	41	1,320	2,060	2,040	1,780	2,040	537
31	2	-	2	37	-	41	-	2,020	-	1,780	2,000	-

Month	Observed				Change in contents in Cle Elum Lake (acre-feet)	Adjusted for change in reservoir contents			
	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	1,020	2	284	17,450	-5,840	11,610	189	0.936	1.08
November	2	2	2.0	119	+26,120	26,240	441	2.18	2.43
December	2	2	2.0	123	+54,550	54,670	889	4.40	5.07
Calendar year 1939	4,100	2	782	566,000	+16,420	582,400	804	3.98	54.09
January	37	2	26.3	1,610	+15,940	17,550	285	1.41	1.63
February	39	37	37.3	2,140	+21,590	23,730	413	2.04	2.20
March	41	39	39.1	2,410	+45,930	48,340	786	3.89	4.48
April	1,500	41	289	17,180	+75,160	92,340	1,552	7.68	8.57
May	3,900	1,080	2,071	127,300	+4,090	131,400	2,137	10.6	12.22
June	2,040	1,360	1,757	104,600	-36,110	68,490	1,151	5.70	6.36
July	2,410	1,780	2,151	132,300	-110,410	21,890	356	1.76	2.03
August	2,180	1,870	2,107	129,600	-120,950	8,650	141	.698	.80
September	2,000	537	1,517	78,390	-74,770	3,620	60.8	.301	.34
Water year 1939-40	3,900	2	845	613,200	-104,700	508,500	701	3.47	47.21

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
101805 - O U.S. GOVERNMENT PRINTING OFFICE 1936

Naches River below Tieton River, near Naches, Wash.

Location.- Water-stage recorder, lat. 46°44'40", long. 120°46'00", in SW¼NE¼ sec. 36, T. 15 N., R. 16 E., half a mile downstream from Wapatox power canal, three-quarters of a mile downstream from Tieton River, and 3½ miles northwest of Naches. Datum of gage is 1,550 feet above mean sea level.

Drainage area.- 943 square miles.

Records available.- August to October 1905, March 1909 to October 1912, May 1915 to September 1928, and October 1935 to September 1940, in reports of Geological Survey. September 1905, October 1908 to September 1912, and June 1915 to September 1929 (mean monthly discharge), in State Water-Supply Bulletin 5.

Average discharge.- 21 years (1908-12, 1916-28, 1935-40), 1,664 second-feet (adjusted for diversions by Selah Valley and Tieton canals since 1909, city of Yakima at Oak Flat since 1935, and by Wapatox canal since 1936, and adjusted for change in contents in Bumping Lake Reservoir since November 1910 and in Tieton Reservoir since October 1924).

Extremes.- Maximum discharge during year, 4,520 second-feet (regulated) May 11 (gage height, 13.98 feet); minimum, 6 second-feet (regulated) Jan. 25 (gage height, 9.25 feet).

1905, 1908-12, 1915-28, 1935-40: Maximum discharge, 18,800 second-feet Nov. 24, 1909 (gage height, 8.9 feet, site and datum then in use); minimum, 2 second-feet (regulated) Jan. 7, 1937 (gage height, 9.40 feet).

Bureau of Reclamation reports a flow of 32,200 second-feet Dec. 23, 1933 (gage height, 14.33 feet, site and datum then in use).

Remarks.- Records good except those for period of no gage-height record, and those below 50 second-feet, which are fair. Flow regulated by Bumping Lake and Tieton Reservoir, and by diversion at Oak Flat for supply of city of Yakima, and by diversions of Selah Valley, Tieton, and Wapatox canals. Records of daily discharge not adjusted.

Cooperation.- Station is maintained by Bureau of Reclamation in cooperation with Pacific Power & Light Co. Records furnished for publication by Bureau of Reclamation. Some discharge measurements made by Geological Survey. Information concerning municipal diversion at Oak Flat, which is very small in relation to flow past station, furnished by water superintendent of city of Yakima.

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	80	29	44	18	14	67	1,910	1,760	2,070	725	284	90
2	70	28	55	42	30	111	1,780	2,400	1,850	684	301	86
3	55	28	47	87	26	134	1,650	2,930	1,590	660	323	86
4	42	26	21	64	24	129	1,520	2,930	1,430	644	370	74
5	55	26	18	32	21	139	1,380	2,750	1,290	708	341	69
6	50	22	21	17	146	134	1,100	2,400	1,140	716	292	83
7	38	18	a65	16	336	142	905	2,230	1,040	668	379	111
8	75	41	a110	16	183	248	993	2,150	916	607	427	108
9	42	47	154	13	87	223	1,110	2,480	885	518	384	92
10	25	30	118	12	122	183	1,130	3,500	905	456	336	90
11	28	28	234	12	102	129	1,130	4,310	993	450	327	88
12	36	34	39	9	52	84	1,240	4,100	1,100	422	606	76
13	36	26	14	18	52	42	1,590	3,500	1,260	400	438	86
14	44	24	11	40	22	23	1,910	3,020	1,130	422	260	74
15	62	26	128	18	15	259	1,850	2,840	1,140	416	216	81
16	46	24	571	18	17	174	1,650	2,660	1,200	305	163	84
17	66	23	438	14	18	252	1,450	2,570	1,200	280	193	71
18	42	23	238	12	14	284	1,620	2,660	1,140	264	223	88
19	33	20	120	9	11	310	1,860	3,020	1,120	268	190	94
20	30	18	61	8	9	400	1,720	3,220	960	260	152	72
21	34	21	25	9	12	486	1,620	3,020	815	264	124	81
22	29	24	17	10	18	571	1,590	3,020	796	174	120	88
23	27	29	14	10	16	660	2,070	3,400	815	108	129	81
24	29	22	11	8	15	916	2,230	3,800	796	108	129	84
25	31	19	8	7	17	1,230	2,150	3,500	845	96	132	78
26	33	22	10	9	32	1,240	2,050	2,660	743	108	129	57
27	35	24	12	10	33	1,660	1,970	2,070	778	124	132	41
28	33	19	10	28	42	1,820	1,730	1,720	752	98	132	50
29	34	21	10	28	67	1,900	1,540	1,580	743	139	113	58
30	28	32	23	14	-	2,020	1,520	1,620	752	194	106	72
31	29	-	20	14	-	2,050	-	2,070	-	142	86	-

a No gage-height record; discharge interpolated.

Monthly discharge, in second-feet, of Naches River below Tieton River, near Naches, Wash., water year October 1939 to September 1940

Month	Observed				Change in contents (acre-feet)*	Diversions (acre-feet)†	Adjusted for change in reservoir contents 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	80	25	41.8	2,570	-2,710	19,000	18,860	307	0.326	0.38
November	47	18	25.9	1,540	+140	19,590	21,270	357	.379	.42
December	571	8	86.0	5,290	+31,780	28,190	65,260	1,061	1.13	1.30
Calendar year 1939	3,500	8	495	358,600	+17,590	82,600	858,700	1,186	1.26	17.07
January	87	7	20.1	1,230	+15,550	27,160	43,940	715	.758	.87
February	336	9	53.6	3,080	+23,380	27,370	53,830	936	.993	1.07
March	2,050	23	578	35,540	+37,910	29,170	102,600	1,669	1.77	2.04
April	2,230	905	1,599	95,140	+28,710	37,440	161,300	2,711	2.87	3.20
May	4,310	1,580	2,771	170,400	+3,080	56,660	230,100	3,742	3.97	4.58
June	2,070	743	1,075	63,960	-20,240	60,170	103,900	1,746	1.85	2.06
July	725	96	369	22,670	-44,770	61,770	39,670	645	.684	.79
August	606	86	243	14,950	-52,180	61,160	23,930	389	.413	.48
September	111	41	79.8	4,750	-24,480	43,810	24,080	405	.429	.48
Water year 1939-40	4,310	7	580	421,100	-3,830	71,500	888,700	1,224	1.30	17.67

*Change in contents in Bumping Lake and Tieton Reservoirs.
†Diversions by Tieton, Selah Valley and Wapatox canals and city of Yakima.

American River near Nile, Wash.

Location.- Water-stage recorder, lat. 46°58'30", long. 121°10'10", in SW¼ sec. 12, T. 17 N., R. 13 E., 300 feet upstream from Bumping Lake road crossing, three-quarters of a mile upstream from mouth, and 16 miles northwest of Nile. Datum of gage is 2,700.0 feet above mean sea level (Washington State Highway Department bench mark). Oct. 12 to Dec. 7, 1939, temporary staff gage at same site but different datum; gage readings reduced to present datum.

Drainage area.- 79 square miles.

Records available.- April 1909 to September 1911 and July 1913 to September 1915 (fragmentary), October 1939 to September 1940.

Extremes.- Maximum discharge during year, 940 second-feet May 24 (gage height, 74.74 feet); minimum discharge observed, 24 second-feet Oct. 16, 17 (gage height, 71.96 feet); discharge may have been less sometime during period of no gage-height record, Oct. 1-11.

Remarks.- Records good except those for periods of no gage-height record, which are poor, and those for period of shifting control, which are fair. No diversion or regulation.

Cooperation.- Records collected and prepared in cooperation with Bureau of Reclamation.

Rating table, water year 1939-40 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 12 to Dec. 6, Apr. 27 to June 5)

72.0	29	73.0	228	74.5	760
72.3	71	73.5	377	75.0	960
72.6	130	74.0	560		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a25	h36	h68	182	90	135	371	540	620	175	81	36
2	a25	h32	h96	250	83	148	345	660	540	165	78	37
3	a30	h32	a84	250	88	146	326	660	482	158	74	42
4	a30	h32	h71	228	85	144	308	640	482	151	71	41
5	a29	a30	h64	205	88	146	290	600	428	144	68	39
6	a29	h29	h65	182	163	146	278	560	391	137	66	38
7	a29	h29	83	177	202	158	290	520	377	130	60	38
8	a29	h36	180	167	167	190	323	540	348	126	59	39
9	a28	h49	247	155	167	177	345	640	351	121	58	45
10	a28	h45	270	148	184	165	355	800	394	115	56	48
11	a28	a45	267	130	170	158	345	900	439	110	53	42
12	h28	a45	197	132	160	148	342	820	464	108	50	46
13	h28	h45	160	130	155	144	414	720	482	104	49	59
14	h27	h43	155	128	148	139	464	680	418	100	48	53
15	a26	h42	267	119	139	144	446	660	380	96	49	46
16	h24	h39	367	115	137	163	439	660	371	92	49	43
17	h24	h37	320	110	130	172	422	660	342	88	49	42
18	h28	h37	264	106	123	177	464	680	339	85	49	41
19	h27	a36	239	94	115	187	482	760	355	81	49	39
20	h29	h34	220	92	106	205	464	800	323	88	49	38
21	h28	h29	194	86	104	223	442	760	296	108	48	36
22	a29	h37	170	90	106	239	446	800	267	88	48	34
23	h30	a37	153	90	106	267	520	880	250	85	46	36
24	h30	h37	135	110	104	320	540	900	252	83	46	32
25	h30	h36	126	160	108	355	540	800	261	78	45	32
26	h34	a32	123	210	123	377	520	680	239	90	43	30
27	h36	h29	117	212	117	391	501	580	220	96	45	34
28	h32	h28	115	192	123	374	482	540	205	88	46	39
29	a34	h27	132	98	128	367	464	520	194	85	43	36
30	h36	h42	184	96	-	401	446	580	187	85	42	33
31	h36	-	165	94	-	387	-	680	-	83	38	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off Inches	Run-off Acre-feet
October	906	36	24	29.2	0.370	0.43	1,800
November	1,087	49	27	36.2	.458	.51	2,160
December	5,298	367	64	171	2.16	2.49	10,510
Calendar year	-	-	-	-	-	-	-
January	4,538	250	86	146	1.85	2.14	9,000
February	3,719	202	83	128	1.62	1.75	7,380
March	6,893	401	135	222	2.81	3.24	13,670
April	12,414	540	278	414	5.24	5.84	24,620
May	21,220	900	520	685	8.67	9.99	42,090
June	10,697	620	187	357	4.52	5.04	21,220
July	3,343	175	78	108	1.37	1.57	6,630
August	1,655	81	38	53.4	.676	.78	3,280
September	1,194	59	30	39.8	.504	.56	2,370
Water year 1939-40	72,964	900	24	199	2.52	34.34	144,700

a No gage-height record; discharge interpolated or computed on basis of records for Greenwater River at Greenwater and North Fork of Ahtanum Creek near Tampico.
h Discharge computed from twice-daily staff-gage readings.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

Bumping River near Nile, Wash.

Location.- Water-stage recorder, lat. 46°52', long. 121°18', a quarter of a mile downstream from spillway of Bumping Lake Dam and 19 miles west of Nile, Yakima County.

Drainage area.- 68 square miles.

Records available.- June to July 1906, April 1909 to September 1940.

Average discharge.- 31 years (1909-40), 291 second-feet (adjusted for storage since November 1910).

Extremes (regulated).- Maximum discharge during year, 956 second-feet May 11 (gage height, 3.92 feet); minimum, 3 second-feet Dec. 13 (gage height, 0.90 foot).
1906, 1909-40: Maximum discharge, 5,180 second-feet Dec. 29, 1917 (gage height, 9.33 feet); practically no flow when gates in outlet conduit are closed.

Remarks.- Records good except those below 30 second-feet, which are fair. No diversion. Flow partly regulated by Bumping Lake (usable capacity, 33,800 acre-feet at spillway crest). Record of daily discharge not adjusted for change in contents of lake.

Cooperation.- Records furnished by Bureau of Reclamation. Three discharge measurements made by Geological Survey.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Apr. 19-24, May 30 to July 24)

Oct. 1 to Apr. 18								Apr. 25 to Sept. 30					
1.0	4	1.6	41	2.3	176	3.4	676	1.6	40	2.3	172	3.4	631
1.2	9	1.8	69	2.6	273			1.8	63	2.6	266	3.8	885
1.4	21	2.0	105	3.0	453			2.0	100	3.0	425		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	54	51	90	107	190	6	453	522	548	382	302	68
2	50	50	120	107	190	6	404	631	497	382	302	59
3	48	48	138	109	190	6	357	690	472	382	302	53
4	50	45	133	105	190	6	335	660	448	382	302	46
5	54	44	124	105	190	6	313	631	425	382	302	38
6	54	42	122	107	176	6	293	548	425	382	302	34
7	54	45	120	109	140	6	293	522	404	382	302	32
8	54	60	120	109	94	6	313	522	382	382	302	34
9	49	69	116	109	39	6	357	575	404	362	302	36
10	46	69	122	111	8	6	357	784	404	382	302	38
11	45	69	62	133	6	6	335	956	404	362	302	38
12	44	74	8	150	6	6	357	920	425	362	302	41
13	41	78	3	150	5	6	428	817	382	362	302	42
14	40	69	4	150	5	6	505	752	382	362	302	42
15	40	69	8	150	10	6	532	690	382	362	322	40
16	38	66	7	150	46	7	505	660	404	322	266	40
17	39	64	6	150	36	7	479	631	404	322	249	39
18	40	62	5	150	7	8	505	660	404	322	249	38
19	42	58	5	150	5	8	554	752	404	322	266	36
20	45	57	4	150	18	8	522	752	382	322	249	35
21	45	54	38	150	96	8	466	721	382	322	249	34
22	44	58	63	150	105	8	461	752	382	322	249	34
23	42	66	69	150	105	10	587	817	382	322	249	33
24	41	63	54	176	105	12	581	885	404	302	249	32
25	41	60	54	190	107	14	548	817	404	302	249	32
26	44	58	54	190	97	37	522	660	382	302	232	32
27	44	56	54	190	39	255	497	522	382	302	232	33
28	46	54	54	190	7	404	472	472	382	302	216	33
29	54	51	79	190	6	453	448	448	382	302	162	33
30	54	62	105	190	-	479	425	472	382	302	129	32
31	54	-	107	190	-	479	-	575	-	302	92	-

Month	Observed				Change in contents in Bumping Lake (acre-feet)	Adjusted for change in reservoir contents			
	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	54	38	46.3	2,850	-160	2,690	43.7	0.643	0.74
November	78	42	59.0	3,510	+70	3,580	60.2	.885	.99
December	138	3	66.1	4,060	+12,980	17,040	277	4.07	4.69
Calendar year 1939	1,310	3	222	161,000	+10,040	171,000	236	3.47	47.18
January	190	105	146	8,960	+1,800	10,760	175	2.57	2.96
February	190	5	76.5	4,400	+5,840	10,240	178	2.62	2.83
March	479	6	73.8	4,540	+11,520	16,060	261	3.84	4.43
April	587	293	440	26,190	-10	26,180	440	6.47	7.22
May	956	448	671	41,290	+250	41,540	676	9.94	11.46
June	548	382	408	24,290	-5,350	18,940	318	4.68	5.22
July	382	302	342	21,030	-14,200	6,830	111	1.63	1.88
August	322	92	262	16,140	-12,680	3,460	56.3	.828	.95
September	68	32	38.6	2,290	-290	2,000	33.6	.494	.55
Water year 1939-40	956	3	220	159,600	-230	159,300	219	3.22	43.92

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey

101809-0 U.S. GOVERNMENT PRINTING OFFICE 1936

Tieton River at Tieton Dam, near Naches, Wash.

Location.- Water-stage recorder, lat. 46°39'30", long. 121°07'20", 900 feet upstream from Wild Cat Creek, 1,200 feet downstream from Tieton Dam, 19 miles upstream from Oak Creek, and 22 miles southwest of Naches, Yakima County.
Drainage area.- 187 square miles.
Records available.- August 1908 to September 1914 (fragmentary), October 1918 to March 1919, and April 1925 to September 1939, in reports of Geological Survey. September 1908 to December 1913, July 1914 to September 1920, and May 1925 to September 1933, in State Water-Supply Bulletin 5.
Average discharge.- 21 years (1908-12, 1918-20, 1925-40), 469 second-feet (adjusted for storage since October 1925).
Extremes (regulated).- Maximum discharge during year, 1,320 second-feet May 24 (gage height, 4.92 feet); minimum, 8 second-feet Feb. 17-25.
1908-14, 1918-20, 1925-40: Maximum discharge, 8,450 second-feet Dec. 22, 1933 (gage height, 9.24 feet); no flow Apr. 4-6, 10, 1930.
Remarks.- Records good except those for very low flow, which are poor. No diversion. Flow regulated by Tieton Reservoir. Record of daily discharge not adjusted for change in contents of reservoir.
Cooperation.- Records furnished by Bureau of Reclamation. Records reviewed and some discharge measurements made by Geological Survey.

Rating tables, water year 1939-40 (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Feb. 5						Feb. 6 to Sept. 30							
1.5	11	2.1	66	3.0	234	1.5	10	2.1	51	3.0	216	4.5	1,020
1.7	24	2.4	105	3.5	420	1.7	18	2.4	88	3.5	420		
1.9	43	2.7	159			1.9	32	2.7	142	4.0	695		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	231	163	226	9	9	9	11	265	884	1,020	812	818
2	228	166	204	9	9	9	10	489	786	988	851	818
3	186	163	139	9	9	9	11	737	719	988	918	818
4	159	163	134	9	9	9	14	851	695	1,020	918	774
5	161	161	121	9	9	9	16	818	632	1,100	884	707
6	159	137	121	9	9	9	16	695	610	1,100	884	719
7	186	121	111	9	9	9	16	649	599	1,020	1,020	749
8	272	132	47	9	9	9	16	638	582	988	1,060	761
9	191	139	9	9	9	9	16	713	593	918	953	768
10	163	139	9	9	9	9	16	953	588	884	953	749
11	204	139	9	9	9	9	17	1,170	599	884	918	725
12	223	139	9	9	9	9	18	1,130	684	918	884	655
13	186	139	9	9	9	9	18	953	755	884	851	593
14	198	139	9	9	9	9	18	918	768	884	851	571
15	223	139	9	9	9	9	18	884	988	851	812	571
16	246	139	10	9	9	9	18	884	1,100	786	805	566
17	336	139	10	9	8	9	30	851	1,020	786	851	554
18	310	139	10	9	8	9	160	884	1,020	786	884	554
19	212	139	10	9	8	9	247	1,020	953	786	818	616
20	163	139	10	9	8	9	247	1,100	851	749	805	616
21	163	139	10	9	8	9	324	1,020	793	695	786	621
22	163	139	10	9	8	9	370	1,020	884	616	786	655
23	163	139	10	9	8	9	308	1,130	953	554	786	655
24	163	139	10	9	8	10	247	1,290	918	588	786	655
25	163	139	10	9	8	10	247	1,170	884	610	786	655
26	163	186	10	9	9	10	244	884	918	610	793	632
27	163	226	9	9	9	10	247	761	953	593	786	582
28	166	226	9	9	9	11	247	713	988	582	786	544
29	163	226	9	9	9	11	247	689	1,020	576	786	511
30	163	226	9	9	-	11	251	743	1,020	621	786	425
31	163	-	9	9	-	11	-	884	-	701	799	-

Month	Observed				Change in contents in Tieton Reservoir (acre-feet)	Adjusted for change in reservoir contents			
	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	336	159	195	11,970	-2,550	9,420	153	0.818	0.94
November	226	121	155	9,240	+70	9,310	156	.834	.93
December	226	9	42.6	2,620	+18,800	21,420	348	1.86	2.14
Calendar year 1939	1,480	7	361	261,600	+7,550	269,200	372	1.99	26.97
January	9	9	9.0	553	+13,750	14,300	233	1.25	1.44
February	9	8	8.7	500	+17,540	18,040	314	1.68	1.81
March	11	9	9.4	577	+26,390	26,970	439	2.35	2.71
April	370	10	122	7,270	+28,720	35,990	605	3.24	3.62
May	1,290	265	868	53,370	+2,830	56,200	914	4.89	5.64
June	1,100	582	825	49,100	-14,890	34,210	575	3.07	3.42
July	1,100	554	809	49,760	-30,570	19,190	312	1.67	1.92
August	1,060	786	852	52,360	-39,500	12,860	209	1.12	1.29
September	818	425	655	38,950	-24,190	14,760	248	1.33	1.48
Water year 1939-40	1,290	8	381	276,300	-3,600	272,700	376	2.01	27.34

UNITED STATES DEPARTMENT OF THE INTERIOR
Geological Survey
101605-0 U. S. GOVERNMENT PRINTING OFFICE 1936

Tieton River at headworks of Tieton canal, near Naches, Wash.

Location.- Water-stage recorder, lat. 46°40'10", long. 121°00'20", in sec. 30, T. 14 N., R. 15 E (unsurveyed), just downstream from intake of Tieton canal, 12 miles upstream from Oak Creek, 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 1940.
Average discharge.- 31 years (1907-16, 1918-40), 545 second-feet (adjusted for diversions since 1910 and for storage since October 1924).
Extremes (regulated).- Maximum discharge during year, 1,100 second-feet May 24 (gage height, 3.86 feet; minimum, not determined, probably occurred during period of ice effect.
1907-40: Maximum discharge, 8,910 second-feet Dec. 22, 1933 (gage height, 9.70 feet); no flow at times in 1926, 1929, 1931, 1932, 1934.
Remarks.- Records good except those below 50 second-feet, which are poor. Diversions for irrigation by Tieton canal. Flow regulated by Tieton Reservoir, 7 miles above gage. Record of daily discharge not adjusted for canal diversion or for change in contents of Tieton Reservoir.
Cooperation.- Records furnished by Bureau of Reclamation. Some discharge measurements made by Geological Survey.

Rating tables, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

Oct. 1 to Dec. 1				Dec. 2 to Sept. 30					
2.1	100	2.7	316	1.4	20	2.2	127	3.0	446
2.3	155	3.0	464	1.6	32	2.4	185	3.2	570
2.5	230			1.8	53	2.6	258	3.4	720
				2.0	83	2.8	345	3.6	880

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	243	149	149	27	47	56	49	173	612	704	476	487
2	e225	146	154	29	39	59	46	345	512	672	505	481
3	e192	146	138	30	28	59	35	612	441	680	550	481
4	e156	146	127	28	26	59	24	704	409	696	570	441
5	e156	146	113	28	27	57	22	664	350	768	564	359
6	e157	125	113	b26	67	57	21	564	332	776	538	359
7	172	108	103	b22	61	66	22	518	296	728	656	414
8	255	118	64	b20	46	75	27	512	262	664	704	420
9	202	128	29	b20	45	67	26	557	283	591	640	435
10	155	128	29	b21	51	61	26	784	292	544	598	420
11	180	125	27	b22	46	54	29	990	292	570	570	393
12	206	125	25	b22	45	48	46	974	364	524	544	332
13	186	125	24	b23	43	38	93	784	446	544	538	262
14	183	125	23	b23	40	38	64	720	430	557	512	239
15	218	128	35	b24	37	43	51	672	648	531	481	247
16	234	131	42	24	36	61	31	640	800	470	458	254
17	330	131	40	24	36	66	31	633	688	458	512	254
18	312	131	32	b23	35	66	103	672	696	458	557	258
19	226	131	31	b20	31	69	210	776	626	458	505	318
20	155	131	30	b18	31	78	182	832	544	430	470	336
21	155	131	27	b16	32	81	220	792	476	350	446	340
22	155	131	26	b16	33	85	254	792	550	287	446	369
23	155	131	26	b15	33	89	228	888	619	220	458	398
24	155	131	27	b16	33	113	146	1,030	598	254	458	414
25	155	131	30	b18	35	108	151	948	577	262	470	425
26	155	140	30	b22	40	91	151	696	612	258	476	404
27	155	146	27	26	41	81	143	505	656	235	476	359
28	155	146	25	28	51	66	140	446	672	220	470	332
29	155	146	26	28	54	59	135	414	688	220	464	296
30	155	146	31	30	-	64	138	446	712	258	464	300
31	155	-	28	31	-	56	-	591	-	345	464	-

Month	Observed				Change in contents in Tieton Reservoir (acre-feet)	Diverted by Tieton canal (acre-feet)	Adjusted for change in reservoir contents and diversion			
	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	330	155	189	11,600	-2,550	-	9,050	147	0.612	0.71
November	149	108	133	7,940	+70	684	8,690	146	.608	.68
December	154	23	52.6	3,240	+18,800	282	22,320	363	1.51	1.74
Calendar year 1939	1,110	15	233	168,400	+7,550	104,900	280,900	388	1.62	21.96
January	31	15	23.2	1,430	+13,750	-	15,180	247	1.03	1.19
February	67	26	40.3	2,320	+17,540	-	19,860	345	1.44	1.55
March	113	38	66.8	4,110	+26,390	750	31,250	508	2.12	2.44
April	254	21	94.8	5,640	+28,720	6,150	40,510	681	2.84	3.17
May	1,030	173	667	41,010	+2,830	15,770	59,610	969	4.04	4.66
June	800	262	516	30,710	-14,890	18,750	34,570	581	2.42	2.70
July	776	220	475	29,220	-30,570	19,870	18,520	301	1.25	1.44
August	704	446	517	31,810	-39,500	20,080	12,390	202	.842	.97
September	487	239	361	21,480	-24,190	16,100	13,390	225	.938	1.05
Water year 1939-40	1,030	15	262	190,500	-3,600	98,440	285,300	393	1.64	22.30

b Stage-discharge relation affected by ice.
e Part of flow diverted into Tieton canal and returned to river below gage. Recorded discharge corrected by this amount.

North Fork of Ahtanum Creek near Tampico, Wash.

Location.- Water-stage recorder, lat. 46°33'40", long. 120°55'10", in NW¼ sec. 2, T. 12 N., R. 15 E., 100 feet downstream from Nasty Creek, 3½ miles northwest of Tampico and mouth of South Fork, and 20 miles west of Yakima.

Drainage area.- 69 square miles.

Records available.- August 1907 to September 1924 (incomplete), March 1931 to September 1940.

Extremes.- Maximum discharge during year, 233 second-feet May 10, 11 (gage height, 1.71 feet); minimum, 5.8 second-feet Dec. 24 (gage height, 0.13 foot), but may have been less during periods of ice effect.
1907-24, 1931-40: Maximum discharge, 755 second-feet Dec. 22, 1933; maximum gage height, 4.6 feet June 18, 1916; minimum discharge, that of Dec. 24, 1939, but may have been less during periods of ice effect.

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

Cooperation.- Records collected in cooperation with Office of Indian Affairs.

Rating table, water year 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)

0.3	18	1.1	111
.5	36	1.4	168
.7	57	1.7	231
.9	81		

Discharge, in second-feet, water year October 1939 to September 1940

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	12	14	21	14	44	100	140	137	36	20	14
2	11	12	15	28	14	45	94	164	127	36	19	14
3	12	12	13	23	14	44	89	162	120	34	19	14
4	12	12	13	20	14	a44	87	156	118	34	19	14
5	12	12	13	17	18	a44	80	144	109	33	18	14
6	12	13	13	10	66	a43	76	135	105	30	18	14
7	12	12	13	b8.0	66	a43	80	137	101	29	17	13
8	12	13	24	b8.0	44	a43	85	144	95	28	16	13
9	12	12	22	b7.0	38	a43	87	168	97	27	16	13
10	12	12	34	b8.0	36	a42	87	205	101	25	16	18
11	12	12	22	b8.0	34	a42	91	218	103	24	17	14
12	12	12	16	b8.0	31	42	97	194	105	23	17	14
13	12	12	15	b9.0	31	40	125	173	101	24	16	14
14	12	12	16	b10	28	38	140	174	92	23	15	14
15	12	12	38	14	26	45	131	174	85	23	15	14
16	11	12	42	16	26	63	120	170	80	23	15	14
17	11	12	33	16	25	68	118	172	74	22	15	16
18	12	12	21	14	24	70	137	178	74	21	14	13
19	12	12	19	12	22	73	135	194	71	21	14	13
20	12	12	18	b10	22	80	127	196	67	26	14	12
21	12	12	16	b8.0	24	87	118	184	62	28	14	12
22	11	12	14	b8.0	*23	92	122	188	56	23	15	12
23	11	12	14	b8.0	22	97	148	198	54	22	16	13
24	11	12	7.6	b10	22	120	133	203	50	21	15	13
25	12	12	b7.0	12	25	125	144	184	49	21	14	12
26	12	12	b8.0	13	31	125	144	156	47	29	14	13
27	12	12	b10	15	32	120	137	140	44	26	14	16
28	13	12	14	15	42	106	131	133	43	24	16	17
29	13	13	17	14	44	109	122	131	40	22	15	14
30	12	13	23	14	-	115	122	137	38	20	14	14
31	12	-	19	14	-	106	-	142	-	20	14	-

Month	Second-foot-days	Maximum	Minimum	Mean	Per square mile	Run-off: Inches	Run-off: Acre-feet
October	367	13	11	11.8	0.171	0.20	728
November	364	13	12	12.1	.175	.20	722
December	563.6	42	7.0	18.2	.264	.30	1,120
Calendar year 1939	12,662.1	152	7.0	34.7	.503	6.82	25,110
January	398	28	7.0	12.8	.186	.21	789
February	858	66	14	29.6	.429	.46	1,700
March	2,198	125	38	70.9	1.03	1.18	4,360
April	3,407	148	76	114	1.65	1.84	6,760
May	5,199	218	131	168	2.43	2.80	10,310
June	2,445	137	38	81.5	1.18	1.32	4,850
July	798	36	20	25.7	.372	.43	1,580
August	491	20	14	15.8	.229	.26	974
September	415	18	12	13.8	.200	.22	823
Water year 1939-40	17,503.6	218	7.0	47.8	.693	9.42	34,720

Peak discharge.- May 9 (11 p.m.) 203 sec.-ft.; May 10 (10 p.m.) to (1 a.m.) May 11, 233 sec.-ft.; May 19 (10 p.m.) 218 sec.-ft.; May 23 (12 p.m.) 222 sec.-ft.
*Winter discharge measurement made on this day.
a No gage-height record; discharge interpolated.
b Stage-discharge relation affected by ice.

South Fork of Ahtanum Creek at Conrad Ranch, near Tampico, Wash.

Location.- Staff gage, lat. 46°30'30", long. 120°54'50", in W½ sec. 23, T. 12 N., R. 15 E., at Conrad Ranch, 2½ miles upstream from North Fork of creek, 2¾ miles southwest of Tampico, and 20 miles southwest of Yakima.

Drainage area.- 24.5 square miles (revised).

Records available.- March 1915 to September 1924 (fragmentary), March 1931 to September 1940.

Extremes.- Maximum discharge observed during year, 45 second-feet May 11 (gage height, 1.06 feet); minimum not determined, probably occurred during period of ice effect.
1915-24, 1931-40: Maximum discharge observed, 424 second-feet Dec. 23, 1933 (gage height, 3.10 feet); minimum, 2.6 second-feet Aug. 23, 25, 1931 (gage height, 0.35 foot).
Revisions: The maximum discharge observed for the water year 1939 has been revised to 34 second-feet May 15-17 (gage height, 1.10 feet); minimum not determined, probably occurred during period of ice effect (figure previously published may be too high). These figures supersede those published in Water-Supply Paper 882.

Remarks.- Records fair except those for periods of ice effect and shifting control, which are poor. Gage read twice daily. A few diversions above station for irrigation.

Cooperation.- Records collected in cooperation with Office of Indian affairs.

Revisions.- Revised figures of discharge for water year 1939, superseding those published in Water-Supply Paper 882, are given herein.

Rating tables, water years 1938-39 and 1939-40, except periods of ice effect (gage height, in feet, and discharge, in second-feet)
(Shifting-control method used Oct. 1-4, 1938, Oct. 23 to Dec. 21, 1939)

Oct. 1, 1938, to Dec. 21, 1939				Dec. 21, 1939, to Sept. 30, 1940			
0.6	5.2	0.9	20	0.5	5.2	0.8	20
.7	9.0	1.0	27	.6	8.8	.9	29
.8	14			.7	14	1.0	38

Discharge, in second-feet, 1938-40

1938-39

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.6	8.2	6.6	7.0	b5	5.6	18	25	24	8.2	4.9	4.9
2	6.6	7.8	6.6	8.2	b5	5.2	20	25	22	8.6	4.6	4.1
3	6.6	12	6.6	7.8	b5	5.6	20	28	21	9.0	4.6	4.1
4	7.4	8.6	10	b7	b5	5.6	20	30	20	8.2	4.6	4.1
5	10	7.8	10	b6	b5	5.2	18	28	20	8.6	4.6	4.1
6	7.8	7.8	8.2	b5	5	5.2	16	27	19	8.2	4.6	3.5
7	7.4	8.2	9.0	b4	b5	9.5	14	27	19	8.2	4.6	3.8
8	7.0	8.2	9.0	b5	b5	5.2	14	29	18	8.2	4.6	3.5
9	6.6	7.4	8.2	b5	b4	5.6	15	30	18	8.2	4.6	3.5
10	6.6	6.6	b8	5.9	b4	5.9	14	30	16	7.4	4.6	3.8
11	8.6	6.3	b7	6.6	b4	5.2	14	30	15	7.4	4.6	3.8
12	7.4	7.0	b6	6.3	b5	5.2	14	31	14	7.0	4.6	3.8
13	7.4	7.4	b5	5.9	b5	5.2	14	33	14	6.6	4.6	4.1
14	6.6	7.4	b4	5.9	7.0	5.2	14	33	13	6.6	4.4	4.1
15	6.6	7.4	b3	5.9	9.0	5.2	14	34	13	6.6	4.6	3.8
16	6.6	7.8	b3	5.9	9.0	5.2	14	34	13	6.6	4.6	3.8
17	7.0	8.2	b4	5.9	5.9	5.9	15	34	13	6.6	4.6	3.8
18	7.0	7.8	b4	5.9	5.9	9.0	15	33	12	6.3	4.4	3.8
19	6.6	7.4	b4	5.9	5.9	11	15	31	12	5.9	4.1	3.8
20	6.6	7.4	b5	5.9	5.9	13	16	30	12	5.9	4.1	3.8
21	6.6	7.4	b5	5.9	5.9	15	21	30	12	6.6	4.1	3.8
22	6.6	b7	b5	b6	5.6	19	22	27	12	5.9	4.1	3.6
23	6.6	b6	b5	b5	5.9	24	22	30	11	5.2	4.1	3.5
24	6.6	b5	b5	b5	5.9	26	24	33	11	5.2	4.1	3.5
25	6.6	b5	b5	b5	5.6	27	22	31	11	5.6	4.1	3.5
26	6.6	b5	b6	b5	5.6	25	22	31	10	5.2	4.1	3.5
27	6.6	b6	6.3	b5	5.2	22	21	30	10	5.2	4.1	3.5
28	6.6	b7	6.6	b5	5.9	20	23	25	9.0	5.2	4.1	3.5
29	7.0	7.4	6.3	5.6	-	20	25	24	9.0	5.2	4.1	3.5
30	8.2	7.4	6.6	5.9	-	18	25	24	9.0	4.9	4.1	3.8
31	8.2	-	6.6	b6	-	17	-	24	-	4.9	4.4	-

b Stage-discharge relation affected by ice.

UNITED STATES DEPARTMENT OF THE INTERIOR
Geolog al Survey

Discharge, in second-feet, of South Fork of Ahtanum Creek, at Conrad Ranch, near Tampico, Wash., 1938-40--Continued

1939-40

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.8	4.9	5.2	5.2	b4	27	31	32	27	8.8	5.8	4.2
2	3.8	4.9	5.6	5.2	b4	24	29	32	27	8.8	5.8	3.9
3	3.8	4.9	5.6	5.2	b5	25	27	32	25	8.8	5.8	4.2
4	3.8	4.9	5.2	5.5	4.9	22	25	32	24	8.8	5.8	4.2
5	3.8	4.9	5.2	5.8	6.5	22	24	31	24	8.8	5.8	4.2
6	3.8	4.9	5.2	6.2	16	21	22	31	22	8.0	5.5	4.2
7	3.8	5.6	6.3	5.5	12	20	21	29	20	8.0	5.2	4.2
8	4.1	5.6	6.6	b5	11	20	20	31	20	7.3	5.2	4.2
9	4.1	5.9	7.0	b5	11	20	20	34	19	7.3	5.2	4.4
10	4.1	5.9	7.0	b4	12	19	20	38	17	7.3	4.9	5.2
11	4.1	5.9	7.0	b3	11	18	21	45	16	7.3	4.7	4.2
12	4.1	5.9	6.3	b3	12	16	24	43	16	7.3	4.7	4.2
13	4.1	5.6	5.6	b3	11	14	25	43	16	7.3	4.7	4.7
14	4.1	5.6	5.2	b3	9.7	14	29	41	14	6.6	4.7	4.7
15	4.1	5.2	9.5	b4	8.8	14	25	41	14	6.9	4.7	4.2
16	4.1	5.2	11	4.2	8.0	23	24	41	14	7.3	4.2	4.2
17	4.1	5.2	8.2	4.7	8.0	24	24	42	13	6.6	4.2	4.2
18	4.1	5.2	7.0	b4	8.0	25	25	42	13	6.6	4.2	4.2
19	4.1	5.2	5.9	b3	8.4	25	25	42	13	6.6	4.2	4.2
20	4.1	5.2	5.2	b3	8.4	28	25	43	12	7.3	4.7	4.2
21	4.6	5.2	4.7	b3	8.4	31	24	43	12	6.6	4.2	4.2
22	4.6	5.2	4.2	b3	8.4	31	24	41	12	6.6	4.2	4.2
23	4.6	5.2	3.7	b4	8.8	32	29	43	11	6.6	4.2	4.2
24	5.2	5.2	b4	b5	8.8	36	29	43	11	6.6	4.2	4.2
25	5.2	5.2	b3	b6	9.7	36	30	41	11	7.3	4.2	4.2
26	5.2	5.2	b3	b7	12	36	32	38	11	8.8	4.2	4.2
27	5.2	5.2	b4	b7	18	36	31	36	11	7.3	4.2	4.9
28	5.2	4.9	b5	b7	34	36	31	32	9.7	6.6	4.4	4.7
29	4.9	4.9	5.2	b6	36	34	29	31	9.7	5.8	4.2	4.2
30	4.9	5.2	5.2	b6	-	34	29	29	8.8	5.8	4.2	4.2
31	4.9	-	5.2	b5	-	32	-	29	-	5.8	4.2	-

b Stage-discharge relation affected by ice.

Monthly discharge, in second-feet, 1938-40

Month	Second-foot-days	Maximum	Minimum	Mean	Run-off in acre-feet
October 1938	219.2	10	6.6	7.07	435
November	219.9	12	5	7.33	436
December	190.6	10	3	6.15	378
Calendar year 1938	8,841.3	124	3	24.2	17,540
January 1939	180.4	8.2	4	5.82	358
February	156.2	9.0	4	5.58	310
March	361.7	27	5.2	11.7	717
April	541	25	14	18.0	1,070
May	911	34	24	29.4	1,810
June	432.0	24	9.0	14.4	857
July	207.4	9.0	4.9	6.69	411
August	136.3	4.9	4.1	4.40	270
September	113.9	4.9	3.5	3.80	226
Water year 1938-39	3,669.6	34	3	10.1	7,280
October 1939	134.4	5.2	3.8	4.34	267
November	158.0	5.9	4.9	5.27	313
December	177.0	11	3	5.71	351
Calendar year 1939	3,509.3	34	3	9.61	6,960
January 1940	145.5	7	3	4.69	289
February	323.8	36	4	11.2	642
March	795	36	14	25.6	1,580
April	774	32	20	25.8	1,540
May	1,151	45	29	37.1	2,280
June	473.2	27	8.8	15.8	939
July	224.6	8.8	5.8	7.25	445
August	146.4	5.8	4.2	4.72	290
September	129.1	5.2	3.9	4.30	256
Water year 1939-40	4,632.0	45	3	12.7	9,190

In addition to the records of stream flow obtained at gaging stations and reported in the preceding pages, measurements of flow were made also at the points in the Pacific slope basins in Washington and upper Columbia River Basin indicated in the following table:

Miscellaneous discharge measurements in Pacific slope basins in Washington and upper Columbia River Basin during water year October 1939 to September 1940

Chambers Creek Basin, Wash.

Date	Stream	Tributary to or diverting from-	Locality	Discharge (sec.-ft.)
Feb. 1	Clover Creek.....	Steilacoom Lake....	NW¼ sec. 16, T. 19 N., R. 3 E., at crossing of State Highway 5, near Parkland.	4.10
Aug. 16	....do.....	....do.....	....do.....	1.81
16	....do.....	....do.....	SE¼ sec. 7, T. 19 N., R. 3 E., just above Spanaway Creek, near Parkland.	a.1
Feb. 1	....do.....	....do.....	SE¼ sec. 7, T. 19 N., R. 3 E., just below Spanaway Creek at east edge McChord Field, near Parkland.	9.62
Aug. 16	....do.....	....do.....	....do.....	5.21
Sept. 6	....do	....do.....	....do.....	3.94
Dec. 29	....do.....	....do.....	NE¼ sec. 18, T. 19 N., R. 3 E., just above Morey Creek, in McChord Field, near Parkland.	8.94
Feb. 1	....do.....	....do.....	....do.....	15.4
Aug. 16	....do.....	....do.....	....do.....	6.31
Sept. 6	....do.....	....do.....	....do.....	4.69
Dec. 29	....do.....	....do.....	SE¼ sec. 12, T. 19 N., R. 2 E., at west edge McChord Field, near Fort Lewis.	13.9
Feb. 1	....do.....	....do.....	....do.....	17.0
Aug. 16	....do.....	....do.....	....do.....	8.60
Sept. 6	....do.....	....do.....	....do.....	7.27
Dec. 29	....do.....	....do.....	SE¼ sec. 11, T. 19 N., R. 2 E., at crossing of U. S. Highway 99, near Fort Lewis.	8.41
Feb. 1	....do.....	....do.....	....do.....	14.1
Aug. 16	....do.....	....do.....	....do.....	5.34
Sept. 6	....do.....	....do.....	....do.....	3.94
Dec. 29	....do.....	....do.....	NW¼ sec. 11, T. 19 N., R. 2 E., on Dwight Orr property, near Fort Lewis.	0
Feb. 1	....do.....	....do.....	....do.....	12.9
Aug. 16	....do.....	....do.....	....do.....	4.40
Sept. 6	....do.....	....do.....	....do.....	2.43
Aug. 16	....do.....	....do.....	NW¼ sec. 11, T. 19 N., R. 2 E., at crossing of Gravelly Lake road, near Fort Lewis.	3.52
Sept. 6	....do.....	....do.....	....do.....	2.23
Jan. 6	....do.....	....do.....	SW¼SW¼ sec. 2, T. 19 N., R. 2 E., at private bridge just above mouth, near Fort Lewis.	0
13	....do.....	....do.....	....do.....	13.0
Feb. 12	....do.....	....do.....	....do.....	24.2
Mar. 18	....do.....	....do.....	....do.....	53.5
Apr. 5	....do.....	....do.....	....do.....	44.6
May 2	....do.....	....do.....	....do.....	34.6
June 4	....do.....	....do.....	....do.....	14.5
July 5	....do.....	....do.....	....do.....	b.33
Aug. 9	....do.....	....do.....	....do.....	0
Sept.16	....do.....	....do.....	....do.....	0
Dec. 29	Spanaway Creek....	Clover Creek.....	NE¼ sec. 20, T. 19 N., R. 3 E., just below Military Road crossing, near Parkland.	8.27
Feb. 1	....do.....	....do.....	....do.....	10.5
Aug. 16	....do.....	....do.....	....do.....	6.25
Feb. 1	Morey Creek.....	....do.....	NE¼ sec. 18, T. 19 N., R. 3 E., at east edge of McChord Field, near Fort Lewis.	5.00
Aug. 16	....do.....	....do.....	....do.....	1.65
Sept. 6	....do.....	....do.....	....do.....	1.74
Dec. 29	....do.....	....do.....	NE¼ sec. 18, T. 19 N., R. 3 E., at mouth, in McChord Field, near Fort Lewis.	3.76
Feb. 1	....do.....	....do.....	....do.....	.45
Aug. 16	....do.....	....do.....	....do.....	1.68
Sept. 6	....do.....	....do.....	....do.....	1.40
Oct. 13	Ponce de Leon Springs Creek.	Steilacoom Lake....	NE¼SE¼ sec. 3, T. 19 N., R. 2 E., near Lakeview.	6.38
Dec. 20	....do.....	....do.....	....do.....	9.21
Jan. 13	....do.....	....do.....	....do.....	15.3
Mar. 19	....do.....	....do.....	....do.....	24.1
Apr. 5	....do.....	....do.....	....do.....	22.6
May 2	....do.....	....do.....	....do.....	19.1
June 4	....do.....	....do.....	....do.....	15.1
July 5	....do.....	....do.....	....do.....	10.7
Aug. 9	....do.....	....do.....	....do.....	8.54
Sept.16	....do.....	....do.....	....do.....	7.81
Oct. 14	Fish Hatchery Springs Creek.[c]	Chambers Creek.....	NE¼SE¼ sec. 27, T. 20 N., R. 2 E., near Steilacoom.	6.02
Dec. 20	....do.....	....do.....	....do.....	6.42
Mar. 19	....do.....	....do.....	....do.....	8.53
Apr. 5	....do.....	....do.....	....do.....	8.72
May 2	....do.....	....do.....	....do.....	7.24

a Estimated.
b No flow at mouth.
c Discharge of 7.10 second-feet was measured at this location on May 5, 1939.

Miscellaneous discharge measurements in Pacific slope basins in Washington and upper Columbia River Basin during water year October 1939 to September 1940--Continued

Chambers Creek Basin, Wash.--Continued

Date	Stream	Tributary to or diverting from-	Locality	Discharge (sec.-ft.)
June 3	Fish Hatchery Springs Creek.	Chambers Creek.....	NE¼SE¼ sec. 27, T. 20 N., R. 2 E., near Steilacoom.	8.05
July 3	....do.....	....do.....	....do.....	7.28
Aug. 9	....do.....	....do.....	....do.....	5.63
Sept.14	....do.....	....do.....	....do.....	6.61
Oct. 13	Flett Creek.....	....do.....	SE¼SW¼ sec. 26, T. 20 N., R. 2 E., near Steilacoom.	6.40
Dec. 20	....do.....	....do.....	....do.....	12.9
Mar. 19	....do.....	....do.....	....do.....	23.6
Apr. 4	....do.....	....do.....	....do.....	24.0
May 2	....do.....	....do.....	....do.....	19.4
June 4	....do.....	....do.....	....do.....	10.5
July 3	....do.....	....do.....	....do.....	6.82
Aug. 9	....do.....	....do.....	....do.....	4.00
Sept.16	....do.....	....do.....	....do.....	6.55
Oct. 13	Leach Creek.....	....do.....	NW¼NW¼ sec. 26, T. 20 N., R. 2 E., near Steilacoom.	10.7
Dec. 20	....do.....	....do.....	....do.....	17.8
Mar. 19	....do.....	....do.....	....do.....	13.2
Apr. 4	....do.....	....do.....	....do.....	12.4
May 2	....do.....	....do.....	....do.....	11.5
June 4	....do.....	....do.....	....do.....	11.2
July 3	....do.....	....do.....	....do.....	d11.4
Aug. 9	....do.....	....do.....	....do.....	8.50
Sept.16	....do.....	....do.....	....do.....	11.0

d Mean of two measurements.

Puyallup River Basin, Wash.

Oct. 13	Maplewood Springs Creek.	Clark Creek.....	NE¼SE¼ sec. 32, T. 20 N., R. 4 E., just below forks at pumping plant, at Puyallup.	26.8
Dec. 21	....do.....	....do.....	....do.....	26.4
Mar. 18	....do.....	....do.....	....do.....	22.4
Apr. 5	....do.....	....do.....	....do.....	22.3
May 2	....do.....	....do.....	....do.....	22.1
June 5	....do.....	....do.....	....do.....	23.2
July 5	....do.....	....do.....	....do.....	25.7
Aug. 11	....do.....	....do.....	....do.....	23.6
Sept.10	....do.....	....do.....	....do.....	24.7

Lake Washington Basin, Wash.

May 27	Rock Creek.....	Cedar River.....	Landsberg-Issaquah road culvert near Landsberg.	5.50
June 27	....do.....	....do.....	....do.....	3.17
July 22	....do.....	....do.....	....do.....	2.96
Aug. 31	....do.....	....do.....	....do.....	2.99
Sept.18	....do.....	....do.....	....do.....	3.60
Feb. 20	Bear Creek.....	Sammamish River....	E½ sec. 11, T. 25 N., R. 5 E., at mouth, near Redmond.	101
May 1	....do.....	....do.....	....do.....	173
22	....do.....	....do.....	....do.....	37.3
June 22	....do.....	....do.....	....do.....	23.6
July 27	....do.....	....do.....	....do.....	34.1
Aug. 28	....do.....	....do.....	....do.....	19.4
Sept.23	....do.....	....do.....	....do.....	18.4

Skagit River Basin, Wash.

Aug. 29	Day Creek.....	Skagit River.....	NW¼ sec. 28, T. 35 N., R. 6 E., near Lyman.	29.7
Sept.29	....do.....	....do.....	....do.....	16.4

Kootenai River Basin, British Columbia

Nov. 14	Kootenai River....	Columbia River.....	Grohman Narrows, 2 miles below Nelson; measurements referred to gage 10 at Nelson; (station 8 N. J. 9 of Dominion Water and Power Bureau, Department of Mines and Resources, Canada).	13,210
Mar. 20	....do.....	....do.....	....do.....	10,380
Apr. 24	....do.....	....do.....	....do.....	23,490
May 23	....do.....	....do.....	....do.....	56,820
June 18	....do.....	....do.....	....do.....	58,460
July 23	....do.....	....do.....	....do.....	25,990
Sept.11	....do.....	....do.....	....do.....	14,300
Nov. 14	....do.....	....do.....	Glade (station 8 N. J. 1 of Dominion Water and Power Bureau, Department of Mines and Resources, Canada).	15,440
Jan. 24	....do.....	....do.....	....do.....	8,350
Mar. 20	....do.....	....do.....	....do.....	11,650
Apr. 24	....do.....	....do.....	....do.....	27,310
May 23	....do.....	....do.....	....do.....	71,570
June 18	....do.....	....do.....	....do.....	68,980
July 23	....do.....	....do.....	....do.....	27,650
Sept.11	....do.....	....do.....	....do.....	15,160
May 26	Nicks Slough.....	Kootenai River.....	In two channels 2½ miles downstream from diversion point, which is ½ mile below Creston Ferry and 4 miles west of Creston. Gage is Creston Ferry river gage (station 8 N. H. 28 of Dominion Water and Power Bureau, Department of Mines and Resources, Canada).	963

Miscellaneous discharge measurements in Pacific slope basins in Washington and upper Columbia River Basin during water year October 1939 to September 1940--Continued

Kootenai River Basin, British Columbia--Continued

Date	Stream	Tributary to or diverting from-	Locality	Discharge (sec.-ft.)
Nov. 15	Slocan River.....	Kootenai River.....	Near Crescent Valley, (station 8 N. J. 13 of Dominion Water and Power Bureau, Department of Mines and Resources, Canada).	1,850
Jan. 24	....do.....	....do.....	....do.....	834
Mar. 21	....do.....	....do.....	....do.....	1,130
Apr. 25	....do.....	....do.....	....do.....	3,330
May 24	....do.....	....do.....	....do.....	12,140
June 19	....do.....	....do.....	....do.....	8,040
July 24	....do.....	....do.....	....do.....	2,280
Sept.12	....do.....	....do.....	....do.....	980

Pend Oreille River Basin, Mont.

June 3	Flint Creek.....	Clark Fork.....	SE¼ sec. 26, T. 6 N., R. 14 W.....	29.6
3	....do.....	....do.....	SW¼SE¼ sec. 26, T. 6 N., R. 14 W.....	15.9
Mar. 9	....do.....	....do.....	SW¼ sec. 15, T. 9 N., R. 13 W.....	75.6
May 29	....do.....	....do.....	....do.....	29.4
Aug. 13	....do.....	....do.....	....do.....	10.7
June 3	Trout Creek.....	Flint Creek.....	NW¼ sec. 19, T. 5 N., R. 14 W., above Flint Creek canal.	3.2
3	Spring Creek.....	....do.....	NE¼ sec. 10, T. 6 N., R. 14 W., near mouth.	.2
3	Fred Burr Creek...	....do.....	SE¼ sec. 3, T. 6 N., R. 14 W., near mouth.	20.5
3	North Fork of Marshall Creek.	....do.....	SW¼ sec. 8, T. 7 N., R. 14 W.....	.5
Sept.18	North Fork of Blackfoot River.	Blackfoot River....	NW¼ sec. 14, T. 15 N., R. 11 W.....	200
July 14	....do.....	....do.....	NW¼ sec. 10, T. 14 N., R. 12 W.....	124
Sept.18	....do.....	....do.....	....do.....	44.9
Apr. 24	West Fork of Bitterroot River.	Clark Fork.....	NW¼ sec. 18, T. 2 N., R. 20 W.....	441
May 23	....do.....	....do.....	....do.....	1,740
July 7	....do.....	....do.....	....do.....	174
Apr. 25	Bitterroot River..	....do.....	SW¼SE¼ sec. 11, T. 4 N., R. 21 W.....	937
May 23	....do.....	....do.....	....do.....	3,200
July 7	....do.....	....do.....	....do.....	303
Apr. 25	....do.....	....do.....	NW¼ sec. 29, T. 6 N., R. 21 W.....	1,040
May 22	....do.....	....do.....	....do.....	3,400
July 6	....do.....	....do.....	....do.....	326

Spokane River Basin, Idaho[e]

1939 Sept.15	Coeur d'Alene River.	Coeur d'Alene Lake.	Sec. 10, T. 51 N., R. 3 E, 700 feet above Yellow Dog Creek, about 0.6 mile below Teddy Creek dam site, near Prichard.	93.7
1940 July 24	....do.....	....do.....	Sec. 9, T. 50 N., R. 4 E., just below Lost Creek dam site, 600 feet above Lost Creek, 5 miles north of Prichard.	121
1939 Sept.15	....do.....	....do.....	Sec. 23, T. 50 N., R. 3 E., 0.4 mile above Brown Creek, about 1 mile below Leland Glen dam site, near Prichard.	184
1940 July 24	....do.....	....do.....	Sec. 23, T. 50 N., R. 3 E., 300 feet above Brown Creek, about 1½ miles below Leland Glen dam site, near Prichard.	161
1939 Sept.14	....do.....	....do.....	Sec. 8, T. 49 N., R. 2 E., just above North Fork of Coeur d'Alene River, near Enaville.	194
14	North Fork of Coeur d'Alene River.	Coeur d'Alene River	Sec. 8, T. 49 N., R. 2 E., 500 feet above mouth, near Enaville.	39.8

e Includes also measurements made during water year 1938-39.

Okanogan River Basin, Wash.

Oct. 4	Similkameen River.	Okanogan River.....	500 feet below highway bridge at Oroville.	f120
Dec. 5	Palmer Creek.....	Similkameen River..	At bridge 1½ miles above mouth, near Nighthawk.	g62.3
Apr. 29	....do.....	....do.....	....do.....	g101
May 16	....do.....	....do.....	....do.....	0
June 6	....do.....	....do.....	....do.....	h385
Aug. 1	....do.....	....do.....	....do.....	h19.1
30	....do.....	....do.....	....do.....	h6.17
Sept.26	....do.....	....do.....	....do.....	h3.70
Oct. 4	Oroville-Tonasket Irrigation District canal.	Left side of Similkameen River.	At road underpass, 1½ miles northwest of Oroville.	f161

f Results furnished by Washington Water Power Co.
g Flow away from river.
h Flow toward river.

Miscellaneous discharge measurements in Pacific slope basins in Washington and upper Columbia River Basin during water year October 1939 to September 1940--Continued

Methow River Basin, Wash.

Date	Stream	Tributary to or diverting from-	Locality	Discharge (sec.-ft.)
May 1	Methow Valley Irrigation District canal.	Left side of Methow River.	Just above point opposite gage on Methow River at Twisp.	23.1
June 8	....do.....	....do.....	....do.....	71.8
24	....do.....	....do.....	....do.....	75.4
Aug. 2	....do.....	....do.....	....do.....	67.8
Sept. 3	....do.....	....do.....	....do.....	70.1
24	....do.....	....do.....	....do.....	52.9
May 1	....do.....	Right side of Methow River.	Road crossing ¼ mile west of Twisp....	0
June 7	....do.....	....do.....	....do.....	53.8
24	....do.....	....do.....	....do.....	56.8
Aug. 3	....do.....	....do.....	....do.....	50.2
Sept. 3	....do.....	....do.....	....do.....	15.9
24	....do.....	....do.....	....do.....	13.4
Apr. 30	Risley ditch.....	....do.....	Just above culvert in Twisp.....	7.55
June 7	....do.....	....do.....	....do.....	21.2
24	....do.....	....do.....	....do.....	18.9
Aug. 3	....do.....	....do.....	....do.....	16.5
Sept. 3	....do.....	....do.....	....do.....	10.0
24	....do.....	....do.....	....do.....	11.1

Yakima River Basin, Wash.

Apr. 22	Union Gap canal...	Left side of Yakima River.	Entrance to Union Gap, 1 mile southeast of town of Union Gap.	41.8
May 23	....do.....	....do.....	....do.....	33.7
Aug. 10	....do.....	....do.....	....do.....	39.6
Apr. 24	Old Reservation canal.	Right side of Yakima River.	NE¼NE¼SW¼ sec. 28, T. 12 N., R. 19 E..	123
May 31	....do.....	....do.....	....do.....	106
Aug. 10	....do.....	....do.....	....do.....	39.1
Apr. 24	New Reservation canal.	....do.....	NE¼SW¼NW¼ sec. 20, T. 12 N., R. 19 E..	1,940
May 31	....do.....	....do.....	....do.....	1,900
Aug. 12	....do.....	....do.....	....do.....	1,720
Apr. 22	Sunnyside canal...	Left side of Yakima River.	SE¼NW¼SW¼ sec. 27, T. 12 N., R. 19 E..	1,240
May 31	....do.....	....do.....	....do.....	1,330
Aug. 10	....do.....	....do.....	....do.....	1,260