

# Surface Water Supply of the United States 1958

## Part 12. Pacific Slope Basins in Washington and Upper Columbia River Basin

*Prepared under the direction of J. V. B. WELLS, Chief, Surface Water Branch*

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GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1566

*Prepared in cooperation with the States  
of Idaho, Montana, and Washington, and  
with other agencies*



**UNITED STATES DEPARTMENT OF THE INTERIOR**

**FRED A. SEATON, *Secretary***

**GEOLOGICAL SURVEY**

**Thomas B. Nolan, *Director***

## PREFACE

This report was prepared by the Geological Survey in cooperation with the States of Idaho, Montana, and Washington, and with other agencies, by personnel of the Water Resources Division, L. B. Leopold, chief, under the general direction of J. V. B. Wells, chief, Surface Water Branch, and F. J. Flynn, chief, Basic Records Section.

The data were collected and computed under supervision of district engineers, Surface Water Branch, as follows:

T. R. Newell, succeeded by W. I. Travis .....	Boise, Idaho
Frank Stermitz .....	Helena, Mont.
F. M. Veatch .....	Tacoma, Wash.

# CALENDAR FOR WATER YEAR 1958

## OCTOBER 1957

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

## NOVEMBER 1957

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

## DECEMBER 1957

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

## JANUARY 1958

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

## FEBRUARY 1958

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

## MARCH 1958

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

## APRIL 1958

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

## MAY 1958

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

## JUNE 1958

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

## JULY 1958

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

## AUGUST 1958

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

## SEPTEMBER 1958

S	M	T	W	T	F	S
1	2	3	4	5	6	
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				



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SURFACE WATER SUPPLY OF PACIFIC SLOPE BASINS IN WASHINGTON AND UPPER COLUMBIA RIVER  
BASIN, 1958

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SCOPE OF WORK

This volume is one of a series of 18 reports presenting measurements of stage, discharge, and contents of streams, lakes, and reservoirs in the United States during the water year ending September 30, 1958. Since 1888, when the United States Geological Survey first studied streamflow in relation to problems of irrigation, similar measurements have been made at more than 14,000 gaging stations in the 48 States and at many others in the Territories of Alaska and Hawaii. On September 30, 1958, the Geological Survey and cooperating organizations were maintaining 7,090 gaging stations, including those in Alaska and Hawaii. Partial-record stations for low flow or for flood flow have been operated at many other points. In addition, discharge measurements are made at miscellaneous sites. The records for the water year October 1, 1957, to September 30, 1958, at gaging stations, partial-record stations, and miscellaneous sites in the Pacific slope basins in Washington and Upper Columbia River basin are given in this report.

COOPERATION

Many State, municipal, and private organizations have cooperated with the Geological Survey in this work by either furnishing or helping to collect data. Organizations that supplied data are acknowledged in station descriptions, and organizations that assisted in the collection of data through cooperative agreements with the Survey are:

Idaho: Idaho Department of Reclamation, M. R. Kulp, State reclamation engineer, succeeded by G. N. Carter.

Montana: Office of State Engineer, F. E. Buck; State Water Conservation Board.

Washington: State Department of Conservation, Earl Coe, director, and M. G. Walker, supervisor of the Division of Water Resources; State Department of Fisheries, M. E. Moore, director; State Department of Game, J. A. Biggs, director; State Department of Highways, W. A. Bugge, director; cities of Aberdeen, Bremerton, Everett, Kent, Olympia, Seattle, and Tacoma, and town of Wilson Creek; Intercounty River Improvement Commission; Chelan County Public Utility District No. 1, Grant County Public Utility District No. 2, Mason County Public Utility District No. 3, Pend Oreille County Public Utility District No. 1, and Snohomish County Public Utility District No. 1; Skagit and Whatcom Counties.

Assistance in the form of funds or services was given by the Corps of Engineers, Department of the Army, in collecting records published herein for 4 gaging stations in Idaho, 2 in Montana, and 12 in Washington.

Assistance was also furnished by the Agricultural Research Service of the United States Department of Agriculture, the United States Department of the Army, the Weather Bureau of the United States Department of Commerce, Bureau of Reclamation and the Office of Indian Affairs of the United States Department of the Interior, and the United States Department of State. Acknowledgment is due to the Forest Service of the United States Department of Agriculture and the Weather Bureau for occupation permits and furnishing special reports of watershed conditions and precipitation records.

On waters adjacent to the international boundary, certain gaging stations are maintained by the United States (or Canada) under agreement with Canada (or the United States) and the records are obtained and compiled in a manner equally acceptable in both countries. These stations are designated herein as "International gaging stations."

The following organizations aided in collecting records:

Idaho: Washington Water Power Co.

Montana: The Montana Power Co.; Washington Water Power Co.; Northern Lights, Incorporated.

Washington: Crown Zellerbach Corporation; Lake Chelan Reclamation District; Puget Sound Power & Light Co.; Rayonier, Inc.; and Washington Water Power Co.

#### DIVISION OF WORK

The stream-gaging work was done by the Water Resources Division of the Geological Survey under the direction of personnel shown in the preface. The data for stations in the several States were collected and prepared for publication in the district offices listed below.

<u>State</u>	<u>District office</u>	<u>Address</u>
Idaho a/.....	Boise .....	914 Jefferson Street.
Montana .....	Helena.....	409 Federal Building.
Washington b/.....	Tacoma.....	207 Federal Building.

a/ Including Pend Oreille River at Newport, Wash.

b/ Except Pend Oreille River at Newport.

Information of a more detailed nature than that published for most of the gaging stations given in this report is on file in the district offices listed above. Provisional records of discharge prior to publication, and other unpublished data concerning the gaging-station records may generally be obtained from the district office.

#### DEFINITION OF TERMS AND ABBREVIATIONS

The terms of streamflow and other hydrologic data, as used in this report, are defined as follows:

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of gage height or discharge are obtained. When used in connection with a discharge record, the term is applied herein only to those gaging stations where a continuous record of discharge is obtained.

Partial-record station is a particular site where limited streamflow data are collected systematically over a period of years for use in hydrologic analyses.

Cubic foot per second (cfs) is the rate of discharge of a stream whose channel is 1 square foot in cross-sectional area and whose average velocity is 1 foot per second.

Cubic feet per second per square mile (cfs/m) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Runoff in inches (in.) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Acre-foot (ac-ft) is the quantity of water required to cover an acre to the depth of 1 foot and is equivalent to 43,560 cubic feet.



Cfs-day is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, 1.983471 acre-feet, or 646,317 gallons, and represents a runoff of 0.0372 inch from 1 square mile.

Stage-discharge relation is the relation between gage height and the amount of water flowing in a channel, expressed as volume per unit of time.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, a long reach of the channel, or an artificial structure.

Contents is the volume of water in a reservoir. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

The drainage area of a stream at a specified location is that area, measured in a horizontal plane, which is so enclosed by a topographic divide that direct surface runoff from precipitation normally would drain by gravity into the river above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise noted.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports.

#### DOWNSTREAM ORDER AND STATION NUMBERS

Beginning with the series of reports for the water year ending September 30, 1951, the order of listing gaging-station records was changed. In this report, in a downstream direction along the main stem all stations on a tributary entering above a main-stem station are listed before that station. If a tributary enters between two main-stem stations, it is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. To indicate the rank of any tributary on which a gaging station is situated and the stream to which it is immediately tributary, each indention in the listing of gaging stations in the table of contents of this report represents one rank. This downstream order and system of indention show which gaging stations are on tributaries between any two stations on a main stem and the rank of the tributary on which each gaging station is situated.

The order of listing used before the publication of the 1951 report listed first all stations on the main stem from headwaters toward mouth, then all stations on the uppermost tributary to the main stem from the tributary's source to mouth, and then all stations from source to mouth of the uppermost tributary to the tributary.

As an added means of identification, each gaging station and partial-record station has been assigned a station number. The numbers have been assigned in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and regular gaging stations, so that the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the numbers to allow for new stations that may be established; hence the numbers are not consecutive. The complete number for each station has eight digits, but the station number as shown in this report, just to the left of the station name, consists of only the essential digits of the complete number. For example, for a

station with the complete number 12-0115.00, the station number shown in this report is 115. The notation in the two places to the left of the hyphen is the part number, it is (12) for all stations in this report and is therefore omitted.

#### EXPLANATION OF DATA

The base data collected at gaging stations consist of records of stage and measurements of discharge. In addition, observations of factors affecting the stage-discharge relation, weather records, and other information are used to supplement base data in determining the daily flow. 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 fluctuations. Measurements of discharge are made with a current meter by the general methods adopted by the Geological Survey on the basis of experience in stream gaging since 1888. These methods are described in Water-Supply Paper 888 and are also outlined in standard textbooks on the measurement of stream discharge.

Rating tables giving the discharge for any stage are prepared from stage-discharge relation curves defined by discharge measurements. If extensions to the rating curves are necessary to define the extremes of discharge, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs, and by other methods), velocity-area studies, and logarithmic plotting. The application of the daily mean gage height to those rating tables gives the daily mean discharge, from which the monthly and the yearly mean discharge are computed. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is essentially the shifting-control method.

At some gaging stations the stage-discharge relation is affected by backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in determining discharge. Information requisite for determining the slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage. If so, the rate of change in 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, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of the gage-height record and occasional winter discharge measurements, consideration being given to the available information on temperature and precipitation, notes by gage observers and engineers, and comparable records of discharge for other stations in the same or nearby basins. If the stage-discharge relation is affected by ice, this information is given in a note to the table. No mention is made of occasional days of ice effect if the degree of accuracy of daily records is not changed.

The data herein presented generally comprise a description of the station, a skeleton rating table, and a table showing the daily discharge and monthly and yearly discharge of the stream. Records are published for the water year which begins on October 1 and ends on September 30. A calendar for the water year 1958 is shown on page IV for the purpose of finding the day of the week for any date.

The description of the station gives the location, drainage area, records available, type and history of gages, average discharge, extremes of discharge, general remarks, and notations of revisions of the previously published record. The location of the gaging station and the drainage area are obtained from the most accurate maps available. River mileage, given under "Location" for some stations, is that determined and used by the Corps of Engineers unless otherwise noted. Under "Records available" are given the periods for which there are published records generally equivalent to those of the present site. Under "Gage" are given the type of gage currently in use and the datum of the present gage above mean sea level, and a condensed history of the types of gages, locations, and datums of previous gages used during the period of records available. Under "Average discharge" is given the average discharge for the number of years indicated. It is not given for stations having fewer than five complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. Under "Extremes" are given the maximum discharge and gage height; the minimum discharge if there is little or no regulation; the minimum daily discharge if there is extensive regulation (also the minimum discharge if useful); and the minimum gage height (unless it is of no importance). In the first paragraph, the data given are for the complete current water year unless otherwise specified. In the second paragraph, the data given are for the periods of record within the calendar year dates in the heading (not necessarily those for the complete years indicated by the heading dates). Reliable information concerning major floods that have occurred outside the period of record are given in the third or last paragraph under "Extremes." Unless otherwise qualified, the maximum discharge corresponds to the crest stage obtained by use of a water-stage recorder, a crest-stage indicator, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur at the same time as the maximum discharge, it is given separately. Information pertaining to the accuracy of the records and conditions which affect the natural flow at the gaging station is given under "Remarks."

Previously published records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual reports. In order to make it easier to find such revised records, a paragraph headed "Revisions (water years)" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1933 stands for the water year October 1, 1932, to September 30, 1933. If no daily, monthly, or annual figures of discharge are concerned in the revision, that fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure

was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

Skeleton rating tables are published for all stations except those at which the daily discharge for the greater part of the open-water period was determined by the shifting-control method, the slope method, or other special methods involving an equivalent adjustment to the gage height of more than one-tenth foot. Skeleton rating tables are generally not published for stations on canals.

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

In the table of daily discharge, the figures for the maximum day and minimum day for each month are underlined. If the figure is repeated, it is underlined only on the first day of its occurrence.

In the monthly summary below the daily table, the line headed "Total" gives the sum of the daily figures; it is the total cfs-days for the month. The line headed "Mean" gives the average flow in cubic feet per second during the month. Discharge for the month may be expressed in cubic feet per second per square mile (line headed "Cfsm"), or in inches (line headed "In."), or in acre-feet (line headed "Ac-ft"). Figures for cubic feet per second per square mile and runoff in inches are omitted if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches.

In the yearly summary below the monthly summary, the figures of maximum are the maximum daily discharges, not the momentary discharges when the water was at crest stage. Likewise, the minimums in this summary are the minimum daily discharges.

Peak discharges and the times of their occurrence and corresponding gage heights of most stations are listed below the table of daily and monthly discharge. All independent peaks above the selected base are given. The base discharge, which is given in parentheses, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man.

Footnotes to the table of daily discharge indicate periods when discharge was computed or estimated by unusual or special methods during periods of no gage-height record and ice effect, or by other effects that reduce the degree of accuracy of the records. Days on which discharge measurements were made are indicated by asterisk and footnote unless they were made at frequent regular intervals, in which instance the general frequency of discharge measurements is given under "Remarks" in the station description.

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

At many gaging stations water samples are collected from the streams for the purpose of making chemical analyses, computing dissolved solids, suspended sediment loads, and particle-size distribution, or measuring water temperatures. For most of these samples the results are published in an annual series of water-supply papers entitled "Quality of Surface Waters of the United States" which is issued in four volumes. In this report under "Remarks" a reference is made to quality-of-water records collected at gaging stations on a regular basis and published in the quality-of-water reports. At many other gaging stations quality-of-water data are obtained at irregular intervals and published as "miscellaneous analyses" in quality-of-water reports; such records are not referred to in "Remarks" paragraph in this report. At many gaging stations water temperature is obtained also at the time a discharge measurement is made; such temperature readings are not reported in the quality-of-water annual reports.

Data collected at partial-record stations and at miscellaneous sites are given at the end of each report. Partial-record stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. Discharge measurements at miscellaneous sites are given in a third table. Occasionally, a series of discharge measurements are made within a short time period to investigate the seepage gains or losses along a reach of a stream or to determine the low-flow characteristics of an area. Such measurements are given in special tables after the list of measurements at miscellaneous sites.

#### ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of stream flow data depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretation of records.

The station description states the degree of accuracy of the records. "Excellent" indicates that, in general, the error in the daily records is believed to be less than 5 percent; "good," less than 10 percent; "fair," less than 15 percent; and "poor," probably more than 15 percent. The records of monthly and yearly mean discharge and runoff are, in general, more nearly accurate than the daily records.

Discharge at some stations, as indicated by the monthly mean, may vary widely from natural runoff, owing to diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff in inches are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur when relatively large negative adjustments are made or when evaporation is large in comparison with the observed discharge.

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 actually show the water supply available at the stations for further development, because water must first be supplied to existing irrigation systems.

#### PUBLICATIONS

To facilitate publication of the annual series of reports, the area of the United States is divided into 14 parts whose boundaries coincide with certain natural drainage lines. Formerly, the results of streamflow measurements were published in 14 volumes, one for each of the 14 parts. Beginning with the reports for 1951, the records are published in 18 volumes, there being 2 volumes each for Parts 1, 2, 3, and 6. The boundaries of the various parts are indicated by the following list and the map in figure 1.

- Part 1. North Atlantic slope basins, in two volumes:  
A, North Atlantic slope basins, Maine to Connecticut.  
B, North Atlantic slope basins, New York to York River.
2. South Atlantic slope and eastern Gulf of Mexico basins, in two volumes:  
A, South Atlantic slope basins, James River to Savannah River.  
B, South Atlantic slope and eastern Gulf of Mexico basins, Ogeechee River to Pearl River.
3. Ohio River basin, in two volumes:  
A, Ohio River basin except Cumberland and Tennessee River basins.  
B, Cumberland and Tennessee River basins.
4. St. Lawrence River basin.
5. Hudson Bay and upper Mississippi River basins.
6. Missouri River basin, in two volumes:  
A, Missouri River basin above Sioux City, Iowa.  
B, Missouri River basin below Sioux City, Iowa.
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 on the water resources of the United States may be purchased or consulted as follows:

1. Copies may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., who will, on application, furnish lists giving prices. A list of Geological Survey publications may also be obtained by applying to the Director, Geological Survey, Washington, D. C.

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

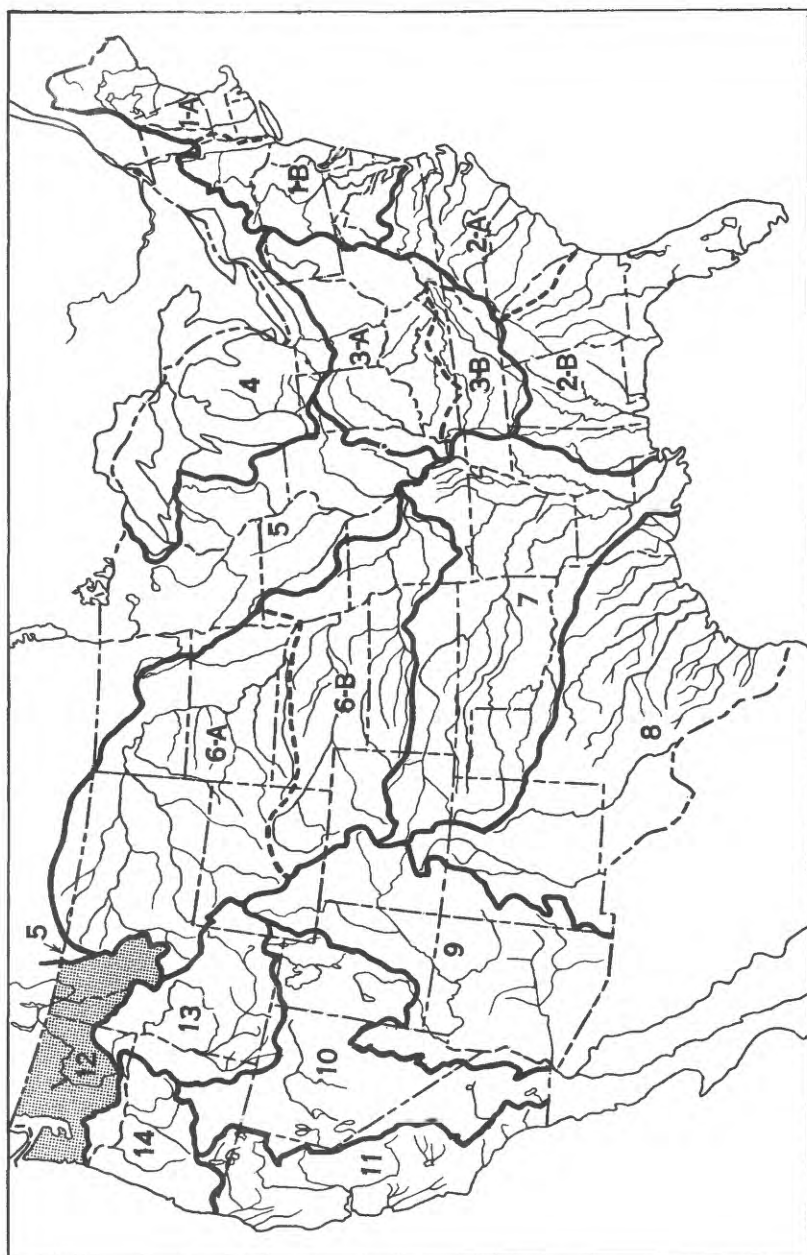


Figure 1.--Map of the United States showing areas covered by the 18 annual volumes on surface-water supply. The area covered by this report is shaded.

3. Sets are available for consultation in the offices of the Water Resources Division of the Geological Survey. Addresses of the offices in the area covered by this report are given on page 2.

Early records of the flow of streams in the United States are published in the reports listed below. In many of these reports records for years earlier than those indicated have been included for some streams.

Streamflow data for the years 1884-1901 in reports of the Geological Survey

(A = Annual Report; B = Bulletin)

Report	Character of data	Year
10th A, pt. 2	Descriptive information only.	
11th A, pt. 2	Monthly discharge and descriptive information.....	1884 to September 1890.
12th A, pt. 2	.....do.....	1884 to June 30, 1891.
13th A, pt. 3	.....do.....	1884-92.
14th A, pt. 2	Monthly discharge.....	1888-93.
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.	1895.
WSP 11.....	Gage heights.....	1896.
18th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge..	1895-96.
WSP 15.....	Descriptions, measurements, and gage heights of streams east of the Mississippi River, and Missouri River and tributaries above Kansas River.	1897.
WSP 18.....	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..	1897.
WSP 27.....	Measurements, ratings, and gage heights of streams east of the Mississippi River, and Missouri River and tributaries.	1898.
WSP 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.....	1898.
WSP 35 to 39.	Descriptions, measurements, gage heights, and ratings.....	1899.
21st A, pt. 4	Monthly discharge.....	1899.
WSP 47 to 52.	Descriptions, measurements, gage heights, and ratings.....	1900.
22d A, pt. 4.	Monthly discharge.....	1900.
WSP 65, 66...	Descriptions, measurements, gage heights, and ratings.....	1901.
WSP 75.....	Monthly discharge.....	1901.

Reports on surface water supply containing records from 1899 to date for drainage basins in this report are listed below. The data for any particular gaging station will, in general, be found in the reports covering the years during which the station was maintained.

Numbers of water-supply papers containing results of stream measurements in Pacific slope basins in Washington and upper Columbia River basin, 1899-1958

Year	WSP	Year	WSP	Year	WSP	Year	WSP	Year	WSP
1899	36	1912	332-A	1925	612	1937	632	1949	1152
1900	51	1913	339-A	1926	612	1938	662	1950	1182
1901	66, 75	1914	392	1927	652	1939	662	1951	1218
1902	85	1915	412	1928	672	1940	902	1952	1246
1903	100	1916	442	1929	692	1941	932	1953	1286
1904	135	1917	462	1930	707	1942	962	1954	1346
1905	178	1918	482	1931	722	1943	982	1955	1396
1906	214	1919-20	512	1932	757	1944	1012	1956	1446
1907-6	232	1921	532	1933	752	1945	1042	1957	1516
1909	272	1922	552	1934	767	1946	1062	1958	1566
1910	292	1923	572	1935	792	1947	1092		
1911	312	1924	592	1936	812	1948	1122		

A compilation of records for the area covered by this report through September 1950 has been published as Water-Supply Paper 1316. That report contains a summary of monthly and annual discharges for all previously published records as well as some records not contained in the annual series of water-supply papers. All records were reexamined and revised where warranted. Estimates of discharge were made to fill short gaps whenever practical.



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 special reports also contain other pertinent hydrologic information and analyses and compilations of data relating to earlier notable floods. The following is a list of these reports:

#### Report

WSP 771: Floods in the United States, magnitude and frequency.  
 WSP 847: Maximum discharges at stream-measurement stations through September 1938.  
 WSP 968-B: Floods of the Puyallup and Chehalis River basins, Washington.  
 WSP 1080: Floods of May-June 1948 in Columbia River basin.  
 WSP 1137-I: Summary of floods in the United States during 1950.  
 WSP 1227-D: Summary of floods in the United States during 1951.  
 WSP 1260-F: Summary of floods in the United States during 1952.  
 Cir. 191: Floods in western Washington, frequency and magnitude in relation to drainage basin characteristics.

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

The table below contains a list of gaging stations for the area covered by this report, at which records of discharge were collected during the water year October 1957 to September 1958 by agencies other than the Geological Survey. The records of these stations are not contained in publications of the Geological Survey.

Records of discharge collected by agencies other than the Geological Survey

Stream	Location	Period	Collected by	Remarks
Lake Whatcom.....	Bellingham, Wash.....	1923-58	City of Bellingham....	Unpublished.
Reservation drain.....	Alfalfa, Wash.....	1912-58	Office of Indian Affairs.	†Unpublished since 1923.
Satus Creek.....	Downstream from Dry Creek, near Toppenish, Wash.	1913-58	....do.....	†Unpublished since 1924.
Do.....	Near Satus, Wash.....	1932-58	....do.....	Unpublished.
Toppenish Creek.....	Near Fort Simcoe, Wash.	1909-58	....do.....	†Unpublished since 1924.
Do.....	Near Alfalfa, Wash.....	1932-58	....do.....	Unpublished.
Yakima River.....	Easton, Wash.....	1904, 1910-15, 1940-58	Bureau of Reclamation.	†Unpublished since 1953.

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

\* Monthly discharge, prior to 1951, published in WSP 1316; prior to 1954, in Washington State Water-Supply Bulletin No. 6.

Note.--Records of daily discharge for many canals and drains in Washington and Montana for 1958 and earlier years have been collected by the Bureau of Reclamation and the Office of Indian Affairs of the United States Department of the Interior in connection with irrigation and drainage projects. These records have not been published. The Inter-Rocky Mountain Forest and Range Experiment Station collects records of runoff from an area of 850 acres on Benton Creek near Priest River, Idaho.

#### HYDROLOGIC CONDITIONS

Streamflow was mostly median or below during the 1958 water year, except during May when high runoff resulted from rapid snowmelt due to high temperatures. Runoff was well below median in some areas and Chehalis River near Grand Mound, Wash. had the second lowest flow for August in 30 years of record. No noteworthy floods occurred during the water year. For two key gaging stations in the area covered by this report, a comparison of the monthly and yearly mean discharges during the 1958 water year with the median discharges for the 25-year period (1921-45) is shown in figure 2 on the following page. For Spokane River at Spokane, Wash., the discharges shown have been adjusted for storage.

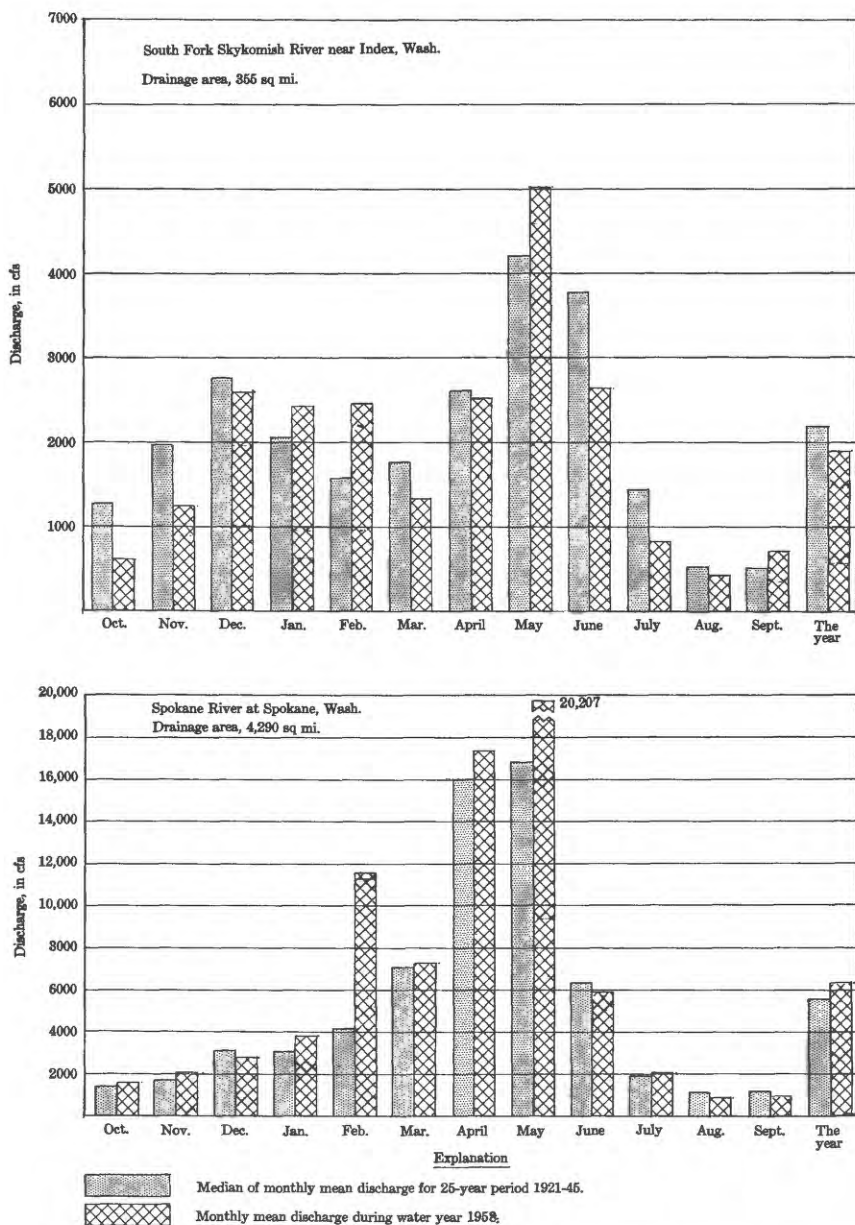


Figure 2. Comparison of discharge at two key gaging stations during 1958 water year with median discharge for 25-year period.

## PACIFIC SLOPE BASINS NORTH OF COLUMBIA RIVER

## NASELLE RIVER BASIN

## 100. Naselle River near Naselle, Wash.

Location.--Lat 46°22'25", long 123°44'45", in SW $\frac{1}{4}$  sec. 1, T. 10 N., R. 9 W., on left bank at downstream side of highway bridge,  $1\frac{1}{2}$  miles upstream from Salmon Creek and  $3\frac{1}{2}$  miles east of Naselle.

Drainage area.--55.3 sq mi.

Records available.--May 1929 to September 1958.

Gage.--Wire-weight gage and crest-stage indicator; gage read twice daily. Altitude of gage is 24 ft (by barometer). Prior to Jan. 11, 1957, staff gage and crest-stage indicator at site 150 ft downstream at same datum.

Average discharge.--29 years, 429 cfs (310,600 acre-ft per year).

Extremes.--Maximum discharge during year, 3,560 cfs Jan. 15 (gage height, 8.65 ft, from graph based on gage readings); minimum observed, 20 cfs Aug. 24, 25 (gage height, 1.63 ft).

1929-58: Maximum discharge, 11,100 cfs Jan. 22, 1935 (gage height, 15.9 ft, from floodmarks), from rating curve extended above 4,000 cfs on basis of slope-area measurement at gage height 15.2 ft; minimum observed, 19 cfs Sept. 12-14, 1949, Sept. 21-24, 1951; minimum gage height observed, 1.60 ft Sept. 8, 1956.

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

Revisions (water years).--WSP 1216: Drainage area. WSP 1316: 1930(M), 1932-40(M), 1945-46(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Feb. 17

Feb. 18 to Sept. 30

1.8	32	4.0	660	1.6	20	4.0	660
2.1	71	5.0	1,110	1.9	58	5.0	1,110
2.5	155	6.0	1,680	2.4	146	6.0	1,680
3.0	305	8.0	3,040	3.0	310	8.0	3,040

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	215	604	620	1,050	636	322	256	86	61	28	34
2	38	197	624	531	820	538	340	224	76	52	28	29
3	56	179	510	461	684	461	340	221	73	50	28	27
4	43	161	433	391	566	398	322	205	70	45	29	26
5	43	147	384	342	454	398	298	186	*64	47	27	25
6	43	137	940	305	433	346	274	176	194	44	27	25
7	41	127	910	281	435	435	250	*164	133	43	27	23
8	46	120	820	311	458	436	238	153	96	47	26	23
9	46	114	648	335	1,150	444	238	144	83	47	25	25
10	41	170	552	335	1,150	433	517	136	79	*43	25	26
11	38	1,190	503	422	865	412	377	129	76	41	25	30
12	43	1,500	440	724	1,150	374	350	121	76	41	25	28
13	145	*1,300	391	608	1,270	346	310	117	74	40	24	31
14	99	1,360	461	1,700	1,000	316	292	114	68	39	24	174
15	61	900	349	2,660	860	298	824	114	64	59	24	61
16	66	684	363	2,150	1,010	286	920	106	60	36	25	58
17	90	570	720	1,990	1,510	274	1,200	99	54	36	24	91
18	66	468	1,190	1,250	2,560	274	960	99	55	34	24	72
19	58	419	*1,960	816	1,500	247	1,180	110	58	34	23	84
20	53	360	1,870	708	1,000	238	1,550	98	57	34	23	78
21	51	311	1,420	573	772	233	1,100	89	57	34	22	75
22	48	278	1,170	510	812	221	950	86	52	32	22	75
23	482	257	1,220	844	804	208	748	84	52	32	22	73
24	990	235	2,210	1,900	1,380	213	608	84	55	32	20	62
25	478	221	2,400	1,260	1,520	*280	520	83	68	30	20	89
26	405	227	2,230	935	1,210	310	454	79	60	30	20	72
27	314	212	1,900	836	990	268	412	78	61	30	22	62
28	269	317	1,790	1,200	784	*244	352	79	64	29	*27	57
29	230	251	1,330	1,150	-	230	313	76	61	29	79	54
30	239	251	990	*1,390	-----	238	286	81	73	31	64	51
31	248	-----	760	1,510	-----	268	-----	86	-----	29	36	-----
Total	4,922	12,876	32,092	29,248	28,195	10,301	16,805	3,877	2,199	1,191	865	1,660
Mean	159	429	1,035	943	1,007	332	560	125	73.3	38.4	27.9	55.3
Cfs/m	2.88	7.76	18.7	17.1	18.2	6.00	10.1	2.26	1.33	0.694	0.505	1.00
In.	3.31	8.66	21.58	19.67	18.96	6.93	11.30	2.61	1.48	0.80	0.58	1.12
Ac-ft	9,760	25,540	63,650	58,010	55,920	20,430	33,330	7,690	4,360	2,360	1,720	3,290

Calendar year 1957: Max 3,100 Min 34 Mean 355 Cfs/m 6.42 In. 87.03 Ac-ft 256,700  
 water year 1957-58: Max 2,860 Min 20 Mean 395 Cfs/m 7.14 In. 97.00 Ac-ft 286,100

Peak discharge (base, 4,000 cfs).--No peak above base.

\* Discharge measurement made on this day.

## 105. Salmon Creek near Naselle, Wash.

Location.--Lat 46°21'20", long 123°45'00", in NE 1/4 sec. 14, T. 10 N., R. 9 W., on left bank half a mile upstream from last crossing of U. S. Highway 830, 2 miles upstream from mouth, and 3 miles southeast of Naselle.

Drainage area.--16.4 sq mi.

Records available.--June 1953 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 80 ft (from topographic map). Prior to Aug. 20, 1958, at datum 0.86 ft lower.

Average discharge.--5 years, 118 cfs (83,980 acre-ft per year).

Extremes.--Maximum discharge during year, 1,980 cfs Jan. 14 (gage height, 7.18 ft), from rating curve extended above 560 cfs by logarithmic plotting; minimum, 1.0 cfs Aug. 28; minimum gage height, 0.96 ft Aug. 16, 17.  
1953-58: Maximum discharge, 2,600 cfs Dec. 21, 1955 (gage height, 7.94 ft), from rating curve extended above 560 cfs by logarithmic plotting; minimum, 2.4 cfs Sept. 20, 1953 (gage height, 0.90 ft).

Remarks.--Records good. Slight regulation from millpond. Possibly some diversion for domestic use.

Revisions (water years).--WSP 1346: 1953(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Day	Oct. 1 to Aug. 19					Aug. 20 to Sept. 30				
	1.0	1.1	2.5	117		1.2	1.0			
	1.2	5.5	3.0	195		1.4	4.8			
	1.4	13.5	4.0	410		1.6	11			
	1.7	34	5.0	748		2.0	31			
	2.0	80	8.0	1,220						

Discharge, in cubic feet per second, water year October 1957 to September 1958											
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
1	4.1	44	198	157	238	142	89	58	15	10.5	2.9
2	4.3	40	173	151	165	115	89	53	13.5	9.0	2.4
3	7.8	37	139	108	148	89	88	51	8.2	2.8	4.8
4	8.4	34	114	82	117	88	84	46	12	7.4	5.6
5	5.5	31	105	81	100	85	59	42	*11	6.7	3.1
6	5.5	29	277	72	93	74	58	40	41	8.1	2.9
7	5.6	27	285	85	82	109	52	38	32	8.1	2.6
8	8.4	25	209	78	108	112	55	*35	20	8.7	2.2
9	8.1	24	170	80	245	112	88	35	17	7.0	2.0
10	5.0	41	137	86	234	102	100	31	15.5	6.7	1.6
11	4.5	140	118	104	207	92	73	26	15	*6.4	1.6
12	9.4	359	102	180	324	85	85	27	14	8.1	1.6
13	39	434	90	142	271	79	87	25	13	5.0	1.6
14	19	359	103	1,180	234	70	89	23	12.5	4.5	1.6
15	11.5	253	82	1,140	215	84	182	22	11.5	4.5	1.6
16	9.9	185	90	857	284	59	207	21	11	4.1	1.6
17	11	146	160	512	494	58	318	20	9.9	4.1	1.4
18	6.6	128	*225	310	707	58	257	18.5	9.4	3.8	1.6
19	7.0	112	842	209	389	51	343	21	9.0	4.1	1.6
20	8.4	93	508	180	247	48	372	18.5	9.4	4.3	*1.3
21	6.1	81	407	128	202	48	301	17.5	9.0	3.8	1.3
22	7.9	72	335	104	218	48	253	15.3	8.6	3.8	1.3
23	87	84	301	191	188	48	198	15.3	8.2	4.1	1.4
24	154	59	823	347	300	48	159	15	9.4	3.3	1.4
25	89	56	818	259	342	70	150	15	12	5.1	1.6
26	89	55	822	204	280	*84	112	14	10.5	3.1	1.3
27	87	59	587	222	219	57	98	14	10.5	5.1	1.8
28	55	89	468	310	173	53	82	14.5	10.5	3.8	2.9
29	46	59	359	227	-	51	73	13.5	9.9	2.8	25
30	82	64	283	*292	-----	54	84	13.5	12	2.8	18
31	52	-----	200	292	-----	84	-----	15	-----	5.1	6.3
Total	908.2	5,195	8,704	8,180	8,831	2,299	4,051	612.0	405.3	158.3	104.3
Mean	29.5	108	281	263	244	74.2	135	28.2	13.5	5.04	3.38
Cfm	1.79	6.48	17.1	18.0	14.9	4.52	8.25	1.60	0.653	0.307	0.205
In.	2.08	7.25	19.74	18.48	15.48	5.21	9.19	1.84	0.92	0.35	0.24
Ac-ft	1,800	6,340	17,260	18,170	13,550	4,580	8,040	1,810	804	310	207

Calendar year 1957: Max 698 Min 3.6 Mean 87.8 Cfm 5.34 In. 72.48 Ac-ft 83,380  
Water year 1957-58: Max 1,180 Min 1.3 Mean 98.5 Cfm 5.99 In. 81.40 Ac-ft 71,200

Peak discharge (base, 1,300 cfs).--Jan. 14 (12 p.m.) 1,980 cfs (7.18 ft).

\* Discharge measurement made on this day.

## 115. Willapa River at Lebam, Wash.

Location.--Lat 46°33'50", long 123°33'50", in SW<sup>1</sup> sec. 33, T. 13 N., R. 7 W., on left bank half a mile west of Lebam and 1 mile upstream from Walker Creek.

Drainage area.--41.4 sq mi.

Records available.--June 1948 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 154.0 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Average discharge.--10 years, 198 cfs (143,800 acre-ft per year).

Extremes.--Maximum discharge during year, 2,940 cfs Dec. 25 (gage height, 11.86 ft); minimum, 2.6 cfs Sept. 7 (gage height, 2.39 ft) 1948-58; Maximum discharge, 4,930 cfs Feb. 22, 1949 (gage height, 17.53 ft, from high-water mark in gage house), from rating curve extended above 2,200 cfs; minimum, 1.4 cfs Sept. 22, 1951; minimum gage height, 2.39 ft Aug. 22, 23, 1951, Oct. 27, 1952, Sept. 7, 1958.

Remarks.--Records good except those below 10 cfs, which are fair. No regulation. Some diversion for irrigation and domestic use.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

2.38	3.0	3.5	168
2.4	3.8	4.0	285
2.5	9.4	5.0	580
2.7	29	7.0	1,160
3.0	73	9.0	1,600

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.7	59	148	283	551	308	164	129	27	19	8.3	5.2
2	5.8	37	179	237	400	243	115	26	15	5.2	4.3	
3	8.1	33	149	211	325	215	163	108	28	12.5	5.2	4.3
4	7.4	32	131	170	266	190	175	99	*24	11	8.9	3.8
5	7.4	28	118	153	232	183	164	*90	20	10	5.8	3.0
6	8.1	27	246	139	206	162	149	85	48	8.7	5.2	3.0
7	11	26	290	129	197	192	137	80	44	8.7	5.2	3.0
8	10	25	242	155	204	211	131	73	29	9.4	5.8	3.0
9	8.1	22	202	168	426	213	125	70	25	10	5.2	3.4
10	6.3	32	172	188	434	204	164	65	24	10	5.8	4.7
11	4.7	106	151	208	365	190	137	60	24	9.4	5.2	5.8
12	4.7	244	139	370	370	*172	131	59	24	8.7	5.8	4.7
13	28	389	123	298	402	153	129	54	21	8.1	5.2	4.7
14	20	473	135	872	388	139	131	50	20	7.4	5.8	7.4
15	11	290	119	992	342	135	249	45	19	6.9	5.2	6.9
16	8.1	211	139	770	375	131	467	42	16	5.8	5.2	7.4
17	9.4	168	352	767	515	123	644	41	15	5.8	5.8	13
18	7.4	141	*476	530	764	121	509	39	12.5	6.3	5.8	7.4
19	6.3	125	737	385	563	116	488	42	11.5	6.9	5.8	7.4
20	5.2	108	685	308	402	118	578	39	13	6.9	5.2	8.7
21	4.7	94	668	*268	335	119	458	36	13	6.9	5.2	8.1
22	6.5	87	560	225	332	119	395	32	11.5	6.0	4.7	8.1
23	114	60	563	521	330	119	322	32	11.5	6.3	4.7	8.1
24	181	73	686	1,080	855	129	263	32	13	5.8	4.7	6.3
25	112	68	1,560	722	817	143	227	30	19	5.2	4.3	6.3
26	80	68	1,500	518	628	143	218	29	18	4.7	4.3	6.9
27	62	67	899	448	473	135	218	28	18	4.7	*5.2	6.9
28	50	83	778	713	370	129	194	28	18	*4.7	6.9	6.3
29	41	69	820	704	-	125	164	27	18	5.2	9.4	5.8
30	*48	65	440	680	-----	133	143	27	20	6.3	9.4	5.8
31	45	-----	340	758	-----	151	-----	28	-----	6.9	6.3	-----
Total	923.7	3,309	13,725	13,948	11,668	4,988	7,630	1,718	630.0	250.1	176.7	179.7
Mean	29.8	110	445	454	364	160	254	55.4	21.0	8.07	5.70	5.89
Cfs/m	0.720	2.66	10.7	10.9	10.2	3.86	6.14	1.34	0.507	0.195	0.158	0.145
In.	0.83	2.97	12.33	12.53	10.88	4.48	6.85	1.54	0.57	0.22	0.18	0.16
Ac-ft	1,630	6,560	27,220	27,660	23,540	9,850	15,130	3,410	1,250	498	350	356

Calendar year 1957 Max 1,820 Min 3.0 Mean 147 Cfs/m 3.55 In. 48.15 Ac-ft 108,300

Water year 1957-58 Max 1,560 Min 3.0 Mean 163 Cfs/m 3.94 In. 53.26 Ac-ft 117,700

Peak discharge (base, 1,600 cfs).--Dec. 25 (8:15 p.m.) 2,940 cfs (11.86 ft).

\* Discharge measurement made on this day.

## WILLAPA RIVER BASIN

120. Fork Creek near Lebam, Wash.

Location.--Lat 46°33'20", long 123°35'00", in NW $\frac{1}{4}$  sec. 5, T. 12 N., R. 7 W., on right bank three-quarters of a mile upstream from mouth and  $\frac{1}{2}$  miles southwest of Lebam.

Drainage area.--20.4 sq mi.

Records available.--June 1953 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 155 ft (from topographic map).

Average discharge.--5 years, 150 cfs (108,600 acre-ft per year).

Extremes.--Maximum discharge during year, 1,920 cfs Dec. 25 (gage height, 5.84 ft), from rating curve extended above 940 cfs as explained below; minimum, 3.4 cfs Sept. 6-8; minimum gage height, 1.57 ft Aug. 26, 27, Sept. 6-8.  
1953-58: Maximum discharge, 3,500 cfs Dec. 9, 1956 (gage height, 7.75 ft), from rating curve extended above 940 cfs on basis of slope-area measurement of peak flow; minimum, that of Sept. 6-8, 1958; minimum gage height, that of Aug. 26, 27, Sept. 6-8, 1958.

Remarks.--Records excellent. Small diversion to State fish hatchery with possibly some regulation.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 25

Dec. 26 to Sept. 30

1.7	6.3	3.0	257	1.5	2.4	2.4	91
1.9	18.5	4.0	735	1.6	4.2	3.0	262
2.2	52	5.0	1,330	1.7	7.6	4.0	735
2.5	107			1.9	22	5.0	1,330
				2.1	42		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.3	*44	202	172	562	198	126	73	26	18	5.3	5.3
2	7.9	40	170	144	266	153	139	69	22	14	5.0	4.7
3	12.5	37	121	129	211	139	144	65	21	12	5.6	4.2
4	9.6	33	96	114	169	119	136	61	*18.5	10.5	6.3	4.0
5	11	31	86	100	150	119	119	*57	18	9.8	5.3	5.6
6	11	28	352	89	134	102	102	54	45	9.2	5.0	3.6
7	13	27	301	81	132	124	93	50	38	8.1	5.0	3.4
8	14.5	25	221	98	158	126	89	47	26	8.6	5.0	3.6
9	13	23	164	105	452	126	91	45	23	9.2	4.7	3.8
10	10	42	131	122	360	114	205	43	21	8.6	4.7	4.4
11	8.4	173	117	155	262	105	134	42	20	8.1	4.7	5.0
12	10	406	101	285	296	98	109	39	20	7.8	4.7	4.7
13	65	490	86	192	296	*91	100	37	18	7.1	4.7	4.4
14	35	418	96	576	262	87	105	36	17	6.7	4.7	17
15	20	235	86	934	238	87	281	34	16	6.7	4.4	17
16	17	158	103	636	316	85	376	32	15.5	7.1	4.4	17.5
17	24	121	300	575	457	83	512	30	14	6.7	4.2	24
18	18	105	*394	358	610	91	344	29	13.5	6.7	4.2	14
19	15.5	90	801	255	355	87	500	32	13.5	6.7	4.2	29
20	14.5	75	565	201	262	85	540	29	13.5	6.7	4.2	18.5
21	12.5	70	520	166	217	89	344	27	12.5	6.7	4.0	18
22	14	65	394	144	255	87	258	25	12	6.3	3.8	17
23	277	62	416	441	262	85	201	24	11	5.9	4.0	15.5
24	313	57	740	877	526	85	163	24	14	5.6	3.8	11
25	136	55	1,200	475	540	126	142	23	16	5.6	3.8	15
26	101	54	880	328	421	124	124	23	15	5.6	3.6	12.5
27	75	49	595	304	324	107	109	22	15.5	5.6	*4.2	9.8
28	60	75	605	448	244	96	93	22	17	*5.3	5.3	8.6
29	48	60	416	448	-	91	83	22	17	5.3	17	7.6
30	62	55	285	610	---	96	79	21	19.5	5.3	14.5	6.7
31	51	---	217	560	---	114	---	23	---	5.6	6.3	---
Total	1,485.7	3,199	10,761	10,122	8,587	3,329	5,841	1,160	571.0	240.9	166.6	313.4
Mean	47.9	107	347	327	307	107	195	37.4	19.0	7.77	5.37	10.4
Cfsm	2.35	5.25	17.0	16.0	15.0	5.25	9.56	1.83	0.931	0.381	0.263	0.510
In.	2.71	5.83	19.62	18.45	15.65	6.07	10.65	2.11	1.04	0.44	0.30	0.57
Ac-ft	2,950	6,350	21,340	20,080	17,030	6,600	11,590	2,300	1,130	478	330	622

Calendar year 1957: Max 1,200 Min 5.4 Mean 113 Cfsm 5.54 In. 75.44 Ac-ft 82,100  
 Water year 1957-58: Max 1,200 Min 3.4 Mean 125 Cfsm 6.13 In. 83.44 Ac-ft 90,800

Peak discharge (base, 2,000 cfs).--No peak above base.

\* Discharge measurement made on this day.

## 145. South Fork Willapa River near Raymond, Wash.

Location--Lat 46°37'45", long 123°42'00", in E $\frac{1}{2}$  sec. 8, T. 13 N., R. 8 W., on left bank at downstream side of logging bridge, a quarter of a mile downstream from Rue Creek and 4 $\frac{1}{4}$  miles southeast of junction of Highways 101 and 12 at Raymond.

Drainage area--27.3 sq mi.

Records available--May 1953 to September 1958.

Gage--Water-stage recorder. Altitude of gage is 155 ft (from topographic map). Prior to Aug. 7, 1957, at site 40 ft upstream at same datum.

Average discharge--5 years, 166 cfs (120,200 acre-ft per year).

Extremes--Maximum discharge during year, 956 cfs Jan. 24 (gage height, 4.59 ft); minimum, 18.5 cfs Oct. 12; minimum gage height, 1.45 ft Sept. 7, 8.

1953-58: Maximum discharge, 2,060 cfs Dec. 11, 1955 (gage height, 6.92 ft); minimum discharge, 18.5 cfs Sept. 22-26, Oct. 12, 1957; minimum gage height, 1.38 ft Sept. 20-22, 1953.

Remarks--Records good. Some slight diversion for domestic use. No regulation.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 25				Dec. 26 to Sept. 30			
1.5	18.5	2.5	210	1.4	15	2.5	210
1.7	39	3.0	360	1.6	34	3.0	375
2.0	90	4.0	720	2.0	95	4.0	725

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	37	101	267	389	267	137	135	58	41	25	25
2	26	34	106	234	322	237	144	130	54	37	25	23
3	29	32	90	205	280	213	151	125	*54	36	27	22
4	22	31	86	188	243	195	139	120	52	34	25	22
5	26	31	80	170	216	198	128	110	50	33	24	21
6	26	30	216	155	200	175	122	*107	74	32	24	21
7	24	29	202	146	185	230	115	105	63	32	25	20
8	24	28	161	153	202	222	113	99	52	*33	23	19.5
9	23	27	134	148	327	222	115	95	50	32	22	20
10	21	51	119	148	372	202	165	91	50	32	22	21
11	20	160	110	153	291	185	137	88	50	31	22	22
12	23	234	102	195	308	175	124	86	48	30	23	21
13	52	256	96	165	372	*162	122	82	47	30	24	24
14	29	285	114	301	330	153	128	81	46	29	24	55
15	23	202	96	473	291	151	249	77	44	29	23	34
16	23	146	112	488	308	148	312	75	43	29	23	37
17	26	121	*249	538	370	139	326	72	42	29	23	41
18	21	108	303	382	476	139	274	71	41	29	22	31
19	20	100	512	305	389	130	347	75	41	29	22	42
20	20	88	446	264	319	130	473	69	41	29	22	34
21	20	79	394	240	291	128	392	67	39	28	22	34
22	25	75	348	208	308	126	333	66	39	28	*22	32
23	166	69	360	*506	502	122	277	64	58	27	22	31
24	139	68	506	702	479	122	243	63	43	27	21	29
25	77	66	592	459	508	130	213	61	43	26	20	34
26	57	64	706	358	438	137	198	60	39	26	20	30
27	48	68	585	330	371	126	180	60	41	25	24	28
28	42	88	540	350	308	119	165	58	44	25	24	27
29	39	71	473	361	-	122	150	57	39	25	44	26
30	64	68	382	476	-	126	145	60	46	26	31	26
31	*51	-	322	466	-	128	-	61	-	26	25	-
Total	1,226	2,746	8,643	9,334	9,195	5,059	6,117	2,570	1,411	925	745	852.5
Mean	39.5	91.5	279	301	328	163	204	82.9	47.0	29.8	24.0	28.4
Cfs/m	1.45	3.35	10.2	11.0	12.0	5.97	7.47	3.04	1.72	1.09	0.879	1.04
In.	1.67	3.74	11.77	12.72	12.53	6.89	8.33	3.50	1.92	1.26	1.01	1.16
Ac-ft	2,430	5,450	17,140	18,510	18,240	10,030	12,130	5,100	2,800	1,830	1,480	1,690
Calendar year 1957: Max	706			Min 18.5	Mean 120			Cfs/m 4.40	In. 59.82	Ac-ft 87,120		
Water year 1957-58: Max	706			Min 19.5	Mean 134			Cfs/m 4.91	In. 66.50	Ac-ft 96,830		

Peak discharge (base, 1,500 cfs)--No peak above base.

\* Discharge measurement made on this day.

## 155. North River near Brooklyn, Wash.

Location.--Lat 46°46'55", long 123°28'50", in S $\frac{1}{2}$  sec. 18, T. 15 N., R. 6 W., on left bank  $\frac{1}{4}$  miles upstream from Fall River and  $\frac{1}{2}$  miles northeast of Brooklyn.

Drainage area.--29.8 sq mi.

Records available.--June 1953 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 190 ft (from topographic map).

Average discharge.--5 years, 112 cfs (81,080 acre-ft per year).

Extremes.--Maximum discharge during year, 879 cfs Dec. 25 (gage height, 3.98 ft); minimum, 5.4 cfs Aug. 22, 23 (gage height, 0.34 ft).  
1953-58: Maximum discharge, 2,640 cfs Dec. 9, 1956 (gage height, 8.69 ft); minimum, that of Aug. 22, 23, 1958.

Remarks.--Records good except those for July and August, which are fair. No regulation. Possibly some small diversion for irrigation and domestic use.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 25		Dec. 26 to Sept. 30	
0.4	7.0	0.3	3.6
.5	15.5	.4	8.0
.6	29	.5	18.0
1.0	112	.6	32
1.5	235	1.0	116
2.6	510	3.1	640

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.0	22	55	178	282	188	84	82	29	24	7.1	10
2	7.8	19.5	91	150	225	148	88	78	25	18	6.7	8
3	8.7	17	76	130	192	128	82	71	*25	16	7.8	7.6
4	7.8	17	65	114	158	118	78	67	22	15	7.6	7.1
5	9.6	15.5	59	102	142	121	73	63	21	14	7.1	7.1
6	10.5	14.5	174	95	128	111	89	*58	82	13	8.7	8.7
7	9.6	14	168	85	128	128	85	56	58	12	8.7	8.2
8	9.6	13	168	95	121	152	83	54	32	13	7.1	8.7
9	11	13	124	104	200	150	85	50	28	*14	a7.5	7.1
10	10.5	18	105	104	218	138	102	48	28	14	a7.5	8
11	9.6	85	91	104	200	123	84	46	25	13	a7.2	11
12	11	185	82	128	220	114	78	45	24	12	a7.0	8
13	34	255	74	114	212	102	78	41	22	11	a6.7	8
14	22	240	89	212	200	*98	86	39	21	10	a6.5	18
15	12	155	78	385	178	73	208	37	19.5	10	a6.5	18.5
16	11	105	76	372	208	89	252	36	17	9	a6.5	17
17	28	82	*162	432	225	88	245	32	16	8	a6.4	22
18	17	74	195	278	298	89	202	32	15	8	a6.2	19.5
19	15	89	365	208	240	86	292	39	15	9	a6.0	28
20	11	58	338	172	190	95	415	54	15	9	a6.8	18
21	11	50	340	145	162	91	298	32	15	9	a5.6	18
22	12	46	302	*128	182	89	245	31	14	9	*5.4	15
23	120	43	282	161	152	84	198	29	13	8	5.8	12
24	82	41	310	558	258	98	168	31	21	7.6	5.8	10
25	41	41	508	335	325	91	145	31	58	7.1	5.6	18
26	34	44	524	240	292	89	133	28	28	7.1	5.6	14
27	25	41	410	208	242	84	123	28	24	6.7	6.2	11
28	19.5	61	360	232	198	80	107	29	25	6.7	7.8	10
29	17	48	325	285	-	78	107	31	21	6.2	38	10
30	*31	43	285	395	-----	84	89	28	21	5.7	21	9
31	31	-----	218	378	-----	80	-----	31	-----	7.1	12	-----
Total	684.2	1,887.5	6,557	6,698	5,754	3,257	4,315	1,335	733.5	333.2	255.4	375.5
Mean	22.1	62.9	212	214	206	105	144	43.1	24.4	10.7	8.24	12.4
Cfsm	0.742	2.11	7.11	7.18	6.91	3.52	4.83	1.45	0.819	0.359	0.277	0.416
In.	0.85	2.36	8.18	8.27	7.18	4.06	5.39	1.87	0.92	0.42	0.32	0.47
Ac-ft	1,360	3,740	13,010	13,150	11,410	6,460	8,560	2,650	1,450	681	507	741

Calendar year 1957: Max 855 Min 6.0 Mean 78.8 Cfsm 2.64 In. 35.88 Ac-ft 57,080  
Water year 1957-58: Max 824 Min 5.4 Mean 88.0 Cfsm 2.95 In. 40.08 Ac-ft 83,700

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

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of recorded range in stage and records for nearby stations.



## 170. North River near Raymond, Wash.

Location.--Lat 46°48'30", long 123°51'00", in sec. 6, T. 15 N., R. 9 W., on left bank 1 1/4 miles upstream from Salmon Creek and 10 miles northwest of Raymond.

Drainage area.--219 sq mi.

Records available.--August 1927 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 7.39 ft above mean sea level (Western Washington Electric Light & Power Co. bench mark).

Average discharge.--31 years, 945 cfs (684,200 acre-ft per year).

Extremes.--Maximum discharge during year, 5,560 cfs Dec. 27 (gage height, 7.23 ft); minimum, 32 cfs Aug. 25-27 (gage height, 1.11 ft).  
1927-58: Maximum discharge, 35,000 cfs Dec. 10, 1933 (gage height, 15.8 ft, from floodmarks), from rating curve extended above 7,500 cfs; minimum, 21 cfs Aug. 24, 1951 (gage height, 1.01 ft).

Remarks.--Records excellent except those for periods of no gage-height record, which are fair. Some diversion for farm and domestic use. No regulation.

Revisions (water years).--WSP 792: 1934. WSP 832: 1935-36. WSP 1286: 1952.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

1.1	31	3.0	615
1.5	76	4.0	1,420
2.0	181	5.0	2,580
2.5	355	7.2	5,520

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	55	285	533	1,900	3,200	1,680	640	660	230	150	47	86
2	58	240	715	1,520	2,580	1,390	870	620	220	140	44	85
3	58	207	785	1,250	1,840	1,180	840	580	*210	110	50	57
4	58	181	667	1,070	1,520	1,040	600	540	198	100	50	52
5	60	168	585	940	1,260	970	560	520	180	92	46	47
6	68	156	820	828	1,130	962	540	*475	470	85	45	44
7	62	147	1,590	764	1,090	1,080	520	455	450	80	44	42
8	64	138	1,580	743	1,110	1,320	500	430	300	85	45	40
9	70	131	1,250	798	1,500	1,420	500	400	200	*95	48	40
10	68	152	1,040	910	2,140	1,300	780	380	200	90	48	40
11	64	310	888	1,080	2,030	1,150	680	360	190	85	47	40
12	90	700	785	1,370	2,240	1,030	620	340	180	80	46	44
13	118	1,500	708	1,350	2,440	918	600	330	170	74	45	49
14	120	2,300	736	2,240	2,280	*828	680	310	160	66	43	57
15	149	2,300	729	4,230	1,980	757	1,500	290	150	65	42	90
16	110	1,700	701	4,270	1,980	722	2,000	270	140	60	42	173
17	93	1,100	*1,010	4,740	2,440	687	1,900	250	120	54	42	233
18	83	850	1,610	3,710	3,290	667	1,600	250	110	52	40	201
19	99	750	2,480	2,410	3,150	654	2,000	300	100	58	39	207
20	79	634	3,720	1,760	2,340	634	3,300	270	95	58	38	174
21	70	538	3,350	1,440	1,840	667	2,500	250	85	58	36	184
22	69	480	3,040	*1,210	1,780	687	2,000	240	80	58	35	149
23	560	440	2,570	1,350	1,650	660	1,600	230	85	52	35	131
24	1,200	405	2,960	3,240	2,040	740	1,350	240	120	50	34	114
25	828	382	3,790	4,760	2,920	720	1,200	240	230	46	32	133
26	544	378	5,220	3,220	3,110	700	1,050	220	200	46	32	118
27	405	396	5,380	2,480	2,680	660	950	220	170	45	34	120
28	500	304	4,435	2,590	2,100	680	900	230	160	43	*35	108
29	254	522	3,960	2,780	-	620	800	240	160	43	59	95
30	257	495	3,260	3,140	-----	660	700	230	140	41	72	84
31	*274	-----	2,500	3,760	-----	640	-----	250	-----	43	104	-----
Total	6,389	18,485	63,452	67,804	59,400	27,703	33,880	10,610	5,523	2,204	1,399	3,017
Mean	206	618	2,047	2,187	2,121	894	1,129	342	184	71.1	45.1	101
Cfs/m	0.941	2.80	4.435	9.59	9.68	4.28	5.18	1.56	0.840	0.325	0.208	0.461
In.	1.08	3.14	10.78	11.51	10.09	4.70	5.5	1.80	0.94	0.37	0.24	0.51
Ac-ft	12,670	36,660	125,800	134,500	117,800	54,950	67,200	21,040	10,950	4,370	2,770	5,980

Calendar year 1957: Max 5,970 Min 41 Mean 743 Cfs/m 3.39 In. 46.08 Ac-ft 538,300

Water year 1957-58: Max 5,380 Min 32 Mean 822 Cfs/m 3.75 In. 50.91 Ac-ft 594,800

Peak discharge (base, 4,000 cfs).--Dec. 27 (11 a.m.) 5,560 cfs (7.23 ft); Jan. 17 (4:30 p.m.) 4,880 cfs (6.76 ft); Jan. 25 (8 a.m.) 4,940 cfs (6.80 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-12, Nov. 12-19, Mar. 23 to May 5, May 8 to June 2, June 5 to Aug. 20; discharge estimated on basis of 1 discharge measurement, recorded range in stage, and records for station near Brooklyn.

## 200. Chehalis River near Doty, Wash.

Location.--Lat 46°37'00", long 123°16'40", in NW<sup>1</sup> sec. 14, T. 13 N., R. 5 W., on right bank  $1\frac{1}{2}$  miles upstream from Elk Creek,  $1\frac{1}{2}$  miles south of Doty, and  $3\frac{1}{2}$  miles north of Pe Ell.

Drainage area.--113 sq mi.

Records available.--October 1939 to September 1958.

Gage.--Staff gage and crest-stage indicator; gage read twice daily. Datum of gage is 302.1 ft above mean sea level (river-profile survey).

Average discharge.--19 years, 566 cfs (409,800 acre-ft per year).

Extremes.--Maximum discharge during year, 6,540 cfs probably Dec. 24 (gage height, 9.32 ft, from graph based on gage readings); minimum observed, 18 cfs Aug. 25-28 (gage height, 0.84 ft).

1939-58: Maximum discharge, 18,100 cfs Feb. 7, 1945 (gage height, 17.80 ft, water over gage, discharge based on observer's estimate of maximum gage height); minimum observed, 18 cfs Oct. 14, 1952, Aug. 25-28, 1958; minimum gage height, 0.84 ft Aug. 25-27, Sept. 21, 22, 1951, Aug. 25-28, 1958.

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

Revisions (water years).--WSP 1316: 1943(M). WSP 1446: 1946(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 24

Dec. 25 to Sept. 30

0.9	28	0.8	14.5	3.0	810
1.2	70	1.0	35	4.0	1,490
1.5	133	1.3	84	5.0	2,260
2.0	298	1.6	157	7.0	4,000
		2.0	298	9.0	6,160

Note.--Same as following table above 2.0 ft.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	160	668	864	1,830	888	485	358	115	80	28	32
2	35	144	580	720	1,380	726	500	323	110	73	29	28
3	35	131	540	602	1,050	624	602	302	100	66	29	26
4	38	121	450	515	810	550	545	282	*90	62	30	23
5	40	114	385	450	668	525	480	267	88	57	28	22
6	47	105	608	416	618	470	421	248	103	52	24	22
7	54	96	1,360	385	613	460	376	233	219	49	24	20
8	60	92	1,070	378	575	515	340	222	146	*48	24	20
9	60	88	738	460	1,230	495	358	208	112	46	24	20
10	53	92	570	570	2,040	480	450	198	105	48	22	22
11	46	530	470	816	1,400	465	412	188	101	46	22	22
12	54	1,190	412	1,520	1,310	*440	372	162	97	43	22	22
13	149	1,600	367	1,210	1,480	398	354	172	92	40	22	23
14	133	1,700	394	1,880	1,270	358	367	163	92	40	21	29
15	88	1,030	349	3,760	1,140	354	618	154	84	39	20	49
16	74	652	332	2,420	1,420	349	1,360	146	78	38	20	48
17	72	500	894	2,240	1,880	349	2,000	140	73	36	20	59
18	65	403	1,660	1,560	2,480	358	1,640	135	69	35	20	66
19	60	358	2,830	1,150	1,640	358	1,520	151	67	35	20	77
20	56	298	2,760	888	1,210	367	2,120	135	66	35	20	90
21	51	263	2,360	768	944	394	1,690	124	64	34	19	64
22	65	237	1,950	646	918	394	1,540	119	62	34	19	59
23	340	220	*1,430	*1,220	882	385	1,030	115	62	32	19	52
24	986	203	3,400	3,660	2,100	420	828	115	62	31	19	46
25	398	190	5,260	2,290	2,300	450	684	110	84	30	18	48
26	319	190	3,770	1,760	1,840	420	591	105	75	29	*18	56
27	267	178	2,700	1,530	1,420	376	545	105	77	29	18	46
28	216	255	2,640	2,040	1,120	349	490	110	75	29	18	43
29	*184	197	2,520	1,970	-	332	430	103	73	27	23	40
30	184	206	1,480	2,520	-----	354	394	99	73	27	62	36
31	178	-----	1,100	2,560	-----	349	-----	120	-----	27	42	-----
Total	4,440	11,543	46,047	43,766	37,568	13,752	23,542	5,432	2,714	1,297	744	1,210
Mean	143	385	1,485	1,412	1,342	444	778	175	90.5	41.8	24.0	40.3
Cfs/m	1.27	3.41	13.1	12.5	11.9	3.93	6.88	1.55	0.801	0.370	0.212	0.357
In.	1.46	3.80	15.15	14.40	12.36	4.53	7.68	1.79	0.89	0.43	0.24	0.40
Ac-ft	8,810	22,900	91,330	86,810	74,520	27,280	46,300	10,770	5,380	2,570	1,480	2,400
Calendar year 1957: Max		6,000		Min 26		Mean 482		Cfs/m 4.27		In. 57.94	Ac-ft 349,200	
Water year 1957-58: Max		5,260		Min 18		Mean 526		Cfs/m 4.65		In. 63.13	Ac-ft 380,600	

Peak discharge (base, 6,800 cfs).--No peak above base.

\* Discharge measurement made on this day.

## 240. Newaukum River near Onalaska, Wash.

Location.--Lat 46°34'35" N., long 122°41'00" W., on line between secs. 28 and 33, T. 13 N., R. 1 E., on right bank 0.9 mile upstream from Lost Creek and 1½ miles east of Onalaska.

Drainage area.--40.8 sq mi.

Records available.--July 1942 to October 1942, July to October 1943, July 1944 to November 1948, June 1957 to September 1958. Prior to October 1943, published as South Fork Newaukum River near Onalaska.

Gage.--Water-stage recorder. Altitude of gage is 540 ft (from topographic map). Prior to Sept. 28, 1944, staff gage at datum 0.93 ft higher.

Average discharge.--5 years (1944-48, 1957-58), 204 cfs (147,700 acre-ft per year).

Extremes.--1957: Maximum daily discharge during period June to September, 200 cfs June 15; minimum daily, 23 cfs Sept. 15, 24, 25.

1957-58: Maximum discharge during water year, 1,060 cfs Dec. 26 (gage height, 4.38 ft); minimum, 17.5 cfs Sept. 6-8 (gage height, 1.26 ft).

1942-48, 1957-58: Maximum discharge, 3,810 cfs Dec. 11, 1946 (gage height, 8.40 ft); minimum, that of Sept. 6-8, 1958.

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

No regulation or diversion of importance above station.

Rating table, June 21, 1957, to Sept. 30, 1958 (gage height, in feet,

and discharge, in cubic feet per second)

1.2	12	2.5	280
1.4	32	3.0	455
1.7	79	4.0	875
2.0	140		

Discharge, in cubic feet per second, 1957

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1	90	57	36	27	11	80	*48	52	25	21	74	49	35	25
2	85	56	35	26	12	100	49	48	25	22	74	45	31	24
3	80	56	32	26	13	130	45	42	26	23	69	43	31	24
4	75	52	43	26	14	105	70	40	24	24	64	42	31	23
5	70	49	38	27	15	200	94	38	23	25	60	39	30	23
6	80	49	38	26	16	130	70	37	25	26	65	38	30	27
7	77	49	40	28	17	105	64	37	26	27	76	38	30	29
8	74	48	80	28	18	90	58	36	*32	28	67	38	29	33
9	70	52	60	26	19	80	55	35	26	29	62	38	29	30
10	65	46	48	26	20	85	53	*35	26	30	59	37	28	28
										31	-	36	27	-
Total													2,541	1,563
Mean													84.7	50.4
Cubic feet per second per square mile													2.08	1.24
Runoff in inches													2.32	1.42
Runoff in acre-feet													5,040	3,100

\* Discharge measurement made on this day.

Note.--No gage-height record June 1-20, July 16 to Aug. 19, Aug. 25 to Sept. 17, Sept. 23-30; discharge estimated on basis of recorded range in stage, weather records, and records for station near Chehalis.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	80	350	322	452	326	145	175	81	81	28	24
2	29	74	400	280	385	284	152	160	62	70	25	22
3	34	62	300	250	332	253	138	150	60	62	30	*21
4	30	59	260	226	*267	232	131	140	56	57	29	20
5	34	56	210	205	265	238	122	135	52	52	25	19
6	37	54	350	190	244	217	116	*127	148	48	24	18.5
7	43	52	450	180	232	214	112	120	102	46	25	18.5
8	44	50	400	199	229	223	110	114	74	45	25	18.5
9	37	49	300	217	336	214	118	108	67	45	24	19
10	34	53	230	244	495	202	202	106	67	42	23	19
11	32	180	210	287	364	188	168	102	65	40	23	19
12	30	270	190	364	385	178	150	96	65	38	22	19
13	35	500	180	301	507	165	150	90	60	38	21	20
14	70	650	180	326	441	155	170	87	57	36	21	60
15	46	*455	160	579	385	150	352	83	54	35	21	52
16	41	308	160	527	452	145	547	79	51	*33	22	35
17	39	232	*180	595	416	*152	527	76	*46	33	22	43
18	43	199	300	441	*392	158	438	74	45	33	22	33
19	41	193	400	350	340	150	463	79	43	33	21	62
20	39	160	*500	308	294	150	683	72	43	35	21	46
21	38	145	575	290	262	168	660	69	42	32	20	36
22	60	130	507	262	315	160	600	67	40	32	20	35
23	120	120	427	284	336	158	420	69	39	31	20	32
24	105	115	531	559	406	193	360	67	76	30	20	30
25	92	110	695	463	515	199	310	69	83	29	19	31
26	84	115	870	378	559	193	280	62	64	28	19	28
27	70	110	643	340	455	178	250	62	72	28	21	26
28	65	175	647	438	378	165	230	69	77	28	23	25
29	60	140	607	455	-	158	210	64	76	28	32	24
30	85	145	471	503	-----	155	190	60	100	28	30	23
31	100	-----	382	551	-----	142	-----	76	-----	29	23	-----
Total	1,645	5,041	12,065	10,914	10,459	5,863	8,402	2,907	1,967	1,225	721	878.5
Mean	53.1	168	389	352	374	189	280	93.8	65.6	39.5	23.3	29.3
Cfs/m	1.30	4.12	9.53	8.63	9.17	4.63	6.86	2.30	1.61	0.968	0.571	0.718
In.	1.50	4.59	11.00	9.95	9.53	5.34	7.66	2.65	1.79	1.12	0.66	0.80
Ac-ft	3,260	10,000	23,930	21,650	20,750	11,630	16,670	5,770	3,900	2,430	1,430	1,740

Calendar year 1957: Max - Min - Mean - Cfs/m - In. - Ac-ft -  
 Water year 1957-58: Max 870 Min 18.5 Mean 170 Cfs/m 4.17 In. 56.59 Ac-ft 123,200

Peak discharge (base, 1,300 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1 to Nov. 14, Nov. 21 to Dec. 20, Apr. 21 to May 5; discharge estimated on basis of recorded range in stage, 2 discharge measurements, weather records, and records for station near Chehalis.

## CHEHALIS RIVER BASIN

245. North Fork Newaukum River near Forest, Wash.

Location.--Lat 46°39'20", long 122°46'40", in SW $\frac{1}{4}$  sec. 35, T. 14 N., R. 1 W., on left bank  $\frac{1}{4}$  miles upstream from Lucas Creek and  $\frac{5}{8}$  miles northeast of Forest.

Drainage area.--32.5 sq mi.

Records available.--July to November 1944, July 1957 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 380 ft (from topographic map). July 25 to Nov. 6, 1944, at site 150 ft upstream at different datum.

Extremes.--1957: Maximum discharge during period July to September, 89 cfs Aug. 8 (gage height, 1.65 ft); minimum, 2.8 cfs Sept. 24 (gage height, 1.02 ft).  
1957-58: Maximum discharge during year, 594 cfs Dec. 25 (gage height, 3.21 ft); minimum, 1.2 cfs Aug. 20, probably 25 (gage height, 0.96 ft).  
1944, 1957-58: Maximum discharge, that of Dec. 25, 1957; minimum, that of Aug. 20, probably 26, 1958.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Cities of Chehalis and Centralia divert about 15 cfs above station for municipal use. No regulation.

Rating tables, July 1, 1957, to Sept. 30, 1958 (gage height, in feet, and discharge, in cubic feet per second)

July 1 to Dec. 24, 1957													Dec. 25, 1957, to Sept. 30, 1958				
	1.0	2.2		1.8	78				0.97	1.3			1.7	56			
	1.2	8.0		2.1	153				1.1	5.4			2.0	125			
	1.4	20		2.6	340				1.3	11			2.5	286			
	1.6	45							1.5	26			3.0	500			

Discharge, in cubic feet per second, 1957																	
Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.		
1	18.5	8.8	5.8	9	17	24	4.8	17	25	13.5	5.4	25	9.8	8.8	8.4		
2	17.5	8.4	5.4	10	15	21	4.2	18	16	13	*8.8	26	9.8	8.8	8.1		
3	17.5	9.8	5.4	11	*17	23	4.0	19	13.5	12.5	4.8	27	10.5	8.8	5.8		
4	17	12.5	5.4	12	17	17	3.8	20	12.5	12	3.8	28	11.5	7.8	6.8		
5	16.5	11	5.1	13	14	14	3.8	21	13	11.5	3.8	29	10.5	8.0	4.0		
6	15	12.5	5.4	14	26	13.5	3.2	22	13	*9.3	3.2	30	10.5	7.6	3.5		
7	15	23	7.2	15	36	13	3.5	23	13	8.8	3.2	31	9.5	5.8	-		
8	14	55	5.8	16	25	13	4.8	24	11	9.3	2.8						
Total													485.9	422.8	145.0		
Mean													15.6	13.8	4.85		
Cubic feet per second per square mile													0.480	0.438	0.149		
Runoff in inches													0.85	0.48	0.17		
Runoff in acre-feet													880	859	288		

\* Discharge measurement made on this day.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.0	23	163	187	250	194	66	83	43	19	3.6	4.0
2	8.8	18.5	204	162	200	185	72	78	30	15.5	4.0	3.0
3	5.8	16	145	159	170	147	64	74	28	14	4.4	*2.2
4	4.2	15.5	108	122	150	133	80	76	25	12.5	6.4	2.2
5	6.8	14	89	109	*139	131	58	66	22	11.5	3.9	1.8
6	8.8	13.5	198	99	128	115	53	*84	80	10.5	3.0	1.6
7	13.5	12.5	211	82	120	120	50	62	53	9.8	2.8	1.5
8	9.3	12	156	99	120	131	50	56	34	11	3.4	1.6
9	7.6	12	122	109	194	131	51	51	29	11.5	2.8	2.0
10	6.1	14	102	128	319	120	104	50	28	9.4	2.6	2.2
11	5.4	146	91	139	218	112	83	48	28	8.4	2.6	2.6
12	5.1	184	82	208	218	102	72	45	*27	8.0	2.6	2.0
13	21	287	72	162	240	92	72	43	24	7.6	2.4	2.2
14	17	322	82	175	225	88	78	42	22	7.2	2.0	25
15	9.3	*191	74	307	204	83	205	59	20	6.4	1.7	21
16	8.0	120	76	295	255	81	347	36	18	*5.4	1.7	11.5
17	17	87	100	351	236	*83	303	35	18.5	5.4	1.6	18.5
18	11	80	*172	244	*225	78	240	34	20	5.7	1.8	10.5
19	8.0	91	284	194	*187	74	225	38	14.5	6.8	1.5	26
20	7.2	70	*287	165	159	72	315	34	14.5	6.8	1.4	17
21	6.4	57	322	147	145	72	315	32	14	6.8	1.4	9.8
22	25	51	308	131	170	68	255	12.5	6.8	1.2	8.9	
23	75	46	240	140	184	88	208	33	12	5.7	1.7	7.6
24	40	43	287	320	311	83	175	33	32	4.4	1.4	5.4
25	28	45	390	250	351	88	153	34	35	3.9	1.4	6.8
26	25	46	491	200	351	85	139	28	23	3.6	1.3	6.4
27	18.5	43	375	180	307	78	138	27	24	3.2	1.5	4.8
28	15.5	76	411	230	235	74	109	32	24	2.9	1.4	4.2
29	14	56	367	250	-	70	99	28	24	4.4	8.0	3.9
30	49	59	287	270	-----	70	90	26	26	3.9	8.0	3.6
31	33	-----	229	280	-----	64	-----	35	-----	4.8	3.0	-----
Total	511.3	2,251.0	6,525	5,884	6,014	3,072	4,257	1,386	802.0	242.9	83.7	217.8
Mean	16.5	75.0	210	189	191	99.1	142	44.7	26.7	7.64	2.70	7.26
Cfs/m	0.508	2.311	6.46	5.85	5.82	3.05	4.37	1.38	0.822	0.241	0.083	0.225
In.	0.59	2.58	7.47	6.73	6.88	3.92	4.67	1.59	0.92	0.28	0.10	0.25
Ac-ft	1,010	4,460	12,940	11,870	11,930	6,090	8,440	2,750	1,590	482	166	432

Calendar year 1957: Max - Min - Mean - Cfs/m - In. - Ac-ft -  
Water year 1957-58: Max 491 Min 1.3 Mean 85.6 Cfs/m 2.63 In. 35.78 Ac-ft 61,980

Peak discharge (base, 430 cfs).--Dec. 25 (9 p.m.) 594 cfs (3.21 ft); Jan. 16 (10 p.m.) 439 cfs (2.86 ft); probably Jan. 24 (time unknown) 431 cfs (2.84 ft); Apr. 16 (2:15 a.m.) 443 cfs (2.87 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Jan. 23 to Feb. 4. Aug. 26 to Sept. 2; discharge estimated on basis of recorded range in stage and records for Newaukum River near Chehalis.

## 250. Newaukum River near Chehalis, Wash.

Location.--Lat 46°37'10", long 122°56'40", on line between secs. 9 and 16, T. 13 N., R. 2 W., on left bank at highway bridge 2½ miles southeast of Chehalis and 3½ miles upstream from mouth.

Drainage area.--159 sq mi.

Records available.--March 1929 to September 1931, July 1942 to September 1958.

Gage.--Staff gage and crest-stage indicator; gage read usually twice daily. Altitude of gage is 190 ft (from topographic map). Prior to Oct. 1, 1929, at datum 1.0 ft higher.

Average discharge.--18 years, 500 cfs (362,000 acre-ft per year), unadjusted.

Extremes.--Maximum discharge during year, 3,290 cfs Dec. 26 (gage height, 8.56 ft); minimum daily, 22 cfs Sept. 8, 9.

1929-31, 1942-58: Maximum discharge, 7,400 cfs Dec. 9, 1953 (gage height, 13.62 ft), from rating curve extended above 3,800 cfs by logarithmic plotting; minimum observed, 12 cfs Sept. 13, 14, 1949.

Remarks.--Records good except those for periods of doubtful or no gage-height record, which are fair. Cities of Chehalis and Centralia divert about 15 cfs for municipal use. No regulation.

Revisions (water years).--WSP 1012: 1943. WSP 1182: 1949(M). WSP 1316: 1929-31(M), 1945-46(M), 1950(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Nov. 13				Nov. 14 to Sept. 30			
0.9	34	2.0	240	0.6	16	2.0	262
1.2	68	3.0	550	.9	42	3.0	610
1.6	142	6.0	1,850	1.3	100	8.0	3,000

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*40	147	834	897	1,540	1,090	350	360	180	139	37	65
2	42	135	1,280	758	1,170	838	390	350	155	135	32	34
3	52	108	735	606	974	717	400	310	140	123	34	*32
4	45	98	650	514	812	638	370	290	135	93	44	30
5	51	*93	530	483	704	590	350	280	125	86	38	30
6	59	88	969	441	610	735	310	260	140	83	33	24
7	72	83	1,250	413	810	598	290	250	300	80	32	23
8	74	90	1,100	408	771	594	290	240	220	78	32	22
9	60	77	1,070	542	834	290	220	180	78	32	22	22
10	53	86	678	670	1,670	582	320	210	165	74	30	24
11	50	428	534	946	1,140	586	380	200	155	70	27	24
12	44	676	476	1,170	1,240	518	360	200	147	64	27	24
13	51	1,360	438	964	1,400	452	330	190	131	61	26	25
14	124	1,820	434	924	1,250	410	330	180	123	60	30	100
15	71	1,210	420	1,680	1,140	375	420	170	115	55	27	90
16	60	753	*378	1,390	1,580	375	950	165	108	50	25	60
17	58	522	494	2,180	1,370	352	1,200	155	98	48	25	75
18	64	396	892	1,420	1,310	349	1,500	150	97	*49	26	55
19	60	469	1,430	1,090	*1,100	340	1,150	150	90	52	26	100
20	58	399	1,920	861	900	318	1,450	160	90	53	26	80
21	56	327	1,890	820	735	*346	1,600	145	86	50	25	60
22	100	288	1,970	658	951	321	1,350	140	82	48	25	50
23	258	268	1,680	776	1,080	306	1,050	135	74	44	23	45
24	215	245	1,630	2,120	1,440	452	850	135	86	40	23	40
25	180	237	2,000	1,560	2,120	487	750	140	188	38	23	53
26	158	245	2,920	1,110	2,020	430	650	135	135	38	23	48
27	124	226	2,200	*915	1,740	392	600	125	121	40	27	42
28	112	420	1,990	1,560	1,660	349	500	130	139	36	31	38
29	100	309	1,840	1,610	-	330	450	140	131	35	35	35
30	180	327	1,320	1,840	-----	349	400	135	147	36	40	33
31	185	-----	1,100	2,110	-----	333	-----	130	-----	38	46	-----
Total	2,856	11,918	37,052	33,414	33,871	15,210	19,630	5,960	4,063	1,974	930	1,383
Mean	91.5	397	1,195	1,078	1,210	491	654	192	135	63.7	30.0	46.1
Ac-ft	5,630	23,640	73,490	66,280	67,180	30,170	38,940	11,820	8,060	3,920	1,840	2,740

Calendar year 1957: Max 3,300 Min 30 Mean 454 Ac-ft 329,000  
 Water year 1957-58: Max 2,920 Min 22 Mean 461 Ac-ft 333,700

Peak discharge (base, 4,000 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 21, Mar. 25, Apr. 1 to June 11, July 8, Aug. 13, 17-26, Sept. 8, 14, 21-24, 26-30; doubtful gage-height record Oct. 19, 20, Feb. 20, July 24-29, Aug. 12, Sept. 7, 11-13, 15-20; discharge estimated on basis of records for station near Onalaska and other nearby stations.

## 260. Skookumchuck River near Centralia, Wash.

Location.--Lat 46°47'15", long 122°42'45" in SW 1/4 sec. 17, T. 15 N., R. 1 E., on left bank half a mile upstream from Bloody Run Creek, 4 1/4 miles upstream from Thompson Creek, and 12 miles northeast of Centralia.

Drainage area.--60.8 sq mi.

Records available.--April 1929 to November 1933, October 1939 to December 1958 (discontinued). Monthly discharge only for some periods, published in WSP 1316.

Gage.--Water-stage recorder. Datum of gage is 300.00 ft above mean sea level (river-profile survey). Apr. 1, 1929, to Dec. 6, 1933, staff gage at site a quarter of a mile downstream at different datum. Oct. 9 to Nov. 29, 1939, staff gage at present site and datum.

Average discharge.--23 years, 246 cfs (178,100 acre-ft per year).

Extremes.--1957-58: Maximum discharge during water year, 1,950 cfs Dec. 25 (gage height, 43.57 ft); minimum, 19.5 cfs Aug. 27 (gage height, 39.28 ft).

1958: Maximum discharge during period October to December, 4,260 cfs Nov. 12 (gage height, 46.35 ft); minimum, 22 cfs Oct. 6 (gage height, 39.33 ft).

1929-33, 1939-58: Maximum discharge, 6,710 cfs Dec. 9, 1953 (gage height, 48.59 ft); minimum, 15.5 cfs Nov. 28, 29, 1952 (gage height, 39.22 ft).

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

Revisions (water years).--WSP 722: 1929-30. WSP 1246: Drainage area. WSP 1286: 1930, 1945.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	76	277	363	695	417	171	*179	92	46	25	a22
2	26	67	408	308	533	348	188	168	67	43	24	a21
3	27	58	308	267	452	297	177	155	60	41	26	a21
4	*26	54	245	239	375	264	160	147	56	40	27	a21
5	28	51	210	222	333	264	150	137	52	37	24	*21
6	31	47	359	216	308	236	139	134	89	36	24	21
7	34	47	213	287	230	134	129	88	34	24	21	
8	35	44	348	239	284	224	129	124	62	36	24	21
9	31	41	280	267	498	216	129	114	56	36	24	22
10	28	44	239	333	*920	207	207	106	54	35	24	23
11	27	367	213	404	598	*199	196	104	52	34	23	24
12	26	447	193	528	561	185	182	99	54	34	22	22
13	38	700	174	417	715	174	171	95	51	33	22	21
14	46	705	210	408	641	160	182	90	50	33	22	28
15	32	492	190	760	519	155	326	86	47	32	22	34
16	30	322	*185	690	542	150	760	81	46	32	21	28
17	41	242	294	805	519	150	805	77	43	32	21	35
18	34	204	542	565	501	150	666	74	42	32	21	29
19	31	193	859	421	439	150	617	77	41	*32	21	48
20	31	163	855	348	363	152	920	72	41	32	21	36
21	29	142	830	301	318	182	780	68	40	32	21	30
22	73	134	695	254	336	190	598	67	38	31	20	31
23	230	*124	608	436	363	182	452	70	37	31	21	28
24	182	112	830	1,360	742	219	379	70	59	30	21	27
25	124	106	1,120	790	1,030	236	333	70	60	27	20	26
26	102	109	1,540	551	910	239	284	65	48	26	20	26
27	81	97	910	474	690	219	254	63	52	26	21	25
28	67	155	956	810	524	193	233	70	54	25	23	25
29	57	126	860	775	-	182	213	*67	48	25	24	24
30	90	124	608	962	-----	182	193	63	50	25	26	24
31	97	-----	447	930	-----	166	-----	82	-----	26	21	-----
Total	1,763	5,590	16,220	15,656	14,994	6,518	10,128	3,003	1,629	1,014	700	785
Mean	56.9	186	523	505	536	210	338	96.9	54.3	32.7	22.6	26.2
Cfs/m	0.336	3.06	8.60	8.31	8.62	3.45	5.56	1.59	0.893	0.558	0.372	0.431
In.	1.08	3.42	9.92	9.58	9.17	3.99	6.20	1.84	1.00	0.62	0.43	0.48
Ac-ft	3,500	11,090	32,170	31,050	29,740	12,930	20,090	5,960	3,230	2,010	1,390	1,560

Calendar year 1957: Max 1,870 Min 25 Mean 213 Cfs/m 3.50 In. 47.53 Ac-ft 154,100  
 Water year 1957-58: Max 1,540 Min 20 Mean 214 Cfs/m 3.52 In. 47.73 Ac-ft 154,700

Peak discharge (base, 2,000 cfs).--No peak above base.

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of recorded range in stage and records for Newaukum River near Onalaska.

Discharge, in cubic feet per second, 1958												
Day	Oct.	Nov.	Dec.	Day	Oct.	Nov.	Dec.	Day	Oct.	Nov.	Dec.	
1	23	50	222	9	74	528	322	17	32	304	*210	25
2	23	46	311	10	52	434	472	18	76	1,230	a350	26
3	23	48	461	11	41	773	1,050	19	390	1,150	a250	27
4	23	92	367	12	36	2,930	735	20	*188	1,030	a300	28
5	23	119	297	13	41	1,660	510	21	114	875	a500	29
6	23	519	258	14	35	840	379	22	104	646	a400	30
7	52	392	373	15	32	547	301	23	122	519	a350	31
8	210	417	379	16	31	363	251	24	90	506	a300	31
Total												
Mean												
Cubic feet per second per square mile												
Runoff in inches												
Runoff in acre-feet												

Calendar year 1958: Max 2,930 Min 20 Mean 238 Cfs/m 3.91 In. 53.07 Ac-ft 172,000  
 Water year 1958-59: Max - Min - Mean - Cfs/m - In. - Ac-ft -

Peak discharge (base, 2,000 cfs).--Nov. 12 (11 a.m.) 4,260 cfs (46.36 ft); Nov. 18 (7 p.m.) 2,540 cfs (44.40 ft).

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for Newaukum River near Onalaska.

## 275. Chehalis River near Grand Mound, Wash.

Location.--Lat 46°46'35", long 123°02'05", in NE $\frac{1}{4}$  sec. 22, T. 15 N., R. 3 W., on left bank at downstream side of highway bridge at Meadows,  $\frac{1}{2}$  miles southwest of Grand Mound and 6 miles downstream from Skookumchuck River.

Drainage area.--895 sq mi.

Records available.--October 1928 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 123.27 ft above mean sea level, datum of 1929. Prior to Oct. 3, 1934, staff gage at same site at datum 3.0 ft higher.

Average discharge.--30 years, 2,755 cfs (1,995,000 acre-ft per year).

Extremes.--Maximum discharge during year, 18,500 cfs Dec. 27 (gage height, 13.16 ft); minimum, 99 cfs Aug. 26, 27; minimum gage height, 0.83 ft Aug. 27.  
1928-58: Maximum discharge, 48,400 cfs Dec. 29, 1937 (gage height, 18.39 ft); minimum, 90 cfs Aug. 23-26, 1951; minimum gage height, that of Aug. 27, 1958.

Remarks.--Records good except those for periods of shifting control, which are fair. Many small diversions for irrigation and domestic use above station, including about 15 cfs for municipal water supply for Centralia and Chehalis. No regulation.

Revisions (water years).--WSP 1216: Drainage area. WSP 1286: 1929-30(M), 1931, 1932-34(M).

Rating tables, water year 1957-58, except periods of shifting control (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 27

Dec. 28 to Sept. 30

1.1	141	6.0	4,130	0.7	88	4.0	1,940
1.5	255	8.0	7,000	1.0	135	6.0	4,130
2.0	470	10.0	10,600	1.5	266	8.0	7,000
3.0	1,020	13.0	18,000	2.0	490	10.0	10,600
4.0	1,840			3.0	1,100	13.0	18,000

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*163	545	1,310	5,880	11,600	6,170	2,070	2,030	747	465	156	199
2	155	450	4,000	4,700	8,820	4,910	2,210	*1,850	755	435	154	*166
3	155	392	3,640	3,890	*6,600	4,110	2,380	1,720	645	372	150	154
4	163	*357	2,720	3,360	5,190	3,490	2,270	1,590	612	337	150	144
5	176	335	2,160	2,920	4,290	3,170	2,110	1,470	570	311	159	135
6	210	311	2,200	2,620	3,720	3,090	1,910	1,390	645	284	152	131
7	252	295	5,750	2,380	3,480	2,760	1,760	1,310	1,650	263	148	124
8	255	280	5,080	2,240	3,250	3,250	1,610	1,230	1,220	250	141	120
9	259	269	3,960	2,650	3,730	3,360	1,570	1,140	858	246	141	117
10	242	266	3,090	3,210	7,200	3,190	1,790	1,070	723	240	144	*122
11	216	591	2,520	3,690	7,140	*2,970	2,150	1,030	669	233	139	131
12	155	2,150	2,190	5,320	6,360	2,740	1,870	640	224	135	129	129
13	192	4,780	1,870	5,950	6,840	2,540	1,740	932	612	213	128	129
14	342	6,620	1,780	5,100	6,820	2,300	1,800	884	560	207	122	137
15	402	5,600	1,800	9,390	6,020	2,130	2,420	858	525	199	*119	178
16	303	3,670	1,640	10,800	6,490	2,010	5,540	795	485	194	115	236
17	262	2,470	2,190	11,000	7,410	1,940	7,020	747	440	191	110	233
18	280	1,920	4,910	10,000	9,020	1,900	8,880	711	390	183	109	250
19	266	1,720	7,050	7,390	8,620	1,860	6,860	717	376	183	108	256
20	232	1,520	11,200	5,570	6,580	1,830	6,440	753	358	188	108	277
21	213	1,260	11,000	4,640	5,120	1,890	9,310	687	354	191	104	316
22	216	1,120	11,600	3,940	4,770	1,930	8,010	640	337	188	104	253
23	425	1,020	*9,860	3,590	5,100	1,850	6,300	612	324	181	103	230
24	1,490	948	9,000	9,600	6,680	2,160	4,990	618	328	176	103	215
25	1,410	888	11,600	12,900	11,900	2,290	4,580	628	445	171	103	199
26	924	870	15,900	10,000	12,100	2,280	3,760	612	550	166	103	194
27	768	864	17,800	7,460	10,500	2,150	3,540	570	480	168	99	201
28	631	960	14,900	7,890	8,170	1,980	2,910	580	460	173	109	188
29	525	1,170	13,400	9,270	-	1,850	2,540	*628	465	156	122	178
30	460	1,030	10,600	10,700	-----	1,980	2,250	612	460	*150	*154	*168
31	580	-----	7,760	12,400	-----	1,910	-----	596	-----	154	221	-----
Total	12,362	44,651	204,460	200,430	193,500	81,990	114,190	29,964	17,663	7,092	4,013	5,508
Mean	399	1,488	6,595	6,465	6,911	2,645	3,806	967	589	229	129	184
Cfsm	0.446	1.66	7.37	7.22	7.72	2.96	4.25	1.08	0.658	0.256	0.144	0.206
In.	0.51	1.86	8.50	8.33	8.04	3.41	4.74	1.25	0.73	0.29	0.17	0.23
Ac-ft	24,520	88,560	405,500	397,500	383,800	162,600	226,500	59,430	35,030	14,070	7,960	10,920

Calendar year 1957: Max 19,700 Min 135 Mean 2,333 Cfsm 2.61 In. 35.38 Ac-ft 1,889,000  
Water year 1957-58: Max 17,800 Min 99 Mean 2,509 Cfsm 2.80 In. 38.06 Ac-ft 1,816,000

Peak discharge (base, 13,000 cfs).--Dec. 27 (3:30 a.m.) 18,500 cfs (13.16 ft); Jan. 25 (4 a.m.) 13,700 cfs (11.47 ft).

\* Discharge measurement made on this day.

Note.--Shifting-control method used Oct. 26 to Nov. 11, June 10 to Aug. 30.

## CHEHALIS RIVER BASIN

## 300. Rock Creek at Cedarville, Wash.

Location.--Lat 46°52'05", long 123°18'25", in SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 15, T. 16 N., R. 5 W., on left bank 0.2 mile downstream from Williams Creek, 1 mile west of Cedarville, and 1 $\frac{1}{2}$  miles upstream from mouth.

Drainage area.--24.8 sq mi.

Records available.--July to October 1942, July to October 1943, June 1944 to September 1958. October 1942 monthly discharge only, published in WSP 1316.

Gage.--Water-stage recorder. Altitude of gage is 70 ft (from topographic map). Prior to Aug. 17, 1944, staff gage at railroad bridge three-quarters of a mile downstream at different datum.

Average discharge.--14 years (1944-58), 86.6 cfs (62,700 acre-ft per year).

Extremes.--Maximum discharge during year, 770 cfs Dec. 26 (gage height, 8.81 ft); minimum, 0.9 cfs Aug. 24-26 (gage height, 2.30 ft).  
1942-58: Maximum discharge, 1,660 cfs Feb. 9, 1951 (gage height, 13.77 ft), from rating curve extended above 850 cfs; minimum, 0.3 cfs Sept. 25, 1946.

Remarks.--Records excellent except those for period Sept. 16-30, which are good. No regulation. Some diversion for irrigation.

Revisions (water years).--WSP 982: 1942. WSP 1092: 1945-46(M).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 28 to Nov. 12, Sept. 17-30)

2.25	0.9	2.7	7.9	4.0	122
2.3	1.2	2.8	11	5.0	255
2.4	2.1	3.0	20	6.0	395
2.5	3.5	3.3	44	8.0	665
2.6	5.4	3.6	75		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.6	13.5	50	178	296	164	57	62	14.5	11.5	2.6	2.4
2	2.9	11	71	142	220	135	55	57	*13	8.2	2.9	2.0
3	3.2	9.7	61	118	178	111	56	52	13	7.0	3.0	2.0
4	3.4	8.5	54	97	142	96	52	48	11.5	6.0	3.4	1.9
5	4.2	7.9	48	84	122	94	51	44	9.7	5.6	3.2	1.5
6	3.4	6.8	132	74	110	83	49	40	22	5.0	2.5	1.4
7	3.0	6.3	180	66	108	92	46	38	27	4.2	2.1	1.1
8	3.0	5.6	161	70	105	116	45	35	16.5	*4.8	2.0	1.1
9	3.4	5.4	132	74	165	125	46	33	13	5.0	2.0	1.1
10	3.0	6.0	106	79	204	*118	49	31	11.5	4.8	1.8	1.2
11	3.4	21	88	86	197	106	66	29	11	4.6	1.6	1.4
12	3.6	122	75	120	263	94	59	27	10.5	4.0	1.4	1.8
13	8.4	228	64	116	244	84	56	25	9.4	3.6	1.4	1.8
14	9.4	199	72	229	219	74	54	22	9.1	3.6	1.2	2.0
15	5.6	120	63	486	188	67	65	22	8.2	3.2	1.1	4.0
16	4.0	79	*64	426	223	62	135	20	7.6	2.6	1.1	4.8
17	5.6	60	95	480	245	60	201	19	6.8	2.4	1.1	8.2
18	5.0	52	144	291	*347	60	223	18	6.0	2.6	1.2	5.8
19	4.5	46	280	208	284	56	190	18	6.0	3.0	1.2	6.3
20	3.8	39	336	164	209	61	305	19	6.3	3.0	1.1	6.3
21	4.0	33	332	*132	166	61	420	20	6.0	3.2	1.1	6.0
22	7.9	30	322	110	156	61	304	18	5.4	2.0	1.0	5.0
23	55	28	258	125	138	80	230	16	5.0	2.6	1.0	4.6
24	53	26	273	558	204	67	178	15	9.5	2.4	1.0	3.2
25	30	26	433	408	328	68	143	16	14.5	2.1	.9	5.4
26	22	26	616	255	318	67	118	16	11.0	2.1	*1.0	6.0
27	16.5	27	419	205	252	65	102	15	9.4	2.1	1.0	4.4
28	12	44	434	216	200	61	92	11	9.1	2.4	1.4	3.0
29	*9.7	38	382	284	57	76	11	8.5	2.1	1.9	2.8	
30	14	34	294	395	-----	61	70	12	10.5	2.1	3.8	2.1
31	19	-----	231	408	-----	57	-----	14.5	-----	2.5	2.6	-----
Total	328.5	1,358.7	6,272	6,680	5,829	2,543	3,589	823.5	321.5	121.2	54.6	100.6
Mean	10.6	45.3	202	215	208	82.0	120	26.6	10.7	3.91	1.75	3.55
Cfs/m	0.427	1.83	6.15	8.67	8.39	3.31	4.84	1.07	0.431	0.158	0.071	0.135
In.	0.49	2.04	8.41	10.02	9.74	3.81	5.38	1.23	0.48	0.18	0.08	0.15
Ac-ft	652	2,690	12,440	13,250	11,560	5,040	7,120	1,630	658	240	108	200

Calendar year 1957: Max 620 Min 1.5 Mean 66.6 Cfs/m 2.69 In. 36.46 Ac-ft 48,220  
Water year 1957-58: Max 618 Min 0.9 Mean 76.8 Cfs/m 3.10 In. 42.01 Ac-ft 55,570

Peak discharge (base, 800 cfs).--No peak above base.

\* Discharge measurement made on this day.



## 310. Chehalis River at Porter, Wash.

Location.--Lat 46°56'20", long 123°18'45", on line between secs. 21 and 28, T. 17 N., R. 5 W., in upstream end of left bank pier of Chehalis River bridge at mouth of Porter Creek, 700 ft west of Porter.

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

Records available.--January 1952 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 25 ft (from topographic map).

Average discharge.--6 years, 4,211 cfs (3,049,000 acre-ft per year).

Extremes.--Maximum discharge during year, 22,000 cfs Dec. 28 (gage height, 18.82 ft); minimum, 195 cfs Aug. 26, 27, Sept. 10 (gage height, 2.60 ft).  
1952-58: Maximum discharge, 31,700 cfs Jan. 7, 1954 (gage height, 22.27 ft); minimum, 164 cfs Oct. 17, 1952 (gage height, 2.25 ft).

Remarks.--Records good. Cities of Centralia and Chehalis divert about 15 cfs from Newaukum River, a tributary, for municipal use. Other small diversions for irrigation and domestic use. No regulation.

Rating table, water year 1957-58 (gage height, in feet,  
and discharge, in cubic feet per second)

2.6	195	10.0	5,770
3.2	355	13.0	9,700
4.0	660	16.0	14,600
5.0	1,210	19.0	22,500
7.0	2,770		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	264	855	1,620	9,520	16,300	10,100	2,990	3,190	946	651	246	319
2	247	755	3,400	7,450	12,200	8,020	3,150	2,940	*1,040	820	249	278
3	259	656	4,640	6,130	11,000	6,680	3,260	2,730	964	566	249	249
4	257	597	3,680	5,200	8,560	5,750	3,260	2,510	865	514	249	239
5	273	550	3,010	4,520	6,970	5,200	3,050	2,330	800	480	246	231
6	298	514	3,090	4,020	5,990	4,930	2,850	2,200	890	452	251	219
7	325	490	5,350	3,630	5,470	4,590	2,630	2,090	1,430	*424	251	213
8	355	469	6,870	3,440	5,140	4,940	2,450	1,970	1,770	416	246	202
9	364	452	5,540	3,580	5,260	5,120	2,360	1,840	1,250	413	244	202
10	355	448	4,440	4,090	7,450	*4,930	2,810	1,740	1,040	402	241	197
11	334	518	3,690	4,620	9,620	4,580	3,030	1,640	934	396	241	202
12	319	1,860	3,210	5,600	8,910	4,270	2,820	1,560	880	382	239	206
13	376	4,330	2,860	7,480	9,020	3,970	2,620	1,470	845	373	236	208
14	355	7,030	2,620	6,870	9,200	3,670	2,600	1,400	800	364	231	219
15	472	7,090	2,620	9,690	8,620	3,410	3,260	1,350	755	355	224	239
16	448	5,130	*2,460	13,200	8,340	3,230	5,710	1,260	710	349	222	292
17	413	3,590	2,890	14,400	9,620	3,110	8,760	1,190	656	337	219	376
18	376	2,820	4,910	14,200	11,300	3,080	10,200	1,140	610	328	217	334
19	376	2,400	7,870	11,600	12,100	3,000	10,100	1,160	566	322	215	382
20	358	2,230	11,000	*8,780	10,400	3,010	10,800	1,140	554	316	213	367
21	334	1,900	13,300	7,070	8,100	3,020	12,300	1,100	538	313	210	399
22	334	1,620	13,800	6,030	7,090	3,100	*11,700	1,020	522	304	208	382
23	646	1,470	13,500	5,440	7,260	3,010	9,700	964	494	301	206	337
24	1,180	1,350	12,000	9,420	8,110	3,190	7,780	958	526	292	204	310
25	1,930	1,250	13,300	15,300	12,700	3,470	6,450	964	638	281	199	322
26	1,340	1,220	17,800	15,400	15,600	3,420	5,670	922	745	270	*197	295
27	1,070	1,200	20,200	12,000	15,300	3,330	5,010	860	725	264	202	281
28	*905	1,330	21,500	10,200	12,700	3,150	4,430	850	660	259	208	278
29	785	1,570	19,400	11,900	-	2,960	3,910	934	646	259	246	267
30	795	1,500	17,000	13,200	-----	2,990	3,510	928	651	249	270	251
31	805	-----	12,700	15,400	-----	3,000	-----	910	-----	249	264	-----
Total	16,963	57,194	260,270	269,370	270,330	130,130	158,970	47,280	24,445	11,501	7,143	8,296
Mean	547	1,906	8,396	8,689	9,655	4,198	5,269	1,525	371	230	277	
Cfs/m	0.421	1.47	6.46	6.68	7.43	3.23	4.08	1.17	0.627	0.285	0.177	0.213
In.	0.49	1.64	7.45	7.71	7.73	3.72	4.55	1.35	0.70	0.33	0.20	0.24
Ac-ft	33,650	113,400	516,200	534,300	536,200	258,100	315,300	93,780	48,490	22,810	14,170	16,450

Calendar year 1957: Max 22,300 Min 236 Mean 3,232 Cfs/m 2.49 In. 33.76 Ac-ft 2,340,000  
Water year 1957-58: Max 21,500 Min 197 Mean 3,457 Cfs/m 2.66 In. 36.11 Ac-ft 2,503,000

Peak discharge (base, 20,000 cfs).--Dec. 28 (11 a.m.) 22,000 cfs (18.82 ft).

\* Discharge measurement made on this day.

## 325. Cloquallum River at Elma, Wash.

Location.--Lat 47°00'20", long 123°23'10", in S<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec. 36, T. 18 N., R. 6 W., on right bank 10 ft downstream from bridge, half a mile east of Elma, and 1.8 miles downstream from Wildcat Creek.

Drainage area.--65.8 sq mi.

Records available.--July 1942 to October 1943 (fragmentary), July 1944 to September 1958. Published as Cloquallum Creek at Elma 1942.

Gage.--Water-stage recorder. Altitude of gage is 20 ft (from topographic map). Prior to Aug. 7, 1944, staff gage at site 350 ft downstream at datum 0.42 ft lower. Aug. 7, 1944, to Sept. 1, 1953, water-stage recorder at site 200 ft upstream at same datum.

Average discharge.--14 years (1944-58), 260 cfs (188,200 acre-ft per year).

Extremes.--Maximum discharge during year, 1,800 cfs Jan. 16 (gage height, 6.97 ft); minimum, 19 cfs Sept. 7, 8; minimum gage height, 1.56 ft Aug. 26, 27, Sept. 7, 8. 1942-58: Maximum discharge, 4,470 cfs Feb. 9, 1951 (gage height, 11.04 ft); minimum, 6.8 cfs Sept. 15, 1945 (gage height, 1.43 ft).

Revisions.--The maximum discharge for the water year 1957 has been corrected to 4,010 cfs Dec. 9, 1956 (gage height, 10.43 ft), superseding figure published in WSP 1446.

Remarks.--Records excellent. Several small diversions on minor tributaries above station and some regulation by log pond on Wildcat Creek.

Revisions.--WSP 1246: Drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 16

Jan. 17 to Sept. 30

1.8	20	4.0	545	1.5	16	3.0	270
2.0	40	5.0	900	1.7	31	4.0	555
2.5	126	7.0	1,810	2.0	67	5.0	900
3.0	240			2.5	157	6.0	1,330

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	71	197	489	716	462	191	176	72	46	26	29
2	25	63	232	*414	579	399	189	163	66	42	26	25
3	26	55	197	372	513	345	176	155	66	41	29	24
4	26	53	176	330	435	315	161	141	63	40	28	23
5	28	50	154	282	417	315	155	135	56	39	26	22
6	29	48	378	246	375	285	143	131	*85	37	25	21
7	27	46	474	225	*375	350	135	124	90	37	25	20
8	27	45	534	230	354	372	139	116	85	39	25	20
9	29	44	420	249	441	332	143	113	59	39	25	22
10	26	46	324	282	435	300	258	107	59	38	24	22
11	25	73	267	333	405	278	196	105	57	37	25	22
12	32	304	232	399	591	280	176	100	54	35	24	22
13	82	682	204	345	519	241	165	97	55	34	24	22
14	53	662	238	686	492	221	170	93	52	33	24	26
15	37	*387	199	1,210	486	207	342	86	51	32	23	30
16	33	258	206	1,190	622	198	471	83	48	31	23	40
17	43	197	288	1,290	692	193	525	81	45	30	24	45
18	38	176	327	797	853	193	*477	77	42	30	24	33
19	33	165	648	603	713	200	685	86	42	32	23	39
20	31	130	797	498	570	221	1,030	81	43	32	23	35
21	30	112	846	441	492	225	678	73	43	32	22	34
22	41	106	710	402	540	228	522	69	41	31	22	30
23	366	93	545	473	492	221	408	70	40	*30	22	29
24	204	87	702	783	671	263	342	75	54	29	22	27
25	136	89	1,010	748	822	*248	295	70	70	29	*22	38
26	124	93	1,490	615	794	246	275	67	56	29	22	32
27	93	93	1,050	579	664	225	285	66	54	27	25	28
28	74	165	1,100	797	543	212	230	59	52	26	26	26
29	64	124	968	818	-	202	207	69	48	27	30	25
30	102	122	780	992	-----	221	189	69	48	29	29	25
31	89	-----	604	924	-----	200	-----	78	-----	28	25	-----
Total	1,998	4,639	16,297	18,042	15,601	8,158	9,358	3,025	1,675	1,041	763	836
Mean	64.5	155	526	582	557	263	312	97.6	55.8	33.6	24.6	27.9
Cfs/m	0.980	2.36	7.99	8.84	8.47	4.00	4.74	1.48	0.848	0.511	0.374	0.424
In.	1.13	2.62	9.21	10.20	8.82	4.61	5.29	1.71	0.95	0.59	0.43	0.47
Ac-ft	3,960	9,200	32,320	35,790	30,940	16,180	18,560	6,000	3,320	2,060	1,510	1,660

Calendar year 1957: Max 1,510 Min 22 Mean 210 Cfs/m 3.19 In. 43.21 Ac-ft 151,700  
 Water year 1957-58: Max 1,490 Min 20 Mean 223 Cfs/m 3.39 In. 46.03 Ac-ft 161,500

Peak discharge (base, 1,500 cfs).--Dec. 26 (1 a.m.) 1,760 cfs (6.91 ft); Jan. 16 (10 p.m.) 1,800 cfs (6.97 ft).

\* Discharge measurement made on this day.

342. East Fork Satsop River near Elma, Wash.

Location.--Lat 47°07'40", long 123°25'00", in SW $\frac{1}{4}$  sec. 15, T. 19 N., R. 6 W., on right bank  $1\frac{1}{2}$  miles downstream from Bingham Creek,  $4\frac{1}{2}$  miles upstream from mouth, and  $8\frac{1}{2}$  miles north of Elma.

Drainage area.--71.5 sq mi.

Records available.--February 1957 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 205 ft (from topographic map).

Extremes.--1957: Maximum discharge during period February to September, 2,300 cfs (revised) Feb. 26, 1957 (gage height, 5.41 ft); minimum, 69 cfs Sept. 30 (gage height, 1.36 ft).

1957-58: Maximum discharge during water year, 2,090 cfs Jan. 17 (gage height, 5.12 ft); minimum, 63 cfs Oct. 10; minimum gage height, 1.32 ft Sept. 29, 30.

Revisions.--The maximum discharge for the period February to September 1957 has been revised to 2,300 cfs Feb. 26, 1957 (gage height, 5.41 ft), superseding figure published in WSP 1516.

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

Revisions.--Revised figures of discharge for the period February to September 1957, superseding those published in WSP 1516, are given herein.

Rating tables, Feb. 21, 1957, to Sept. 30, 1958 (gage height, in feet, and discharge, in cubic feet per second)

Feb. 21, 1957, to Jan. 16, 1958

Jan. 17 to Sept. 30, 1958

1.3	56	3.0	770	1.3	66	3.0	770
1.6	133	4.0	1,350	1.6	150	4.0	1,350
2.0	280	5.0	2,010	2.0	295	5.0	2,010

Discharge, in cubic feet per second, February to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					-	780	450	251	155	116	90	78
2					-	665	420	246	155	116	90	78
3					-	585	395	234	150	116	90	78
4					-	555	420	230	150	113	92	76
5					-	710	495	223	145	113	95	78
6					-	780	445	219	145	110	*100	81
7					-	1,300	410	215	145	110	110	81
8					-	1,200	385	211	140	110	150	78
9					-	1,200	361	211	140	116	140	76
10					-	1,150	348	208	140	110	130	76
11					-	978	*334	204	140	110	150	74
12					-	850	338	200	155	107	130	74
13					-	750	361	193	150	107	115	74
14					-	760	405	*190	170	113	100	74
15					-	835	530	190	160	200	95	74
16					-	765	475	186	140	150	90	74
17					-	690	425	190	135	130	88	74
18					-	620	390	223	135	120	87	*74
19					-	565	361	200	130	110	86	74
20					-	575	343	190	130	100	85	74
21					*307	545	330	186	130	100	84	71
22					307	505	316	186	130	98	83	71
23					665	475	316	179	125	96	83	71
24					1,560	565	320	176	125	94	83	71
25					1,730	525	302	172	125	92	81	71
26					2,140	475	289	168	*127	90	81	71
27					1,420	450	280	165	127	92	81	74
28					990	430	272	168	121	96	81	74
29					-	455	263	159	118	94	78	71
30					-----	445	255	159	118	92	78	71
31					-----	475	-----	155	-----	90	78	-----
Total					-	21,658	11,034	6,087	4,156	3,411	3,004	2,236
Mean					-	699	368	196	139	110	96.9	74.5
Cfsm					-	9.78	5.15	2.74	1.94	1.54	1.36	1.04
In.					-	11.27	5.74	3.17	2.16	1.77	1.56	1.16
Ac-ft					-	42,960	21,890	12,070	8,240	6,770	5,960	4,440
Calendar year	: Max		Min	Mean		Cfsm		In.	Ac-ft			
Water year	: Max		Min	Mean		Cfsm		In.	Ac-ft			

Peak discharge (base, 1,700 cfs, revised).--Feb. 26 (6:30 a.m.) 2,300 cfs (5.41 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record May 30 to June 25, July 15 to Aug. 22; discharge estimated on basis of 1 discharge measurement and records for Satsop River near Satsop.

## 342. East Fork Satsop River near Elma, Wash.--Continued

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69	91	230	570	860	600	299	299	174	124	98	84
2	69	88	263	*510	740	545	303	291	171	121	95	80
3	69	86	246	480	660	495	299	279	168	*124	95	78
4	69	86	227	445	590	466	291	275	164	121	92	78
5	71	85	211	405	555	452	279	267	160	118	89	80
6	69	81	356	375	520	420	271	259	171	118	89	78
7	69	81	445	352	505	438	267	252	168	118	89	78
8	69	78	540	358	500	443	263	248	160	118	89	78
9	69	78	465	370	595	416	263	241	154	118	89	78
10	67	81	380	405	625	389	315	234	*157	118	87	80
11	65	88	338	435	*575	376	287	230	154	115	87	80
12	74	212	320	580	705	362	271	224	150	112	87	80
13	94	420	289	525	660	344	259	220	150	112	87	78
14	78	530	312	844	605	331	259	216	147	109	87	80
15	71	375	284	1,590	580	327	362	210	144	106	87	82
16	72	284	289	1,540	685	315	452	210	144	106	87	87
17	71	234	348	1,740	745	307	545	202	140	106	87	89
18	71	219	405	1,100	1,030	303	540	202	140	106	84	82
19	69	*204	565	825	906	315	625	202	137	106	84	89
20	69	179	700	685	730	319	876	196	137	106	84	82
21	69	165	730	600	640	319	680	192	134	104	84	84
22	74	155	695	555	670	315	575	188	134	104	82	80
23	136	149	610	655	655	307	465	192	131	104	82	78
24	124	145	765	1,080	855	351	434	188	144	104	82	78
25	113	143	1,050	918	1,040	327	402	185	150	104	82	82
26	104	146	1,510	785	936	*319	384	178	140	104	80	78
27	96	149	1,150	720	785	315	366	178	134	98	84	75
28	88	215	1,130	785	680	303	*344	178	131	98	84	75
29	86	186	1,000	825	-	299	323	174	128	98	*87	73
30	99	182	820	1,100	-----	311	311	178	128	98	84	73
31	96	-----	665	1,040	-----	303	-----	178	-----	98	84	-----
Total	2,508	5,211	17,338	23,175	19,632	11,412	11,630	6,766	4,444	3,396	2,688	2,397
Mean	80.9	174	559	748	701	368	388	218	148	110	86.7	79.9
Cfsm	1.13	2.43	7.82	10.5	9.80	5.15	5.43	3.05	2.07	1.54	1.21	1.12
In.	1.30	2.71	9.02	12.05	10.21	5.94	6.05	3.52	2.31	1.77	1.40	1.25
Ac-ft	4,970	10,340	34,390	45,970	38,940	22,640	23,070	13,420	8,810	6,740	5,330	4,750

Calendar year 1957: Max - Min 65 Mean 303 Cfsm 4.24 In. 57.53 Ac-ft 219,400  
 Water year 1957-58: Max 1,740 Min 65 Mean 303 Cfsm 4.24 In. 57.53 Ac-ft 219,400

Peak discharge (base, 1,700 cfs, revised).--Dec. 26 (4:30 a.m.) 1,700 cfs (4.56 ft); Jan. 17 (1 a.m.) 2,090 cfs (5.12 ft).

\* Discharge measurement made on this day.

## 350. Satsop River near Satsop, Wash.

Location.--Lat 47°00'05", long 123°29'40", in sec. 36, T. 18 N., R. 7 W., in west pier of bridge on U. S. Highway 410, three-quarters of a mile west of Satsop and 2 miles upstream from mouth.

Drainage area.--290 sq mi, approximately.

Records available.--March 1929 to September 1958.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929. Prior to Mar. 19, 1938, staff gage at site 60 ft upstream at datum 20.9 ft higher.

Average discharge.--29 years, 1,951 cfs (1,412,000 acre-ft per year).

Extremes.--Maximum discharge during year, 14,200 cfs Dec. 26, Jan. 17; maximum elevation, 31.06 ft Dec. 26; minimum discharge, 212 cfs Sept. 7, 8 (elevation, 23.55 ft).

1929-58: Maximum discharge, 46,600 cfs Jan. 22, 1935 (elevation, 38.9 ft, from floodmarks); minimum, 166 cfs Sept. 21, 1938; minimum elevation, 21.66 ft, present datum, Sept. 3-6, 1934.

Flood in November 1909 reached a stage of 37.1 ft at railroad bridge 300 ft downstream from high-water mark.

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

Revisions (water years).--WSP 1246: Drainage area. WSP 1286: 1930-35(M), 1937(M).

Rating table, water year 1957-58 (elevation, in feet, and discharge, in cubic feet per second)

23.5	180	26.0	3,020
23.9	500	28.0	6,450
25.0	1,700	30.0	11,500

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	252	780	1,520	3,120	5,080	3,170	1,580	1,270	550	371	252	245
2	252	700	2,120	2,740	4,100	2,740	1,570	1,210	510	354	252	252
3	252	830	1,880	2,610	3,510	2,430	1,590	1,140	490	*346	252	238
4	252	580	2,740	3,030	2,190	1,530	1,090	472	337	260	232	232
5	252	540	1,530	2,450	2,780	2,110	1,430	1,030	472	320	252	226
6	252	510	2,480	2,230	2,640	1,940	1,320	998	*490	320	245	219
7	252	490	3,480	2,060	*2,610	1,990	1,220	943	530	312	245	219
8	252	472	4,140	2,080	2,730	2,070	1,160	910	472	320	245	212
9	280	452	3,440	2,480	4,300	1,940	1,170	877	443	320	245	219
10	280	550	2,610	2,890	4,780	1,830	1,600	853	434	312	238	232
11	252	1,020	2,210	3,690	3,680	1,720	1,470	811	434	312	238	238
12	275	3,050	2,140	4,600	4,090	1,640	1,330	770	424	305	238	232
13	616	4,600	1,830	3,750	3,910	1,540	1,250	740	414	305	238	232
14	570	*4,720	2,040	5,510	3,440	1,450	1,240	720	405	305	238	245
15	414	3,170	1,860	10,200	3,220	1,380	2,300	690	396	298	238	252
16	380	2,280	1,830	9,780	4,070	1,370	3,690	670	396	298	238	290
17	396	1,780	2,540	10,700	4,600	1,310	4,050	640	388	298	238	371
18	354	1,580	3,600	6,130	7,600	1,310	3,970	610	380	298	238	337
19	337	1,400	4,660	4,530	5,800	1,370	4,180	630	371	298	232	405
20	320	1,240	5,610	3,630	4,190	1,530	6,510	620	380	298	232	414
21	312	1,110	4,990	3,060	3,480	*1,640	4,390	590	380	290	232	396
22	320	1,010	4,280	2,750	3,860	1,770	3,400	570	371	290	232	405
23	752	932	3,930	3,700	3,630	1,660	2,780	570	362	282	232	354
24	2,800	888	5,100	7,940	5,420	1,800	2,380	580	396	275	232	328
25	1,980	899	7,290	5,840	7,100	2,080	2,110	560	443	268	*232	380
26	1,640	910	*10,800	4,780	5,960	2,200	1,950	540	414	268	232	388
27	1,330	868	6,710	4,040	4,580	1,990	1,860	520	396	268	238	357
28	1,020	1,330	6,970	4,900	3,720	1,750	*1,630	596	396	268	232	320
29	833	1,350	6,150	5,280	1,590	1,470	530	396	252	260	305	282
30	943	1,280	4,670	7,480	-----	1,680	1,360	550	388	260	282	282
31	921	-----	3,700	6,310	-----	1,530	-----	560	-----	260	245	-----
Total	19,301	41,279	117,780	143,980	117,910	58,720	67,490	23,312	12,793	9,300	7,501	8,805
Mean	623	1,376	3,799	4,644	4,211	1,830	2,250	752	426	300	242	284
Cfsm	2.15	4.74	13.1	16.0	14.5	6.31	7.76	2.59	1.47	1.03	0.834	1.01
In.	2.48	5.50	15.10	16.46	15.12	7.27	8.66	2.99	1.64	1.19	0.96	1.13
Ac-ft	38,280	81,880	233,600	285,500	233,900	112,500	133,900	46,240	25,370	18,450	14,880	17,460
Calendar year 1957: Max	15,300	Min	252	Mean	1,572	Cfsm	5.42	In.	73.58	Ac-ft	1,138,000	
Water year 1957-58: Max	10,800	Min	212	Mean	1,715	Cfsm	5.91	In.	80.29	Ac-ft	1,242,000	

Peak discharge (base, 13,500 cfs).--Dec. 26 (2 a.m.) 14,200 cfs (31.06 ft); Jan. 17 (2:30 a.m.) 14,200 cfs (31.04 ft).

\* Discharge measurement made on this day.

360. Wynoochee River above Save Creek, near Aberdeen, Wash.

Location.--Lat 47°18', long 123°39', in NW<sup>1</sup> sec. 24, T. 21 N., R. 8 W., on left bank 1 mile upstream from Save Creek, 3 miles downstream from Oxbow, and 22 miles northeast of Aberdeen.

Drainage area.--69.5 sq mi.

Records available.--May 1925 to September 1958. Published as "at Oxbow, near Aberdeen" 1925-52. Records published for both sites October 1951 to October 1952.

Gage.--Water-stage recorder at present site and datum since Oct. 5, 1951. Datum of gage is 401 ft above mean sea level (stadia traverse). Prior to Nov. 7, 1925, staff gage at site 1,200 ft downstream from Oxbow at different datum. Nov. 7, 1925, to Sept. 3, 1947, water-stage recorder at site 1 mile downstream from Oxbow at datum 444.0 ft above mean sea level (levels by city of Aberdeen). Sept. 4, 1947, to Oct. 13, 1952, water-stage recorder at Oxbow at datum 91 ft higher.

Average discharge.--33 years, 794 cfs (574,800 acre-ft per year).

Extremes.--Maximum discharge during year, 8,890 cfs Dec. 25 (gage height, 11.02 ft); minimum, 107 cfs Sept. 5-9 (gage height, 3.96 ft).  
1925-58: Maximum discharge, 23,600 cfs Dec. 9, 1956 (gage height, 16.95 ft), from rating curve extended above 9,000 cfs; minimum, 64 cfs Jan. 27, 1949.

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

Revisions (water years).--WSP 1216: Drainage area. WSP 1346: 1952.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 25

Dec. 26 to Sept. 30

3.9	109	6.0	1,330	3.9	95	6.0	1,450
4.4	255	7.0	2,420	4.4	251	7.0	2,500
5.0	560	8.0	3,710	5.0	601	9.0	5,200

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	142	530	738	1,040	1,640	1,180	670	551	382	178	118	130
2	142	456	778	1,010	1,360	1,010	678	544	344	171	118	107
3	140	412	687	*1,240	1,210	894	726	530	316	171	118	120
4	137	370	644	1,320	1,040	814	670	506	311	168	118	111
5	137	340	614	1,190	1,040	782	621	482	300	168	115	109
6	135	313	1,140	1,090	1,100	686	558	476	322	162	115	107
7	135	295	1,270	1,000	1,320	726	518	470	322	159	113	107
8	135	279	2,080	1,320	1,680	678	518	476	290	156	113	107
9	132	263	1,280	1,370	2,740	628	518	482	*280	152	111	109
10	130	275	932	2,190	2,200	600	663	476	261	149	109	115
11	130	796	908	2,080	1,550	558	579	452	256	149	111	115
12	151	1,870	932	2,270	*1,870	524	544	410	251	149	111	113
13	445	2,230	764	1,560	1,690	506	544	382	251	146	111	109
14	513	2,040	884	2,460	1,370	476	615	366	258	146	109	109
15	237	1,290	743	4,190	1,330	464	1,090	366	230	143	109	113
16	216	a950	916	4,580	1,930	458	1,450	404	225	140	109	149
17	209	a750	1,780	3,370	2,280	446	1,820	416	225	138	109	204
18	190	a650	1,740	2,040	4,580	452	1,460	428	225	138	109	190
19	178	a580	2,240	1,560	2,510	524	1,890	488	221	138	109	338
20	175	a520	2,180	1,280	1,720	593	2,340	434	208	135	109	208
21	170	*467	1,670	1,090	1,570	806	1,460	410	201	135	109	311
22	164	440	1,300	1,050	1,890	878	1,160	416	197	*132	109	256
23	357	418	1,420	2,600	1,590	758	955	422	193	130	109	204
24	2,170	396	1,680	3,420	3,340	790	850	404	201	128	109	186
25	1,490	396	3,700	2,290	3,100	886	742	404	208	125	109	238
26	1,200	423	3,820	1,780	2,290	*1,000	686	404	193	122	109	208
27	844	492	2,260	1,530	1,720	822	628	399	197	122	115	182
28	628	680	2,719	2,420	1,380	694	579	382	204	120	113	171
29	506	512	2,050	2,480		663	*551	350	190	120	*122	162
30	745	494	1,500	2,480	-----	678	544	333	186	120	118	146
31	662	-----	1,220	1,880	-----	663	-----	360	-----	118	115	-----
Total	12,537	19,927	46,580	60,960	53,040	21,637	26,607	13,423	7,428	4,428	3,481	4,480
Mean	404	664	1,503	1,966	1,894	698	887	433	248	143	112	161
Cfsm	5.81	9.55	21.6	28.3	27.5	10.0	12.8	6.23	3.57	2.06	1.61	2.32
In.	6.71	10.60	24.33	32.62	28.38	11.58	14.24	7.18	3.97	2.37	1.85	2.59
Ac-ft	24,870	39,520	92,390	120,900	105,200	42,920	52,770	26,620	14,730	8,780	6,900	9,600

Calendar year 1957: Max 7,570 Min 130 Mean 722 Cfsm 10.4 In. 141.03 Ac-ft 522,700  
Water year 1957-58: Max 4,580 Min 107 Mean 753 Cfsm 10.8 In. 147.09 Ac-ft 545,200

Peak discharge (base, 8,800 cfs).--Dec. 25 (9 p.m.) 8,890 cfs (11.02 ft).

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of recorded range in stage and records for nearby stations.

374. Wynoochee River above Black Creek, near Montesano, Wash.

Location.--Lat 47°00'40", long 123°39'35", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 27, T. 18 N., R. 8 W., 2,000 ft upstream from mouth of Black Creek and 3 $\frac{1}{2}$  miles northwest of Montesano.

Drainage area.--179 sq mi.

Records available.--October 1956 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 40 ft (from topographic map).

Extremes.--Maximum discharge during year, 11,100 cfs Dec. 26 (gage height, 14.27 ft); minimum, 23 cfs Aug. 22, 23 (gage height, 3.11 ft).  
1956-58: Maximum discharge, 24,500 cfs Dec. 10, 1956 (gage height, 20.54 ft); minimum, that of Aug. 22, 23, 1958.

Remarks.--Records excellent. City of Aberdeen diverts about 56 cfs for municipal supply at intake 2 $\frac{1}{4}$  miles upstream. No regulation.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 19

Apr. 20 to Sept. 30

3.4	57	6.0	1,280	3.1	22	5.0	640
3.9	157	9.0	4,250	3.4	58	6.0	1,290
4.4	307	12.0	7,820	3.9	170	10.0	5,350
5.0	578			4.4	345		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	80	681	963	1,940	3,080	2,040	956	804	460	176	52	75
2	77	556	1,425	1,730	2,520	1,720	921	768	415	168	50	75
3	75	482	1,210	*1,700	2,120	1,510	977	744	377	158	52	63
4	71	434	1,130	1,930	1,830	1,310	921	739	353	151	52	55
5	75	386	1,040	1,710	1,680	1,260	851	678	*341	148	43	48
6	73	351	1,740	1,540	1,720	1,130	778	646	381	146	41	44
7	70	318	2,530	1,420	1,830	1,200	726	629	426	138	39	42
8	70	293	2,920	1,480	2,170	1,220	706	607	357	136	38	38
9	68	280	2,480	1,870	3,390	1,150	752	596	305	133	37	32
10	60	300	1,810	2,290	*3,770	1,070	1,110	590	268	128	36	33
11	59	867	1,490	3,020	2,700	998	977	574	258	126	35	41
12	78	2,850	1,580	3,240	2,890	.21	858	530	244	120	33	36
13	255	3,680	1,300	2,580	2,930	837	824	480	233	116	31	38
14	347	3,500	1,450	3,810	2,450	772	858	445	223	100	30	42
15	238	2,390	1,300	6,550	2,210	746	1,660	435	210	81	28	50
16	186	1,710	1,280	6,920	2,770	706	2,580	435	210	72	28	75
17	189	1,320	2,280	7,200	3,260	681	2,750	460	200	68	28	133
18	160	1,190	2,980	3,930	6,000	662	2,770	465	179	70	28	148
19	145	1,050	3,540	2,870	4,560	694	2,770	520	176	72	27	207
20	133	879	4,250	2,290	3,010	817	4,470	520	176	70	26	283
21	124	*778	3,450	1,940	2,470	*914	2,900	465	173	68	26	244
22	120	700	2,810	1,740	2,960	1,180	2,200	455	162	65	24	275
23	357	637	2,660	2,580	2,560	1,110	1,760	470	148	*65	26	207
24	2,080	590	3,450	5,600	4,130	1,130	1,500	470	176	61	50	162
25	2,040	584	4,340	3,960	5,140	1,230	1,310	465	207	56	54	191
26	1,580	608	7,760	3,140	4,180	1,410	1,170	445	176	55	49	200
27	1,220	590	4,520	2,620	3,110	1,280	1,080	440	170	56	49	159
28	865	1,100	4,580	3,320	2,460	1,080	951	435	168	55	*55	136
29	675	935	3,990	3,490	-	963	*876	421	176	54	75	116
30	830	879	2,960	4,690	-----	984	822	421	162	55	75	100
31	865	-----	2,330	3,910	-----	914	-----	445	-----	55	68	-----
Total	13,262	30,908	81,543	97,010	83,900	33,619	43,784	16,597	7,551	3,018	1,285	3,348
Mean	428	1,030	2,630	3,129	2,996	1,084	1,459	535	252	97.4	41.5	112
Ac-ft	26,300	61,310	161,700	192,400	166,400	66,680	86,840	32,920	14,980	5,990	2,550	6,640

Calendar year 1957: Max 11,500 Min 59 Mean 1,036 Ac-ft 749,900  
Water year 1957-58: Max 7,760 Min 24 Mean 1,139 Ac-ft 824,700

Peak discharge (base, 8,900 cfs).--Dec. 26 (5 a.m.) 11,100 cfs (14.27 ft); Jan. 17 (2 a.m.) 10,300 cfs (13.74 ft).

\* Discharge measurement made on this day.

## HUMPTULIPS RIVER BASIN

## 390. Humptulips River near Humptulips, Wash.

Location.--Lat 47°13'40", long 123°56'25", in NE¼ sec. 17, T. 20 N., R. 10 W., on right bank 1 mile southeast of Humptulips, 2.5 miles upstream from Stevens Creek, and 3¼ miles downstream from confluence of East and West Forks.

Drainage area.--130 sq mi.

Records available.--May 1933 to January 1935, July 1942 to September 1958.

Gage.--Staff gage and crest-stage indicator; gage read once daily. Datum of gage is 117.4 ft above mean sea level (river-profile survey). Prior to Jan. 14, 1935, and Mar. 1, 1950, to Jan. 15, 1953, water-stage recorder and July 1, 1942, to Feb. 28, 1950, staff gage, at same site and datum.

Average discharge.--17 years (1933-34, 1942-58), 1,307 cfs (946,200 acre-ft per year).

Extremes.--Maximum discharge during year, 11,000 cfs Jan. 16 (gage height, 7.24 ft, from graph based on gage readings); minimum observed, 94 cfs Aug. 24-26 (gage height, 1.00 ft).

1933-35, 1942-58: Maximum discharge, 33,000 cfs Jan. 22, 1935 (gage height, 12.7 ft, from floodmarks), from rating curve extended above 16,500 cfs; minimum observed, 82 cfs Sept. 11, 1944; minimum gage height, 0.64 ft Sept. 14, 1949 (from graph based on gage readings).

Remarks.--Records good. No diversion above station. Slight regulation by fish hatchery on West Fork for short periods at low flow.

Revisions (water years).--WSP 1216: 1934-35, 1943-46, 1947(M), 1949(M). WSP 1246:

Drainage area. WSP 1396: 1946(M), 1954(P).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

1.0	94	4.0	3,390
1.5	260	6.0	7,800
2.0	580	7.5	11,800
3.0	1,620		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	180	740	1,000	1,620	2,810	1,740	950	692	415	211	122	169
2	188	620	1,230	1,490	2,190	1,480	920	660	352	195	119	142
3	180	559	1,160	1,480	1,880	1,250	1,190	644	315	188	122	119
4	180	497	1,100	1,780	1,540	1,100	1,060	644	285	188	125	116
5	169	445	1,090	1,510	1,440	1,110	1,010	568	*280	188	119	110
6	165	421	1,440	1,340	1,340	990	884	559	276	173	116	106
7	162	391	2,300	*1,210	1,520	1,210	812	517	363	169	113	103
8	158	368	3,190	1,550	1,850	1,110	758	510	300	169	113	97
9	158	346	2,070	1,620	3,790	1,080	740	490	280	165	113	110
10	155	397	1,840	2,160	3,810	1,020	1,280	478	276	165	110	132
11	151	1,350	1,280	2,940	*2,570	940	980	478	258	158	110	132
12	203	3,630	1,480	3,750	2,980	866	866	433	248	151	110	119
13	596	4,070	1,180	2,810	2,920	803	812	421	235	151	106	128
14	374	3,410	1,580	4,790	2,440	758	857	409	231	151	106	125
15	290	2,080	1,230	6,500	2,330	724	1,790	365	227	148	106	148
16	262	1,440	1,400	7,970	3,510	700	3,040	380	223	142	103	155
17	276	1,150	3,040	6,500	5,170	660	4,010	374	215	142	103	262
18	235	1,070	3,830	5,770	6,460	700	2,580	374	207	138	103	271
19	219	920	3,670	2,620	4,030	758	2,700	433	203	142	100	596
20	207	*794	4,140	1,990	2,580	*875	4,750	365	203	138	100	445
21	195	724	3,350	1,640	1,930	1,120	2,850	330	203	138	97	445
22	188	680	2,640	1,490	2,770	1,200	2,090	336	195	135	97	397
23	439	620	3,310	2,530	2,310	1,110	1,590	330	168	135	97	515
24	2,790	590	4,330	5,890	5,310	1,120	1,350	341	211	*128	94	258
25	1,670	596	4,580	4,010	5,490	1,220	*1,160	325	253	128	94	363
26	1,660	692	6,250	2,960	4,280	1,110	1,020	315	203	125	94	290
27	1,150	652	5,010	2,580	2,940	1,190	950	300	253	125	113	253
28	830	1,330	5,420	3,750	2,210	1,010	857	320	300	122	*119	227
29	660	1,000	3,890	3,590	---	911	794	320	235	122	138	211
30	1,140	980	2,600	4,790	---	1,020	740	352	227	122	138	192
31	693	---	2,010	3,650	---	893	---	358	---	122	122	---
Total	16,323	32,512	82,340	96,260	82,400	31,778	45,370	13,459	7,660	4,674	3,422	6,539
Mean	527	1,084	2,656	3,105	2,943	1,025	1,512	434	255	151	110	218
Cfsm	4.05	8.34	20.4	23.9	22.6	7.88	11.6	3.34	1.96	1.16	0.846	1.68
In.	4.67	9.30	23.56	27.54	23.57	9.09	12.98	5.65	2.19	1.34	0.98	1.87
Ac-ft	32,380	64,490	163,500	190,900	163,400	63,030	89,990	26,700	15,180	9,270	6,790	12,970

Calendar year 1957: Max 10,400 Min 151 Mean 1,027 Cfsm 7.90 In. 107.26 Ac-ft 743,500  
 Water year 1957-58: Max 7,970 Min 94 Mean 1,158 Cfsm 6.91 In. 120.94 Ac-ft 838,400

Peak discharge (base, 12,000 cfs).--No peak above base.

\* Discharge measurement made on this day.



## 395. Quinault River at Quinault Lake, Wash.

Location.--Lat 47°27'30", long 123°53'30", in sec. 25, T. 23 N., R. 10 W., on left bank at outlet of Quinault Lake, 50 ft downstream from Olympic Highway bridge on U. S. Highway 101 and 4 miles southwest of Quinault.

Drainage area.--264 sq mi.

Records available.--October 1911 to September 1958. Monthly discharge only for some periods, published in WSP 1816.

Gage.--Water-stage recorder. Datum of gage is 184.60 ft above mean sea level (Washington State Highway bench mark). Prior to Jan. 1, 1913, staff gage on south shore of Quinault Lake 3 miles northeast of present site and Jan. 1, 1913, to Sept. 30, 1916, staff gage at mouth of Canoe Creek, 4 miles northeast of present site, at datum 1.06 ft higher. Oct. 1, 1916, to May 2, 1935, water-stage recorder at site 300 ft downstream from present site at datum 0.36 ft higher than present datum.

Average discharge.--47 years, 2,759 cfs (1,997,000 acre-ft per year).

Extremes.--Maximum discharge during year, 15,300 cfs Jan. 17 (gage height, 10.62 ft); minimum, 359 cfs probably Sept. 13 (gage height, 2.02 ft, from recorded range in stage). 1911-22, 1924-58: Maximum discharge, 50,200 cfs Nov. 4, 1955 (gage height, 20.51 ft); minimum, 276 cfs Sept. 12, 1944 (gage height, 1.96 ft). Flood in November 1909 reached a stage of approximately 22 ft, present datum (discharge, 52,600 cfs).

Remarks.--Records excellent except those for periods of no gage-height record, which are fair. Natural regulation by Quinault Lake. No diversion above station.

Revisions (water years).--WSP 442: Drainage area. WSP 1286: 1915-16(M), 1934, 1936-39(M). WSP 1816: 1923, 1925, 1933.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

2.0	350	5.0	3,210
2.5	610	7.0	6,680
3.0	970	10.0	13,700
4.0	1,910		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	658	2,480	1,710	3,650	5,200	4,710	2,020	1,940	2,880	1,310	580	460
2	642	2,120	1,840	3,200	4,400	3,900	2,010	2,010	2,650	1,260	562	420
3	623	1,840	1,900	3,180	3,700	3,380	2,120	2,070	2,520	1,220	556	400
4	604	1,660	1,940	3,500	3,000	2,990	2,070	2,080	*2,470	1,190	545	380
5	574	1,510	1,930	3,500	2,800	2,770	1,960	2,040	2,500	1,180	528	370
6	556	1,370	2,240	3,320	*2,890	2,540	1,830	2,040	2,650	1,180	516	370
7	539	1,260	3,090	*3,150	2,990	2,440	1,730	2,090	2,700	1,160	505	370
8	522	1,180	4,690	3,490	3,550	2,390	1,700	2,220	2,500	1,120	500	370
9	500	1,110	4,890	4,020	5,270	2,260	1,690	2,330	2,330	1,100	489	390
10	494	1,120	3,970	4,990	6,300	2,100	1,770	2,390	2,190	1,040	478	480
11	484	1,650	3,420	6,420	5,350	1,960	1,790	2,380	2,020	1,020	468	450
12	494	3,060	3,570	6,420	4,950	1,840	1,750	2,260	1,900	978	458	400
13	604	6,360	3,200	5,520	5,020	1,750	1,800	2,060	1,830	938	452	380
14	710	6,860	3,090	5,680	4,590	1,670	1,930	1,930	1,800	906	447	370
15	710	5,310	2,840	9,840	4,000	1,590	2,340	1,890	1,800	868	442	360
16	689	4,000	2,890	12,900	4,260	1,510	3,270	2,030	1,810	852	432	750
17	675	3,150	4,640	13,600	4,810	1,470	3,970	2,420	1,870	838	428	700
18	642	2,650	5,880	9,570	9,740	1,430	4,570	2,420	1,980	822	423	600
19	616	2,300	6,280	6,800	11,800	1,470	4,640	2,930	2,020	801	413	1,000
20	586	*2,040	7,200	5,210	8,560	*1,590	6,700	3,080	2,030	780	408	800
21	562	1,840	6,360	4,210	6,500	1,940	5,980	3,050	2,010	752	404	900
22	544	1,690	5,210	3,580	6,440	2,560	4,780	3,200	1,990	731	404	700
23	642	1,610	4,820	4,780	5,740	2,670	3,900	3,380	1,960	710	404	550
24	2,210	1,580	4,950	9,380	9,220	2,640	3,220	3,330	1,940	*696	404	450
25	3,500	1,570	6,650	8,520	12,000	2,680	*2,840	3,470	1,840	675	399	850
26	3,870	1,600	11,300	6,680	10,300	2,820	2,520	3,630	1,690	656	394	700
27	3,340	1,610	8,630	5,350	7,720	2,680	2,280	3,700	1,630	642	404	650
28	2,650	1,810	8,180	5,760	5,940	2,430	2,090	3,620	1,660	630	*404	620
29	2,200	1,780	7,360	6,440	-	2,250	1,940	3,320	1,550	623	410	600
30	2,610	1,710	5,760	6,880	-----	2,160	1,910	2,980	1,430	610	400	580
31	2,810	-----	4,500	6,000	-----	2,080	-----	2,860	-----	598	390	-----
Total	36,858	69,810	145,130	185,520	166,940	72,670	83,120	80,960	62,130	27,886	14,047	16,420
Mean	1,189	2,237	4,682	5,985	5,362	2,344	2,612	2,571	2,071	900	453	547
Cfs/m	4.50	8.81	17.7	22.7	22.6	8.88	10.5	9.89	7.84	3.41	1.72	2.07
In.	5.19	9.83	20.44	26.13	23.52	10.24	11.71	11.40	8.75	3.93	1.98	2.31
Ac-ft	73,110	158,500	287,900	368,000	331,100	144,100	164,900	160,600	123,200	55,310	27,880	32,570

Peak discharge (base, 12,000 cfs)--Jan. 17 (1 a.m.) 15,300 cfs (10.62 ft); Feb. 19 (2:30 a.m.) 12,600 cfs (9.56 ft); Feb. 25 (12-m.) 12,200 cfs (9.40 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Jan. 31 to Feb. 5, Aug. 29 to Sept. 30; discharge estimated on basis of recorded range in stage and records for nearby stations.

## 410. Hoh River near Spruce, Wash.

Location.--Lat 47°48'20", long 124°06'20", in NE $\frac{1}{4}$  sec. 34, T. 27 N., R. 11 W., on left bank 1 mile downstream from Maple Creek, 2 $\frac{1}{2}$  miles west of Spruce, and 5 miles downstream from South Fork.

Drainage area.--208 sq mi.

Records available.--August 1926 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 320 ft (from river-profile map).

Average discharge.--32 years, 2,002 cfs (1,449,000 acre-ft per year).

Extremes.--Maximum discharge during year, 13,800 cfs Dec. 25 (gage height, 11.41 ft); minimum, 484 cfs Oct. 6, 18 (gage height, 0.66 ft).

1926-58: Maximum discharge, 38,700 cfs Nov. 26, 1949 (gage height, 22.2 ft, from high-water marks), from rating curve extended above 13,000 cfs on basis of slope-area measurement of peak flow; minimum, 247 cfs Nov. 14, 15, 1929; minimum gage height, that of Oct. 6, 18, 1957.

Maximum stage known since at least 1891, that of Nov. 26, 1949.

Remarks.--Records good. No artificial regulation or diversion above station. Large diurnal fluctuation during summer months caused by melting glaciers at source.

Revisions (water years).--WSP 1182: 1935(M). WSP 1216: Drainage area. WSP 1286: 1934.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 25				Dec. 26 to Sept. 30			
0.6	460	5.0	3,180	1.3	640	5.0	3,100
1.0	620	7.0	5,340	2.0	950	7.0	5,400
2.0	1,100	9.0	9,000	3.0	1,500	9.0	9,000
3.0	1,680			4.0	2,200		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	895	2,070	1,460	2,080	2,680	2,550	1,000	1,300	1,930	1,100	1,040	1,370
2	870	1,660	1,440	2,030	2,340	2,240	1,040	1,320	1,760	1,120	965	890
3	724	1,420	1,460	2,310	2,100	2,000	1,020	1,360	1,810	1,230	980	732
4	820	1,250	1,460	2,690	1,310	1,820	945	1,350	*1,740	1,360	865	660
5	548	1,110	1,330	2,320	*1,820	1,900	900	1,270	1,980	1,500	875	672
6	496	1,010	2,160	2,080	1,750	1,610	855	1,240	2,220	1,530	960	728
7	580	935	2,410	2,000	1,900	1,720	828	1,330	2,030	1,550	1,040	810
8	544	855	3,550	*3,270	2,150	1,570	860	1,430	1,730	1,500	940	875
9	540	804	2,420	2,610	3,270	1,460	860	1,450	1,650	1,430	865	1,020
10	544	885	1,970	4,490	2,830	1,370	1,100	1,460	1,470	*1,410	870	1,300
11	552	1,470	2,350	3,850	2,260	1,290	955	1,390	1,450	1,450	920	1,040
12	592	2,890	2,470	3,520	2,810	1,210	930	1,210	1,290	1,370	915	800
13	1,480	4,640	2,040	2,720	3,100	1,140	1,090	1,100	1,360	1,190	890	720
14	980	*3,220	2,220	4,860	2,470	1,100	1,390	1,080	1,410	1,120	880	740
15	742	2,360	1,980	7,220	2,250	1,050	2,110	1,180	1,510	1,180	885	736
16	634	1,900	2,620	8,280	2,700	1,020	2,370	1,420	1,610	1,230	935	1,480
17	580	1,640	3,940	6,820	3,620	980	3,540	1,540	1,870	1,280	900	1,750
18	512	1,500	3,380	4,190	8,480	955	2,990	1,750	2,060	1,340	890	1,250
19	596	1,340	4,240	3,150	6,090	*1,030	3,170	2,360	2,140	1,250	836	2,160
20	544	1,220	4,230	2,640	6,830	1,090	3,980	2,050	2,110	1,140	870	1,370
21	608	1,110	3,400	2,290	3,510	1,970	2,920	2,030	2,130	1,180	945	1,520
22	556	1,040	2,930	2,110	4,120	1,950	2,490	2,290	2,210	1,260	990	1,140
23	1,720	1,200	3,370	5,900	3,180	1,610	2,060	2,300	2,220	1,200	1,040	905
24	4,050	1,130	3,720	6,240	9,000	1,620	*1,810	2,220	2,040	1,120	1,040	774
25	3,060	1,200	7,680	4,220	6,570	1,540	1,630	2,640	1,750	1,120	1,100	935
26	2,980	1,220	6,770	3,190	5,050	1,570	1,490	2,680	1,570	1,220	1,020	841
27	2,040	1,300	4,610	2,790	3,840	1,360	1,370	2,720	1,700	1,350	*1,010	836
28	1,570	1,580	4,930	4,690	3,050	1,240	1,270	2,580	1,700	1,480	905	828
29	1,750	1,250	3,760	4,020	-----	1,180	1,210	2,200	1,350	1,450	1,050	760
30	4,790	1,170	2,920	3,840	-----	1,360	1,240	1,890	1,210	1,270	920	692
31	2,700	-----	2,370	3,100	-----	1,060	-----	1,940	-----	1,140	885	-----
Total	39,367	46,379	95,390	115,520	98,680	45,245	49,423	54,060	53,010	40,070	29,251	30,134
Mean	1,270	1,546	3,077	3,726	3,524	1,460	1,647	1,744	1,767	1,293	944	1,004
Cfs/m	6.11	7.43	14.8	17.9	16.9	7.02	7.92	8.38	8.50	6.22	4.54	4.83
In.	7.04	8.29	17.06	20.15	17.64	8.09	8.86	9.67	9.48	7.16	5.23	5.39
Ac-ft	78,080	91,990	189,200	229,100	195,700	89,740	98,036	107,200	105,100	79,480	58,020	59,770

Calendar year 1957: Max 13,600 Min 496 Mean 1,757 Cfs/m 8.45 In. 114.66 Ac-ft 1,272,000  
 Water year 1957-58: Max 9,000 Min 496 Mean 1,908 Cfs/m 9.17 In. 124.54 Ac-ft 1,381,000

Peak discharge (base, 10,000 cfs),--Dec. 25 (7 p.m.) 13,800 cfs (11.41 ft); Jan. 16 (6:30 p.m.) 12,000 cfs (10.50 ft); Feb. 24 (11 a.m.) 12,100 cfs (10.54 ft).

\* Discharge measurement made on this day.

## 415. Soleduck River near Fairholm, Wash.

Location.--Lat 48°02'40", long 123°57'35", in lot 4, SW $\frac{1}{4}$  sec. 35, T. 30 N., R. 10 W., on right bank 300 ft downstream from South Fork, 2.5 miles southwest of Fairholm, and 17 miles east of Beaver.

Drainage area.--83.8 sq mi.

Records available.--October 1917 to September 1921, October 1933 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,060 ft (from topographic map).

October 1917 to September 1921 water-stage recorder and Oct. 4 to Nov. 4, 1933, staff gage, at same site at datum 1.2 ft higher.

Average discharge.--29 years, 619 cfs (448,100 acre-ft per year).

Extremes.--Maximum discharge during year, 7,090 cfs Dec. 25 (gage height, 8.26 ft); minimum, 60 cfs Sept. 13, 14 (gage height, 0.99 ft).

1917-21, 1933-58: Maximum discharge, 23,500 cfs Nov. 26, 1949 (gage height, 16.42 ft, from high-water mark in well), from rating curve extended above 13,000 cfs on basis of slope-area measurement of peak flow; minimum, 51 cfs Sept. 11, 12, 1944; minimum gage height, 0.79 ft Oct. 17-20, 1952.

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

Revisions (water years).--WSP 1182: 1918-19, 1920(M), 1921, 1934-39, 1940(M), 1941-42, 1943(M), 1944-46, 1947-48(M). WSP 1216: Drainage area. WSP 1286: 1939, 1949.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 25

Dec. 26 to Sept. 30

1.1	88	3.0	680	0.9	47	3.0	680
1.6	156	4.0	1,400	1.4	125	4.0	1,400
2.0	255	6.0	3,670	2.0	260	6.0	3,670

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	97	486	405	645	906	790	322	445	481	224	100	153
2	101	377	405	635	802	700	325	458	457	210	95	74
3	100	311	463	790	725	635	308	486	*417	205	105	98
4	98	272	450	1,020	670	580	287	458	433	200	100	70
5	96	246	401	906	*635	571	278	437	472	196	94	66
6	94	220	740	808	610	512	266	421	504	189	90	64
7	97	204	898	808	815	526	257	445	454	182	94	62
8	99	190	1,260	1,370	640	481	288	468	393	178	90	61
9	97	181	832	1,110	927	450	263	463	369	*169	89	62
10	94	185	600	1,580	864	425	393	468	349	165	86	67
11	91	262	700	1,340	715	405	322	445	341	161	84	74
12	92	790	766	1,220	915	381	314	389	318	159	79	64
13	123	*1,440	630	941	1,020	365	373	349	329	149	79	61
14	118	878	895	1,660	832	345	413	345	329	145	76	60
15	104	620	580	2,740	790	333	625	393	337	143	76	61
16	99	490	842	3,400	1,050	322	844	454	341	139	74	149
17	98	413	1,300	2,420	1,390	308	1,240	490	377	138	74	193
18	95	377	1,010	1,440	2,590	300	1,510	553	369	134	73	145
19	92	341	*1,650	1,070	1,790	*353	1,150	695	361	130	72	365
20	90	300	1,560	976	1,160	373	1,720	576	345	127	70	252
21	89	276	1,080	772	1,110	665	1,110	585	337	125	68	240
22	90	258	858	725	1,270	655	892	635	329	123	67	217
23	453	269	990	2,590	1,030	558	725	630	311	120	66	161
24	665	262	1,140	2,540	2,810	530	*615	620	297	115	66	139
25	441	283	3,370	1,520	2,140	490	544	680	287	111	64	147
26	476	300	2,560	1,120	1,590	476	504	645	263	110	62	134
27	353	344	1,500	1,000	1,160	433	458	635	263	108	*67	120
28	255	433	1,690	1,760	941	401	429	635	304	106	68	110
29	275	325	1,220	1,400	-	377	405	535	263	106	94	103
30	1,380	311	899	1,280	-----	373	417	472	257	105	84	97
31	754	-----	730	1,030	-----	337	-----	481	-----	103	86	-----
Total	7,186	11,644	32,204	42,616	31,695	14,430	17,375	15,791	10,667	4,575	2,492	3,669
Mean	232	368	1,039	1,375	1,132	465	579	509	356	148	80.4	122
Cfs/m	2,77	4.63	12.4	16.4	13.5	5.55	6.91	6.07	4.25	1.77	0.959	1.46
In.	3.19	5.17	14.29	18.91	14.07	6.40	7.71	7.01	4.73	2.03	1.10	1.63
Ac-ft	14,250	23,100	63,880	84,530	62,870	28,620	34,460	31,320	21,160	9,070	4,940	7,280

Calendar year 1957: Max 6,840 Min 89 Mean 478 Cfs/m 5.70 In. 77.48 Ac-ft 346,200  
 Water year 1957-58: Max 3,400 Min 60 Mean 532 Cfs/m 6.35 In. 86.24 Ac-ft 365,500

Peak discharge (base, 6,000 cfs).--Dec. 25 (6 p.m.) 7,090 cfs (8.26 ft).

\* Discharge measurement made on this day.

450. Lake Mills at Glines Canyon, near Port Angeles, Wash.

Location.--Lat 48°00'05", long 123°36'00", on Elwha River, in SE $\frac{1}{4}$  sec. 17, T. 29 N., R. 7 W., at Glines Canyon Dam 2 miles upstream from Griff Creek, 4 miles south of Elwha, and 11 miles southwest of Port Angeles.

Drainage area.--245 sq mi.

Records available.--April 1927 to September 1958. Prior to October 1950, monthly change in contents, published in WSP 1316.

Gage.--Staff gage read twice daily. Datum of gage is 19.67 ft below mean sea level, datum of 1929, supplementary adjustment of 1947.

Extremes.--Maximum contents observed during year, 39,210 acre-ft Oct. 30 (gage height, 611.3 ft); minimum observed, 33,840 acre-ft Nov. 10 (gage height, 598.5 ft). 1927-58: Maximum contents observed, 39,940 acre-ft Dec. 22, 1936 (gage height, 613.0 ft); minimum observed since reservoir first filled in May 1927, 24,290 acre-ft Nov. 14, 1929 (gage height, 574.4 ft).

Remarks.--Reservoir is formed by concrete dam, completed in 1927; storage began Apr. 1, 1927. Total capacity, 37,790 acre-ft at gage height 608 ft (top of gates). Figures given herein represent total contents. Water is used for power by Crown Zellerbach Corp.

Cooperation.--Gage-height record furnished by Crown Zellerbach Corp.

Month-end gage height and total contents, water year October 1957 to September 1958

Date	Gage height (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	607.4	37,540	-
Oct. 31.....	610.0	38,650	+1,110
Nov. 30.....	607.4	37,540	-1,110
Dec. 31.....	609.6	38,480	+940
Calendar year 1957.....	-	-	-380
Jan. 31.....	609.2	38,310	-170
Feb. 28.....	610.9	39,040	+730
Mar. 31.....	604.4	36,280	-2,760
Apr. 30.....	601.8	35,190	-1,090
May 31.....	608.1	37,830	+2,640
June 30.....	610.1	38,690	+860
July 31.....	608.2	37,880	-810
Aug. 31.....	607.7	37,660	-220
Sept. 30.....	602.9	35,650	-2,010
Water year 1957-58.....	-	-	-1,890

† Gage height at 12 p.m. based on twice-daily staff-gage readings.

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

Location.--Lat 48°03'20", long 123°34'55", in NE<sup>1</sup> sec. 33, T. 30 N., R. 7 W., on right bank 300 ft upstream from site of McDonald Bridge (now removed), half a mile upstream from Little River, 7 miles upstream from mouth, and 8 miles southwest of Port Angeles.

Drainage area.--269 sq mi.

Records available.--October 1897 to December 1901, October 1918 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 200.0 ft above mean sea level, datum of 1929. Oct. 1, 1897, to Dec. 31, 1901, wire-weight gage at McDonald Bridge at different datum. Dec. 9, 1918, to May 1, 1936, water-stage recorder under McDonald Bridge at datum 7.4 ft higher.

Average discharge.--44 years, 1,480 cfs (1,071,000 acre-ft per year), adjusted for storage since April 1927.

Extremes.--Maximum discharge during year, 10,500 cfs Jan. 16 (gage height, 16.08 ft); minimum, 118 cfs Oct. 8, 9 (gage height, 8.28 ft); minimum daily, 280 cfs Oct. 8.

1897-1901, 1918-58: Maximum discharge, 41,600 cfs Nov. 18, 1897 (gage height, 14.5 ft, from graph based on gage readings, site and datum then in use), from rating curve extended above 3,300 cfs on basis of two determinations of flow over dam at discharge 26,700 and 30,100 cfs, referred to 1897 datum; minimum daily, 10 cfs Oct. 3, 1938.

Revisions.--The minimum discharge for the water year 1957 has been revised to 221 cfs Sept. 29, 1957, superseding figure published in WSP 1516.

Remarks.--Records excellent except those above 2,500 cfs, which are good. Water is diverted through Glines Canyon powerhouse and returned to river above gage. Flow partly regulated by Lake Mills (see preceding page).

Revisions (water years).--WSP 1246: Drainage area. WSP 1286: 1898, 1899(M), 1900-1902, 1919, 1920-31(M), 1932, 1933(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 16				Jan. 17 to Sept. 30			
8.6	238	11.0	2,250	8.8	310	11.0	2,100
9.0	453	13.0	4,980	9.2	525	13.0	4,850
10.0	1,250	15.0	8,390	10.0	1,100	15.0	8,330

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	417	1,090	637	1,290	1,600	2,400	1,040	1,390	2,440	1,530	753	365
2	453	839	652	1,280	1,680	2,160	940	1,170	1,990	1,250	683	443
3	411	980	727	1,360	1,650	1,740	948	1,010	2,410	1,080	655	519
4	376	682	751	1,600	*1,430	1,740	940	964	2,400	1,350	642	513
5	417	847	697	1,590	1,460	1,750	788	1,240	2,660	1,220	616	489
6	417	929	783	1,520	1,510	1,460	795	1,570	3,050	1,340	577	477
7	423	887	831	1,610	1,370	1,460	837	1,520	2,720	1,370	558	438
8	280	630	1,160	2,030	1,250	1,400	823	1,900	2,030	1,370	570	421
9	423	558	1,300	2,010	1,620	1,320	816	1,960	2,200	1,120	610	421
10	441	682	1,110	2,610	1,660	1,420	809	2,100	2,150	1,280	610	452
11	411	652	1,110	2,510	1,520	1,240	802	2,120	2,090	1,220	596	489
12	371	*572	1,150	2,410	1,690	1,050	802	1,850	1,970	1,120	577	443
13	382	895	972	1,920	1,670	1,050	823	1,660	1,910	1,060	558	416
14	435	1,170	1,110	2,610	1,540	918	988	1,470	1,970	1,080	519	410
15	423	1,090	980	4,220	1,430	910	1,080	1,360	1,820	1,080	513	416
16	453	1,080	1,030	6,780	1,580	910	1,110	1,820	2,010	1,000	519	572
17	405	1,010	1,810	5,540	2,200	1,000	1,050	2,450	2,280	988	518	858
18	359	920	*1,660	3,760	5,920	*1,020	1,130	2,550	2,410	940	538	718
19	399	751	*1,860	2,490	4,840	996	1,080	3,390	2,550	980	584	802
20	301	637	2,140	2,210	3,150	1,020	1,810	3,200	2,560	880	596	880
21	316	593	1,550	1,890	2,950	1,130	1,880	3,080	2,510	*888	513	648
22	359	538	1,300	1,730	3,110	1,140	1,670	3,540	2,340	956	495	513
23	411	517	1,490	3,710	2,120	1,120	*1,700	3,810	2,340	988	501	532
24	652	608	1,300	4,690	6,650	1,200	1,620	3,650	2,230	1,020	501	471
25	712	674	2,710	2,640	5,520	1,100	1,310	4,020	2,090	888	502	432
26	823	689	4,180	2,100	3,790	1,120	1,140	4,250	1,760	774	590	432
27	929	615	2,160	1,900	3,160	1,140	1,090	3,920	1,680	663	*636	398
28	659	767	2,290	2,680	2,710	1,050	1,170	3,920	1,670	697	603	510
29	630	674	2,200	2,520	-	1,070	1,350	2,990	1,440	685	570	432
30	1,530	491	1,340	2,240	-	1,080	1,400	2,500	1,410	940	513	501
31	1,290	-	1,270	2,000	-	1,080	-	2,420	-	872	519	-
Total	16,308	23,067	44,260	79,350	71,380	39,194	33,741	74,794	64,790	32,867	17,766	15,191
Mean	526	769	1,428	2,560	2,549	1,264	1,125	2,413	2,160	1,060	573	506
In.	32.350	45.750	87.790	157.400	141.600	77.740	66.920	148.400	128.500	65.190	35.240	30.130
Ac-ft	+1,110	-1,110	+940	-170	+730	-2,760	-1,090	+2,640	+860	-810	-220	-2,010

Adjusted for change in contents in Lake Mills

	Mean	554	750	1,443	2,557	2,562	1,219	1,106	2,456	2,175	1,047	570	473
Cfs	2.02	2.79	5.36	9.51	9.52	4.53	4.11	9.13	8.09	3.89	2.12	1.76	
In.	2.33	3.11	6.18	10.96	9.92	5.23	4.59	10.53	9.02	4.49	2.44	1.96	
Ac-ft	33,460	44,640	88,730	157,200	142,300	74,980	65,830	151,000	129,400	64,380	35,020	28,120	

Observed

Calendar year 1957: Max	10,000	Min	280	Mean	1,242	Ac-ft	899,400
Water year 1957-58: Max	6,780	Min	280	Mean	1,405	Ac-ft	1,017,000

Adjusted

Calendar year 1957: Mean	1,242	Cfs	4.62	In.	62.66	Ac-ft	899,000
Water year 1957-58: Mean	1,402	Cfs	5.21	In.	70.76	Ac-ft	1,015,000

\* Discharge measurement made on this day.

† Change in contents, in acre-feet, in Lake Mills, furnished by Crown Zellerbach Corp.

## 475. Siebert Creek near Port Angeles, Wash.

Location--Lat 48°05'35", long 123°17'00", in SE $\frac{1}{4}$  sec. 14, T. 30 N., R. 5 W., on left bank  $2\frac{1}{4}$  miles upstream from mouth and  $6\frac{1}{2}$  miles east of Port Angeles.

Drainage area--17.2 sq mi.

Records available--June 1952 to September 1958.

Gage--Water-stage recorder. Altitude of gage is 225 ft (from topographic map). Prior to Jan. 10, 1957, at site 200 ft upstream at datum 0.76 ft higher.

Average discharge--6 years, 22.0 cfs (15,930 acre-ft per year).

Extremes--Maximum discharge during year, 304 cfs Dec. 25 (gage height, 2.97 ft), from rating curve extended above 70 cfs on basis of computations of peak flow through culvert; minimum, 2.0 cfs Aug. 19-26; minimum gage height, 0.21 ft Oct. 1, 3, 4, 15, 16, 20-22.

1952-58: Maximum discharge, 1,620 cfs Nov. 3, 1955 (gage height, 10.26 ft, present datum), from rating curve extended above 260 cfs on basis of computations of peak flow through culvert; minimum, 2.0 cfs Sept. 3-5, 1952, Aug. 19-26, 1958; minimum gage height, 0.20 ft Sept. 13-15, 1957.

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

Revisions (water years)--WSP 1346. 1952(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 25				Dec. 26 to Sept. 30			
0.2	2.9	1.0	36	0.3	2.6	1.5	78
.4	7.0	1.5	78	.5	9.5	2.0	136
.7	19	2.0	136	.9	30		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.0	3.8	4.4	17.5	31	26	10.5	8.7	17	4.3	3.1	3.4
2	3.1	5.6	4.8	14.5	26	24	12	8.3	10.5	4.0	2.8	2.8
3	3.0	3.6	4.4	12.5	*24	22	10.5	8.3	*7.9	3.7	2.8	2.8
4	3.1	3.6	4.4	12.0	22	19	11.5	7.9	6.7	3.7	2.8	2.6
5	3.1	3.6	5.4	11.5	19	19	11.5	7.5	6.0	3.7	2.6	2.6
6	3.1	3.4	5.9	11	17	17	10.5	7.1	6.4	3.4	2.6	2.6
7	3.1	3.4	8.2	10.5	15.5	16.5	6.7	16	3.7	2.6	2.6	2.6
8	3.3	3.4	6.7	13	15	15.5	10.5	6.7	10.5	3.7	2.8	2.6
9	3.3	3.4	6.0	17.5	14	14	10.5	6.4	8.7	3.7	2.6	2.4
10	3.1	3.4	5.6	17.5	13.5	13	9.9	6.4	7.5	3.7	2.6	2.6
11	3.1	3.8	5.6	17	12.5	12.5	9.1	6.0	7.1	3.4	2.4	2.6
12	3.1	4.6	5.6	17.5	19.5	12	8.7	6.0	6.7	3.4	2.4	2.4
13	3.1	12	5.6	16.5	22	11	8.7	5.6	6.0	3.4	2.4	2.4
14	3.1	*8.2	5.6	19	20	10.5	8.7	5.6	5.6	3.4	2.4	2.6
15	3.0	5.6	5.6	25	18	10.5	9.1	5.3	5.3	3.1	2.2	2.8
16	3.0	4.8	7.0	44	18.5	9.9	12.5	5.0	5.0	3.1	2.2	3.4
17	3.1	4.4	22	51	24	9.9	13.5	5.0	4.6	3.1	2.2	4.0
18	3.1	4.4	19.5	34	41	9.9	17	5.0	4.3	3.1	2.2	3.1
19	3.1	4.8	13	27	40	*9.9	17.5	5.6	4.0	3.1	2.2	3.1
20	3.0	4.4	*24	22	31	9.9	26	5.3	4.0	3.1	2.0	2.8
21	3.0	4.0	22	20	26	12.5	22	5.0	4.3	3.1	2.0	3.1
22	3.1	4.0	14	17	24	12.5	28	5.0	4.3	*2.8	2.0	3.1
23	4.6	4.0	14.5	20	22	12	*27	4.6	4.0	2.6	2.0	3.7
24	5.9	4.0	17.5	26	39	13	23	4.6	4.3	2.6	2.0	3.4
25	4.2	4.2	*100	22	50	14.5	18.5	4.6	5.6	2.6	2.0	3.1
26	3.8	4.6	101	19.5	49	13	15.5	4.3	5.0	2.6	*2.2	3.1
27	3.6	4.6	45	17	38	12	13.5	4.3	5.3	2.6	2.6	3.1
28	3.4	5.0	42	30	31	11.5	12	5.6	5.0	2.6	3.1	3.1
29	3.6	4.4	37	42	-	12.5	10.5	6.4	4.6	2.6	3.4	3.1
30	5.4	4.2	26	57	-----	11.5	9.9	9.5	5.0	2.8	3.4	2.8
31	4.6	-----	21	40	-----	10.5	-----	15	-----	3.1	3.1	-----
Total	107.1	135.2	609.3	721.0	722.5	427.5	418.6	197.3	197.2	99.8	77.7	87.8
Mean	3.45	4.51	19.7	23.3	25.8	13.8	14.0	6.36	6.57	3.22	2.51	2.93
Cfs/m	0.201	0.262	1.15	1.35	1.50	0.802	0.814	0.370	0.382	0.187	0.146	0.170
In.	0.23	0.29	1.32	1.56	1.56	0.92	0.91	0.43	0.43	0.22	0.17	0.19
Ac-ft	212	268	1,210	1,430	1,430	848	830	391	391	198	154	174

Calendar year 1957: Max 604 Min 2.3 Mean 15.1 Cfs/m 0.878 In. 11.94 Ac-ft 10,940  
 Water year 1957-58: Max 101 Min 2.0 Mean 10.4 Cfs/m 0.605 In. 8.23 Ac-ft 7,540

Peak discharge (base, 300 cfs)--Dec. 25 (7:30 p.m.) 304 cfs (2.97 ft).

\* Discharge measurement made on this day.

## 480. Dungeness River near Sequim, Wash.

Location.--Lat 48°00'50", long 123°07'55", in NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 13, T. 29 N., R. 4 W., on right bank three-quarters of a mile upstream from Canyon Creek,  $4\frac{1}{2}$  miles southwest of Sequim, and  $1\frac{1}{2}$  miles upstream from mouth.

Drainage area.--156 sq mi.

Records available.--June 1923 to September 1930, June 1937 to September 1958. July 1897 to July 1898 at site below Canyon Creek, published as "near Sequim," records not equivalent.

Gage.--Water-stage recorder. Datum of gage is 569.3 ft above mean sea level (river-profile survey). June 8, 1923, to Sept. 30, 1930, staff gage just above fish-hatchery diversion half a mile downstream at different datum. June 19 to Aug. 12, 1937, staff gage at present site and datum.

Average discharge.--28 years (1923-30, 1937-58), 369 cfs (267,100 acre-ft per year).

Extremes.--Maximum discharge during year, 2,640 cfs Feb. 24 (gage height, 5.56 ft); minimum, 118 cfs Oct. 20-23 (gage height, 2.69 ft).  
1923-30, 1937-58: Maximum discharge, 6,820 cfs Nov. 27, 1949 (gage height, 7.3 ft), from rating curve extended above 2,000 cfs on basis of slope-area measurement of peak flow; minimum observed, 77 cfs Sept. 10, 1928.

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

Revisions (water years).--WSP 1316: 1924-25(M), 1927(M).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

2.6	96	4.5	1,140
3.0	205	5.0	1,750
3.5	408	5.5	2,530
4.0	715		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	157	225	149	239	342	565	205	334	1,030	460	300	196
2	157	196	143	229	320	505	225	379	*934	460	280	177
3	149	183	141	215	300	455	222	424	934	505	272	171
4	146	174	141	239	*288	418	208	434	934	553	261	160
5	143	166	136	243	276	403	199	439	1,080	577	243	157
6	138	160	149	246	265	365	196	413	1,240	577	246	154
7	136	154	166	265	261	356	199	477	1,170	577	265	160
8	130	149	174	325	261	334	202	584	950	571	261	163
9	128	143	171	316	269	308	196	650	878	516	239	168
10	130	163	166	365	258	292	190	708	806	*494	236	174
11	128	183	163	351	239	284	196	715	814	510	232	177
12	128	196	160	347	269	276	212	610	715	510	236	166
13	146	*280	154	300	272	269	258	540	722	460	229	160
14	146	232	149	351	254	254	265	522	790	418	222	152
15	138	196	143	590	243	254	254	571	854	413	212	149
16	136	177	190	1,010	265	243	258	693	870	413	212	174
17	133	166	320	1,210	351	239	292	798	950	418	205	185
18	125	163	*269	790	1,300	*236	284	902	1,050	424	202	168
19	123	152	243	571	1,390	229	280	1,260	1,060	408	199	190
20	118	143	261	460	878	232	374	1,210	1,040	384	196	171
21	118	141	232	389	672	265	334	1,120	1,010	370	196	168
22	118	149	205	342	686	250	*325	1,260	1,020	379	199	160
23	184	166	199	475	584	232	316	1,290	1,080	360	202	152
24	334	171	208	636	2,030	232	300	1,270	977	334	199	143
25	342	177	542	482	1,560	225	280	1,500	814	316	199	138
26	316	174	856	398	1,030	215	272	1,490	722	325	*202	136
27	246	166	471	351	806	215	261	1,480	745	338	202	136
28	208	168	413	418	650	215	261	1,540	617	351	199	133
29	202	154	351	455	-	208	258	1,250	534	347	196	130
30	316	152	292	516	-	219	288	1,020	488	325	186	128
31	272	-	258	389	-	208	-	1,070	-	308	174	-
Total	5,391	5,219	7,615	13,513	16,319	9,001	7,610	26,953	26,828	13,401	6,902	4,794
Mean	174	174	246	436	563	290	254	869	894	432	223	160
Cfsm	1.12	1.12	1.58	2.79	3.74	1.86	1.63	5.57	5.73	2.77	1.43	1.03
In.	1.29	1.24	1.82	3.22	3.89	2.15	1.81	6.43	6.40	3.19	1.65	1.14
Ac-ft	10,690	10,350	15,100	26,800	32,370	17,850	15,090	53,460	53,210	26,580	13,690	9,510

Calendar year 1957: Max 2,560 Min 118 Mean 350 Cfsm 2.24 In. 30.43 Ac-ft 253,200  
Water year 1957-58: Max 2,030 Min 118 Mean 393 Cfsm 2.52 In. 34.23 Ac-ft 284,700

Peak discharge (base, 1,700 cfs).--Feb. 18 (10 p.m.) 1,860 cfs (5.08 ft); Feb. 24 (1 p.m.) 2,640 cfs (5.56 ft).

\* Discharge measurement made on this day.

## 505. Snow Creek near Maynard, Wash.

Location.--Lat 47°56'30", long 122°53'05", in SE $\frac{1}{4}$  sec. 2, T. 28 N., R. 2 W., on left bank 600 ft upstream from Andrews Creek and  $3\frac{1}{2}$  miles south of Maynard.

Drainage area.--13.2 sq mi.

Records available.--May 1952 to September 1958.

Gage.--Water-stage recorder and wooden control. Altitude of gage is 180 ft (from topographic map).

Average discharge.--6 years, 17.3 cfs (12,520 acre-ft per year).

Extremes.--Maximum discharge during year, 179 cfs Feb. 24 (gage height, 3.04 ft); minimum, 2.0 cfs Sept. 7; minimum gage height, 1.49 ft Oct. 20-22.

1952-58: Maximum discharge not determined, probably occurred during period of doubtful gage-height record Feb. 13-21, 1954; minimum, 1.6 cfs Oct. 20, 1952.

Remarks.--Records good except those for periods of doubtful gage-height record, which are fair. Some small diversion for irrigation. No regulation.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 11				Dec. 12 to Sept. 30			
1.4	1.1	1.6	5.4	1.9	2.1	2.6	67
1.5	2.7	1.7	9.5	2.1	4.8	3.0	165
				2.3	12.5		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.7	4.2	4.2	12.5	41	47	9.9	9.9	47	6.6	3.2	2.9
2	2.7	3.9	4.8	d12	33	39	9.9	9.4	*27	5.9	3.0	2.9
3	2.7	3.6	4.5	d11.5	*27	35	9.9	9.6	15.5	5.4	3.0	2.9
4	2.7	3.6	4.2	d10.5	21	27	9.9	8.6	11	5.0	3.0	2.8
5	2.7	3.6	4.2	d10.5	18	25	10.5	7.8	8.6	4.7	2.9	2.6
6	2.7	3.6	4.2	d10	15	21	10.5	7.8	7.8	4.3	2.9	2.6
7	2.7	3.6	4.5	d10	14	21	10.5	7.5	13.5	4.2	3.6	2.4
8	2.5	*3.4	4.5	d13	13.5	18	10.5	7.2	11	*4.3	3.9	2.6
9	2.5	3.1	4.2	d15	14	16.5	10.5	6.9	9.0	4.5	3.3	2.6
10	2.5	6.7	4.2	18	18	14	10.5	6.9	8.6	4.2	3.0	2.6
11	2.5	9.0	3.9	15	18	d13	10.5	6.9	8.6	3.9	2.9	2.4
12	2.5	6.1	4.3	19.5	39	d12	10.5	7.2	8.6	4.0	2.9	2.4
13	3.6	6.8	4.3	18	35	d11.5	14	6.6	9.0	3.9	2.8	2.4
14	5.8	7.7	3.9	23	35	d11	33	6.4	8.6	3.7	2.9	2.6
15	3.6	6.1	3.7	27	29	d10.5	23	5.9	7.8	3.4	2.9	2.7
16	2.9	5.8	4.5	35	27	d10.5	33	5.7	7.2	3.2	2.9	3.0
17	3.1	5.4	*38	57	63	*10.5	35	5.2	6.4	3.0	2.9	3.3
18	2.9	4.8	47	43	118	10.5	31	5.2	5.7	3.0	2.9	3.0
19	2.7	4.8	19.5	35	87	9.9	27	6.4	5.2	3.0	2.9	2.8
20	2.5	4.5	15	25	65	9.9	25	5.7	5.2	3.3	2.8	2.8
21	2.3	4.2	12.5	19.5	51	10.5	23	5.0	5.0	3.2	2.7	3.0
22	2.3	4.2	9.0	16.5	41	11	*27	4.7	4.7	3.2	2.7	3.4
23	7.0	4.2	9.4	15	37	9.9	27	4.5	4.5	3.0	2.7	3.6
24	6.1	4.2	10.5	25	140	10.5	21	4.3	5.0	2.9	2.6	3.0
25	4.5	4.2	50	19.5	110	10.5	19.5	4.2	4.5	2.8	2.6	2.9
26	3.6	4.2	74	16.5	85	10.5	18	4.0	5.7	2.9	*2.7	2.8
27	3.4	3.9	45	15	67	10.5	15	4.0	7.5	2.9	2.7	2.7
28	3.1	3.9	35	29	55	10.5	13.5	6.1	9.4	2.9	3.0	2.6
29	3.1	3.9	27	49	-	9.9	11	7.5	9.9	2.9	3.4	2.6
30	3.9	3.9	19.5	73	-----	10.5	10.5	12.5	8.2	2.9	3.3	2.4
31	4.8	-----	14	51	-----	10.5	-----	49	-----	3.0	3.0	-----
Total	102.6	141.1	493.5	749.5	1,316.5	485.6	530.1	247.6	296.7	116.1	92.0	83.3
Mean	3.31	4.70	15.9	24.2	47.0	15.7	17.7	7.99	9.89	3.75	2.97	2.78
Cfsm	0.251	0.356	1.20	1.83	3.56	1.19	1.34	0.605	0.749	0.284	0.225	0.211
In.	0.29	0.40	1.39	2.11	3.71	1.37	1.49	0.70	0.84	0.33	0.26	0.23
Ac-ft	204	280	979	1,490	2,610	963	1,050	491	588	230	182	165

Calendar year 1957: Max 129 Min 2.2 Mean 12.3 Cfsm 0.932 In. 12.68 Ac-ft 8,920  
 Water year 1957-58: Max 140 Min 2.3 Mean 12.8 Cfsm 0.970 In. 13.12 Ac-ft 9,230

Peak discharge (base, 100 cfs).--Dec. 25 (7:15 p.m.) 176 cfs (3.03 ft); Jan. 29 (9:30 p.m.) 101 cfs (2.76 ft); Feb. 18 (12 m.) 135 cfs (2.90 ft); Feb. 24 (4 a.m.) 179 cfs (3.04 ft).

\* Discharge measurement made on this day.

d Doubtful gage-height record; discharge estimated on basis of records for nearby stations.



540. Duckabush River near Brinnon, Wash.

Location.--Lat 47°41'00", long 123°00'40", in SW¼SW¼ sec. 1, T. 25 N., R. 3 W., on left bank 4½ miles upstream from mouth and 5 miles west of Brinnon.

Drainage area.--66.5 sq mi.

Records available.--August to December 1910 (gage heights only), December 1910 to December 1911, June 1938 to September 1958. Published as "near Duckabush" 1910-11.

Gage.--Water-stage recorder. Datum of gage is 241.49 ft above mean sea level, datum of 1929. Aug. 19, 1910, to Dec. 31, 1911, staff gage at same site at different datum.

Average discharge.--20 years (1938-58), 407 cfs (294,700 acre-ft per year).

Extremes.--Maximum discharge during year, 4,910 cfs Feb. 24 (gage height, 7.77 ft), from rating curve extended above 2,800 cfs as explained below; minimum, 67 cfs Sept. 30 (gage height, 1.61 ft).  
1910-11, 1938-58: Maximum discharge, 8,960 cfs Nov. 26, 1949 (gage height, 10.06 ft), from rating curve extended above 1,800 cfs on basis of slope-area measurement of peak flow; minimum, 45 cfs Oct. 26, 28, 29, 1942; minimum gage height, 1.32 ft Sept. 30, 1939.

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

Revisions.--WSP 1216: Drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Nov. 11 to Feb. 17)

Oct. 1 to Feb. 17

Feb. 18 to Sept. 30

1.7	70	3.0	468	1.6	66	4.0	1,010
2.1	151	4.0	1,050	2.0	132	5.0	1,770
2.5	268	5.0	1,860	2.5	277	7.0	3,900
				3.0	485		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	109	248	198	336	506	625	423	406	720	323	139	92
2	103	216	196	333	450	566	449	485	665	323	130	85
3	99	196	186	329	410	508	485	508	655	335	126	79
4	92	182	182	408	376	454	406	485	680	343	124	76
5	90	168	168	436	372	418	355	467	808	363	118	74
6	90	158	249	428	364	380	315	454	818	351	114	72
7	90	*146	322	428	515	363	304	539	705	347	120	72
8	90	142	525	615	816	335	296	606	630	327	116	74
9	90	133	360	585	1,200	315	281	635	625	311	110	75
10	88	454	300	1,220	834	296	277	665	593	296	107	76
11	84	550	289	910	595	274	277	611	566	*288	105	86
12	120	774	289	847	670	263	304	530	530	277	105	76
13	282	868	245	605	590	*249	363	449	544	252	103	72
14	268	800	232	676	492	235	368	436	557	229	101	71
15	182	432	213	1,200	423	229	389	516	566	220	99	70
16	149	344	*535	1,720	575	220	*449	630	602	216	99	84
17	142	296	1,180	1,540	1,080	213	611	705	655	216	98	99
18	124	261	854	917	3,640	210	*530	782	695	213	98	85
19	111	235	670	665	2,020	216	544	992	690	204	*94	117
20	103	213	676	540	1,100	256	750	854	675	196	92	94
21	98	190	535	459	872	552	584	908	660	190	91	103
22	96	187	432	402	986	530	494	1,030	665	187	81	94
23	783	220	450	762	866	423	418	1,000	665	176	81	85
24	1,280	201	446	952	3,470	397	372	968	625	165	90	78
25	1,040	207	978	630	2,230	418	399	1,120	530	158	90	92
26	660	190	1,310	520	1,310	389	311	1,130	472	158	88	82
27	450	182	720	506	920	347	288	1,050	480	158	88	76
28	348	193	738	875	735	311	277	*1,040	431	160	90	72
29	300	166	605	847		226	281	842	380	163	98	
30	380	161	468	*768		359	327	715	343	155	86	*70
31	303	-----	384	579	-----	427	-----	765	-----	148	85	-----
Total	8,244	8,513	14,935	22,032	28,417	11,074	11,867	22,323	18,228	7,450	3,176	2,452
Mean	266	284	482	711	1,015	357	396	720	608	240	102	81.7
Cfs/m	4.00	4.27	7.25	10.7	15.3	5.37	5.95	10.8	9.14	3.61	1.53	1.23
In.	4.61	4.76	8.35	12.32	15.89	6.19	6.64	12.48	10.19	4.17	1.78	1.37
Ac-ft	16,350	16,890	29,820	43,700	56,360	21,960	23,540	44,280	36,150	14,780	6,300	4,860
Calendar year 1957: Max	3,410	Min	79	Mean	370	Cfs/m	5.56	In.	75.47	Ac-ft	267,700	
Water year 1957-58: Max	3,640	Min	70	Mean	435	Cfs/m	6.54	In.	88.75	Ac-ft	314,800	

Peak discharge (base, 2,500 cfs).--Feb. 18 (12:15 p.m.) 4,240 cfs (7.27 ft); Feb. 24 (8 a.m.) 4,910 cfs (7.77 ft).

\* Discharge measurement made on this day.

## HAMMA HAMMA RIVER BASIN

545. Hamma Hamma River near Eldon, Wash.

Location.--Lat 47°35'20", long 123°07'00", in NW¼ sec. 7, T. 24 N., R. 3 W., on left bank a quarter of a mile downstream from Watson Creek, 4½ miles northwest of Eldon, and 6 miles upstream from mouth.

Drainage area.--51.3 sq mi.

Records available.--June 1951 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 510 ft (from topographic map).

Average discharge.--7 years, 374 cfs (270,800 acre-ft per year).

Extremes.--Maximum discharge during year, 3,960 cfs Feb. 24 (gage height, 5.67 ft), from rating curve extended above 1,800 cfs; minimum, 46 cfs Sept. 15, 16 (gage height, 0.33 ft).

1951-58: Maximum discharge, 4,980 cfs Nov. 3, 1955 (gage height, 6.58 ft), from rating curve extended above 1,100 cfs; minimum, 42 cfs Oct. 21-23, Nov. 9, 1952; minimum gage height, that of Sept. 15, 16, 1958.

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

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-22			Oct. 23 to Sept. 30		
0.5	60	0.3	41	1.5	410
.7	107	.4	52	2.0	700
1.0	200	.6	82	3.0	1,450
		.8	131	5.0	3,270
		1.0	199		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	78	*253	185	350	503	587	401	341	526	222	89	58
2	75	229	199	341	460	520	396	382	487	210	88	58
3	73	210	188	345	420	a470	420	401	482	207	84	58
4	71	195	*181	396	382	a440	368	452	203	82	57	
5	69	181	177	430	377	a400	319	377	537	203	80	55
6	69	170	222	435	377	a365	285	377	549	199	80	53
7	69	160	290	420	537	a340	273	415	492	192	80	53
8	69	150	405	498	840	a320	269	465	440	185	80	52
9	69	144	345	526	1,260	a305	261	492	420	177	80	52
10	69	300	298	1,130	945	a285	261	503	401	170	75	51
11	67	543	285	938	660	a265	257	482	382	163	74	51
12	78	777	277	826	756	a250	269	430	368	160	74	49
13	169	861	253	615	580	a235	315	386	359	153	72	50
14	173	847	241	667	543	*226	319	377	354	144	70	49
15	147	476	222	1,160	482	222	337	405	350	*137	68	48
16	129	386	411	1,530	654	214	*382	487	354	137	67	48
17	121	337	973	1,390	1,110	207	526	543	377	134	67	49
18	110	302	819	986	3,150	192	492	591	396	131	65	49
19	102	277	641	667	2,030	195	487	721	396	131	*65	52
20	97	253	628	537	1,150	210	641	667	396	126	64	53
21	92	233	520	460	847	350	514	680	386	123	62	55
22	90	218	430	*420	896	425	425	777	396	120	62	55
23	586	222	410	675	819	363	377	796	377	115	62	55
24	1,080	214	405	959	3,100	359	341	756	372	109	61	53
25	875	207	926	667	2,300	382	315	826	332	104	61	55
26	628	195	1,160	537	1,370	368	290	854	302	102	61	53
27	450	188	*687	492	938	328	273	*840	285	100	61	53
28	368	192	667	791	714	294	261	791	265	97	61	53
29	319	181	578	805	-	285	265	660	249	97	60	53
30	311	170	465	777	-	323	294	560	232	95	60	*53
31	281	-	396	578	-	368	-	560	-	93	58	-
Total	6,994	8,871	13,884	21,248	28,300	10,103	10,633	17,330	11,735	4,553	2,171	1,583
Mean	226	296	448	685	1,011	326	354	559	391	146	70.0	52.8
Cfs	4.41	5.77	8.73	13.4	19.7	6.35	6.90	10.9	7.62	2.85	1.36	1.03
In.	5.07	6.43	10.07	15.40	20.52	7.32	7.71	12.58	8.51	3.29	1.57	1.15
Ac-ft	13,870	17,600	27,540	42,140	56,130	20,040	21,090	34,370	23,280	9,000	4,310	3,140

Calendar year 1957: Max 2,810 Min 64 Mean 303 Cfs 5.91 In. 80.25 Ac-ft 219,600  
 Water year 1957-58: Max 3,150 Min 48 Mean 376 Cfs 7.33 In. 99.60 Ac-ft 272,500

Peak discharge (base, 1,700 cfs).--Dec. 25 (8:30 p.m.) 1,890 cfs (3.52 ft); Jan. 16 (6 p.m.) 1,930 cfs (3.63 ft); Feb. 18 (12 m.) 3,670 cfs (5.40 ft); Feb. 24 (9 a.m.) 3,960 cfs (5.67 ft).

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for nearby stations.

546. Jefferson Creek near Eldon, Wash.

Location.--Lat 47°35'00", long 123°06'15", in SE $\frac{1}{4}$  sec. 7, T. 24 N., R. 3 W., on right bank a quarter of a mile upstream from mouth and 4 miles northwest of Eldon.

Drainage area.--21.6 sq mi.

Records available.--October 1957 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 500 ft (from topographic map).

Extremes.--Maximum discharge during year, 2,270 cfs Feb. 18 (gage height, 7.84 ft), from rating curve extended above 1,600 cfs on basis of slope-area measurement of peak flow; minimum, 13 cfs Sept. 13-16; minimum gage height, 2.99 ft Sept. 15, 16.

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

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

3.0	13	4.5	186
3.3	26	5.0	345
3.6	50	6.0	920
4.0	96	7.0	1,610

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	*112	67	166	298	277	231	86	120	57	22	15
2	20	100	104	156	264	242	201	84	115	55	22	14.5
3	20	91	87	168	231	217	242	84	110	51	21	14.5
4	20	83	*76	214	211	201	196	84	104	47	21	14
5	20	75	70	217	208	186	154	86	100	46	20	14
6	20	70	80	214	188	173	130	87	97	44	19.5	14
7	20	66	120	196	270	166	115	87	96	43	19.5	13.5
8	20	58	200	261	416	156	107	88	93	41	19.5	13.5
9	20	53	150	302	1,030	142	100	91	91	40	19	13.5
10	20	86	120	825	596	130	100	92	88	39	19	13.5
11	20	248	105	632	337	121	96	95	86	59	18.5	13.5
12	30	492	105	701	530	112	93	95	82	38	18	13.5
13	55	452	95	558	376	100	93	93	78	36	18	13
14	65	313	90	514	274	*91	92	91	75	35	17.5	13
15	60	225	85	944	242	84	*110	87	72	*35	17	13
16	48	182	150	908	400	78	191	88	69	32	17	13.5
17	46	160	550	704	674	73	309	90	67	32	17	14.5
18	41	142	350	410	*1,540	70	248	92	66	31	17	14.5
19	38	*126	250	309	844	73	258	100	67	30	*16.5	14
20	34	115	220	264	446	90	325	104	67	29	16.5	14
21	32	102	180	231	363	160	222	107	67	28	15.5	14
22	32	92	160	*211	390	177	182	112	68	27	15.5	14.5
23	588	82	150	609	341	150	158	115	68	27	15.5	14.5
24	761	76	150	707	1,030	137	140	118	70	26	15.5	14.5
25	420	72	250	350	794	160	130	120	72	25	15	14.5
26	309	68	700	274	554	160	118	123	70	25	15	15
27	225	63	*313	261	410	137	109	*124	68	24	15	14.5
28	179	62	390	572	329	118	99	128	66	24	15	14
29	156	61	317	578	-	109	92	128	62	23	15	14
30	142	58	231	602	-----	137	87	126	60	22	15	*13.5
31	126	-----	191	333	-----	171	-----	124	-----	22	15	-----
Total	3,607	3,975	6,106	13,191	13,386	4,398	4,728	3,129	2,414	1,073	542.5	419.5
Mean	116	132	197	426	478	142	158	101	80.5	34.6	17.5	14.0
Cfs/m	5.37	6.11	9.12	19.7	22.1	6.57	7.31	4.66	3.73	1.60	0.810	0.648
In.	6.21	6.84	10.51	22.71	23.05	7.57	8.14	5.39	4.16	1.85	0.93	0.72
Ac-ft	7,150	7,880	12,110	26,160	26,550	8,720	9,580	6,210	4,790	2,130	1,080	832

Calendar year 1957: Max - Min - Mean - Cfs/m - In. - Ac-ft -  
 Water year 1957-58: Max 1,540 Min 13 Mean 156 Cfs/m 7.22 In. 98.08 Ac-ft 113,000

Peak discharge (base, 1,400 cfs).--Oct. 23 (8 p.m.) 1,400 cfs (6.70 ft); Feb. 18 (5:30 a.m.) 2,270 cfs (7.84 ft); Feb. 24 (9 a.m.) 1,590 cfs (6.97 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-14, Dec. 5-26; discharge estimated on basis of records for Hamma Hamma River near Eldon.

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

Location.--Lat 47°30'55", long 123°19'45", in NW $\frac{1}{4}$  sec. 4, T. 23 N., R. 5 W., on left bank  $\frac{1}{4}$  miles upstream from Lake Cushman, 2 miles upstream from Dry Creek, and  $11\frac{1}{2}$  miles northwest of Hoodsport.

Drainage area.--58.1 sq mi.

Records available.--July 1924 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 762.26 ft above mean sea level, datum of 1929, supplementary adjustment of 1947. Prior to Nov. 1, 1934, water-stage recorder and Nov. 1, 1934, to Nov. 10, 1941, staff gages, on right bank at same datum.

Average discharge.--34 years, 486 cfs (351,800 acre-ft per year).

Extremes.--Maximum discharge during year, 6,690 cfs Feb. 24 (gage height, 7.68 ft); minimum, 62 cfs Sept. 13 (gage height, 1.52 ft).

1924-58: Maximum discharge, 27,000 cfs Nov. 5, 1934 (gage height, 14.4 ft, from high-water mark), from rating curve extended above 9,800 cfs on basis of slope-area measurement at gage height 12.2 ft; minimum recorded, 16 cfs Sept. 23, 1930 (gage height, 1.12 ft).

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

Revisions (water years).--WSP 1246: Drainage area. WSP 1286: 1932, 1935, 1937(M), 1942(M), 1945(M), 1947(P), 1948(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 25

Dec. 26 to Sept. 30

1.6	72	3.0	555	1.5	60	4.0	1,200
2.0	150	4.0	1,240	2.0	145	5.0	2,200
2.5	315	5.0	2,200	2.5	309	6.0	3,500
				3.0	537	7.0	5,250

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1	96	311	344	487	718	827	473	558	672	257	104	84	
2	94	280	319	502	662	730	482	612	640	253	100	71	
3	91	254	299	558	612	656	497	612	656	253	99	68	
4	89	237	292	640	579	596	439	558	678	253	97	66	
5	91	224	265	640	601	553	398	548	736	257	95	64	
6	92	210	*486	628	628	497	367	569	748	249	95	64	
7	96	201	588	612	946	487	354	667	645	239	95	66	
8	91	186	951	841	1,260	444	359	736	574	228	90	66	
9	87	177	599	778	1,600	416	342	748	564	215	88	71	
10	86	487	476	1,560	1,200	393	393	748	522	209	87	74	
11	82	754	544	1,210	876	372	376	662	482	205	87	75	
12	183	1,190	486	1,030	1,070	350	425	553	453	196	84	67	
13	353	1,330	421	808	911	*334	492	487	458	184	82	63	
14	189	874	402	939	754	317	482	492	453	172	82	54	
15	143	622	362	2,080	712	305	585	590	453	169	81	64	
16	131	486	858	2,620	1,020	294	634	736	482	*169	82	116	
17	122	421	1,280	2,000	1,780	279	*869	808	527	167	81	112	
18	111	384	986	1,200	4,360	271	730	904	542	164	79	85	
19	103	344	972	911	2,220	305	920	1,060	532	158	78	143	
20	98	307	958	760	1,370	384	1,140	869	512	145	*77	97	
21	94	280	754	*662	1,240	784	790	946	492	143	77	124	
22	91	272	610	612	1,420	718	650	1,070	492	140	78	94	
23	956	292	544	1,240	1,340	569	553	1,030	468	134	77	81	
24	1,630	269	539	1,520	4,330	590	487	968	444	127	77	77	
25	1,080	269	1,770	1,040	2,620	606	449	1,100	372	120	78	110	
26	790	262	1,480	834	1,660	553	421	1,140	350	120	75	85	
27	523	272	911	802	1,220	482	393	1,080	354	120	78	75	
28	393	280	992	1,290	968	439	439	871	326	144	75	132	
29	353	240	796	1,130	-	421	402	*754	282	120	79	69	
30	491	237	645	1,100	----	444	477	684	267	114	74	66	
31	*370	----	548	796	----	473	----	712	----	108	71	----	
Total	9,199	11,952	21,477	31,830	38,677	14,889	15,763	23,933	15,171	5,510	2,602	2,432	
Mean	297	398	693	1,027	1,381	480	525	772	506	178	83.9	81.1	
Cfs/m	5.11	6.85	11.9	17.7	25.6	8.26	9.04	13.3	8.71	3.06	1.44	1.40	
In.	5.89	7.65	13.15	20.37	24.76	9.53	10.09	15.32	9.71	3.53	1.67	1.56	
Ac-ft	18,250	23,710	42,600	63,130	76,710	29,530	31,270	47,470	30,090	10,930	5,160	4,820	
Calendar year 1957: Max		4,920		Min	80	Mean	429	Cfs/m	7.38	In.	100.26	Ac-ft	310,700
Water year 1957-58: Max		4,360		Min	63	Mean	530	Cfs/m	9.12	In.	123.83	Ac-ft	383,700

Peak discharge (base, 3,000 cfs).--Dec. 25 (5 p.m.) 4,200 cfs (6.43 ft); Jan. 16 (4 p.m.) 3,930 cfs (6.27 ft); Feb. 18 (8 a.m.) 5,570 cfs (7.16 ft); Feb. 24 (7 a.m.) 6,690 cfs (7.68 ft).

\* Discharge measurement made on this day.

575. North Fork Skokomish River near Hoodsport, Wash.

Location.--Lat 47°25'20", long 123°13'10", in SW $\frac{1}{4}$  sec. 5, T. 22 N., R. 4 W., at city of Tacoma dam, 4 miles northwest of Hoodsport.

Drainage area.--93.7 sq mi.

Records available.--August 1910 to September 1911 (fragmentary) and February 1913 to September 1958 (monthly discharge only) in reports of Geological Survey. October 1911 to September 1953 (monthly discharge only) in State Water-Supply Bulletin 6.

Gage.--Discharge determined from record of power output and Lake Cushman elevations, plus spillway discharge when present. Prior to Sept. 23, 1911, staff gage and February 1913 to September 1923, water-stage recorder, at approximately same site. At datum 486.4 ft above mean sea level (levels by city of Tacoma) prior to Sept. 2, 1918, and at datum 5.00 ft higher Sept. 2, 1918, to September 1923. October 1923 to September 1930 water-stage recorder 1 mile downstream at different datum.

Average discharge.--47 years (1911-58), 738 cfs (534,300 acre-ft per year), adjusted for storage.

Extremes.--Not determined since regulation began in Lake Cushman.

Remarks.--Records fair. No diversion of consequence. Flow regulated in Lake Cushman since October 1925 for power by city of Tacoma.

Cooperation.--Records of power output and elevations of Lake Cushman furnished by city of Tacoma.

Revisions.--WSP 1216: Drainage area.

Monthly discharge, water year October 1957 to September 1958

Month	Observed				Change in contents in Lake Cushman (acre-feet)	Adjusted for change in reservoir contents			
	Maximum (cfs)	Minimum (cfs)	Mean (cfs)	Runoff in acre-feet		Mean (cfs)	Per square mile	Runoff in inches	Runoff in acre-feet
October.....	1,400	0	652	40,070	-12,270	452	4.82	5.56	27,800
November.....	1,490	330	946	56,280	-21,810	579	6.18	6.90	34,470
December.....	1,330	245	807	49,600	+24,310	1,202	12.8	14.79	73,910
Calendar year 1957...	1,710	0	677	489,800	-17,820	652	6.96	94.45	472,000
January.....	2,270	0	981	60,350	+48,380	1,768	18.9	21.75	108,700
February.....	4,010	1,120	1,980	110,000	+11,600	2,130	23.4	24.33	121,600
March.....	1,420	0	766	47,080	-2,670	722	7.71	8.89	44,410
April.....	1,540	0	754	44,850	+3,850	818	8.73	9.75	48,700
May.....	1,580	0	732	44,980	+9,150	880	9.39	10.83	54,130
June.....	1,110	0	539	32,100	+840	554	5.91	6.59	32,940
July.....	621	0	205	12,590	-40	204	2.18	2.51	12,550
August.....	902	0	365	22,450	-16,630	94.7	1.01	1.16	5,820
September.....	1,150	0	490	29,140	-22,440	113	1.21	1.34	6,700
Water year 1957-58...	4,010	0	759	549,500	+22,270	790	8.43	114.40	571,800

580. Deer Meadow Creek near Hoodspport, Wash.

Location--Lat 47°25'00", long 123°13'30", on NW $\frac{1}{4}$  sec. 8, T. 22 N., R. 4 W., on left bank a quarter of a mile upstream from mouth and 4 miles west of Hoodspport.

Records available--August 1950 to August 1951, October 1952 to September 1958.

Gage--Water-stage recorder. Datum of gage is 688.28 ft above mean sea level, datum of 1929, supplementary adjustment of 1947 (levels by city of Tacoma). Prior to Oct. 1, 1952, at datum 0.48 ft higher.

Average discharge--6 years, 7.24 cfs (5,240 acre-ft per year).

Extremes--Maximum discharge during year, 111 cfs Dec. 25 (gage height, 1.95 ft); minimum, 0.3 cfs Oct. 5-12, 21, 22 (gage height, 0.59 ft).  
1950-51, 1952-58: Maximum discharge, 355 cfs Nov. 3, 1955 (gage height, 2.98 ft); minimum, 0.2 cfs Oct. 8-11, 1952.

Remarks--Records good. Since October 1953, records include large part of flow of McTaggart Creek, from which water is diverted at city of Tacoma diversion dam in N $\frac{1}{2}$  sec. 7, T. 22 N., R. 4 W. When flow of McTaggart Creek exceeds about 80 cfs, there is undiverted spill over dam. For discharges less than about 80 cfs the city allows up to 2 cfs to flow through pipe in dam and continue in McTaggart Creek, not to exceed the natural flow of stream. No regulation.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

0.59	0.3	1.0	12
.7	1.9	1.3	33
.8	4.2	1.7	75
.9	7.2		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	1.7	3.2	18	31	20	4.2	5.3	1.9	1.5	0.7	0.6
2	.4	1.7	2.7	15.5	27	17.5	4.7	5.0	1.9	1.5	.7	.4
3	.4	1.7	2.5	14.5	23	15	4.2	4.7	1.7	1.2	.6	.4
4	.4	1.7	2.5	12.5	19.5	13	4.2	4.7	1.7	1.5	.7	.4
5	.3	1.5	2.3	11	17.5	12	4.2	4.2	1.9	1.5	.7	.4
6	.3	1.5	*3.3	9.2	15.5	10	4.0	4.2	2.1	1.4	.7	.4
7	.3	1.5	4.0	9.2	15	10.5	3.7	4.2	1.9	1.4	.7	.4
8	.3	1.5	5.0	11	16	9.2	3.7	4.0	1.7	1.4	.7	.4
9	.3	1.5	5.0	12	29	8.4	3.7	3.7	1.5	1.4	.7	.4
10	.3	2.5	4.7	19.5	29	7.6	3.7	3.7	1.5	1.4	.7	.4
11	.3	3.4	4.7	24	24	7.2	*3.2	3.4	1.5	1.4	.7	.6
12	.6	5.6	4.2	31	29	*6.5	3.0	3.4	1.7	1.4	.7	.4
13	1.0	8.4	4.2	26	25	5.9	3.0	3.4	1.7	1.4	.6	.4
14	.7	8.8	4.0	40	22	5.6	3.4	3.2	1.7	1.4	.6	.4
15	.6	6.5	3.7	54	19.5	5.3	4.2	3.0	1.7	1.2	.4	.4
16	.4	5.6	4.2	62	22	5.0	4.2	3.0	1.7	*1.4	.6	.6
17	.4	5.0	6.5	56	31	4.7	8.0	3.0	1.7	1.2	.6	.6
18	.4	4.4	9.6	41	63	4.8	9.2	3.0	1.7	1.2	.6	.6
19	.4	3.7	12	32	44	5.0	11	3.0	1.7	1.4	*.6	.6
20	.4	3.4	14.5	25	32	5.0	14.5	2.5	1.7	1.2	.4	.4
21	.3	3.2	14	*20	27	5.3	12.5	2.3	1.7	1.2	.4	.6
22	.4	3.0	12.5	17.5	24	5.0	10.5	2.5	1.7	1.2	.4	.4
23	1.7	2.7	15.5	31	22	4.7	9.2	2.5	1.7	1.2	.4	.4
24	3.2	2.7	20	38	40	5.3	8.4	2.3	1.9	1.2	.4	*.4
25	3.0	2.7	60	30	44	5.6	8.0	2.3	1.9	1.0	.4	.4
26	3.0	2.5	68	24	36	5.6	8.0	*2.3	1.9	1.0	.4	.4
27	2.5	2.5	43	24	28	5.0	7.2	2.1	1.7	1.0	.4	.4
28	2.1	2.3	40	32	24	4.7	6.5	2.3	1.7	.9	.4	.4
29	1.9	2.1	35	37	-	4.4	6.2	1.9	1.0	.9	.6	.4
30	2.1	2.3	27	45	-----	4.4	5.6	2.1	1.7	.9	.4	.4
31	*1.7	-----	22	38	-----	4.4	-----	2.3	-----	.9	.4	-----
Total	30.5	97.6	459.8	859.9	779.0	232.5	186.1	99.5	52.4	39.3	17.3	13.4
Mean	0.98	3.25	14.8	27.7	27.8	7.50	6.20	3.21	1.75	1.27	0.56	0.45
Ac-ft	60	194	912	1,710	1,550	461	369	197	104	78	34	27
Calendar year 1957:	Max 120			Min 0.3		Mean 6.17		Ac-ft 4,470				
Water year 1957-58:	Max 68			Min 0.3		Mean 7.86		Ac-ft 5,700				

\* Discharge measurement made on this day.

595. North Fork Skokomish River near Potlatch, Wash.

Location.--Lat 47°19'40", long 123°14'30", in NE¼NW¼ sec. 7, T. 21 N., R. 4 W., on left bank 1 mile upstream from mouth, 6 miles southwest of Potlatch, and 7 miles downstream from city of Tacoma's Cushman Dam No. 2.

Drainage area.--117 sq mi, includes 99 sq mi above Cushman Dam No. 2 which is normally noncontributing.

Records available.--March 1944 to December 1949, February 1950 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 63.49 ft above mean sea level (levels by city of Tacoma). Prior to Nov. 27, 1949 (destroyed by flood of Nov. 27, 1949), and Mar. 18 to May 9, 1950, water-stage recorder at site 200 ft downstream at present datum.

Extremes.--Maximum discharge during year, 2,300 cfs Feb. 25 (gage height, 6.65 ft); minimum, 4.6 cfs Aug. 24-27 (gage height, 2.41 ft).

1944-58: Maximum discharge, 7,740 cfs Nov. 4, 1955 (gage height, 10.45 ft); minimum recorded, 1.3 cfs Sept. 5, 14, 16, 1951 (gage height, 2.02 ft).

Remarks.--Records good. Entire flow of river normally diverted at Cushman Dam No. 2 to supply powerplant which discharges directly into sea (Hood Canal). Main portion of McTaggart Creek is diverted into Cushman Reservoir No. 2 and may bypass this station. Flow regulated by Lake Cushman (see p. 47) and by pondage in Cushman Reservoir No. 2, from which spill and releases are infrequent.

Rating table, water year 1957-58 (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Feb. 24 to Apr. 30)

2.4	3.5	3.5	130	5.0	850
2.5	12.5	4.0	295	6.0	1,600
2.8	28	4.5	525	7.0	2,550
3.2	75				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.2	32	61	130	255	138	77	68	28	17.5	7.6	6.6
2	4.9	28	69	115	202	120	80	85	27	16	7.6	6.0
3	4.9	26	64	109	173	109	83	62	26	16	7.6	9.2
4	5.2	25	57	102	148	102	77	60	25	15.5	7.0	13
5	5.6	25	55	95	142	96	75	56	24	15.5	6.6	8.6
6	6.3	*24	80	88	135	*93	72	54	25	14.5	6.3	6.6
7	6.3	25	93	81	138	100	68	53	25	14	6.3	6.0
8	6.6	21	130	93	142	96	67	51	23	14	6.3	6.0
9	6.3	21	113	100	234	91	68	48	22	14	6.3	6.0
10	5.6	30	95	142	244	86	78	46	23	14	6.0	6.0
11	5.2	59	*88	182	199	83	69	46	23	13	6.0	6.0
12	9.2	126	80	263	252	80	67	44	23	13	6.0	5.6
13	32	173	75	199	213	77	62	41	22	13	6.0	5.2
14	21	167	77	353	182	74	69	40	21	12.5	5.6	5.2
15	14.5	173	71	490	161	71	102	39	20	12	5.6	5.2
16	12	96	75	485	202	68	113	38	19.5	*12	5.2	7.0
17	12.5	81	102	425	267	67	*185	36	19	12	5.6	8.1
18	11	75	128	259	886	67	173	35	19	12	5.6	7.0
19	9.8	65	161	192	1,520	72	199	36	19	12	5.6	8.6
20	8.6	59	185	155	884	77	241	34	18	12.5	5.2	7.6
21	8.1	54	192	130	365	78	173	32	17.5	12	5.2	9.8
22	9.2	51	173	120	875	80	140	*31	16.5	29	*5.2	8.1
23	*51	48	206	238	182	77	124	33	16	38	4.9	7.6
24	89	51	255	*398	1,430	80	109	32	19.5	21	4.9	7.6
25	89	47	495	271	2,160	86	102	31	19.5	14	4.6	9.8
26	64	45	470	210	1,670	85	95	29	19	10.5	4.6	*9.2
27	53	45	275	206	767	80	88	29	17.5	9.2	5.2	9.2
28	42	50	259	279	185	78	81	29	17.5	6.6	10.5	8.6
29	*36	45	220	315	-	77	77	29	18	6.6	14.5	9.2
30	39	47	179	402	-----	78	74	26	16	8.6	9.2	9.2
31	34	-----	176	331	-----	77	-----	30	-----	8.1	7.0	-----
Total	687.0	1,812	4,759	6,958	14,213	2,643	3,088	1,285	630.5	442.6	199.8	227.8
Mean	22.2	60.4	154	224	508	85.3	103	41.5	21.0	14.3	6.45	7.59
Ac-ft	1,360	3,590	9,440	13,800	28,190	5,240	6,120	2,550	1,250	878	396	452

Calendar year 1957: Max 984 Min 4.6 Mean 65.8 Ac-ft 47,670  
 Water year 1957-58: Max 2,160 Min 4.6 Mean 101 Ac-ft 73,270

\* Discharge measurement made on this day.

600. South Fork Skokomish River near Potlatch, Wash.

Location.--Lat 47°23'10", long 123°18'30", in NW¼ sec. 22, T. 22 N., R. 5 W., on right bank at head of canyon, 1 mile upstream from Rock Creek, 3 miles downstream from Brown Creek, and 7½ miles west of Potlatch.

Drainage area.--65.6 sq mi.

Records available.--October 1923 to September 1932, September 1946 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 456 ft (by barometer).

Average discharge.--21 years, 593 cfs (429,300 acre-ft per year).

Extremes.--Maximum discharge during year, 9,060 cfs Dec. 25 (gage height, 11.21 ft); minimum, 68 cfs Sept. 6-8, 13-15 (gage height, 0.83 ft).  
1923-32, 1946-58: Maximum discharge, 19,300 cfs Nov. 26, 1949 (gage height, 17.75 ft), from rating curve extended above 5,600 cfs on basis of logarithmic plotting; minimum, 38 cfs Sept. 15, 1926; minimum gage height, 0.74 ft Sept. 21, 22, 1953.

Remarks.--Records good except those for periods of shifting control, which are fair. No regulation or diversion above station.

Revisions (water years).--WSP 1216: Drainage area. WSP 1286: 1950(P). WSP 1346: 1952.

Rating tables, water year 1957-58, except periods of shifting control (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 25

Dec. 26 to Sept. 30

0.8	82	3.0	556	0.6	63	3.0	676
1.4	154	4.0	1,070	1.0	98	4.0	1,220
2.0	265	5.0	1,730	1.5	170	6.0	2,700
2.5	386	7.0	3,600	2.0	280	8.0	4,730

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	112	342	482	818	1,350	984	715	506	277	139	88	77
2	106	305	536	792	1,200	881	705	506	257	136	88	73
3	105	278	454	919	1,070	786	756	489	257	137	87	70
4	110	257	406	1,060	968	720	671	451	257	134	86	69
5	108	242	*370	1,020	968	662	584	426	244	131	85	69
6	111	224	655	968	1,000	598	510	414	254	130	84	69
7	110	213	834	897	1,230	498	455	418	242	129	84	69
8	111	204	1,420	1,170	1,560	540	443	439	221	126	83	69
9	100	196	934	1,250	2,540	501	422	430	210	123	81	69
10	90	394	687	2,040	1,990	468	531	430	204	122	81	70
11	88	862	641	1,940	1,390	454	*484	395	198	118	80	71
12	132	1,510	837	1,990	1,750	*414	463	348	192	116	80	69
13	362	1,740	540	1,460	1,460	489	512	489	183	115	78	69
14	234	1,286	564	1,750	1,210	362	514	294	183	114	78	68
15	180	873	492	3,120	1,110	348	856	312	179	111	77	68
16	159	650	659	3,500	1,620	338	1,150	344	179	109	77	84
17	148	525	1,430	2,580	2,140	331	1,470	362	177	106	76	106
18	136	471	1,460	1,540	4,620	322	1,280	380	175	105	76	97
19	131	421	1,460	1,210	2,290	384	1,520	430	175	104	75	139
20	126	375	1,600	1,010	1,450	480	1,790	369	170	103	*73	123
21	125	342	1,280	881	1,270	786	1,210	366	168	103	73	145
22	124	320	986	823	1,440	833	974	380	165	99	72	127
23	721	308	912	1,890	1,320	691	844	384	163	99	71	110
24	1,670	292	1,000	2,660	3,680	700	735	352	*168	98	69	*104
25	1,130	287	3,420	1,690	2,680	807	667	355	165	95	69	129
26	998	296	2,970	1,330	1,880	833	616	*362	155	95	69	113
27	682	301	1,560	1,220	1,400	696	566	341	155	94	71	103
28	492	395	1,870	1,990	1,120	584	518	315	153	92	72	97
29	392	327	1,560	*1,940	-	531	493	280	148	92	73	92
30	478	315	1,150	2,030	-----	584	497	264	143	91	72	90
31	*403	-----	957	1,540	-----	638	-----	280	-----	89	70	-----
Total	9,974	14,546	33,926	49,059	47,706	18,218	22,928	11,734	5,817	3,455	2,398	2,708
Mean	322	485	1,094	1,583	1,704	588	764	379	194	111	77.4	90.3
Cfs/m	4.91	7.39	16.7	24.1	26.0	8.96	11.6	5.78	2.96	1.69	1.18	1.38
In.	5.65	8.25	19.23	27.81	27.05	10.33	13.00	6.65	3.30	1.96	1.36	1.54
Ac-ft	19,780	28,850	67,290	97,310	94,620	36,130	45,480	23,270	11,540	6,850	4,760	5,370

Calendar year 1957: Max 7,000 Min 86 Mean 496 Cfs/m 7.56 In. 102.69 Ac-ft 359,300  
Water year 1957-58: Max 4,620 Min 68 Mean 610 Cfs/m 9.30 In. 126.13 Ac-ft 441,200

Peak discharge (base, 3,800 cfs).--Dec. 25 (7:30 p.m.) 9,060 cfs (11.21 ft); Jan. 16 (7 p.m.) 4,900 cfs (8.14 ft); Jan. 23 (11:30 p.m.) 4,040 cfs (7.40 ft); Feb. 18 (time unknown) about 5,850 cfs; Feb. 24 (10 a.m.) 5,170 cfs (8.37 ft).

\* Discharge measurement made on this day.

Note.--Shifting-control method used Apr. 21 to June 21, June 27 to Sept. 20.



605. South Fork Skokomish River near Union, Wash.

Location.--Lat 47°20'30", long 123°16'30", in NE¼ sec. 2, T. 21 N., R. 5 W., on right bank 3½ miles upstream from confluence with North Fork and Vance Creek and 8 miles west of Union.

Drainage area.--79.6 sq mi.

Records available.--August 1931 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 110 ft (by barometer). Prior to Sept. 19, 1931, staff gage at same site at datum 2.32 ft higher.

Average discharge.--27 years, 707 cfs (511,800 acre-ft per year).

Extremes.--Maximum discharge during year, 9,490 cfs Dec. 25 (gage height, 6.89 ft); minimum, 69 cfs Sept. 7, 8 (gage height, 1.79 ft).  
1931-58: Maximum discharge, 21,600 cfs Jan. 22, 1935, Nov. 26, 1949 (gage height, 11.0 ft), from rating curve extended above 11,000 and 4,400 cfs, respectively; minimum, 62 cfs Sept. 18, 1938; minimum gage height, that of Sept. 7, 8, 1958.

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

Revisions (water years).--WSP 1216: 1950, drainage area. WSP 1316: 1934(M), 1938(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 25				Dec. 26 to Sept. 30			
1.9	110	3.5	1,300	1.7	50	3.0	860
2.2	230	4.0	2,000	1.9	98	4.0	2,120
2.6	460	5.0	3,850	2.1	170	5.0	3,860
3.0	780			2.5	420	6.0	6,410

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	117	395	562	890	1,590	1,150	751	524	308	142	95	90
2	117	414	690	850	1,360	980	742	516	282	138	95	84
3	114	324	578	960	1,170	880	800	500	282	138	95	79
4	114	296	523	1,090	1,040	790	706	476	282	138	93	76
5	117	275	481	1,070	1,010	751	625	460	270	134	93	74
6	117	260	735	990	1,040	679	556	452	275	130	90	71
7	*117	240	980	930	1,250	679	508	444	275	130	90	71
8	117	230	1,680	1,150	1,590	634	460	242	130	90	69	69
9	114	221	1,120	1,270	2,990	580	484	452	231	127	87	71
10	110	379	834	2,170	2,330	548	*564	436	226	130	87	74
11	110	890	*780	2,150	1,630	*524	516	404	215	*127	84	76
12	142	1,650	780	2,260	2,030	500	500	348	210	127	84	74
13	408	2,080	674	1,620	1,720	468	508	320	205	127	82	74
14	275	1,540	690	2,060	1,380	444	532	308	200	124	82	74
15	208	1,020	618	3,820	1,240	428	857	320	195	120	82	74
16	177	771	762	4,070	1,840	420	1,250	348	195	117	82	90
17	161	642	1,580	3,140	2,440	412	1,620	380	190	111	82	130
18	157	578	1,760	1,900	5,060	404	1,360	396	190	111	82	114
19	153	523	1,750	1,450	2,670	460	1,550	444	190	111	82	158
20	145	474	2,000	1,170	1,750	540	2,080	404	185	111	*82	138
21	142	440	1,620	1,000	1,470	820	1,300	396	175	108	79	162
22	145	408	1,250	930	1,630	890	1,040	420	170	104	76	142
23	736	389	1,190	2,030	1,420	733	860	428	166	101	76	114
24	1,870	365	1,340	3,080	3,880	733	751	396	175	98	76	108
25	1,230	359	3,830	1,970	3,250	840	679	404	175	98	76	*130
26	1,100	377	3,510	1,580	2,380	890	643	412	166	98	76	127
27	780	371	1,990	1,590	1,770	580	396	162	98	79	111	97.9
28	578	495	2,220	2,260	1,580	625	548	*364	166	98	82	98
29	474	421	1,820	2,300	-	580	516	320	154	98	84	95
30	*554	402	1,290	*2,550	-----	634	516	301	146	98	82	90
31	467	-----	1,040	1,860	-----	670	-----	314	-----	95	79	-----
Total	11,166	17,229	40,587	55,960	54,290	20,419	24,442	12,543	6,303	3,617	2,604	2,938
Mean	360	574	1,309	1,805	1,939	653	815	405	210	117	84.0	97.9
Cfs/m	4.52	7.21	16.44	22.7	24.4	8.28	10.2	5.09	2.64	1.47	1.06	1.23
In.	5.22	8.05	18.96	26.15	25.36	9.54	11.42	5.86	2.94	1.69	1.22	1.37
Ac-ft	22,150	34,170	80,500	111,000	107,700	40,500	48,480	24,880	12,500	7,170	5,160	5,830

Calendar year 1957: Max 8,480 Min 101 Mean 579 Cfs/m 7.27 In. 98.82 Ac-ft 419,500  
Water year 1957-58: Max 5,060 Min 69 Mean 691 Cfs/m 8.68 In. 117.78 Ac-ft 500,000

Peak discharge (base, 6,000 cfs).--Dec. 25 (8 p.m.) 9,490 cfs (6.89 ft); Feb. 18 (6 and 9:30 a.m.) 6,110 cfs (5.90 ft).

\* Discharge measurement made on this day.

## 615. Skokomish River near Potlatch, Wash.

Location.--Lat 47°19'00", long 123°11'05", in NW¼NW¼ sec. 15, T. 21 N., R. 4 W., on right bank half a mile upstream from U. S. Highway 101, 2.8 miles downstream from confluence of North and South Forks, 4.7 miles southwest of Potlatch, and 5.5 miles upstream from mouth. Prior to July 22, 1958, at site 200 ft downstream.

Drainage area.--230 sq mi.

Records available.--July 1943 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 16.47 ft above mean sea level, datum of 1929, supplementary adjustment of 1947. Prior to Mar. 24, 1956, water-stage recorders or staff gages at about present site at datum 2.88 ft (revised) higher except Oct. 1, 1947, to Apr. 18, 1951, at present datum. Mar. 24, 1956, to July 21, 1958, at site 200 ft downstream at datum 2.88 ft higher.

Extremes.--Maximum discharge during year, 12,400 cfs Dec. 25 (gage height, 9.03 ft, site and datum then in use); minimum, 131 cfs Sept. 7-9; minimum gage height, 0.39 ft Oct. 12, datum then in use.

1943-58: Maximum discharge, 22,100 cfs Nov. 3, 1955 (gage height, 12.6 ft, datum then in use); minimum, 125 cfs Sept. 14-17, 1944 (gage height, -0.01 ft, datum then in use).

Remarks.--Records good except those for period Feb. 20 to Apr. 20, and those for periods of doubtful or no gage-height record, which are fair. Flow partly regulated by Lake Cushman and Cushman Reservoir No. 2. In normal years practically entire flow of North Fork is diverted at dam No. 2 and returned to sea through Cushman powerplant No. 2.

Revisions.--WSP 1216: Drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Feb. 22 to Apr. 17)

Oct. 1 to July 2				July 3 to Sept. 30	
0.3	155	2.0	1,390	2.6	111
.6	295	4.0	3,790	3.1	271
1.0	540	7.0	8,500		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	183	582	650	1,710	2,670	1,890	1,130	1,020	430	250	218	191
2	175	505	965	1,560	2,450	1,825	1,130	992	400	245	215	185
3	175	452	744	1,630	2,130	1,440	1,210	985	400	245	215	179
4	175	410	617	1,610	1,680	1,270	1,140	912	400	245	215	166
5	175	360	547	1,720	1,780	1,190	1,030	860	390	240	208	148
6	179	356	971	1,610	1,780	*1,060	938	848	390	235	198	139
7	179	339	1,420	1,510	1,960	1,080	872	824	390	235	195	136
8	179	317	2,400	1,770	2,260	1,020	852	816	360	230	191	131
9	179	295	1,960	2,010	3,690	965	816	808	345	225	188	131
10	175	406	*1,370	2,960	3,690	912	*947	792	340	230	188	139
11	171	1,070	1,170	3,180	2,790	872	896	768	330	225	188	148
12	191	2,220	1,140	3,580	3,090	832	856	728	325	225	185	148
13	434	2,990	938	2,680	2,850	792	848	673	320	225	182	148
14	374	2,510	1,000	3,540	2,450	760	872	631	310	220	182	154
15	295	1,740	824	6,080	2,140	756	1,320	610	305	*220	182	157
16	265	1,320	920	6,560	2,650	720	2,160	610	305	220	188	172
17	255	1,050	1,940	5,450	3,390	696	2,630	610	300	220	191	208
18	235	872	2,480	3,480	7,610	696	2,400	617	300	220	188	211
19	215	712	2,580	2,640	5,600	744	2,500	652	300	220	188	228
20	205	596	3,030	2,180	4,030	848	3,570	624	295	220	179	225
21	205	491	2,640	1,860	2,690	1,080	2,460	582	285	220	166	232
22	205	434	2,110	1,700	3,540	1,240	1,940	*596	280	221	*160	225
23	611	404	2,030	2,940	2,500	1,090	1,670	603	275	221	154	204
24	2,240	374	2,270	*5,210	5,900	1,070	1,460	568	285	225	157	191
25	1,660	356	4,910	3,410	6,780	1,200	1,340	554	285	221	160	*195
26	1,490	356	6,750	2,700	5,120	1,310	1,360	540	270	218	163	191
27	1,130	350	3,590	2,340	3,590	1,140	1,190	540	265	215	172	161
28	856	491	4,000	3,440	2,330	1,010	1,110	505	270	211	179	157
29	*696	410	3,360	3,480	-	929	1,060	452	260	208	188	154
30	760	398	2,510	4,390	-----	992	1,020	420	250	215	191	146
31	680	-----	2,030	3,440	-----	992	-----	435	-----	218	191	-----
Total	14,947	23,186	63,886	92,370	94,440	32,196	42,727	21,175	9,660	6,988	5,768	5,210
Mean	482	73	2,061	2,980	3,573	1,039	1,424	683	322	225	186	174
Ac-ft	29,650	45,990	126,700	185,200	187,300	63,860	84,750	42,000	19,160	13,860	11,440	10,330
Calendar year 1957: Max	13,000				Min	171	Mean	923	Ac-ft	668,500		
Water year 1957-58: Max	7,610				Min	131	Mean	1,130	Ac-ft	818,200		

Peak discharge (base, 8,400 cfs)--Dec. 25 (11 p.m.) 12,400 cfs (9.03 ft); Jan. 16 (8:30 p.m.) 8,550 cfs (7.03 ft); Feb. 16 (11:30 a.m.) 8,680 cfs (7.21 ft).

\* Discharge measurement made on this day.

Note.--Doubtful gage-height record May 30 to July 2; no gage-height record July 3-21; discharge estimated on basis of 1 discharge measurement and records for nearby stations.

## 625. Purdy Creek near Union, Wash.

Location.--Lat 47°18'05", long 123°10'50", in NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 22, T. 21 N., R. 4 W., on left bank immediately downstream from county road bridge, 1 mile upstream from Weaver Creek and  $\frac{5}{8}$  miles southwest of Union.

Drainage area.--1.43 sq mi.

Records available.--September 1954 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 28.76 ft above mean sea level (State Fisheries Department reference mark).

Extremes.--Maximum discharge during year, 60 cfs Jan. 16 (gage height, 1.76 ft); minimum, 10 cfs probably Oct. 28; minimum gage height, 1.38 ft probably Oct. 28 and Nov. 21-27, Dec. 5, 13, 15, 16, Sept. 30.

1954-58: Maximum discharge, 106 cfs Dec. 10, 1956 (gage height, 2.00 ft); minimum, that of probably Oct. 28, 1957; minimum gage height, 1.10 ft Sept. 13, 14, 1954.

Remarks.--Records good. Flow affected by springs. No regulation.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 15

Jan. 16 to Sept. 30

1.37	11
1.5	22
1.7	47

1.34	11
1.5	25
1.7	49

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	11.5	15.5	21	35	32	27	25	22	19	17	14
2	13	11.5	13	19.5	34	32	27	24	21	18	16	14
3	14.5	11.5	13	19	33	32	27	24	21	18	17	14
4	14.5	11.5	13	18	32	31	27	24	21	18	16	14
5	14.5	11.5	*13	16	32	*31	26	24	21	18	15	13
6	14.5	11.5	16	18	31	31	26	24	22	18	16	13
7	14.5	11.5	15.5	21	30	32	25	24	22	18	16	13.5
8	13.5	11.5	14.5	23	31	31	25	23	21	18	16	13.5
9	13.5	11.5	13.5	23	32	30	*26	23	21	18	15	13.5
10	13.5	13.5	13	24	30	28	27	23	22	18	15	13
11	13.5	14.5	13	24	30	28	25	24	21	18	15	13
12	16	21	13	22	33	28	25	24	21	18	15	13
13	14.5	22	13	19	30	28	25	24	21	19	15	13
14	12.5	16	13.5	30	31	27	26	23	20	*19	15	13
15	12.5	15.5	12.5	30	32	27	28	23	21	19	15	13
16	13	13.5	13.5	49	32	27	26	23	21	19	15	14
17	12.5	13.5	15.5	49	34	27	30	23	20	19	15	13
18	12.5	13.5	13.5	45	36	27	26	23	20	19	*15	13.5
19	12.5	13.5	17	36	33	28	33	23	20	19	15	13.5
20	12.5	13	18	32	32	28	30	23	20	19	15	13
21	11.5	13	19	27	32	30	27	*22	20	19	15	13
22	13	13	17	26	32	28	27	22	20	19	15	12
23	16	12.5	18	35	32	27	26	22	20	19	15	12
24	12.5	12.5	19.5	31	36	28	26	22	20	18	15	13
25	13	12.5	25	30	38	27	26	22	20	18	15	*13
26	11.5	12.5	19.5	28	35	27	25	21	20	17	15	12
27	11	13.5	23	30	34	27	24	21	20	18	15	11.5
28	11	13.5	26	*31	33	27	24	22	20	18	14	12
29	*11.5	12.5	27	33	-	27	24	21	19	18	14	11.5
30	13	13.5	25	36	-----	28	25	21	19	18	14	11
31	11.5	-----	23	36	-----	27	-----	22	-----	18	14	-----
Total	408.5	402.0	524.5	879.5	915	888	791	709	617	569	470	388.5
Mean	13.2	13.4	16.9	28.4	32.7	28.6	26.4	22.9	20.6	18.4	15.2	13.0
Ac-ft	6810	797	1,040	1,740	1,810	1,760	1,570	1,410	1,220	1,130	932	771

Calendar year 1957: Max 58 Min 11 Mean 20.3 Ac-ft 14,680  
 Water year 1957-58: Max 49 Min 11 Mean 20.7 Ac-ft 14,990

\* Discharge measurement made on this day.

630. Union River near Bremerton, Wash.

Location.--Lat 47°31'45", long 122°47'05", in SW 1/4 sec. 34, T. 24 N., R. 1 W., on right bank 400 ft upstream from highway bridge, 1 mile downstream from Casad dam, 1 1/4 miles upstream from Hazel Creek, and 7 miles west of Bremerton.

Drainage area.--3.16 sq mi.

Records available.--October 1945 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 395 ft (from topographic map). Prior to Jan. 30, 1952, at site 100 ft upstream at datum 398.0 ft above mean sea level (closed stadia traverse).

Average discharge.--13 years, 12.3 cfs (8,900 acre-ft per year).

Extremes.--Maximum discharge during year, 26 cfs Feb. 25 to Mar. 1; maximum gage height, 3.58 ft Oct. 1; minimum daily, 0.7 cfs Nov. 18.

1945-58: Maximum discharge, 476 cfs Feb. 22, 1949 (gage height, 3.85 ft, site and datum then in use), from rating curve extended above 160 cfs by logarithmic plotting; minimum daily, 0.2 cfs June 2, 1955.

Remarks.--Records fair. Regulation by dam 1 mile upstream. No diversion above station.

Revisions (water years).--WSP 1216: Drainage area. WSP 1286: 1948(M), 1949-50.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1-3)

2.4	0.4	2.8	11
2.5	1.4	3.1	30
2.7	6.5		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*22	1.5	7.6	1.6	11	24	8.8	8.0	10.5	9.8	13.5	5.8
2	19	1.5	*7.6	1.3	11	23	8	8.0	10.5	13.5	14	5.8
3	15	1.5	7.2	1.2	10.5	19	8.4	8.4	9.3	15.5	13	6.2
4	12.5	1.5	7.2	1.0	10.5	13.5	7.6	8.8	11	13	10.5	6.2
5	11.5	*1.4	7.2	.9	10.5	11.5	7.2	8.8	13	11.5	10.5	6.2
6	11	1.4	9.8	.8	11	12	6.5	8.8	13	14.5	9.8	6.2
7	8.8	1.4	9.8	2.6	11	11	*7.1	8.8	10.5	16.5	9.3	5.8
8	8.4	1.5	10.5	4.8	11	11	9.3	8.8	11.5	13	9.3	6.2
9	8.4	1.7	9.8	4.5	11.5	9.8	9.3	10.5	11	13	9.3	6.2
10	9.3	3	9.3	4.8	12	9.8	8.8	11.5	10.5	14.5	9.3	6.2
11	8.4	8	8.8	5.1	11.5	9.3	8.4	8.8	8.8	*15.5	9.3	6.2
12	8.0	9	6.8	6.2	14	8.8	8.8	8.0	8.4	14.5	8.4	6.2
13	7.2	10	3.4	*5.4	16	8.8	9.8	7.6	8.0	10.5	8.4	6.2
14	5.8	5	1.0	7.2	17	8.4	*9.7	8.8	8.0	13	*8.4	6.2
15	4.8	.8	.9	8.0	17	7.6	8.8	12	8.8	17	8.4	5.8
16	6.2	.8	.9	8.0	17	7.6	8.0	13	12.5	17	8.4	6.5
17	3.4	1.1	1.3	8.8	17.5	7.6	7.6	11.5	*16	17	8.8	6.5
18	2.4	*.7	1.3	7.6	19.5	8.0	6.5	11	16	17	8.8	6.2
19	1.6	10	2.0	6.8	21	8.0	6.8	11.5	16	14.5	8.8	6.2
20	2.2	*20	2.2	6.5	22	9.3	6.8	*12.5	14	13	8.8	5.8
21	2.5	9	2.8	6.2	*22	10.5	6.5	12.5	13.5	15.5	*8.8	5.8
22	3.5	8	2.8	6.2	23	10.5	6.2	13	13.5	17	8.8	*5.8
23	10	7	3.0	7.2	23	9.3	8.2	14	14.5	17	8.8	5.8
24	5	6	4.2	7.6	24	8.0	6.5	13	12	*17	8.8	6.2
25	3.5	5.8	6.5	7.2	26	8.0	7.2	12.5	8.8	17	8.8	6.2
26	2.5	5.8	5.4	6.8	25	8.0	6.8	13.5	8.8	16.5	8.8	5.8
27	2	5.8	4.2	7.6	25	8.0	7.2	16	9.3	14	8.4	5.8
28	2	5.8	3.9	8.8	26	9.8	7.6	12	8.4	16.5	7.2	5.8
29	2	5.4	3.2	9.3	-	12	8.0	9.8	8.4	17	6.5	5.8
30	1.5	5.4	2.4	11	-----	11	8.0	9.8	*8.4	16	5.8	5.8
31	1.5	-----	2.2	11	-----	9.3	-----	10.5	-----	13.5	5.8	-----
Total	211.9	145.8	155.2	182.0	476.5	332.4	232.4	331.7	332.9	460.8	281.5	181.4
Mean	6.84	4.86	5.01	5.87	17.0	10.7	7.75	10.7	11.1	14.9	9.08	6.05
Cfsm	2.16	1.54	1.59	1.86	5.38	3.39	2.45	3.39	3.51	4.72	2.87	1.91
In.	2.49	1.72	1.83	2.14	5.61	3.91	2.74	3.90	3.92	5.42	3.31	2.13
Ac-ft	420	289	308	361	945	659	461	658	660	914	558	360

Calendar year 1957: Max 22 Min 0.7 Mean 9.12 Cfsm 2.89 In. 39.18 Ac-ft 6,600  
Water year 1957-58: Max 26 Min 0.7 Mean 9.11 Cfsm 2.88 In. 39.12 Ac-ft 6,590

Peak discharge (base, 120 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 21 to Nov. 4, Nov. 8-24; discharge estimated on basis of recorded range in stage, 4 discharge measurements, reservoir discharge data, and records for station near Belfair.

## 635. Union River near Belfair, Wash.

Location.--Lat 47°28'20", long 122°49'40", in NE¼ sec. 20, T. 23 N., R. 1 W., on left bank at highway bridge 1½ miles north of Belfair and 2 miles upstream from mouth.

Drainage area.--19.2 sq mi.

Records available.--July 1947 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 45.6 ft above mean sea level (closed stadia traverse).

Average discharge.--11 years, 55.2 cfs (39,960 acre-ft per year).

Extremes.--Maximum discharge during year, 340 cfs probably Dec. 25 (gage height, 3.65 ft, from recorded range in stage); minimum, 13 cfs Sept. 7, 8 (gage height, 1.64 ft).  
1947-58: Maximum discharge, 1,610 cfs Feb. 22, 1949 (gage height, 7.81 ft), from rating curve extended above 700 cfs; minimum, 13 cfs Sept. 29, 1947, Sept. 11, 1953, Sept. 7, 8, 1958; minimum gage height, 1.06 ft Sept. 5, 6, 1949.

Remarks.--Records good except those for periods of no gage-height record, which are poor. City of Bremerton diverts annually about 4,000 acre-ft from a point about 5 miles above station for municipal use. The diversion varies from almost no flow in August and September to as much as 10 cfs during winter months. Regulation by dam 6 miles upstream.

Revisions.--WSP 1216: Drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 25

Dec. 26 to Sept. 30

1.7	15.5	2.4	90	1.6	12.5	2.4	93
1.9	28	3.0	203	1.8	24	3.0	203
2.1	49	3.5	307	2.0	43		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	23	35	65	89	75	45	38	32	24	18.5	14.5
2	25	25	*31	55	75	89	44	38	31	22	18	14.5
3	21	22	29	50	70	64	42	36	28	22	18.5	14.5
4	22	21	28	45	62	59	39	36	28	22	18	14.5
5	22	20	30	42	67	55	37	36	27	21	17.5	14
6	22	*20	41	40	64	53	37	36	28	20	17.5	14
7	21	20	38	40	65	59	*37	36	27	20	18	14
8	21	20	38	40	64	58	39	36	27	*21	17.5	14
9	21	20	35	48	104	54	39	35	27	21	17.5	14
10	20	25	33	65	104	52	44	35	28	20	17	14.5
11	21	35	31	75	82	50	40	35	28	20	17	15
12	23	55	30	100	133	47	39	36	29	20	*17.5	15
13	31	85	28	85	103	46	38	34	28	20	17	15
14	25	50	28	138	83	45	39	33	28	*20	17	15.5
15	22	45	26	185	76	44	51	34	27	20	16	16
16	22	37	26	193	89	42	51	34	*26	19	16	18
17	23	32	33	203	99	42	85	35	25	19	15.5	17
18	21	28	30	116	163	41	69	34	24	19	*15.5	17
19	20	26	35	90	126	46	85	34	24	20	15.5	17.5
20	20	25	40	*74	96	48	80	*31	24	19	15.5	17
21	19.5	25	55	61	*89	50	62	30	24	19	15	19
22	22	25	60	58	99	45	56	29	24	18.5	15	*17.5
23	50	25	70	100	86	43	52	29	24	18.5	14.5	17.5
24	35	25	140	152	135	44	47	29	26	*18.5	14.5	17.5
25	30	25	250	109	137	43	45	29	27	18	14	17.5
26	28	25	200	89	107	42	44	29	25	17.5	14	17
27	25	26	180	80	90	41	42	30	24	17.5	15	16
28	23	30	160	118	82	40	40	31	24	17.5	15	17
29	22	28	120	116	-	41	39	30	24	17.5	15	17
30	27	26	90	133	-----	47	38	30	24	18	14.5	16
31	25	-----	80	114	-----	46	-----	35	-----	19	14.5	-----
Total	753.5	892	2,050	2,879	2,639	1,531	1,445	1,031	792	608.5	501.5	477.5
Mean	24.3	29.7	66.1	92.9	94.2	49.4	48.2	35.3	26.4	19.6	16.2	15.9
Ac-ft	1,490	1,770	4,070	5,710	5,230	3,040	2,870	2,040	1,570	1,210	995	947

Calendar year 1957: Max 335 Min 19.5 Mean 41.9 Ac-ft 30,330  
Water year 1957-58: Max 250 Min 14 Mean 42.7 Ac-ft 30,940

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

\* Discharge measurement made on this day.  
Note.--No gage-height record Nov. 4, 5, Nov. 10 to Dec. 1, Dec. 18 to Jan. 13; discharge estimated on basis of recorded range in stage and records for nearby stations.

## 655. Gold Creek near Bremerton, Wash.

Location.--Lat 47°33'20", long 122°48'35", in NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 21, T. 24 N., R. 1 W., on right bank  $\frac{1}{4}$  miles upstream from mouth and 8 miles west of Bremerton.

Drainage area.--1.54 sq mi.

Records available.--October 1945 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 750.9 ft above mean sea level (closed stadia traverse).

Average discharge.--13 years, 6.06 cfs (4,390 acre-ft per year).

Extremes.--Maximum discharge during year, 77 cfs Dec. 25 (gage height, 2.32 ft); minimum, 0.1 cfs July 29, Sept. 9; minimum gage height, 0.72 ft Sept. 9.

1945-58: Maximum discharge, 203 cfs Feb. 22, 1949 (gage height, 3.27 ft); minimum, that of July 29, Sept. 9, 1958; minimum gage height, that of Sept. 9, 1958.

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

Revisions (water years).--WSP 1216: Drainage area. WSP 1286: 1947-49(M), 1950(P).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

0.8	0.2
.9	.6
1.1	3.2
1.5	17
2.0	45

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	1.1	3.3	10	14.5	9.8	4.4	4.4	2.0	*0.8	0.7	0.6
2	.4	1.1	3.2	8.8	12.5	8.8	4.4	4.1	1.7	.8	.5	.5
3	.4	1.1	*3.2	7.8	11.0	7.8	4.4	3.4	1.6	1.2	.5	.5
4	.4	1.1	3.1	6.7	9.8	*7.0	4.1	3.4	1.6	1.1	.6	.5
5	.4	*1.1	2.9	6.0	9.5	6.0	4.1	3.4	1.4	1.0	.5	.6
6	.4	1.0	3.4	5.6	9.2	6.0	4.1	3.2	1.2	.7	.5	1.0
7	.4	1.0	3.7	5.0	8.8	7.0	4.1	3.1	1.3	.6	.5	1.0
8	.4	1.0	4.1	5.0	9.5	7.0	*4.7	2.9	1.2	.5	.5	.6
9	.5	1.0	3.9	5.3	14	6.4	4.7	2.7	1.2	.6	.5	.3
10	.4	1.4	3.7	7.8	19	5.6	4.7	2.7	1.3	.8	.3	.4
11	.3	2.7	3.2	10	16	5.3	4.1	2.7	1.4	.7	.3	.5
12	.4	5.0	3.2	18	22	4.7	3.9	2.9	1.3	.6	.3	.5
13	.8	11	3.1	16	20	4.4	3.7	2.4	1.4	.6	.4	.5
14	.8	14.5	3.2	22	15	4.4	3.9	2.5	1.3	.7	.4	.6
15	.7	10	3.1	32	12.5	4.4	5.3	2.4	1.3	.7	.4	.8
16	.6	7.7	3.2	31	12.5	4.1	6.7	2.2	1.1	.6	.4	.8
17	.6	6.8	3.7	34	14	4.1	13.5	2.0	1.1	.6	.4	.6
18	.5	6.2	3.2	21	26	3.9	17	1.8	1.0	.6	.3	.5
19	.5	5.3	6.0	15	22	4.4	16	2.4	.9	.7	.3	.6
20	.5	4.8	8.1	*12.5	18	4.4	15	2.0	.8	.7	.4	.6
21	.5	4.4	12.5	10.5	13.5	4.7	13.5	2.0	.9	.7	*.4	.9
22	.5	4.1	14	9.5	13.5	4.4	12	2.0	.8	.6	.3	.6
23	1.8	3.7	16	13	12	3.9	10.5	*1.8	.8	.8	.4	*.5
24	3.1	3.5	22	24	17	4.4	8.8	1.8	.9	.7	.4	.6
25	2.5	3.5	41	18	20	4.4	8.1	1.7	1.2	.8	.4	1.0
26	2.4	3.0	36	14	16	4.1	7.8	1.7	1.2	.9	.2	.9
27	1.8	3.0	24	12.5	13.5	4.1	6.7	1.7	1.1	1.2	.5	.7
28	1.6	2.7	23	15	11.5	3.9	6.0	1.8	.8	.8	.4	.3
29	3.1	2.5	19.5	16	-	3.9	5.3	1.7	1.0	*.3	.5	.4
30	1.8	3.0	14.5	19	-----	4.7	5.0	1.8	.8	.4	.5	.4
31	1.5	-----	12	17.5	-----	4.4	-----	1.8	-----	.6	.5	-----
Total	30.0	118.3	309.0	448.5	410.8	162.4	216.5	76.4	35.6	22.4	13.3	18.3
Mean	0.97	3.94	9.97	14.5	14.7	5.24	7.22	2.46	1.19	0.72	0.43	0.61
Cfs/m	0.630	2.56	6.47	9.42	9.55	3.40	4.69	1.60	0.773	0.468	0.279	0.396
In.	0.72	0.86	7.46	10.83	9.92	3.92	5.23	1.85	0.86	0.54	0.32	0.44
Ac-ft	80	235	613	890	815	322	429	152	71	44	26	35

Calendar year 1957: Max 61 Min 0.3 Mean 4.75 Cfs/m 3.08 In. 41.90 Ac-ft 3,440  
 Water year 1957-58: Max 41 Min 0.3 Mean 5.10 Cfs/m 3.31 In. 44.95 Ac-ft 3,690

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

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 2-4, Nov. 15 to Dec. 2; discharge estimated on basis of recorded range in stage and records for nearby stations.

## 685. Dewatto Creek near Dewatto, Wash.

Location.--Lat 47°28'10", long 123°01'30", in SE $\frac{1}{4}$  sec. 23, T. 23 N., R. 3 W., on right bank at county road bridge  $\frac{1}{2}$  miles upstream from mouth and 2 miles northeast of Dewatto.

Drainage area.--17.5 sq mi.

Records available.--July 1947 to October 1954, May to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 55 ft (from topographic map). Prior to May 1958, at datum 0.92 ft higher.

Average discharge.--7 years, 70.0 cfs (50,680 acre-ft per year).

Extremes.--Maximum discharge during period May to September, 63 cfs May 29 (gage height, 1.61 ft); minimum, 12 cfs Sept. 8-10, 12-16; minimum gage height, 1.06 ft Aug. 30, Sept. 8-10, 12-16.

1947-54, 1958: Maximum discharge, 1,630 cfs Nov. 27, 1949 (gage height, 7.67 ft, present datum), from rating curve extended above 780 cfs; minimum, 9.6 cfs Sept. 22, 1950; minimum gage height, that of Aug. 30, Sept. 8-10, 12-16, 1958.

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

Revisions.--WSP 1246: Drainage area.

Rating table, May 22 to Sept. 30, 1958 (gage height, in feet, and discharge, in cubic feet per second)

1.0	9.0
1.2	23
1.5	52

Discharge, in cubic feet per second, May to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								-	31	20	15	14
2								-	29	19.5	14	14
3								-	28	19.5	15	14
4								-	27	18.5	15	14
5								-	26	18.5	14	13.5
6								-	26	18	13.5	13.5
7								-	26	*18	15.5	13
8								-	24	18.5	14	12
9								-	25	18.5	14	12
10								-	25	18	13.5	13
11								-	26	17	13.5	13
12								-	25	17	13.5	12
13								-	25	17	13.5	12
14								-	24	17	13.5	12
15								-	23	17	13.5	12
16								-	22	16	13.5	13.5
17								-	21	17	13.5	14
18								-	21	17	13.5	13.5
19								-	20	17	13.5	13.5
20								-	20	17	13.5	13.5
21								-	20	17	*13.5	15
22								*33	20	17	13.5	15
23								30	19.5	16	14	*14
24								29	22	15.5	13.5	14
25								28	23	15.5	13.5	15.5
26								26	22	15.5	13.5	15.5
27								25	21	15.5	14	14
28								28	20	15	15.5	14
29								*46	21	15	15	15
30								34	21	15.5	14	14
31								34	-----	15	15	-----
Total								-	703.5	528.5	430.5	408.0
Mean								-	23.4	17.0	13.9	13.6
Cfs/m								-	1.34	0.971	0.794	0.777
In.								-	1.50	1.12	0.91	0.87
Ac-ft								-	1,400	1,050	854	809

Calendar year	: Max	Min	Mean	Cfs/m	In.	Ac-ft
Water year	: Max	Min	Mean	Cfs/m	In.	Ac-ft

\* Discharge measurement made on this day.

## DOGFISH CREEK BASIN

700. Dogfish Creek near Poulsbo, Wash.

Location.--Lat 47°45'10", long 122°38'30", in SW $\frac{1}{4}$  sec. 11, T. 26 N., R. 1 E., on left bank half a mile upstream from mouth and 1 mile north of Poulsbo.

Drainage area.--6.77 sq mi.

Records available.--July 1947 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 20 ft (from topographic map). Prior to Nov. 2, 1950, at site 200 ft downstream at datum 1.75 ft lower.

Average discharge.--11 years, 8.98 cfs (6,500 acre-ft per year).

Extremes.--Maximum discharge during year, 128 cfs Dec. 25 (gage height, 3.56 ft), from rating curve extended above 60 cfs as explained below; minimum, 2.6 cfs July 26-28, Aug. 10, 15; minimum gage height, 0.95 ft July 26, 28, Aug. 15.

1947-58: Maximum discharge, 333 cfs Feb. 22, 1949 (gage height, 8.07 ft, present datum, from high-water mark on gage house), from rating curve extended above 50 cfs on basis of contracted-opening measurement of peak flow; minimum, 1.8 cfs Aug. 13, 1947, July 30, 1951.

Remarks.--Records good except those for periods of shifting control, which are fair. Small diversions for irrigation. Slight regulation at times from unknown source.

Revisions (water years).--WSP 1122: 1947(M). WSP 1346: 1948-50(P), 1953(M). WSP 1396: 1950(P).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 25

Dec. 25 to Sept. 30

1.3	3.1	0.9	2.4	1.6	15.5
1.5	6.5	1.0	3.0	2.0	30
1.9	20	1.3	7.9	2.7	66
2.5	52				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1	4.4	6.0	8.8	12	16	12	8.3	8.3	4.5	3.9	2.9	3.7	
2	10	5.5	7.0	12	15	11.5	8.0	8.3	4.1	3.8	3.0	3.8	
3	6.5	5.5	*6.0	11.5	15.5	10.5	8.3	8.1	3.8	3.7	3.2	3.8	
4	4.9	5.5	6.0	11	14	*9.9	7.7	7.1	3.9	3.4	3.1	3.7	
5	4.7	*5.5	6.2	11	16	11.5	7.5	6.0	3.8	3.4	3.1	3.7	
6	4.6	5.8	7.0	10.5	15	10.5	7.1	6.0	4.2	3.1	3.0	3.4	
7	4.4	5.5	6.5	10.5	15.5	17.5	7.1	5.8	4.4	*3.2	3.2	3.2	
8	4.6	5.3	5.1	15	17.5	13.5	*7.5	5.7	4.1	3.4	3.2	3.2	
9	4.4	5.3	5.5	16.5	32	11.5	7.5	5.7	4.2	3.5	3.1	3.4	
10	4.2	11.5	5.8	28	29	10	7.5	5.8	*4.4	3.2	3.0	3.4	
11	4.2	12	6.0	26	21	9.7	6.9	6.8	4.7	3.2	3.0	4.4	
12	4.6	11	5.8	31	54	9.2	6.8	6.4	4.5	3.5	3.1	4.1	
13	14	20	5.8	22	33	8.8	6.9	6.0	4.4	3.2	3.1	4.1	
14	15.5	13	5.8	44	21	8.6	7.7	5.5	4.4	3.1	3.0	4.2	
15	6.5	9.1	5.8	40	17.5	8.3	8.1	5.3	4.1	3.1	2.9	4.5	
16	6.5	7.6	8.5	65	23	8.1	10.5	4.7	3.9	3.0	3.0	4.5	
17	6.5	7.0	16	53	36	8.1	24	3.5	3.7	2.9	3.1	5.3	
18	5.5	9.7	13	28	56	7.9	13.5	3.5	3.7	3.1	3.2	5.0	
19	5.1	8.8	11	21	29	9.9	16.5	3.8	3.7	3.4	3.4	5.2	
20	4.9	7.3	10.5	18	19	9.7	15	3.9	3.7	3.4	3.2	5.0	
21	4.9	6.8	11.5	16	18.5	11	13.5	3.8	3.7	3.2	*3.1	5.0	
22	4.9	6.8	8.5	15	18.5	9.7	14	3.7	3.5	3.2	3.1	5.2	
23	24	6.5	22	*39	15	8.6	12.5	*3.8	3.4	3.2	*5.0		
24	12	6.5	26	35	46	13.5	11	3.9	4.7	2.9	3.2	4.7	
25	13	6.2	50	22	29	10.5	11	3.8	4.5	3.0	3.2	4.8	
26	8.5	6.2	36	17.5	19	9.2	10.5	3.7	4.2	2.9	*3.0	4.7	
27	6.8	6.2	30	20	15.5	8.6	9.9	3.7	4.4	2.8	3.2	4.7	
28	6.2	6.0	27	26	13.5	8.3	9.2	4.1	4.2	2.8	3.7	4.8	
29	5.8	5.8	21	32	-	8.3	8.8	4.1	4.5	2.9	3.7	4.8	
30	6.8	5.8	17.5	28	-	9.9	8.3	4.5	4.2	2.9	3.8	4.8	
31	6.5	-	13	19	-	8.8	-	5.3	-	3.0	3.7	-	
Total	225.4	229.7	414.6	755.5	670.5	313.1	302.1	160.6	125.5	99.3	98.7	130.1	
Mean	7.27	7.66	13.4	24.4	23.9	10.1	10.1	5.18	4.12	3.20	3.18	4.34	
Cfsm	1.07	1.13	1.98	3.60	3.53	1.49	1.49	0.785	0.609	0.473	0.470	0.641	
In.	1.24	1.26	2.26	4.15	3.68	1.72	1.66	0.88	0.68	0.55	0.54	0.71	
Ac-ft	447	456	822	1,500	1,350	621	599	319	245	197	196	258	
Calendar year 1957: Max	107			Min	3.0	Mean	9.05	Cfsm	1.34	In.	18.14	Ac-ft	6,550
Water year 1957-58: Max	65			Min	2.8	Mean	9.65	Cfsm	1.45	In.	19.35	Ac-ft	6,990

Peak discharge (base, 70 cfs).--Dec. 25 (7 p.m.) 128 cfs (3.56 ft); Jan. 16 (1:30 p.m.) 104 cfs (3.21 ft); Jan. 23 (9:30 p.m.) 72 cfs (2.78 ft); Feb. 12 (8 a.m.) 79 cfs (2.88 ft); Feb. 18 (2:30 a.m.) 72 cfs (2.78 ft).

\* Discharge measurement made on this day.

Note.--Shifting-control method used Oct. 1-14, Oct. 24 to Nov. 12, Mar. 8 to June 10, June 25 to Aug. 13.



735. Huge Creek near Wauna, Wash.

Location.--Lat 47°23'20", long 122°41'50", at north line sec. 20, T. 22 N., R. 1 E., on right bank at downstream side of bridge, an eighth of a mile upstream from mouth and  $2\frac{1}{2}$  miles west of Wauna.

Drainage area.--5.51 sq mi.

Records available.--July 1947 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 100 ft (from topographic map). Prior to June 26, 1951, at same site at datum 0.86 ft higher.

Average discharge.--11 years, 11.7 cfs (8,470 acre-ft per year).

Extremes.--Maximum discharge during year, 85 cfs Jan. 16 (gage height, 1.67 ft); minimum, 3.7 cfs June 17, 18, 22, Aug. 22; minimum gage height, 0.68 ft Oct. 1.  
1947-58: Maximum discharge, 391 cfs Feb. 9, 1951 (gage height, 3.64 ft); minimum, 3.2 cfs Sept. 1, 1950; minimum gage height, 0.49 ft May 18, 20, 21, 1956.

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

Revisions.--WSP 1216: Drainage area.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.4	5.0	7.1	11.5	30	15.5	8.4	8.1	5.2	*4.8	4.8	5.0
2	5.6	5.0	6.6	11.5	24	14.5	8.7	7.9	5.0	4.8	4.8	4.8
3	5.6	5.0	*5.8	10.5	21	13	8.4	7.9	4.8	4.8	5.0	4.8
4	5.6	*5.0	5.8	10	18.5	12.5	8.1	7.6	4.5	4.5	5.0	4.8
5	5.8	5.0	6.1	9.7	20	12.5	7.9	7.4	4.3	4.3	5.0	4.8
6	5.6	5.0	8.1	9.0	18.5	11.5	7.6	7.4	4.8	4.3	5.0	4.3
7	5.2	5.0	6.6	9.0	17.5	12.5	*7.6	7.4	4.8	4.3	5.0	4.1
8	5.4	5.0	6.6	9.7	16	12	7.9	7.1	4.5	4.5	5.0	4.1
9	5.2	5.0	5.8	10	20	11	7.9	7.1	4.5	4.8	4.5	4.3
10	5.2	5.2	5.8	13.5	21	10.5	9.0	7.1	4.5	4.5	4.5	4.5
11	5.0	6.1	5.6	15	18.5	10	7.9	7.1	4.5	4.5	4.3	4.5
12	5.4	10.5	5.6	20	28	10	7.9	7.6	4.5	4.3	4.5	4.5
13	7.6	11	5.6	*16	22	9.7	7.6	7.1	4.5	4.3	4.3	4.5
14	5.4	7.9	5.8	26	18.5	9.4	7.9	6.6	4.5	4.3	4.1	4.8
15	5.2	6.3	5.8	40	16	9.4	10	6.3	4.3	4.1	4.1	5.0
16	5.6	5.8	5.8	51	19	9.0	9.4	6.1	4.1	4.1	4.3	5.3
17	5.8	5.6	7.1	67	22	9.0	13.5	5.6	4.1	4.1	4.3	4.8
18	5.0	5.6	6.6	40	37	9.0	10.5	5.4	4.1	4.3	4.3	4.3
19	5.0	5.4	8.1	28	30	9.4	17	5.8	4.1	4.5	4.3	4.8
20	5.0	5.2	8.4	23	22	10	16	*5.6	4.1	4.5	4.1	4.5
21	5.0	5.2	10.5	19	*20	10	13	5.4	4.1	4.5	4.1	4.8
22	5.2	5.2	8.4	17	24	9.4	11	5.4	4.1	4.3	*4.0	*4.5
23	9.7	5.2	7.9	*22	20	8.7	11	5.4	4.1	4.5	4.3	4.8
24	5.6	5.2	11.5	30	35	9.4	10	5.4	5.0	4.1	4.3	4.5
25	5.8	5.2	21	26	40	9.0	10	5.2	5.2	4.1	4.5	4.5
26	5.2	5.0	25	22	31	8.7	10	5.2	5.2	4.1	4.5	4.3
27	5.0	5.2	20	22	22	8.4	9.4	5.2	5.2	4.3	4.8	4.3
28	4.8	5.8	22	33	18.5	8.1	9.0	5.6	5.0	4.5	4.8	4.3
29	4.5	5.2	19	34	-	8.4	8.7	5.0	5.0	4.8	5.0	4.3
30	6.1	5.4	15.5	43	-----	9.0	8.1	5.0	*5.0	5.0	4.8	4.3
31	5.2	-----	13	40	-----	8.4	-----	5.6	-----	5.0	5.0	-----
Total	172.7	172.2	302.5	738.4	650.0	317.9	289.4	196.5	137.6	137.6	141.3	137.1
Mean	5.57	5.74	9.76	23.8	23.2	10.3	9.65	6.34	4.59	4.44	4.56	4.57
Cfsm	1.01	1.04	1.77	4.32	4.21	1.87	1.75	1.15	0.833	0.806	0.828	0.829
In.	1.17	1.16	2.04	4.98	4.39	2.15	1.95	1.33	0.93	0.93	0.95	0.93
Ac-ft	343	342	600	1,460	1,290	631	574	390	273	273	280	272

Calendar year 1957: Max 78 Min 4.5 Mean 9.22 Cfsm 1.67 In. 22.73 Ac-ft 6,680  
Water year 1957-58: Max 67 Min 4.0 Mean 9.30 Cfsm 1.69 In. 22.91 Ac-ft 6,730

Peak discharge (base, 50 cfs).--Jan. 16 (11:30 p.m.) 85 cfs (1.67 ft).

\* Discharge measurement made on this day.

745. Mason Lake near Union, Wash.

Location.--Lat 47°19'15", long 122°57'15", in SE $\frac{1}{4}$  sec. 8, T. 21 N., R. 2 W., on right shore  $7\frac{1}{2}$  miles southeast of Union.

Drainage area.--20.2 sq mi.

Records available.--July 1951 to September 1958 (fragmentary).

Gage.--Staff gage read once daily. Altitude of gage is 190 ft (from topographic map).

Extremes.--Maximum gage height observed during year, 2.76 ft Jan. 31; minimum observed, 0.92 ft July 19-21, 27, 28, Aug. 3, 4.

1951-58: Maximum gage height observed, 5.02 ft Feb. 2, 1953; minimum observed, that of July 19-21, 27, 28, Aug. 3, 4, 1958.

High water during period Mar. 25 to Apr. 1, 1951, reached a stage of 7.5 ft, from high-water marks.

Remarks.--No diversion above station. Beaver dams at outlet cause some change in lake elevation.

Gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	1.56	-	-	-	2.66	-	-	1.32	1.00	-	-
2	-	1.54	-	-	-	2.62	-	1.70	1.30	.98	-	-
3	-	1.54	-	-	-	2.56	-	1.70	-	.98	0.92	-
4	1.31	1.49	-	-	-	-	-	1.70	-	.98	.92	-
5	-	1.52	-	-	-	-	1.70	1.68	-	.98	-	-
6	-	-	-	-	-	-	1.68	-	-	.98	-	-
7	-	-	-	-	2.50	-	1.64	-	1.24	.96	-	-
8	-	-	-	-	2.52	-	1.65	-	1.22	.94	-	-
9	1.50	-	1.50	-	2.54	2.62	-	-	1.20	-	-	-
10	-	-	-	-	2.56	2.68	-	1.58	-	-	-	-
11	-	-	-	-	-	-	-	1.56	-	-	-	-
12	-	-	-	-	-	-	1.60	-	-	.94	-	-
13	1.30	-	-	-	-	-	1.60	-	1.18	.94	-	-
14	-	-	-	-	2.50	-	1.58	-	1.16	-	-	-
15	-	-	-	-	2.52	-	-	-	1.16	-	-	-
16	-	-	-	-	2.52	1.98	-	-	1.14	-	-	-
17	-	-	-	-	2.54	1.96	-	-	1.14	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	2.00	-	1.10	.92	-	-
20	-	-	-	-	-	-	1.98	-	-	.92	-	-
21	-	-	-	-	2.70	-	1.96	-	-	.92	-	-
22	-	-	-	-	2.70	-	1.95	-	-	-	-	-
23	-	1.46	-	2.71	2.68	-	1.96	1.40	-	-	-	-
24	-	1.46	-	2.70	-	-	-	1.38	-	-	-	-
25	-	-	-	2.70	-	-	-	1.36	-	-	-	-
26	-	-	-	2.68	-	-	-	1.33	-	-	-	-
27	-	-	-	2.68	-	-	-	-	-	.92	-	-
28	-	-	2.30	2.66	2.70	-	-	-	1.00	.92	-	-
29	-	-	2.30	-	-	-	-	-	1.00	-	-	1.20
30	-	-	2.32	2.74	-	-	-	-	.98	-	-	1.18
31	-	-	-	2.76	-	-	-	1.32	-	-	-	-

Note.--Gage read once daily at various times.

765. Goldsborough Creek near Shelton, Wash.

Location.--Lat 47°12'50", long 123°10'50", in SW $\frac{1}{4}$  sec. 15, T. 20 N., R. 4 W., on right bank  $3\frac{1}{2}$  miles west of Shelton and  $5\frac{1}{2}$  miles upstream from mouth.

Drainage area.--42 sq mi, approximately.

Records available.--June 1951 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 205 ft (from topographic map).

Average discharge.--7 years, 113 cfs (81,810 acre-ft per year).

Extremes.--Maximum discharge during year, 552 cfs Jan. 17 (gage height, 6.13 ft); minimum, 16 cfs Aug. 25, 27, Sept. 8, 9, 12-14; minimum gage height, 2.25 ft Aug. 25, 27, 1951-58; Maximum discharge, 1,090 cfs Jan. 31, 1953; maximum gage height, 8.51 ft Dec. 10, 1956; minimum discharge, 16 cfs Sept. 23, 1951, Sept. 22-25, 1952, Aug. 25, 27, Sept. 8, 9, 12-14, 1958.

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

Revisions.--WSP 1246: Drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

2.27	16	4.0	215
2.7	50	5.0	370
3.2	101	6.1	547

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	38	90	155	303	204	92	82	46	30	20	22
2	20	35	92	134	230	184	92	80	43	*29	20	20
3	20	32	80	125	196	167	91	77	46	28	20	20
4	20	32	74	114	173	155	93	74	41	26	20	20
5	21	32	71	101	173	156	86	72	40	26	20	17.5
6	22	31	127	94	162	146	81	71	43	25	20	17.5
7	21	30	146	89	160	155	78	68	46	24	20	17
8	21	29	172	91	155	158	78	67	40	25	20	16
9	22	29	134	101	185	140	*79	64	38	25	20	16
10	21	29	*109	120	197	125	105	62	38	24	20	17
11	20	43	99	125	164	*116	88	62	38	24	20	17
12	26	135	92	190	264	109	80	60	36	24	20	16
13	59	222	81	154	254	105	77	58	35	23	20	16
14	58	252	93	283	206	101	79	57	35	23	20	17
15	29	164	80	496	200	98	126	55	34	22	19	19
16	27	103	84	514	239	97	146	53	33	22	19	22
17	29	84	111	544	263	96	172	51	32	22	20	27
18	27	77	120	397	380	92	167	50	31	22	*19	23
19	25	74	164	266	380	99	212	53	31	22	19	29
20	25	64	224	188	293	105	332	51	31	22	19	24
21	24	58	270	160	230	107	286	*50	30	22	19	24
22	27	54	252	161	251	105	196	48	29	22	19	21
23	102	51	186	174	233	98	150	48	28	22	19	20
24	86	50	224	254	303	117	132	50	36	21	17.5	20
25	59	50	295	233	365	108	121	48	40	20	17	27
26	50	54	455	200	362	100	109	45	35	20	17	*23
27	40	53	423	186	301	96	102	44	33	21	18.5	21
28	*36	81	399	*245	240	92	97	46	32	21	20	20
29	34	63	348	266	-	90	91	47	30	20	22	20
30	48	63	284	381	-----	99	87	45	30	21	21	19
31	45	-----	197	373	-----	94	-----	47	-----	20	20	-----
Total	1,064	2,112	5,576	6,916	6,862	3,714	3,725	1,785	1,080	718	605.0	608.0
Mean	34.3	70.4	180	223	245	120	124	57.6	36.0	23.2	19.5	20.3
Cfs/m	0.817	1.68	4.29	5.31	5.83	2.86	2.95	1.37	0.857	0.552	0.464	0.483
In.	0.94	1.87	4.94	6.12	6.08	3.29	3.30	1.58	0.96	0.64	0.54	0.54
Ac-ft	2,110	4,190	11,060	13,720	13,610	7,370	7,390	3,540	2,140	1,420	1,200	1,210

Calendar year 1957: Max 598 Min 20 Mean 89.2 Cfs/m 2.12 In. 28.83 Ac-ft 64,560  
Water year 1957-58: Max 544 Min 16 Mean 95.2 Cfs/m 2.27 In. 30.80 Ac-ft 68,960

Peak discharge (base, 400 cfs).--Dec. 26 (12 m.) 468 cfs (5.61 ft); Jan. 17 (6:30 a.m.) 552 cfs (6.13 ft).

\* Discharge measurement made on this day.



790. Deschutes River near Rainier, Wash.

Location.--Lat 46°51'10", long 122°40'00", in SW $\frac{1}{4}$  sec. 22, T. 16 N., R. 1 E., on right bank 75 ft upstream from county road crossing, half a mile downstream from mouth of outlet from Reichel Lake and  $2\frac{1}{2}$  miles southeast of Rainier.

Drainage area.--89.8 sq mi.

Records available.--June 1949 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 350 ft (from topographic map).

Average discharge.--9 years, 278 cfs (201,300 acre-ft per year).

Extremes.--Maximum discharge during year, 2,620 cfs Dec. 26 (gage height, 9.12 ft); minimum, 26 cfs Sept. 7 (gage height, 2.66 ft).  
1949-58: Maximum discharge, 5,620 cfs Dec. 12, 1955 (gage height, 13.06 ft); minimum, 21 cfs Sept. 20, 1952; minimum gage height, 2.64 ft Sept. 20, Oct. 17, 1952.

Remarks.--Records excellent except those for period of no gage-height record, which are good. Probably some small diversion for irrigation and domestic use. No regulation.

Revisions.--WSP 1246: Drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

2.6	24	3.3	115	5.0	600
2.8	38	3.6	178	7.0	1,430
3.0	61	4.0	279	9.0	2,550

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	31	66	178	388	742	479	176	180	87	54	34	30
2	31	58	369	326	566	398	180	171	89	52	33	29
3	31	54	251	279	459	350	176	158	85	49	34	29
4	31	55	196	246	385	302	160	148	76	48	33	28
5	32	53	160	228	341	294	150	141	71	47	32	28
6	36	48	217	220	311	268	146	135	85	47	32	28
7	36	45	395	218	285	257	137	129	106	43	32	28
8	42	45	317	245	273	254	131	123	85	43	32	28
9	*37	42	248	341	429	235	131	117	76	43	32	28
10	34	44	203	411	870	223	160	111	71	43	32	28
11	32	254	174	469	*604	208	167	109	71	41	31	*28
12	31	332	152	566	532	196	154	107	68	41	31	28
13	33	596	133	486	686	187	150	*104	*64	39	31	29
14	43	580	152	423	628	176	154	102	63	39	30	29
15	39	398	154	786	519	167	196	98	61	38	29	30
16	37	a240	148	738	519	167	569	96	58	37	29	32
17	42	a170	247	934	516	*167	746	92	57	37	29	35
18	42	a150	556	660	529	169	762	91	54	37	29	35
19	36	a140	642	482	459	165	590	92	54	37	29	38
20	35	a130	842	*375	391	165	1,080	89	53	37	29	43
21	34	a120	874	308	338	196	994	83	52	37	28	35
22	56	a110	746	265	350	208	726	82	50	37	28	35
23	227	a105	597	388	385	201	525	83	49	36	28	34
24	187	a95	862	1,500	872	246	407	87	61	35	28	32
25	125	a90	1,170	925	1,280	259	357	87	73	35	26	31
26	104	*85	2,100	610	1,130	254	305	80	60	34	28	31
27	85	78	1,060	499	842	233	268	76	57	34	28	31
28	70	102	982	849	618	213	238	82	60	34	28	30
29	60	96	942	846	-	194	215	80	57	*34	29	30
30	66	89	642	1,050	-----	104	196	76	55	34	31	31
31	75	-----	482	1,040	-----	176	-----	91	-----	34	31	-----
Total	1,800	4,460	16,191	17,103	15,849	7,201	10,346	3,300	2,008	1,236	938	931
Mean	58.1	149	522	552	566	232	345	106	66.9	39.9	30.3	31.0
Cfsm	0.647	1.66	5.81	6.15	6.30	2.58	3.84	1.18	0.745	0.444	0.337	0.345
In.	0.75	1.85	6.71	7.08	6.56	2.98	4.28	1.37	0.83	0.51	0.39	0.39
Ac-ft	3,570	8,850	32,110	33,920	31,440	14,280	20,520	6,550	3,980	2,450	1,860	1,850

Calendar year 1957: Max 3,160 Min 29 Mean 222 Cfsm 2.47 In. 33.53 Ac-ft 160,500  
Water year 1957-58: Max 2,100 Min 28 Mean 223 Cfsm 2.48 In. 33.70 Ac-ft 161,400

Peak discharge (base, 2,000 cfs).--Dec. 26 (4 a.m.) 2,620 cfs (9.12 ft).

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of recorded range in stage and records for nearby stations.

## DESCHUTES RIVER BASIN

800. Deschutes River near Olympia, Wash.

Location.--Lat 47°00'05", long 122°53'40", in NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 35, T. 18 N., R. 2 W., on left bank  $1\frac{1}{2}$  miles upstream from mouth and  $2\frac{1}{2}$  miles south of Olympia.

Drainage area.--160 sq mi.

Records available.--April 1945 to November 1954, June 1957 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 95 ft (from topographic map). Prior to Oct. 14, 1947, water-stage recorder on right bank at same datum.

Average discharge.--10 years, 408 cfs (295,400 acre-ft per year).

Extremes.--Maximum discharge during year, 2,720 cfs Dec. 26 (gage height, 6.94 ft, from high-water mark in well); minimum, 76 cfs Aug. 26, Sept. 7 (gage height, 1.97 ft). 1945-54, 1957-58: Maximum discharge, 4,780 cfs Dec. 10, 1953 (gage height, 7.96 ft); maximum gage height, 8.00 ft Feb. 18, 1949; minimum discharge, 66 cfs Oct. 11, 1945; minimum gage height, 1.90 ft Oct. 18, Nov. 11, 1952.

Remarks.--Records excellent. Small diversions above station for irrigation. No regulation.

Revisions.--WSP 1246: Drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 26		Dec. 27 to Sept. 30	
2.1	86	1.9	65
2.4	152	2.3	137
3.0	330	3.0	330
3.5	525		
4.0	750		
5.0	1,270	Note.--Same as preceding table above 3.0 ft.	
6.5	2,310		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	92	145	195	610	1,080	780	300	330	200	133	94	85
2	92	138	445	530	845	569	304	314	187	151	92	83
3	90	130	381	469	710	592	287	300	177	126	94	85
4	90	124	306	421	620	543	285	288	170	124	94	83
5	100	128	271	365	556	521	275	*275	162	122	92	82
6	108	121	268	365	505	469	263	268	170	120	90	78
7	102	117	469	354	473	465	257	257	194	118	90	78
8	110	113	449	354	449	473	249	249	179	116	90	*78
9	108	110	381	453	489	445	246	240	*167	116	90	78
10	102	110	323	513	935	417	260	232	162	116	90	78
11	100	186	292	602	*860	397	288	226	162	114	88	78
12	98	362	268	678	723	381	275	221	160	112	88	80
13	100	615	247	674	810	362	266	215	158	110	88	78
14	*98	714	244	*592	840	348	272	210	153	112	87	82
15	108	570	265	840	728	337	314	205	151	*108	85	83
16	106	401	247	970	700	330	598	200	146	108	85	88
17	110	298	274	1,110	705	*320	780	189	142	108	85	92
18	115	256	570	955	723	314	1,040	187	137	106	85	92
19	113	238	696	718	678	310	780	192	135	105	85	92
20	110	218	1,010	584	592	307	1,200	184	135	105	82	95
21	110	200	1,020	501	525	320	1,270	182	133	106	82	97
22	117	181	1,020	441	534	344	1,020	179	131	105	82	90
23	234	170	805	417	588	337	785	177	123	101	80	90
24	298	160	905	1,470	846	362	638	182	144	101	80	87
25	232	152	1,260	1,390	1,600	397	566	177	158	97	78	85
26	195	152	2,150	915	1,550	393	497	174	151	97	77	83
27	173	*152	1,550	736	1,220	377	457	170	142	95	85	82
28	155	165	1,160	335	955	351	413	174	139	94	83	80
29	145	177	1,264	1,080	-	327	377	172	139	94	88	82
30	142	165	955	1,280	-----	320	351	174	137	94	88	82
31	147	-----	736	1,350	-----	307	-----	177	-----	94	87	-----
Total	4,000	6,769	20,412	22,692	21,839	12,635	14,923	6,718	4,650	3,388	2,684	2,526
Mean	129	226	658	732	780	408	497	217	155	109	86.6	84.2
Cfsm	0.806	1.41	4.11	4.58	4.88	2.55	3.11	1.36	0.969	0.681	0.541	0.526
In.	0.95	1.57	4.74	5.27	5.06	2.94	3.47	1.56	1.08	0.79	0.52	0.58
Ac-ft	7,930	13,430	40,490	45,010	43,320	25,060	29,600	13,320	9,220	6,720	5,320	5,010

Calendar year 1957: Max - Min - Mean - Cfsm - In. - Ac-ft -  
 Water year 1957-58: Max 2,150 Min 77 Mean 338 Cfsm 2.11 In. 28.64 Ac-ft 244,400

Peak discharge (base, 2,000 cfs).--Dec. 26 (time unknown) 2,720 cfs (6.94 ft).

\* Discharge measurement made on this day.

## 810. Woodland Creek near Olympia, Wash.

Location.--Lat 47°04'20", long 122°49'00" in SW $\frac{1}{4}$  sec. 4, T. 18 N., R. 1 W., on left bank  $\frac{1}{2}$  miles upstream from mouth and 4.4 miles northeast of Olympia.

Drainage area.--24.3 sq mi.

Records available.--June 1949 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 25 ft (from topographic map).

Average discharge.--9 years, 28.2 cfs (20,420 acre-ft per year).

Extremes.--Maximum discharge during year, 54 cfs Mar. 21 (gage height, 2.22 ft), regulation caused by highway construction above station; minimum, 8.0 cfs Sept. 29 (gage height, 1.07 ft).  
1949-58: Maximum discharge, 204 cfs Feb. 9, 1951 (gage height, 4.46 ft); minimum, 8.0 cfs Dec. 17-21, 1952, Sept. 29, 1958; minimum gage height, that of Sept. 29, 1958.

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

Revisions.--WSP 1216: Drainage area.

Rating tables, water year 1957-58, except period of shifting control (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 24

Jan. 25 to Sept. 30

1.16	11	1.09	8.7
1.3	15.5	1.3	16.5
2.1	47	2.1	50

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	12.5	14.5	20	31	36	26	25	18	14	9.8	8.7
2	12	12	13.5	19.5	29	35	26	24	17.5	13.5	9.8	9.0
3	12	12	12	19.5	27	35	26	24	17	13.5	9.8	9.4
4	12	12.5	12	19	25	33	25	24	17	13	9.8	8.7
5	13	12	12	18.5	24	32	24	*23	16.5	13	9.0	8.7
6	14	12.5	17	18	23	31	24	23	17	13	9.0	8.7
7	14	12	14.5	17.5	24	31	24	22	17	12.5	9.0	8.7
8	13	12	13.5	18.5	28	32	24	22	16.5	12.5	9.0	*8.7
9	12	11.5	12.5	19.5	31	31	24	22	*16	12.5	9.0	9.0
10	12	12	12.5	20	32	31	26	22	16	12.5	9.0	9.0
11	12	14	12.5	19.5	31	30	24	21	16	11.5	9.0	9.4
12	12	16.5	12	22	29	30	24	21	16	11.5	9.0	9.0
13	13	22	12	19.5	29	29	24	20	16	12	9.0	9.0
14	*13	18	12.5	*24	*30	29	24	20	16	12	9.0	9.0
15	13	14	11.5	28	29	29	27	20	15.5	*12	9.0	9.0
16	13	13	11	29	30	29	28	20	15.5	12	9.0	9.4
17	14	12	13.5	32	31	*28	30	19.5	15	11.5	9.0	9.4
18	13.5	12.5	13	26	32	27	28	19.5	14.5	11.5	9.0	9.4
19	13.5	12.5	15.5	24	30	27	32	20	14.5	11.5	9.0	9.8
20	13	12.5	15	23	29	27	31	19.5	14.5	11.5	9.0	9.8
21	13	13	20	23	29	47	30	19	14.5	11	9.0	9.4
22	16	12.5	19.5	25	36	31	29	18	14.5	10.5	9.0	9.0
23	19.5	12	16	35	36	28	28	18.5	14	10.5	9.0	9.0
24	15	12	18	45	42	30	28	18	16	10.5	9.0	9.4
25	14.5	12	29	40	46	28	28	18	15	10.5	8.7	9.8
26	13	12	32	35	43	27	27	17.5	14.5	10.5	8.7	9.4
27	13	*11.5	24	36	40	26	27	17.5	14.5	10.5	8.7	9.4
28	13	12	27	28	37	26	26	19	14.5	10	9.0	9.4
29	13	11	24	29	-	26	26	18	14.5	9.8	9.0	9.4
30	15.5	11	22	31	-----	26	25	18	14.5	10	8.7	9.4
31	13	-----	21	32	-----	26	-----	18.5	-----	10	8.7	-----
Total	415.5	387.0	515.0	790.0	883	933	795	631.5	468.5	360.8	280.7	275.4
Mean	13.4	12.9	16.5	25.5	31.5	30.1	26.5	20.4	15.6	11.6	9.05	9.18
Cfs/m	0.551	0.531	0.683	1.05	1.30	1.24	1.09	0.840	0.842	0.477	0.372	0.378
In.	0.62	0.59	0.79	1.21	1.35	1.43	1.22	0.97	0.72	0.55	0.43	0.42
Ac-ft	824	768	1,020	1,570	1,750	1,850	1,580	1,250	929	716	557	546

Calendar year 1957: Max 58 Min 11 Mean 22.8 Cfs/m 0.938 In. 12.73 Ac-ft 16,480  
Water year 1957-58: Max 47 Min 8.7 Mean 18.5 Cfs/m 0.761 In. 10.32 Ac-ft 13,360

Peak discharge (base, 110 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-13, Jan. 21 to Feb. 13; discharge estimated on basis of recorded range in stage and records for Deschutes River near Rainier. Shifting-control method used Oct. 23 to Dec. 31.

## 815. McAllister Springs near Olympia, Wash.

Location.--Lat 47°01'45", long 122°43'25", in SE $\frac{1}{4}$  sec. 19, T. 18 N., R. 1 E., on right side of stilling pool just above city of Olympia control gates, 8 miles east of Olympia.

Records available.--March 1951 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is about mean sea level. Auxiliary water-stage recorder 30 ft downstream from base gage.

Average discharge.--7 years, 24.9 cfs (18,030 acre-ft per year), unadjusted.

Extremes.--Maximum daily discharge during year, 25 cfs Feb. 28; minimum daily, 13.5 cfs Sept. 16.  
1951-58: Maximum daily discharge, 46 cfs Jan. 26, 1956; minimum daily, that of Sept. 16, 1958.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Diversion by city of Olympia for municipal use. Gage pool regulated by low dam and flashboards. Backwater from tides occurs daily.

Discharge, in cubic feet per second, water year October 1957 to September 1958												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23		20	21	19.5	24	18.5	21	17.5	17	16	16
2	22		21	20	17	23	18	*20	18	16	15	16.5
3	22		*20	20	16	22	17	20	18.5	17	16	17
4	23		19	19	15.5	e21	17	19.5	18	17	16	a17
5	24		18.5	18.5	16	e20	18	19	18.5	18	16	a17
6	23		17	17.5	16	e19	17.5	20	19	17.5	16	a16
7	24		18.5	17.5	17	e19	19	21	21	17.5	17	a16
8			18.5	17.5	16.5	18.5	20	22	20	18.5	17.5	*16
9			18	18	17	20	22	22	*21	18.5	17	17.5
10			18.5	17	18.5	21	23	23	22	18.5	17	16.5
11			18.5	18.5	21	22	24	22	22	18	17	15.5
12			19	18.5	19	23	24	22	22	19	16	15
13			19.5	19.5	21	24	24	23	22	19	15	14.5
14	(*)		19.5	19	*20	*24	24	22	21	17.5	15	14.5
15			18.5	19	20	23	23	22	21	*15.5	14.5	15
16		a22	18	18.5	19.5	23	23	21	19.5	15	14.5	13.5
17			16.5	*19.5	18	22	21	21	17.5	15	14.5	14
18			16	20	17.5	23	22	19.5	17	15	15	16.5
19			15	19	18.5	22	21	20	17	16.5	15	16.5
20	a23		15	18.5	19.5	21	22	20	18	16	15	17.5
21		(*)	14.5	20	21	21	22	19.5	18	16	15	18
22			16	19.5	20	21	22	19.5	17.5	16	16.5	18
23			16.5	18	21	21	23	20	18	15.5	16	17.5
24			17	18.5	19.5	21	24	21	18	15.5	15.5	17.5
25			17.5	20	20	22	24	21	19	15	15.5	17
26			18.5	20	23	23	24	20	18.5	16.5	15.5	17.5
27			18.5	21	24	23	24	19.5	19	15	15.5	17.5
28			18.5	21	25	24	24	21	19	14.5	16	18
29			20	20	-	24	23	19.5	18	14	15.5	17
30			22	19.5	-	22	22	19	17.5	15.5	16	17.5
31			21	21	-	20	-	18	-	15.5	16.5	-
Total	713	659	564.5	594.5	535.5	676.5	650.0	638.0	573.0	511.0	488.5	493.5
Mean	23.0	22.0	18.2	19.2	19.1	21.8	21.7	20.6	19.1	16.5	15.8	16.4
Ac-ft	1,410	1,310	1,120	1,180	1,060	1,340	1,290	1,270	1,140	1,010	969	979

## Adjusted for diversion by city of Olympia

	26.9	25.6	21.7	22.8	22.5	25.0	24.9	25.2	24.1	23.2	22.0	20.1
Mean Cfs												
In. Ac-ft												

## Observed

Calendar year 1957: Max	36	Min	14.5	Mean	25.4	Ac-ft	18,410
Water year 1957-58: Max	25	Min	13.5	Mean	19.4	Ac-ft	14,080

## Adjusted

Calendar year 1957: Mean	-	Cfs	In.	Ac-ft
Water year 1957-58: Mean	23.2	Cfs	In.	Ac-ft

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of 2 discharge measurements and pumping record.

e Rating not defined for conditions of dislodged weir; discharge estimated.



## 825. Nisqually River near National, Wash.

Location.--Lat 46°45'10", long 122°05'00", in SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 29, T. 15 N., R. 6 E., on right bank 100 ft downstream from railroad bridge, 1 mile west of National, 2 $\frac{1}{2}$  miles west of Ashford, and 3 miles upstream from Mineral Creek.

Drainage area.--133 sq mi.

Records available.--May 1942 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,450 ft (from river-profile map).

Average discharge.--16 years, 766 cfs (554,600 acre-ft per year).

Extremes.--Maximum discharge during year, 2,790 cfs probably Apr. 20 (gage height, 6.53 ft, from recorded range in stage); minimum, 176 cfs Oct. 20, 21 (gage height, 3.27 ft).

1942-58: Maximum discharge, 9,560 cfs Dec. 11, 1946 (gage height, 10.34 ft); minimum, 108 cfs Dec. 1, 3, 1952 (gage height, 2.76 ft).

Remarks.--Records good except those for period of shifting control, which are fair, or those for periods of no gage-height record, which are poor. Small diversion for domestic use. Slight regulation at low water by powerplant of Mount Rainier National Park on Paradise River.

Revisions (water years).--WSP 1286: 1947(P), 1950(M).

Rating table, water year 1957-58, except period of shifting control (gage height, in feet, and discharge, in cubic feet per second)

3.2	155	4.5	760
3.6	285	5.0	1,160
4.0	460	6.5	2,750

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	493	396	570	630	854	1,000	400	720	966	666	690	564
2	430	329	559	588	781	900	400	760	918	666	678	425
3	293	293	515	537	746	800	390	800	846	725	678	361
4	236	274	482	504	690	720	380	790	878	788	594	353
5	218	257	450	471	672	680	350	760	1,190	816	618	415
6	209	250	690	488	636	630	350	750	1,360	894	704	504
7	*229	236	1,020	515	630	600	360	*800	1,230	958	767	570
8	209	222	1,090	548	746	560	350	982	974	942	832	636
9	209	215	910	570	830	520	400	1,010	910	850	774	548
10	212	229	774	654	966	490	500	1,050	910	823	760	*537
11	215	450	711	666	862	470	550	1,050	*894	854	788	435
12	209	588	666	816	*990	450	650	830	846	830	697	341
13	365	1,010	594	746	1,150	420	800	678	802	788	648	349
14	317	926	576	809	1,050	400	800	642	846	795	660	450
15	246	*718	515	1,450	950	390	800	718	878	816	666	450
16	215	576	482	1,540	1,000	380	1,000	910	1,010	838	684	455
17	229	493	510	2,120	1,050	370	1,200	1,050	1,220	942	612	482
18	191	450	520	1,830	1,200	360	1,300	1,230	1,260	990	642	374
19	185	410	684	1,250	1,400	350	1,800	1,430	1,380	966	648	520
20	179	365	*974	1,010	1,300	350	2,600	1,340	1,510	846	672	383
21	179	333	918	846	1,250	400	2,000	1,430	1,430	781	718	383
22	271	325	753	739	1,350	450	1,500	1,550	1,330	816	718	341
23	450	333	666	774	1,400	400	1,300	1,720	1,210	802	718	313
24	440	329	774	1,210	1,600	450	1,100	1,660	1,190	809	720	309
25	504	333	1,010	1,010	1,750	*488	950	1,830	1,050	816	700	435
26	420	333	1,510	878	1,650	471	800	1,690	950	830	640	378
27	329	321	1,170	802	1,350	450	720	1,540	990	846	550	406
28	289	325	1,120	1,070	1,150	435	660	1,340	823	*902	526	476
29	289	293	982	1,050	-	420	620	1,110	725	820	582	476
30	618	357	816	1,070	-	410	670	974	690	767	515	435
31	450	-	704	998	-	400	-	990	-	704	548	-
Total	9,328	11,973	23,715	27,989	30,003	15,614	25,700	34,134	31,216	25,666	20,747	13,104
Mean	301	399	765	903	1,072	504	857	1,101	1,041	828	669	437
Cfs/m	2.26	3.00	5.75	6.79	8.06	3.79	6.44	8.28	7.83	6.23	5.03	3.29
In.	2.61	3.35	6.63	7.83	8.39	4.37	7.19	9.54	8.73	7.18	5.80	3.66
Ac-ft	18,500	23,750	47,040	56,520	59,510	39,970	50,980	67,700	61,920	50,910	41,150	25,990

Peak discharge (base, 2,600 cfs).--Probably Apr. 20 (time unknown) 2,790 cfs (6.53 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Feb. 13 to Mar. 24, Mar. 31 to May 7, July 29, Aug. 24-27; discharge estimated on basis of recorded range in stage, 1 discharge measurement, and records for nearby stations. Shifting-control method used June 16 to Sept. 30.

## 830. Mineral Creek near Mineral, Wash.

Location.--Lat 46°44'20", long 122°08'40", in SW $\frac{1}{4}$  sec. 35, T. 15 N., R. 5 E., on right bank three-eighths of a mile downstream from railroad bridge, 1 mile upstream from mouth, and 2 $\frac{1}{2}$  miles northeast of Mineral.

Drainage area.--74.3 sq mi.

Records available.--June 1942 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,340 ft (from topographic map).

Average discharge.--16 years, 375 cfs (271,500 acre-ft per year).

Extremes.--Maximum discharge during year, 2,400 cfs Dec. 25 (gage height, 6.00 ft); maximum gage height, 6.04 ft Apr. 19 (from high-water mark in well); minimum discharge, 25 cfs Sept. 7, 8 (gage height, 1.86 ft).

1942-58: Maximum discharge, 7,600 cfs Dec. 9, 1953 (gage height, 9.02 ft), from rating curve extended above 3,400 cfs; minimum, 19.5 cfs Sept. 22, 23, Oct. 6-10, 13, 14, 1952; minimum gage height, 1.40 ft Sept. 22, 23, 1950.

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

Revisions.--WSP 1246: Drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 25				Dec. 26 to Sept. 30			
2.0	30	3.5	376	1.8	18	3.5	406
2.3	57	4.0	640	2.1	54	4.0	625
2.6	102	5.0	1,430	2.5	122	5.0	1,270
3.0	193			3.0	246	6.0	2,340

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	113	374	486	851	529	235	410	118	97	42	34
2	36	104	452	426	724	453	254	380	147	89	41	31
3	38	94	376	350	645	395	249	350	154	84	42	31
4	36	86	325	320	570	360	235	325	122	82	41	29
5	40	79	289	301	558	360	222	305	106	84	39	28
6	45	73	550	304	508	*326	214	290	149	74	36	27
7	64	72	767	307	499	317	214	275	156	71	37	26
8	64	65	706	339	570	295	219	260	129	70	37	25
9	50	62	553	370	741	280	224	*248	122	67	35	28
10	*42	57	452	457	1,020	263	370	238	131	65	34	*29
11	38	302	390	529	833	252	353	232	133	64	34	28
12	37	580	350	655	977	232	328	206	144	62	34	28
13	47	1,170	305	580	*1,140	222	326	180	131	61	33	28
14	50	788	317	759	938	214	330	166	122	60	33	36
15	43	*536	274	1,720	857	203	435	166	116	57	33	41
16	41	399	256	1,490	1,000	198	918	168	106	54	31	40
17	52	325	317	1,840	944	198	1,500	168	*102	54	31	70
18	48	278	390	1,270	1,000	198	870	168	98	51	31	58
19	44	246	1,120	931	887	193	2,200	173	95	51	30	68
20	40	214	1,530	746	752	205	2,100	158	91	50	29	60
21	39	188	1,210	580	655	268	1,600	149	89	50	29	53
22	138	174	830	478	736	289	1,300	144	86	49	29	55
23	287	166	676	542	752	277	1,050	161	84	*49	29	58
24	185	156	940	1,270	863	336	900	158	104	48	28	53
25	164	154	1,390	991	984	326	770	178	102	46	28	51
26	152	161	1,670	785	905	314	670	137	93	46	28	49
27	129	152	1,130	702	763	289	600	122	108	46	30	44
28	112	161	1,130	1,070	635	271	530	118	116	45	33	40
29	102	144	970	1,050	-	260	480	108	106	45	40	40
30	147	149	730	1,100	263	263	450	102	100	44	55	39
31	129	---	575	1,070	---	246	---	114	---	44	40	---
Total	2,453	7,260	21,344	23,818	22,287	8,833	20,144	6,357	3,460	1,859	1,072	1,225
Mean	79.1	242	689	768	796	285	671	205	115	60.0	34.6	40.8
Cfsm	1.06	3.26	9.27	10.3	10.7	3.84	9.03	2.76	1.55	0.808	0.466	0.549
In.	1.23	3.63	10.68	11.92	11.16	4.42	10.08	3.18	1.73	0.83	0.54	0.61
Ac-ft	4,870	14,400	42,340	47,240	44,210	17,520	39,960	12,610	6,860	3,690	2,130	2,430

Calendar year 1957: Max 3,090 Min 29 Mean 309 Cfsm 4.05 In. 55.07 Ac-ft 218,300  
 Water year 1957-58: Max 2,200 Min 25 Mean 329 Cfsm 4.43 In. 60.11 Ac-ft 238,300

Peak discharge (base, 2,700 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--No gage-height record Apr. 17 to May 9; discharge estimated on basis of high-water mark in well, 1 discharge measurement, weather records, and records for nearby stations.

## 850. Alder Reservoir at Alder, Wash.

Location.--Lat 46°48'05", long 122°18'30", in NW $\frac{1}{4}$  sec. 9, T. 15 N., R. 4 E., near left end of Alder Dam on Nisqually River, 1 mile west of Alder and 4 $\frac{1}{2}$  miles upstream from Mashel River.

Drainage area.--286 sq mi.

Records available.--November 1944 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 7.61 ft below mean sea level, datum of 1929 (levels by city of Tacoma). Prior to July 8, 1946, staff gage at same site and datum.

Extremes.--Maximum contents during year, 231,400 acre-ft July 19, 20 (gage height, 1,206.88 ft); minimum, 131,500 acre-ft Dec. 18, 19 (gage height, 1,167.90 ft).  
1944-58: Maximum contents, 232,000 acre-ft Aug. 2, 1955 (gage height, 1,207.06 ft); minimum observed since reservoir first filled, 93,990 acre-ft Feb. 16, 1949 (gage height, 1,147.61 ft).

Remarks.--Reservoir is formed by concrete arch dam; storage began Nov. 7 1944; dam completed in 1945. Capacity, 99,170 acre-ft between gage heights 1,114 (lower limit of operating range) and 1,177 ft (gage height of spillway). Water can be controlled by spillway gates to gage height 1,207 ft, usable capacity, 179,600 acre-ft. Dead storage, 52,100 acre-ft. Figures given herein represent total contents. Water is used by city of Tacoma for power production.

Capacity table, water year 1957-58 (gage height, in feet, and contents, in acre-feet)  
(Prepared by city of Tacoma from project surveys and maps)

1,160	115,700	1,190	183,300
1,170	135,800	1,200	210,800
1,180	158,300	1,207	231,700

Total contents, in acre-feet, at 12 p.m., water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	210,300	157,100	134,300	173,000	214,900	222,600	192,300	222,600	220,200	225,300	230,500	216,100
2	209,700	154,800	135,000	172,300	215,200	222,300	190,700	222,600	219,600	225,000	230,500	213,700
3	208,800	153,400	135,200	171,500	214,900	222,000	189,400	222,000	218,700	225,000	230,200	211,400
4	207,600	151,700	134,500	170,500	214,600	221,400	187,900	222,000	217,800	226,200	229,900	208,500
5	206,800	149,900	133,700	169,700	213,700	221,700	186,600	221,400	218,100	226,200	229,300	205,600
6	205,600	148,300	133,700	169,000	212,900	220,500	185,800	220,800	218,700	227,700	228,600	203,900
7	204,400	146,500	135,400	167,700	212,000	219,600	185,100	220,200	220,800	228,000	228,300	202,700
8	203,300	144,600	137,700	166,700	211,700	219,000	184,800	219,900	221,700	228,600	228,000	201,000
9	202,100	143,100	138,300	166,000	213,200	219,600	184,300	219,600	220,500	228,600	227,700	198,600
10	201,000	141,800	138,100	166,000	215,200	218,400	184,800	219,600	219,300	229,000	227,700	196,300
11	199,200	141,500	137,500	166,700	216,100	217,200	185,100	219,600	218,100	229,300	227,700	193,900
12	196,600	142,600	136,600	168,200	217,500	215,800	185,100	218,700	216,900	229,300	227,100	191,300
13	195,000	146,900	135,800	169,000	220,200	214,300	185,600	216,900	217,200	229,900	226,800	188,900
14	192,900	149,400	135,200	170,500	221,700	212,900	185,600	215,500	217,500	229,900	226,200	187,100
15	190,200	150,100	134,300	176,600	222,900	211,700	186,300	214,000	218,400	230,200	225,900	184,800
16	187,900	149,900	132,900	181,500	225,000	210,600	188,900	212,900	219,000	230,500	225,600	184,000
17	185,300	149,400	132,100	189,400	224,700	209,100	192,600	212,600	219,600	230,800	225,000	183,300
18	182,800	148,300	131,500	191,500	223,800	207,600	195,500	213,400	220,500	230,800	223,900	181,200
19	180,200	147,400	133,300	193,100	222,600	205,900	199,800	214,000	221,400	230,800	222,600	181,200
20	177,600	145,800	137,200	194,200	222,300	204,200	209,700	214,300	222,300	230,800	222,300	180,000
21	175,100	144,000	140,400	193,900	222,600	203,300	217,200	214,000	223,200	230,500	222,300	178,200
22	173,000	142,200	142,900	193,400	223,800	202,700	221,700	214,800	224,100	230,500	222,300	176,100
23	172,000	140,700	142,900	193,400	225,300	202,100	223,800	215,200	224,700	230,800	222,900	173,500
24	170,800	139,200	145,600	197,200	225,900	201,800	225,000	216,100	225,600	230,800	223,500	171,000
25	169,500	137,200	152,900	200,100	225,000	200,700	225,600	217,500	226,200	230,500	223,500	169,200
26	168,200	136,400	160,600	201,800	223,500	199,800	226,200	218,100	225,900	230,500	223,200	167,500
27	166,500	135,400	164,500	202,700	222,300	198,600	226,500	218,400	226,200	230,800	222,300	166,200
28	164,500	135,000	168,700	205,900	222,600	197,500	225,900	217,800	226,200	230,800	220,200	165,000
29	162,300	134,100	171,500	208,200	-	196,300	224,700	217,500	226,200	231,100	218,700	162,500
30	161,100	133,500	172,800	210,600	-	195,500	223,500	218,100	225,600	230,500	217,600	159,900
31	159,000	-	172,800	213,200	-	193,900	-	218,700	-	230,600	216,600	-
(†)	1,180.34	1,168.93	1,185.89	1,200.84	1,203.97	1,194.07	1,204.32	1,202.72	1,204.99	1,206.67	1,201.97	1,180.74
(‡)	-51,600	-25,500	+39,300	+40,400	+9,400	-28,700	+29,600	-4,800	+6,900	+5,200	-14,200	-56,700

Calendar year 1957..... ‡ -35,700

Water year 1957-58..... ‡ -50,700

† Gage height, in feet, at end of month.

‡ Change in contents, in acre-feet.

855. La Grande Reservoir at La Grande, Wash.

Location.--Lat 46°49'20", long 122°18'10", in SE $\frac{1}{4}$  sec. 33, T. 16 N., R. 4 E., at left end of gate control structure, 1 mile southeast of La Grande and  $\frac{1}{2}$  miles downstream from Alder Dam.

Drainage area.--289 sq mi.

Records available.--January 1945 to September 1958. January 1945 to September 1951 included in combined adjustment to monthly flow of Nisqually River at La Grande. Month-end contents January 1945 to September 1950 published in WSP 1316.

Gage.--Water-stage recorder. Datum of gage is 7.61 ft below mean sea level, datum of 1929 (levels by city of Tacoma). Prior to June 12, 1947, month-end gage heights furnished by city of Tacoma from temporary gages in pool above dam.

Extremes.--Maximum contents during year, 2,616 acre-ft Oct. 8 (gage height, 933.8 ft); minimum, 1,956 acre-ft Nov. 1 (gage height, 919.7 ft).  
1947-58: Maximum contents, 2,760 acre-ft May 14, 1950 (gage height, 936.4 ft); minimum observed (since reservoir first filled), 1,370 acre-ft Aug. 24, 1956 (gage height, 900.0 ft).

Remarks.--Reservoir is formed by concrete dam completed in 1944; storage began February 1945. Usable storage, 1,050 acre-ft between gage heights 910 (minimum practical head) and 935 ft (normal reservoir level). Dead storage, 1,630 acre-ft. Figures given herein represent total contents. Water used by city of Tacoma for power production.

Month-end gage height and total contents, water year October 1957 to September 1958

Month	Gage height (feet) <sup>†</sup>	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	931.2	2,478	-
Oct. 31.....	932.1	2,525	+47
Nov. 30.....	928.1	2,323	-202
Dec. 31.....	931.9	2,515	+192
Calendar year 1957.....	-	-	+62
Jan. 31.....	928.8	2,357	-158
Feb. 28.....	929.3	2,382	+25
Mar. 31.....	930.7	2,453	+71
Apr. 30.....	931.5	2,494	+41
May 31.....	930.6	2,448	-46
June 30.....	930.4	2,437	-11
July 31.....	927.4	2,289	-148
Aug. 31.....	928.0	2,318	+29
Sept. 30.....	932.7	2,557	+239
Water year 1957-58.....	-	-	+79

<sup>†</sup> Gage height at 12 p.m.

## 865. Nisqually River at La Grande, Wash.

Location.--Lat 46°50'30", long 122°19'35", in SE $\frac{1}{4}$  sec. 29, T. 16 N., R. 4 E., on right bank half a mile downstream from city of Tacoma powerplant, half a mile northwest of La Grande, and three-quarters of a mile upstream from Mashel River.

Drainage area.--292 sq mi.

Records available.--September 1906 to October 1911, November and December 1911 (gage heights only), October 1919 to September 1931, October 1943 to September 1958. Monthly discharge only for some periods, published in WSP 1316. Published as "below Little Nisqually River, near La Grande" 1906-10, and as "near La Grande" 1912, 1919-31.

Gage.--Water-stage recorder. Altitude of gage is 490 ft (from river-profile map). Sept. 5, 1906, to Sept. 8, 1910, staff gage just below site of diversion dam 4 miles upstream at different datum. January 1910 to December 1911 staff gage at La Grande powerhouse site; datum at mean sea level (levels by city of Tacoma). January 1920 to September 1931 water-stage recorder at approximately same site as that of first staff gage at datum 921.17 ft above mean sea level (levels by city of Tacoma). Dec. 7, 1943, to Feb. 8, 1945, water-stage recorder 600 ft downstream from La Grande powerhouse at different datum.

Average discharge.--32 years, 1,376 cfs (996,200 acre-ft per year), adjusted for storage.

Extremes.--Maximum discharge during year, 6,900 cfs Feb. 17 (gage height, 6.36 ft); minimum, 326 cfs July 15 (gage height, 2.71 ft); minimum daily, 432 cfs July 4.

1906-11, 1919-31, 1943-58: Maximum discharge, 19,600 cfs Dec. 12, 1921 (includes flow in power conduit); practically no flow on many occasions at site near La Grande as result of regulation.

Remarks.--Records excellent. Flow regulated by city of Tacoma powerplant at La Grande since December 1943, by Alder Reservoir (see p. 69) since November 1944, and by La Grande Reservoir (see preceding page) since February 1945. All diversions returned to river above gage.

Revisions (water years).--WSP 1216: Drainage area. WSP 1316: 1927-28(M), 1949-50.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	870	1,740	1,000	1,530	1,870	1,880	1,690	1,830	626	870	931	892
2	870	1,680	1,190	1,680	2,100	1,740	1,640	1,300	1,550	850	967	1,520
3	880	1,190	1,140	1,710	2,250	1,490	1,590	1,680	1,530	670	863	1,560
4	860	1,300	1,580	1,640	1,900	1,550	1,580	1,420	1,570	432	960	1,720
5	860	1,240	1,440	1,600	2,150	1,330	1,410	1,550	1,350	622	996	1,720
6	850	1,280	1,660	1,510	2,100	1,700	1,110	1,620	1,470	450	990	1,540
7	850	1,220	1,570	1,850	2,130	1,770	1,140	1,610	564	729	972	1,160
8	850	1,240	1,140	1,830	1,970	1,280	904	1,610	714	980	1,680	
9	850	1,180	1,560	1,820	1,890	754	1,030	1,600	1,610	701	919	1,650
10	850	1,110	1,690	1,750	2,170	1,540	907	1,490	1,780	656	834	1,720
11	1,430	1,230	1,730	1,640	2,170	1,530	1,040	1,580	1,820	748	932	1,770
12	1,590	1,240	1,700	1,540	2,120	1,490	997	1,660	1,700	831	946	1,750
13	1,370	1,340	1,600	1,680	2,270	1,510	945	1,800	942	532	956	1,650
14	1,640	1,080	1,510	1,650	2,150	1,490	1,290	1,850	810	746	929	1,450
15	1,670	1,520	1,460	1,790	2,060	1,400	1,180	1,740	678	620	924	1,760
16	1,710	1,450	1,560	1,850	1,990	1,280	1,280	1,780	876	780	890	976
17	1,680	1,450	1,650	1,830	3,120	1,550	1,730	1,500	*912	807	864	1,020
18	1,680	*1,490	1,660	2,270	4,020	1,480	1,790	1,060	935	863	1,210	1,020
19	1,640	1,390	1,620	2,140	3,700	*1,610	1,700	1,560	1,020	989	1,240	1,280
20	1,510	1,530	1,630	1,870	2,820	1,530	1,630	1,510	986	796	917	1,080
21	1,700	1,530	1,520	1,910	1,950	1,530	1,850	1,790	945	972	832	1,330
22	1,700	1,600	1,610	1,970	1,880	1,330	1,850	1,640	975	832	768	1,610
23	1,710	1,400	1,610	2,170	2,110	1,240	1,870	1,710	856	771	606	1,730
24	1,670	1,550	1,400	2,150	3,370	1,400	1,870	1,590	983	844	468	1,510
25	1,660	1,430	666	1,720	5,000	1,700	1,820	1,440	1,050	920	396	1,380
26	1,520	1,210	1,480	1,580	4,680	1,490	1,520	1,620	1,020	921	925	1,330
27	1,430	1,020	*1,650	1,800	3,420	1,720	1,320	1,700	1,080	890	1,210	1,070
28	1,600	850	1,530	1,870	2,180	1,530	1,770	1,800	946	950	1,450	1,010
29	1,640	984	1,850	2,320	---	1,490	1,870	1,530	926	964	1,520	1,730
30	1,660	1,010	1,690	2,320	---	1,340	1,860	896	990	*932	1,370	1,830
31	1,760	---	1,850	1,900	---	1,730	---	1,030	---	788	905	---
Total	42,590	39,490	46,396	56,890	71,540	46,404	44,184	48,666	33,304	24,170	30,250	43,448
Mean	1,374	1,316	1,497	1,835	2,255	1,497	1,473	1,570	1,110	780	976	1,448
Ac-ft	84,480	78,330	92,035	112,800	141,900	92,040	87,640	96,530	66,060	47,940	60,000	86,130
(t)	-51,550	-25,700	+39,490	+40,240	+9,420	-28,630	+29,640	-4,850	+6,890	+5,050	-14,170	-56,460

Adjusted for change in reservoir contents

	Mean	536	884	2,139	2,488	2,724	1,031	1,971	1,491	1,226	862	745	499
Cfsm	1.84	3.03	7.33	8.52	9.33	3.53	6.75	5.11	4.20	2.95	2.55	1.71	
In.	2.11	3.38	8.44	9.82	9.72	4.07	7.53	5.89	4.68	3.40	2.94	1.91	
Ac-ft	32,950	52,630	131,500	153,000	151,300	63,410	117,300	91,680	72,950	42,990	45,830	29,720	

Observed

Calendar year 1957: Max	2,400	Min	392	Mean	1,331	Ac-ft	963,500
Water year 1957-58: Max	5,000	Min	432	Mean	1,445	Ac-ft	1,046,000

Adjusted

Calendar year 1957: Mean	1,282	Cfsm	4.39	In.	59.58	Ac-ft	927,900
Water year 1957-58: Mean	1,375	Cfsm	4.71	In.	63.89	Ac-ft	995,400

\* Discharge measurement made on this day.

† Change in contents, in acre-feet, in Alder and La Grande Reservoirs.

880. Ohop Creek near Eatonville, Wash.

Location.--Lat 46°52'50", long 122°16'45", in SE $\frac{1}{4}$  sec. 10, T. 16 N., R. 4 E., on left bank 400 ft downstream from Lynch Creek, 600 ft downstream from outlet of Ohop Lake, and 1 mile northwest of Eatonville.

Drainage area.--35.5 sq mi.

Records available.--June 1927 to September 1932, September 1941 to September 1958.

Gage.--Water-stage recorder and concrete control. Datum of gage is 519.8 ft above mean sea level (stadia traverse). June 3, 1927, to Sept. 30, 1932, water-stage recorder at same site at datum 2.79 ft higher. Sept. 6, 1941, to Mar. 17, 1942, staff gage at present site and datum.

Average discharge.--22 years, 66.5 cfs (48,140 acre-ft per year).

Extremes.--Maximum discharge during year, 339 cfs Dec. 26 (gage height, 3.34 ft); minimum, 5.2 cfs Aug. 17-19, 24-27 (gage height, 1.58 ft).

1927-32, 1941-58: Maximum discharge, 1,740 cfs Dec. 9, 1953; maximum gage height, 5.97 ft Dec. 11, 1946; minimum discharge, 2.3 cfs Aug. 22, 23, 1944; minimum gage height observed, 1.12 ft Sept. 26, 1947.

Remarks.--Records excellent except those below 20 cfs, which are good. Possible small diversions for domestic use. Natural regulation in Ohop Lake.

Revisions (water years).--WSP 1246: Drainage area. WSP 1286: 1946.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

1.58	5.2	2.3	71
1.7	10	2.6	125
1.8	16.5	3.0	225
2.0	33	3.5	400

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.2	37	97	121	129	149	47	76	46	32	7.5	7.5
2	12	31	129	105	115	129	56	67	36	29	7.1	7.1
3	11.5	28	98	92	101	111	50	61	36	27	6.7	6.7
4	*10	26	82	82	91	98	47	56	31	25	6.7	6.7
5	12	23	73	74	84	91	44	50	27	23	6.7	6.7
6	13	22	81	68	77	*82	41	48	39	21	6.3	6.3
7	12.5	20	96	61	73	76	38	*46	50	21	6.7	6.3
8	12.5	18.5	82	60	68	73	36	43	40	19.5	6.7	5.9
9	12	17	71	61	67	68	38	41	34	18.5	6.7	*6.3
10	11.5	17	63	63	127	63	88	39	33	17	6.7	6.7
11	11.5	79	56	60	113	60	77	37	*33	16	5.9	6.3
12	10.5	71	52	60	*132	56	65	36	37	14.5	6.7	5.9
13	12	120	47	57	219	52	58	33	33	14	5.9	5.9
14	14.5	184	46	54	189	48	60	31	31	13	5.9	8.3
15	12.5	143	44	67	171	47	108	28	28	12	5.9	10
16	12	105	41	63	187	47	228	26	26	11.5	5.9	9.2
17	21	84	41	231	169	56	200	26	24	*11.5	5.5	12
18	16.5	*73	52	176	152	64	174	24	23	11.5	5.2	9.7
19	14.5	82	77	140	132	70	154	24	22	11.5	5.5	21
20	14	68	*92	119	113	65	184	23	21	10.5	5.9	14.5
21	13	57	121	103	100	67	246	22	20	10	5.9	12
22	25	50	125	91	121	61	240	22	18.5	10	5.9	14
23	54	46	134	104	169	57	203	22	18	9.2	5.5	15
24	39	41	186	222	229	73	171	24	42	8.8	5.5	13
25	36	38	235	192	240	73	152	23	47	8.8	5.2	12
26	34	34	300	161	243	65	166	22	36	8.8	5.2	12
27	30	33	234	140	211	60	134	21	40	8.8	5.5	10
28	26	50	231	176	181	54	115	21	44	8.3	5.9	9.7
29	25	46	214	157	-	50	100	20	39	7.5	7.9	9.7
30	51	47	174	154	-	49	85	21	36	7.5	7.9	9.2
31	42	140	143	143	47	47	34	34	34	7.5	7.1	-
Total	630.2	1,690.5	3,514	3,457	4,003	2,161	3,405	1,067	990.5	454.2	193.6	285.6
Mean	20.3	56.4	113	112	143	69.7	114	34.4	33.0	14.7	6.25	9.52
Cfsm	0.572	1.59	3.18	3.15	4.03	1.96	3.21	0.969	0.930	0.414	0.176	0.268
In.	0.66	1.77	3.68	3.62	4.19	2.26	3.57	1.12	1.04	0.48	0.20	0.30
Ac-ft	1,250	3,350	6,970	6,860	7,940	4,290	6,750	2,120	1,960	901	384	566

Calendar year 1957: Max 450 Min 5.9 Mean 62.2 Cfsm 1.75 In. 23.79 Ac-ft 45,030  
 Water year 1957-58: Max 300 Min 5.2 Mean 59.9 Cfsm 1.69 In. 22.89 Ac-ft 43,340

Peak discharge (base, 270 cfs).--Dec. 26 (4:30 to 5:30 a.m.) 339 cfs (3.34 ft); Feb. 24 (3:15 p.m.) 336 cfs (3.33 ft); Apr. 16 (4 a.m.) 290 cfs (3.20 ft).

\* Discharge measurement made on this day.

## 885. Nisqually River near McKenna, Wash.

Location.--Lat 46°51'20", long 122°27'10", in SE $\frac{1}{4}$  sec. 20, T. 16 N., R. 3 E., on right bank 800 ft downstream from Elbow Creek, three-quarters of a mile upstream from Tanwax Creek, and 7.4 miles southeast of McKenna.

Drainage area.--445 sq mi.

Records available.--August 1941 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 373.6 ft above mean sea level (stadia traverse). Prior to Sept. 30, 1941, staff gage at same site and datum.

Average discharge.--17 years, 1,777 cfs (1,286,000 acre-ft per year).

Extremes.--Maximum discharge during year, 5,820 cfs Feb. 26 (gage height, 7.67 ft); minimum, 346 cfs July 9, 10 (gage height, 3.24 ft); minimum daily, 424 cfs Aug. 24, 1941-58; Maximum discharge, 20,800 cfs Dec. 12, 1955 (gage height, 12.06 ft); minimum, 85 cfs Oct. 19, 1945 (gage height, 2.57 ft); minimum daily, 176 cfs Jan. 30, 1945.

Remarks.--Records excellent. No diversion above station. Yelm Irrigation District Canal, abandoned in 1950, diverted water 3.6 miles above station. Major portion of flow regulated by Alder Reservoir and city of Tacoma powerplant at La Grande.

Revisions (water years).--WSP 1286: 1947.

Rating table, water year 1957-58. (gage height, in feet, and discharge, in cubic feet per second)

3.4	415
4.0	750
5.0	1,590
6.0	2,730
7.6	5,850

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	869	1,870	1,520	2,100	2,440	2,520	1,890	2,190	818	1,060	871	847
2	876	1,790	1,900	2,120	2,680	2,280	1,850	1,540	1,580	1,000	944	1,430
3	890	1,350	1,660	2,100	2,770	1,970	1,790	1,940	1,700	800	868	1,570
4	876	1,440	1,730	1,910	2,320	1,910	1,780	1,850	1,650	498	938	1,690
5	876	1,350	1,790	1,960	2,500	1,640	1,540	1,750	1,510	624	977	1,730
6	890	1,330	1,980	1,670	2,470	1,990	1,330	1,810	1,630	440	1,010	1,550
7	898	1,320	2,240	2,170	2,440	2,010	1,270	1,780	874	772	964	1,150
8	*890	1,310	1,770	2,120	2,280	1,560	1,080	1,780	922	728	975	1,630
9	876	1,250	1,850	2,180	2,240	1,060	1,190	1,750	1,620	724	894	1,600
10	869	1,180	2,010	2,160	2,670	1,600	1,250	1,650	1,920	690	820	1,660
11	1,320	1,600	1,980	2,040	2,720	1,730	1,360	1,740	1,960	768	881	*1,690
12	1,560	1,700	1,930	1,980	*2,750	1,650	1,300	*1,790	*1,880	820	915	1,710
13	1,350	2,130	1,800	*2,080	3,340	1,670	1,180	2,040	1,220	620	866	1,580
14	1,580	2,040	1,720	1,980	3,040	1,620	1,970	1,550	1,970	948	894	1,450
15	1,650	2,140	1,680	2,180	2,610	1,560	1,570	1,870	784	658	860	1,680
16	1,700	1,900	1,790	2,320	2,670	1,450	2,260	1,890	953	714	878	1,050
17	1,700	1,630	1,790	3,180	3,510	1,730	2,930	1,620	994	786	834	1,020
18	1,690	1,740	1,990	3,200	4,410	1,690	2,900	1,200	1,000	856	1,120	975
19	1,670	1,630	2,050	2,790	3,990	*1,750	2,500	1,650	1,100	948	1,250	1,210
20	1,560	1,730	2,220	2,380	3,310	1,720	2,740	1,590	1,070	822	952	1,140
21	1,650	1,740	2,260	2,330	2,550	1,770	3,350	1,880	1,010	960	800	1,260
22	1,750	1,730	2,140	2,250	2,250	1,620	3,190	1,740	890	864	758	1,590
23	2,010	1,520	2,240	2,580	2,770	1,470	2,860	1,800	1,000	756	588	1,710
24	1,880	1,700	2,320	3,470	3,900	1,720	2,620	1,720	1,110	*804	424	1,510
25	1,610	1,540	2,020	2,710	5,540	2,030	2,550	1,500	1,500	898	896	1,390
26	1,640	*1,350	3,370	2,300	5,390	1,760	2,280	1,680	1,140	896	958	1,310
27	1,560	2,110	2,870	2,330	4,300	1,940	1,940	1,800	1,250	828	1,100	1,120
28	1,650	1,130	2,670	2,700	2,930	1,730	2,160	1,840	1,210	956	1,430	1,020
29	1,680	1,110	2,760	3,100	-	1,690	2,250	1,690	1,130	963	1,520	1,570
30	1,840	1,210	2,420	3,190	-----	1,540	2,190	966	1,180	970	1,410	1,820
31	1,970	-----	2,450	2,700	-----	1,860	-----	1,090	-----	793	976	-----
Total	44,030	46,570	64,920	74,280	87,370	54,250	60,650	52,906	37,353	24,706	29,561	42,662
Mean	1,420	1,552	2,094	2,396	2,812	1,750	2,022	1,707	1,245	797	954	1,422
Ac-ft	87,330	92,370	128,800	147,300	173,300	107,600	120,300	104,900	74,090	49,000	58,630	84,620
Calendar year 1957: Max	4,610				Min 348		Mean 1,586	Ac-ft 1,148,000				
Water year 1957-58: Max	5,540				Min 424		Mean 1,697	Ac-ft 1,228,000				

\* Discharge measurement made on this day.

## 895. Nisqually River at McKenna, Wash.

Location.--Lat 46°56'00", long 122°33'35", in SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 28, T. 17 N., R. 2 E., on left bank 100 ft downstream from highway bridge at McKenna and 9.0 miles downstream from Tanwax Creek.

Drainage area.--517 sq mi.

Records available.--October 1947 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 275 ft (from topographic map).

Extremes.--Maximum discharge during year, 4,980 cfs Feb. 26 (gage height, 6.06 ft); minimum, 62 cfs July 5, Aug. 17 (gage height, 1.17 ft).  
1947-58: Maximum discharge, 20,200 cfs Dec. 12, 1955 (gage height, 12.38 ft), from rating curve extended above 9,900 cfs; minimum, 42 cfs Sept. 19, 1948 (gage height, 0.98 ft).

Remarks.--Records excellent. Major portion of flow regulated by Alder Reservoir and city of Tacoma powerplants at Alder Dam and at La Grande. Centralia power canal diverts 4.4 miles above station; water is returned to river at powerplant 4.5 miles below station.

Revisions.--WSP 1246: Drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

1.4	99	3.0	940
1.7	174	4.0	2,010
2.0	285	5.0	3,340
2.5	550	6.0	4,880

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	312	1,320	922	1,700	2,000	2,030	1,410	1,730	480	578	349	390
2	326	1,200	1,410	1,650	2,180	1,840	1,400	1,090	908	509	442	824
3	340	874	1,250	1,670	2,250	1,600	1,310	1,400	1,210	420	418	1,230
4	350	874	1,810	1,440	1,830	1,430	1,320	1,170	1,180	125	430	1,170
5	308	795	1,850	1,490	1,970	1,160	1,090	1,270	1,040	172	466	1,130
6	321	754	1,970	1,180	1,980	1,520	964	1,310	1,110	146	484	1,030
7	335	760	2,060	1,690	1,930	1,490	846	1,290	575	252	482	725
8	345	742	1,370	1,630	1,770	1,160	596	1,270	383	270	477	1,040
9	*330	662	1,180	1,710	1,700	755	707	1,260	1,010	260	426	1,070
10	350	601	1,430	1,710	2,320	983	774	1,140	1,400	262	350	1,110
11	589	1,010	1,420	1,550	2,240	1,290	852	1,230	1,460	274	385	1,150
12	994	1,150	1,380	1,510	*2,240	1,170	820	*1,300	1,370	283	440	1,150
13	824	1,570	1,250	1,650	2,870	*1,200	701	1,540	*895	278	401	1,040
14	1,020	1,570	1,160	1,430	2,590	1,140	1,020	1,450	496	198	409	884
15	1,090	1,600	1,120	1,600	2,330	1,060	1,110	1,400	388	258	438	*1,100
16	1,110	1,400	1,220	1,740	2,390	972	1,710	1,360	425	209	462	625
17	1,140	1,150	1,190	2,600	2,930	1,220	2,310	1,170	498	305	410	459
18	1,130	1,200	1,430	2,710	3,790	1,210	2,460	777	518	378	655	433
19	1,110	1,110	1,510	2,320	3,480	1,270	2,030	1,070	610	420	832	570
20	988	1,210	1,740	1,860	3,000	1,230	2,190	1,120	584	411	624	648
21	1,100	1,210	1,810	1,810	2,070	1,250	2,810	1,340	540	451	406	610
22	1,200	1,170	1,760	1,750	1,720	1,190	2,740	1,260	442	390	350	999
23	1,470	950	1,830	2,000	2,280	990	2,440	1,300	520	309	228	1,130
24	1,350	1,150	1,900	2,980	3,290	1,280	2,170	1,220	618	284	99	1,010
25	1,270	*1,030	1,650	2,300	4,700	1,550	2,070	1,040	790	392	407	937
26	1,070	833	2,900	1,860	4,710	1,400	1,870	1,210	698	418	502	796
27	1,010	588	2,500	1,840	4,050	1,440	1,560	1,310	716	337	644	550
28	1,110	688	2,250	2,200	2,500	1,340	2,150	1,340	728	454	940	480
29	1,110	592	2,440	2,610	-	1,210	2,080	1,320	638	*438	968	925
30	1,260	940	2,060	2,750	-	1,100	1,750	518	639	478	919	1,250
31	1,410	-	2,030	2,270	-	1,310	-	580	-	369	588	-
Total	26,632	30,703	51,802	59,210	73,110	39,790	47,240	37,785	22,869	10,328	15,431	26,525
Mean	859	1,023	1,671	1,910	2,611	1,284	1,575	1,219	762	333	498	884
Ac-ft	52,820	60,900	102,700	117,400	145,000	78,920	93,700	74,950	45,360	20,490	30,610	52,610
Calendar year 1957: Max	4,150				Min 64	Mean 1,086	Ac-ft 786,400					
Water year 1957-58: Max	4,710				Min 99	Mean 1,209	Ac-ft 875,500					

\* Discharge measurement made on this day.



## 902. Muck Creek at Roy, Wash.

Location.--Lat 47°00'20", long 122°32'30", in SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 34, T. 18 N., R. 2 E., on right bank 0.3 mile downstream from Muck Lake at north edge of Roy.

Drainage area.--87.8 sq mi.

Records available.--May 1956 to September 1958.

Gage.--Staff gage read once daily. Altitude of gage is 310 ft (from topographic map).

Extremes.--Maximum discharge observed during year, 308 cfs Feb. 27 (gage height, 3.92 ft); no flow many days.

1956-58: Maximum discharge observed, 332 cfs Mar. 11, 1957 (gage height, 3.98 ft); no flow many days each year.

Remarks.--Records fair except those for August, which are poor. Some regulation in lakes above station. Small amount of diversion above station for domestic use.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 5 to Aug. 28)

0.97	0	2.0	33
1.1	.4	2.5	62
1.2	1.8	3.0	105
1.4	6.4	3.5	185
1.6	13.5	4.0	340

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0	3.8	92	199	265	56	87	34	8.3	4.0	
2	0	0	15	91	194	241	56	76	28	8.6	3.1	
3	0	0	12.5	88	190	224	53	68	22	8.0	3.1	
4	0	0	9.7	88	173	208	52	61	22	7.3	3.1	
5	0	0	9.7	83	173	190	51	60	22	7.3	2.3	
6	0	0	9.7	78	169	185	49	56	23	7.0	2.0	
7	0	0	9.7	72	169	177	46	53	27	5.3	3.1	
8	0	0	9.7	72	169	165	44	50	26	1.3	3.1	
9	0	0	7.6	72	169	165	44	48	18.5	.3	2.1	
10	0	0	6.4	71	177	100	49	57	14	1.4	1.8	
11	0	0	5.3	73	*175	62	49	52	12	3.3	1.4	(*)
12	0	.1	4.8	72	199	68	46	*50	*9.7	2.9	2.1	
13	0	.4	4.8	*70	208	*75	44	41	8.3	2.9	2.3	
14	0	3.8	4.8	71	213	75	44	37	8.6	1.4	2.1	
15	0	6.4	5.3	75	213	77	48	39	22	2.3	1.3	
16	0	4.8	5.3	83	219	77	56	36	19.5	2.7	.4	
17	0	3.3	5.8	99	224	75	69	34	21	2.3	1.3	
18	0	2.1	10.5	107	241	75	84	29	18	2.3	2.1	
19	0	3.3	9.0	105	235	72	93	25	16	2.3	2.3	
20	0	3.8	12	107	213	69	110	25	13	2.3	2.1	
21	0	2.5	24	107	213	68	115	25	10	2.3	2.1	
22	.1	1.8	42	105	213	66	125	21	8.6	2.0	2.0	
23	.9	1.8	49	105	235	63	125	19.5	12.5	2.0	1.8	
24	.4	1.8	52	124	241	63	125	19.5	15.5	*2.0	1.0	
25	.1	*1.0	59	152	259	71	128	18.5	14	2.0	.3	
26	0	1.4	73	154	293	69	134	21	13.5	1.8	.2	
27	0	1.8	77	151	308	68	127	18.5	9.7	1.8	.2	
28	0	2.5	86	161	286	66	112	18.5	9.7	2.0	.2	
29	0	2.5	95	177	-	63	106	14	9.0	2.0	.1	
30	0	2.9	93	199	-----	61	97	7.0	8.3	2.0	.1	
31	0	-----	92	208	-----	57	-----	29	-----	2.3	0	-----
Total	1.5	48.0	903.4	3,312	5,970	3,360	2,337	1,195.5	495.4	101.7	53.1	0
Mean	0.05	1.60	29.1	107	213	108	77.9	38.6	16.5	3.28	1.71	0
Ac-ft	3.0	95	1,790	6,570	11,840	6,660	4,640	2,370	983	202	105	0

Calendar year 1957: Max 332 Min 0 Mean 36.6 Ac-ft 26,470  
Water year 1957-58: Max 308 Min 0 Mean 48.7 Ac-ft 35,260

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

## SEQUALLITCHEW CREEK BASIN

903. American Lake near Tillicum, Wash.

Location.--Lat 47°06'40", long 122°35'20", in NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 30, T. 19 N., R. 2 E., on southwest shore at west end of U. S. Engineers boathouse and  $1\frac{1}{2}$  miles south of Tillicum.

Records available.--October 1956 to September 1958. September 1938 and October 1940 to December 1956 (fragmentary) in reports of Ground Water Branch.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929. Prior to Oct. 10, 1951, reference point at site on northeast shore of lake at same datum.

Extremes.--Maximum elevation during year, 232.88 ft Apr. 26-28; minimum recorded, 230.11 ft Sept. 30.

1938, 1940-58: Maximum elevation observed, 236.85 ft Mar. 26, 1951; minimum observed, 228.00 ft Sept. 27, 1944.

Remarks.--Regulation started May 14, 1956. The maximum elevation of lake is maintained at 233 ft by means of a drop-entrance box culvert installed from the lake to Sequallitchew Creek to insure against flooding conditions above 233 ft. Prior to May 14, 1956, no outlet existed from lake to creek although seepage from lake appeared in creek channel. Small diversions from lake.

Elevation, in feet, at 12 p.m., water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	30.28	30.29	30.57	31.37	-	32.68	32.84	-	31.92	31.17	30.52
2	-	30.27	30.29	30.58	31.38	-	32.69	32.82	-	31.90	31.18	30.51
3	-	30.25	30.28	30.58	31.40	32.29	32.69	32.82	32.44	31.88	31.15	30.49
4	-	30.23	30.27	30.58	31.42	32.31	32.69	32.81	32.42	31.87	31.12	30.46
5	-	30.22	30.27	30.58	31.46	32.34	32.69	32.79	32.39	31.85	31.10	30.45
6	-	30.20	30.30	30.59	31.48	32.36	32.69	32.78	32.41	31.84	31.08	30.42
7	30.38	30.19	30.30	30.59	31.51	32.39	32.68	32.77	32.39	31.80	31.06	30.41
8	30.37	30.19	30.30	30.62	31.53	32.42	32.68	32.76	32.36	31.78	31.04	30.39
9	30.36	30.17	30.30	30.65	31.58	32.43	32.72	32.75	32.34	31.76	31.02	30.40
10	30.34	30.17	30.28	30.68	31.60	32.44	32.72	32.73	32.32	31.74	31.00	30.39
11	30.33	30.19	30.28	30.72	31.65	32.45	32.73	32.71	32.30	31.71	30.96	30.37
12	30.34	30.25	30.28	30.73	31.68	32.46	32.72	32.71	32.28	31.68	30.94	30.35
13	30.35	30.33	30.28	30.73	31.68	32.47	32.71	32.70	32.27	31.66	30.92	30.32
14	-	30.34	30.29	30.81	31.70	32.48	32.74	32.68	32.26	-	30.90	-
15	30.32	30.32	30.28	30.82	31.73	32.50	32.76	32.67	32.23	31.60	30.88	30.30
16	30.34	30.32	30.27	30.90	31.75	32.51	32.76	32.65	32.22	31.58	30.86	30.31
17	30.32	30.30	30.29	30.91	31.79	32.53	32.78	32.63	32.20	31.55	-	30.29
18	30.30	30.31	30.30	30.92	31.82	32.55	32.78	32.60	32.18	31.53	-	-
19	30.28	30.29	30.32	30.94	31.84	32.56	32.84	32.61	32.15	31.51	30.83	-
20	30.26	30.28	30.35	30.95	31.86	32.59	32.83	32.60	32.13	31.48	30.79	-
21	30.25	30.27	30.37	30.96	31.89	32.59	32.84	32.58	32.11	31.47	30.77	-
22	30.33	30.26	30.38	30.99	31.97	32.60	32.85	32.56	32.08	31.44	30.75	-
23	30.35	30.25	30.37	31.03	31.99	32.62	32.85	32.57	32.05	31.42	30.73	-
24	30.34	30.24	30.40	31.14	32.09	32.63	32.87	32.55	32.08	-	30.71	-
25	30.35	30.23	30.46	31.17	32.16	32.64	32.87	32.54	32.07	-	30.66	-
26	30.33	30.23	30.48	31.17	32.19	32.64	32.88	32.52	32.05	-	30.65	-
27	30.33	30.24	30.49	31.21	-	32.64	32.87	32.50	32.02	-	30.64	-
28	30.32	30.24	30.53	31.24	-	32.65	32.86	32.49	-	-	30.61	-
29	30.33	30.23	30.55	31.29	-	32.67	32.86	32.49	-	-	30.58	30.12
30	30.32	30.24	30.56	31.33	-----	32.67	32.85	32.46	-	-	30.56	30.11
31	30.31	-	30.56	31.36	-----	32.67	-----	32.49	-----	31.15	30.54	-----

912. Leach Creek near Fircrest, Wash.

Location.--Lat 47°13'15", long 122°30'30", in lot 24, block 14, SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 14, T. 20 N., R. 2 E., on right bank  $1\frac{1}{4}$  miles south of Fircrest and 2 miles upstream from mouth.

Drainage area.--6.01 sq mi, of which 2.53 sq mi is noncontributing.

Records available.--March 1957 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 190 ft (from topographic map).

Extremes.--Maximum discharge during year, 28 cfs Jan. 16 (gage height, 1.69 ft); minimum, 2.6 cfs Apr. 12-14 (gage height, 1.21 ft).  
1957-58: Maximum discharge, that of Jan. 16, 1958; minimum, 2.6 cfs July 7, 8, 1957, Apr. 12-14, 1958; minimum gage height, 0.75 ft Aug. 2, 5, 13, 14, Sept. 5, 6, 1957.

Remarks.--Records good. Drainage into upper end of basin influenced by urbanizing of area. No regulation or diversion above station.

Rating table, water year 1957-58 (gage height, in feet,  
and discharge, in cubic feet per second)

1.2	2.4
1.3	4.8
1.4	8.5
1.5	14

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.2	3.9	6.9	4.2	5.8	4.2	3.9	3.4	4.2	3.6	3.2	3.6
2	3.2	3.6	4.8	4.8	4.8	4.2	4.2	*3.6	3.9	3.6	3.4	3.4
3	3.2	3.9	3.9	4.8	4.5	4.2	3.9	3.6	3.6	3.4	3.2	3.4
4	3.2	3.9	3.9	4.5	3.9	3.9	3.6	3.6	3.6	3.4	3.2	3.4
5	3.9	3.9	4.2	4.2	5.8	3.9	3.6	3.6	3.6	3.4	3.2	*3.2
6	3.9	3.9	5.5	4.2	3.9	3.9	3.4	*3.6	*4.2	3.4	3.2	3.0
7	3.6	3.6	4.5	3.9	4.2	4.2	3.0	3.4	3.6	3.6	3.4	3.0
8	3.9	3.6	3.9	4.5	3.9	5.2	3.0	3.4	3.4	3.6	3.4	3.0
9	3.4	3.6	3.9	5.2	5.2	3.9	3.4	3.4	3.4	3.6	3.2	3.4
10	3.4	3.6	3.9	5.2	*4.8	3.6	3.4	3.4	3.4	3.6	3.2	3.2
11	3.4	3.9	3.9	5.2	4.8	3.6	3.6	3.4	3.9	3.6	3.2	3.2
12	3.6	*6.6	3.6	5.8	6.9	*3.6	3.0	3.4	3.6	3.6	3.2	3.2
13	5.2	10	3.6	3.9	4.8	3.6	2.8	3.4	3.6	3.6	3.2	3.2
14	3.9	7.7	4.8	10	4.5	3.9	2.8	3.4	3.4	*3.4	3.2	3.4
15	*3.6	4.5	3.9	6.2	4.2	3.9	3.2	3.4	3.4	3.2	3.2	3.4
16	4.2	4.2	3.6	*9.5	5.5	3.9	3.6	*3.4	3.4	3.4	3.2	3.6
17	4.8	4.2	3.6	12	5.2	3.9	3.6	3.6	3.4	3.4	3.2	3.4
18	3.9	4.5	3.9	6.2	5.5	3.9	4.8	3.6	3.4	3.4	3.2	3.2
19	3.6	*4.5	6.2	4.5	5.2	4.2	3.2	3.6	3.4	3.4	3.2	3.6
20	3.6	4.2	4.8	4.2	4.2	3.9	6.2	3.6	3.4	3.4	3.2	3.4
21	3.9	4.2	6.6	3.9	4.5	4.2	4.8	3.6	3.4	3.4	3.2	3.4
22	4.8	4.2	5.8	3.6	5.8	3.9	3.2	3.6	3.4	3.4	3.2	3.2
23	8.1	4.2	3.6	5.8	5.2	3.9	3.6	4.2	3.4	3.4	3.2	3.2
24	4.5	4.2	5.2	6.6	*9.0	4.5	3.2	3.9	5.8	3.2	3.2	3.4
25	4.5	4.2	6.9	5.8	7.3	4.8	3.2	3.9	3.6	3.4	3.2	3.4
26	4.2	4.2	6.6	4.5	5.2	4.2	3.6	3.6	3.9	3.4	3.2	3.2
27	4.2	4.5	4.2	5.2	4.5	3.9	3.4	3.6	3.9	3.4	3.4	3.2
28	3.9	4.8	8.5	*8.5	4.2	3.9	3.4	3.9	3.6	3.4	3.4	3.2
29	3.6	3.9	5.5	7.3	-	3.9	3.4	3.6	3.6	3.4	3.6	3.2
30	4.5	3.9	*4.2	9.5	-----	4.2	3.4	3.6	3.9	3.4	3.4	3.2
31	3.9	-----	4.2	9.5	-----	3.9	-----	5.2	-----	3.4	3.4	-----
Total	124.8	134.1	148.6	183.2	143.3	124.9	107.4	112.5	110.3	106.8	101.0	98.8
Mean	4.03	4.47	4.79	5.91	5.12	4.03	3.58	3.63	3.68	3.45	3.26	3.29
Ac-ft	248	266	295	363	284	248	213	223	219	212	200	196

Calendar year 1957: Max - Min - Mean - Ac-ft -  
Water year 1957-58: Max 12 Min 2.8 Mean 4.10 Ac-ft 2,970

\* Discharge measurement made on this day.

913. Leach Creek near Steilacoom, Wash.

Location.--Lat 47°11'55", long 122°31'15", in NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 26, T. 20 N., R. 2 E., on left bank a third of a mile upstream from mouth and 4 miles northeast of Steilacoom.

Drainage area.--7.63 sq mi, of which 2.53 sq mi is noncontributing.

Records available.--February 1957 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 140 ft (from topographic map).

Extremes.--Maximum discharge during year, 44 cfs Jan. 16 (gage height, 2.16 ft); minimum, 4.5 cfs July 13; minimum gage height, 1.42 ft Oct. 7, 10.  
1957-58: Maximum discharge, that of Jan. 16, 1958; minimum, that of July 13, 1958; minimum gage height, 1.36 ft Sept. 19, 1957.

Remarks.--Records good. Drainage into upper end of basin influenced by urbanizing of area. Some pumping for domestic use above gage. No regulation.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to July 2

July 3 to Sept. 30

1.39	7.6	1.9	31	1.8	5.1
1.5	11.5	2.2	46	2.0	10.5
1.7	20				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.6	10.5	12.5	11	18	12.5	9.6	10	11	8.9	7.0	7.8
2	9.6	10.5	9.2	11	16.5	12.5	10	10	10.5	8.9	7.5	7.0
3	10	10.5	8.2	11	16	11.5	9.2	10.5	10.5	8.1	7.5	7.2
4	10	10.5	7.9	13.5	14.5	11	9.2	10.5	10.5	8.1	7.0	7.2
5	10.5	10.5	8.2	10.5	17	11	9.2	10	10	8.4	6.5	*7.2
6	10.5	10.5	10.5	10.5	15	10.5	9.2	*10	*11	7.8	7.0	7.5
7	9.6	10.5	8.6	10.5	14.5	10.5	8.9	10	10.5	7.0	7.2	7.2
8	10.5	10.5	7.9	12.5	14	11	8.9	10	10	7.5	7.0	7.0
9	9.6	10.5	8.2	12.5	14.5	10	10	10	10	7.2	7.5	8.1
10	9.6	11	8.2	13	*14	8.9	11	10.5	9.6	7.2	7.2	7.5
11	9.6	11	8.2	13.5	13	8.9	9.2	10.5	10	7.2	6.5	7.8
12	10	*15	7.9	14.5	15	*8.9	9.2	10	9.6	7.5	6.8	7.5
13	12.5	18	7.9	11.5	12.5	9.6	9.2	10	9.6	7.5	7.0	7.8
14	10.5	14.5	9.2	19	12	9.6	10	10	10	*6.8	7.0	8.1
15	*9.6	8.9	8.2	20	12	9.6	10.5	10	10	6.5	6.8	7.8
16	10.5	8.2	8.6	23	13	9.6	10.5	10	9.2	6.8	7.2	8.7
17	12	8.2	8.9	18.5	13	9.6	12.5	10	9.2	7.0	7.2	8.1
18	9.6	8.2	8.9	14.5	13	9.6	9.6	10	9.2	7.0	7.0	7.8
19	9.6	*8.2	12.5	12.5	12.5	9.6	16	10	9.2	7.5	7.0	8.7
20	9.6	7.9	10	13	12	9.6	12.5	9.6	9.2	7.5	7.0	7.8
21	9.6	7.6	12.5	12.5	12	10	11	10	9.6	6.8	7.0	7.8
22	10.5	7.8	12	13.5	14	9.6	11.5	10	9.2	7.0	6.8	7.8
23	18.5	7.6	8.6	16	13	9.6	11	11	8.9	7.0	7.5	7.5
24	11.5	7.6	10.5	17	*20	10.5	11.5	11	11.5	6.8	7.2	7.5
25	11	7.9	13.5	15	*18	10.5	*11	10.5	10.5	6.8	7.0	7.5
26	10.5	7.9	14.5	14.5	15.5	9.6	10.5	10.5	10	7.2	6.5	7.2
27	10.5	8.6	10.5	14.5	14	9.6	10.5	10.5	9.6	7.2	7.0	7.5
28	10.5	8.9	15.5	*19	13	9.6	10.5	10.5	9.6	6.2	7.0	7.5
29	10.5	7.9	12.5	17	-	9.6	10	10.5	9.6	6.8	7.2	7.0
30	11.5	8.2	*11.5	19	-----	9.6	10	10.5	8.2	7.0	7.2	7.2
31	10.5	-----	11	22	-----	9.2	-----	12	-----	6.5	7.5	-----
Total	328.1	293.4	312.5	454.0	401.5	311.4	312.6	318.6	296.5	225.7	218.8	228.3
Mean	10.6	9.78	10.1	14.6	14.3	10.0	10.4	10.3	9.88	7.28	7.06	7.61
Ac-ft	651	582	619	900	796	618	620	632	588	448	434	453

Calendar year 1957: Max - Min - Mean - Ac-ft -  
Water year 1957-58: Max 23 Min 6.2 Mean 10.1 Ac-ft 7,340

\* Discharge measurement made on this day.

915. Chambers Creek below Leach Creek, near Steilacoom, Wash.

Location.--Lat 47°11'55", long 122°31'40", in NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 27, T. 20 N., R. 2 E., on left bank a quarter of a mile downstream from Leach Creek,  $\frac{1}{2}$  miles downstream from outlet of Steilacoom Lake, and 4 miles northeast of Steilacoom.

Drainage area.--104 sq mi.

Records available.--December 1937 to September 1940, July 1943 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 100 ft (from topographic map).

Average discharge.--17 years (1938-40, 1943-58), 113 cfs (81,810 acre-ft per year).

Extremes.--Maximum discharge during year, 253 cfs Feb. 24 (gage height, 2.46 ft); minimum, 30 cfs Aug. 10; minimum gage height, 1.14 ft Aug. 10, Sept. 7.  
1937-40, 1943-58: Maximum discharge, 792 cfs Jan. 5, 1956 (gage height, 3.58 ft); minimum, that of Aug. 10, 1958; minimum gage height, 0.71 ft Oct. 9-12, 1952.

Remarks.--Records good except those for period July 1 to Sept. 30, which are fair. Some regulation by gates at outlet of Steilacoom Lake. Some diversions from tributaries for domestic use and for use of Army air base above station.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 16		Jan. 16 to Sept. 30	
1.2	30	1.2	30
1.5	70	1.6	80
1.8	127	2.0	148
		2.4	244

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	42	45	58	60	183	230	100	137	80	67	37	36
2	43	43	52	82	180	225	111	133	77	65	39	34
3	46	43	50	82	183	220	109	129	80	65	39	33
4	46	42	48	82	180	212	98	127	80	63	37	36
5	46	42	48	84	187	210	103	127	76	62	34	*36
6	45	41	54	85	180	204	108	124	*81	62	36	36
7	50	41	51	85	183	202	109	118	69	62	36	36
8	61	41	50	89	180	202	113	116	92	61	36	37
9	60	40	48	91	185	192	116	115	94	58	37	39
10	62	38	48	93	*187	187	120	115	92	58	37	38
11	61	38	48	91	185	185	116	113	92	62	38	39
12	60	48	48	91	200	*190	113	108	69	61	40	39
13	62	64	48	85	200	176	109	105	90	61	40	39
14	55	62	52	108	202	*176	111	105	69	*58	40	40
15	*51	51	50	104	202	171	118	105	88	60	40	39
16	48	50	51	114	202	169	120	103	83	58	42	40
17	50	48	52	120	202	167	125	101	82	57	42	38
18	45	50	52	108	210	167	120	98	82	57	41	38
19	42	48	81	109	217	167	135	100	80	58	42	40
20	41	*47	56	109	214	163	133	111	79	57	45	39
21	43	47	67	111	210	154	127	106	76	54	43	38
22	51	47	67	113	217	152	129	105	76	54	41	39
23	64	47	60	122	217	150	140	111	74	53	39	40
24	51	47	67	133	236	152	144	108	80	51	37	39
25	50	47	75	129	239	152	*133	105	76	51	36	40
26	48	46	78	127	241	140	133	100	74	51	34	39
27	47	47	70	133	239	127	131	98	74	49	33	39
28	46	48	85	146	236	129	129	98	73	42	34	39
29	46	47	80	158	-	129	125	90	72	40	34	38
30	47	48	77	176	-----	131	133	73	70	39	34	37
31	45	-----	*78	185	-----	120	-----	80	-----	37	34	-----
Total	1,554	1,393	1,829	3,425	5,697	5,341	3,611	3,364	2,440	1,734	1,177	1,144
Mean	50.1	46.4	59.0	110	203	172	120	109	81.3	55.9	38.0	38.1
Ac-ft	3,080	2,780	3,630	6,790	11,300	10,590	7,160	6,670	4,840	3,440	2,330	2,270
Calendar year 1957: Max	316				Min 38		Mean 94.5		Ac-ft 68,370			
Water year 1957-58: Max	241				Min 33		Mean 89.6		Ac-ft 64,860			

\* Discharge measurement made on this day.

## PUYALLUP RIVER BASIN

920. Puyallup River near Electron, Wash.

Location.--Lat 46°54'10", long 122°02'00", in N $\frac{1}{2}$  sec. 3, T. 16 N., R. 6 E., on left bank 1,000 ft upstream from Puget Sound Power & Light Co.'s flume headworks, a quarter of a mile downstream from Mowich River, and 10 miles southeast of Electron. Prior to Oct. 1, 1957, at site 25 ft upstream.

Drainage area.--32.8 sq mi.

Records available.--October 1908 to September 1926, October 1944 to September 1949, and October 1957 to September 1958 in reports of Geological Survey. October 1908 to September 1933 and October 1944 to September 1949 (monthly discharge only) in State Water-Supply Bulletin 6.

Gage.--Water-stage recorder. Altitude of gage is 1,640 ft (from river-profile map). Prior to Jan. 1, 1913, staff gage and Jan. 1, 1913, to Sept. 30, 1926, and Oct. 1, 1944, to Sept. 30, 1949, water-stage recorder, all at site 25 ft upstream at different datums.

Average discharge.--31 years (1908-33, 1944-49, 1957-58, 522 cfs (377,900 acre-ft per year)

Extremes.--Maximum discharge during year, 1,870 cfs Dec. 6 (gage height, 5.87 ft); minimum, 175 cfs Sept. 13; minimum gage height, 3.05 ft Oct. 21.

1908-26, 1944-49, 1957-58: Maximum discharge, 9,160 cfs Dec. 11, 1946 (gage height, 8.75 ft); minimum not determined, probably occurred during period of ice effect in December 1914 or December 1922.

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

Revisions (water years).--WSP 1092: 1946(M). WSP 1346: 1913, 1916-17(M), 1918-23, drainage area.

Corrections.--The maximum discharge for the water year 1945, published in error in WSP 1092, has been corrected to 5,060 cfs Jan. 7, 1945 (gage height, 7.94 ft). The figure of peak discharge for Oct. 19, 1947, published in error in WSP 1122, has been corrected to 4,040 cfs.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Oct. 30, Dec. 26 to May 21				Oct. 30 to Dec. 25, May 22 to Sept. 30			
3.0	175	4.5	770	3.1	170	4.5	740
3.5	320	5.5	1,490	3.5	280	5.5	1,490
4.0	510			4.0	470		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	450	382	490	394	434	458	225	438	668	500	550	432
2	519	326	442	386	418	422	240	458	626	475	590	274
3	324	287	*370	*366	418	390	225	478	555	505	500	222
4	267	254	32*	355	384	366	212	474	575	590	406	228
5	240	231	301	355	386	358	208	474	686	644	454	277
6	225	214	931	386	372	330	202	478	965	680	530	358
7	246	201	1,010	414	372	320	202	510	788	710	620	442
8	220	188	858	430	422	306	208	615	600	605	575	500
9	254	184	626	430	450	288	205	625	585	575	662	485
10	240	196	515	550	520	276	358	*650	605	565	674	430
11	225	535	480	482	450	264	302	620	620	605	662	304
12	218	694	434	520	660	258	296	494	605	550	500	*234
13	410	958	378	446	794	249	341	430	550	505	454	198
14	348	782	362	550	620	237	362	422	580	500	470	443
15	267	530	322	992	640	234	466	482	595	525	475	340
16	240	406	312	920	788	231	535	610	*668	600	480	383
17	261	346	301	1,240	*705	231	743	695	794	722	454	346
18	222	329	*312	914	1,010	228	625	836	874	*770	442	274
19	205	308	628	680	902	222	744	1,010	944	662	438	525
20	195	270	626	560	700	240	1,420	890	979	555	574	258
21	190	251	515	486	595	310	1,180	1,050	944	535	595	312
22	358	245	410	442	752	288	914	1,170	861	590	550	242
23	590	258	382	535	824	273	700	1,200	818	550	560	228
24	*470	251	458	794	1,130	*341	585	1,130	1,040	585	590	245
25	478	280	830	585	1,030	310	506	1,250	776	585	600	370
26	394	261	*1,060	486	776	285	450	1,150	704	686	515	298
27	324	254	740	450	615	267	408	1,050	762	764	495	318
28	285	288	716	645	510	258	383	881	615	836	756	312
29	296	254	590	555		249	376	722	575	794	545	277
30	894	312	482	525	-----	252	394	638	545	600	378	251
31	500	-----	426	478	-----	234	-----	668	-----	550	414	-----
Total	10,335	10,285	16,614	17,351	17,687	8,975	14,013	22,598	21,542	18,918	16,003	9,812
Mean	333	343	536	560	632	290	467	729	718	610	516	327
Cfsm	3.59	3.70	5.78	6.03	6.81	3.12	5.03	7.88	7.74	6.57	5.56	3.52
In.	4.14	4.12	6.66	6.95	7.09	3.60	5.22	9.06	8.63	7.58	6.41	3.93
Ac-ft	20,500	20,400	32,950	34,420	35,080	17,800	27,790	44,820	42,730	37,520	31,740	19,460
Calendar year 1957: Max				Min		Mean		Cfsm		In.		Ac-ft
Water year 1957-58: Max			1,420	Min	184	Mean	504	Cfsm	5.43	In.	73.79	Ac-ft
												365,200

Peak discharge (base, 2,300 cfs, revised).--No peak above base.

\* Discharge measurement made on this day.

## 935. Puyallup River near Orting, Wash.

Location.--Lat 47°02'20", long 122°12'25", in SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> sec. 17, T. 18 N., R. 5 E., on right bank 600 ft downstream from highway bridge, 4 miles south of Orting, and 9 miles upstream from Carbon River.

Drainage area.--172 sq mi.

Records available.--September 1931 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 357.5 ft above mean sea level, unadjusted. Prior to Feb. 6, 1946, at site 600 ft upstream at datum 3.93 ft higher. Supplementary water-stage recorder 200 ft upstream at datum 2.1 ft higher than present gage datum used at times during periods in 1942-46.

Average discharge.--27 years, 702 cfs (508,200 acre-ft per year).

Extremes.--Maximum discharge during year, 2,740 cfs Dec. 25 (gage height, 6.06 ft); minimum, 231 cfs Oct. 4-22 (gage height, 3.41 ft); minimum daily, 239 cfs Oct. 20, 21.

1931-58: Maximum discharge, 12,800 cfs Dec. 10, 1933 (gage height, 11.87 ft, from recorded range in stage), from rating curve extended above 3,300 cfs; minimum, 25 cfs Nov. 28, 1952 (gage height, 2.16 ft); minimum daily, 59 cfs Nov. 29, 1952.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Water diverted for Electron powerplant of Puget Sound Power & Light Co., returned to river above gage. Some regulation by Electron powerplant.

Revisions (water years).--WSP 932: 1937-39. WSP 962: 1934. WSP 1246: Drainage area.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	472	465	691	668	747	806	315	572	747	593	600	500
2	508	394	755	638	675	715	340	593	691	537	650	400
3	*335	350	593	579	645	645	325	608	652	551	550	300
4	291	315	498	424	593	558	305	593	630	630	500	300
5	278	300	441	504	540	572	305	586	715	660	520	320
6	247	282	1,110	517	520	517	286	586	957	715	550	380
7	268	273	1,460	544	510	491	282	593	912	755	700	450
8	247	268	1,160	558	600	478	278	691	699	660	650	550
9	260	273	894	565	650	429	282	699	652	638	700	558
10	255	273	755	683	800	411	478	*668	699	615	750	478
11	251	652	691	652	*755	*383	423	707	683	645	750	366
12	268	*798	645	680	948	361	394	579	739	615	600	*300
13	378	1,330	558	593	1,360	340	417	478	*638	544	500	291
14	366	1,200	558	630	1,160	325	453	447	630	517	520	475
15	278	832	491	1,120	1,070	315	660	517	652	537	550	400
16	264	615	478	1,130	1,330	310	1,120	683	707	593	550	400
17	278	484	491	2,100	1,160	330	1,190	806	849	715	520	429
18	255	429	*498	1,450	1,330	325	1,090	930	903	*800	500	320
19	273	417	922	1,110	1,250	305	1,120	948	1,130	710	470	566
20	239	366	1,090	894	1,000	315	1,680	1,010	1,000	600	500	320
21	239	335	1,080	772	840	388	1,740	1,120	975	580	600	345
22	347	320	903	660	1,010	372	1,660	1,300	930	620	650	315
23	691	340	798	707	1,250	356	1,400	1,360	885	650	600	300
24	558	320	921	1,480	1,530	*447	1,150	1,260	1,050	600	620	286
25	510	350	1,390	1,150	1,580	429	966	1,410	885	650	650	405
26	465	330	2,060	912	1,380	400	806	1,300	764	650	650	405
27	356	320	1,380	798	1,130	372	691	1,200	867	750	550	361
28	315	405	1,310	1,030	948	356	630	1,050	780	850	450	361
29	305	340	1,170	957	-	350	572	849	691	850	450	325
30	910	383	930	939	-----	350	558	715	645	700	600	310
31	652	-----	764	832	-----	325	-----	731	-----	600	450	-----
Total	11,359	13,759	27,485	26,256	27,311	13,076	22,116	25,771	23,575	20,130	17,900	11,536
Mean	366	459	887	847	975	422	737	831	786	649	577	385
Cfsm	2.13	2.67	5.16	4.92	5.67	2.45	4.28	4.83	4.57	3.77	3.35	2.24
In.	2.46	2.97	5.94	5.68	5.91	2.83	4.78	5.57	5.10	4.35	3.87	2.49
Ac-ft	22,530	27,290	54,520	52,080	54,170	25,940	43,870	51,120	46,760	39,930	35,500	22,880
Calendar year 1957: Max	3,010			Min 200		Mean 612		Cfsm 3.56		In. 48.32	Ac-ft 443,300	
Water year 1957-58: Max	2,100			Min 239		Mean 658		Cfsm 3.83		In. 51.95	Ac-ft 476,600	

Peak discharge (base, 4,500 cfs).--No peak above base).

\* Discharge measurement made on this day.

Note.--No gage-height record Feb. 5-10, July 18 to Sept. 8; discharge estimated on basis of records for station near Electron and nearby stations.

## 940. Carbon River near Fairfax, Wash.

Location.--Lat 47°01'40", long 122°01'50", in SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 22, T. 18 N., R. 6 E., on left bank  $1\frac{1}{4}$  miles upstream from highway bridge,  $1\frac{1}{4}$  miles northwest of Fairfax, and  $2\frac{1}{4}$  miles downstream from Evans Creek.

Drainage area.--78.9 sq mi.

Records available.--November 1910 to July 1912, March 1929 to September 1958. Published as "at Fairfax" 1910-12.

Gage.--Water-stage recorder. Datum of gage is 1,212.6 ft above mean sea level (river-profile survey). Prior to July 13, 1912, staff gage at railroad crossing 1.7 miles upstream at different datum.

Average discharge.--29 years (1929-58), 416 cfs (301,200 acre-ft per year).

Extremes.--Maximum discharge during year, 1,610 cfs Dec. 6 (gage height, 3.63 ft); minimum, 114 cfs Oct. 21 (gage height, 0.83 ft).  
1910-12, 1929-58: Maximum discharge, 11,000 cfs Dec. 9, 1933 (gage height, 10.2 ft), from rating curve extended above 4,200 cfs; minimum, 36 cfs Nov. 28, 29, 1952; minimum gage height recorded, 0.75 ft Nov. 20, 1944.

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

Revisions (water years).--WSP 1246: Drainage area. WSP 1286: 1930, 1931-32(M), 1933-35.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 6		Dec. 6 to Sept. 30	
0.8	108	1.0	136
1.3	228	2.0	480
2.0	480	3.0	1,080
2.5	730	4.0	1,960
3.0	1,060		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*234	356	455	325	309	361	163	390	625	416	537	309
2	264	287	430	313	291	329	172	421	610	390	349	215
3	197	246	371	288	291	294	165	450	565	351	537	185
4	160	220	328	274	267	274	154	430	530	445	267	*140
5	146	206	297	274	260	264	147	426	*675	495	264	158
6	132	190	841	309	251	241	143	426	722	500	298	182
7	132	179	1,000	325	257	232	140	455	645	525	349	209
8	124	167	855	353	270	215	143	545	555	475	317	257
9	120	157	600	333	282	201	147	545	500	426	317	264
10	122	190	480	377	*385	*190	277	545	485	412	349	235
11	120	364	421	357	341	180	257	520	500	*435	373	209
12	122	591	369	345	502	175	241	403	505	430	302	198
13	168	742	325	313	630	168	274	321	445	403	274	182
14	217	585	309	610	520	163	302	305	450	361	270	263
15	177	434	270	1,100	555	160	416	353	460	361	280	260
16	160	356	*257	1,010	625	156	550	470	495	381	274	248
17	160	307	244	1,180	555	158	535	580	580	426	254	294
18	141	284	244	794	620	154	490	610	635	435	260	226
19	132	264	536	605	610	151	620	698	640	390	238	458
20	122	240	630	495	520	158	1,270	640	650	349	248	294
21	116	222	515	408	440	193	1,040	710	670	337	294	274
22	218	217	412	361	605	198		770	660	355	305	270
23	324	240	377	403	740	187	660	835	605	341	291	229
24	268	246	450	565	728	224	*750	794	692	349	313	204
25	252	277	707	465	704	215	515	891	585	361	321	309
26	237	261	835	398	590	204	430	849	510	361	302	288
27	208	255	630	357	490	187	377	814	595	408	298	232
28	188	284	525	450	408	182	349	704	575	455	248	235
29	204	243	525	390		175	333	590	515	460	372	218
30	686	271	421	361	-----	170	349	540	465	377	291	185
31	484	-----	361	333	-----	160	-----	580	-----	337	288	-----
Total	6,334	8,881	15,100	14,431	13,046	6,319	12,041	17,565	17,124	12,587	9,280	7,230
Mean	204	296	487	466	466	204	401	567	571	406	299	241
Cfs/m	2.59	3.75	6.17	5.91	5.91	2.59	5.08	7.19	7.24	5.15	3.79	3.05
In.	2.99	4.19	7.12	6.90	6.15	2.98	5.68	8.28	8.07	5.33	4.57	3.41
Ac-ft	12,560	17,620	29,950	28,620	25,880	12,530	23,880	34,840	33,960	24,970	18,410	14,340
Calendar year 1957: Max		1,640		Min 110		Mean 353		Cfs/m 4.47		In. 60.75	Ac-ft 255,600	
Water year 1957-58: Max		1,270		Min 116		Mean 383		Cfs/m 4.85		In. 65.97	Ac-ft 277,600	

Peak discharge (base, 1,800 cfs).--No peak above base.

\* Discharge measurement made on this day.



950. South Prairie Creek at South Prairie, Wash.

Location.--Lat 47°08'30", long 122°05'30", in NE1/4 sec. 18, T. 19 N., R. 6 E., on right bank 0.3 mile northeast of South Prairie and 5 miles upstream from mouth.

Drainage area.--78.6 sq mi.

Records available.--June 1949 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 430 ft (from topographic map).

Average discharge.--9 years, 246 cfs (178,100 acre-ft per year).

Extremes.--Maximum discharge during year, 1,710 cfs Jan. 17 (gage height, 5.38 ft); minimum, 25 cfs Aug. 23; minimum gage height, 1.58 ft Oct. 1, 1949-58; Maximum discharge, 6,850 cfs Dec. 11, 1955 (gage height, 9.78 ft), from rating curve extended above 3,000 cfs; minimum, 22 cfs Nov. 29, 1952 (gage height, 1.25 ft).

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

Revisions.--WSP 1286: Drainage area.

Rating tables, water year 1957-58, except periods of shifting control (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 6

Dec. 7 to Sept. 30

1.6	48	3.0	355	1.4	25	3.0	370
2.0	110	3.5	525	1.7	61	4.0	805
2.5	220			2.0	110	5.1	1,490
				2.5	225		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	48	166	280	249	309	315	120	233	159	148	40	a40
2	67	138	335	233	289	283	137	220	145	118	40	a37
3	70	120	255	212	274	258	130	209	*158	102	43	a35
4	*58	106	213	197	258	228	122	197	120	90	47	*32
5	54	97	194	187	241	215	118	185	120	86	38	28
6	57	90	458	189	225	197	112	180	130	81	35	28
7	64	84	532	194	*222	180	106	168	141	74	41	28
8	66	81	390	192	228	188	103	170	105	72	46	28
9	61	76	286	185	228	157	106	168	96	70	42	32
10	58	74	250	244	461	148	218	161	128	*64	42	33
11	57	210	199	247	373	*139	230	157	137	58	41	32
12	54	293	187	249	583	130	187	145	170	54	38	29
13	86	483	157	269	*650	124	175	124	143	52	39	30
14	106	*469	168	346	505	114	180	110	126	51	40	64
15	82	298	145	632	447	108	236	108	112	47	35	74
16	76	240	*139	621	596	106	534	122	103	44	34	61
17	86	191	141	1,430	482	114	534	130	97	41	33	84
18	73	166	141	857	462	122	491	139	87	40	32	72
19	67	158	387	547	396	118	528	152	81	43	28	137
20	62	140	552	400	342	114	854	139	78	49	29	81
21	61	122	556	324	297	145	790	130	74	*47	28	68
22	190	112	432	274	393	154	715	137	68	43	28	79
23	283	116	361	260	614	157	*637	141	62	42	27	79
24	160	112	414	638	560	192	574	148	104	41	30	67
25	155	118	535	516	529	202	458	150	128	39	35	101
26	153	116	797	400	458	185	393	145	96	37	34	87
27	120	105	520	353	342	134	342	139	38	35	a35	68
28	103	160	499	438	358	157	303	122	148	39	a40	58
29	97	128	451	386	-	145	274	110	170	37	a45	54
30	367	128	358	364	-----	139	249	105	154	38	a40	52
31	215	-----	292	342	-----	128	-----	108	-----	41	a35	-----
Total	3,256	4,897	10,604	11,974	11,171	5,110	9,956	4,647	3,579	1,826	1,140	1,698
Mean	105	163	342	386	359	165	332	150	119	56.9	36.8	56.6
Cfs/m	1.34	2.07	4.35	4.91	5.08	2.10	4.22	1.91	1.51	0.749	0.468	0.720
In.	1.54	2.32	5.02	5.67	5.29	2.42	4.71	2.20	1.69	0.86	0.54	0.80
Ac-ft	6,460	9,710	21,030	23,750	22,160	10,140	19,750	9,220	7,100	3,620	2,260	3,370

Calendar year 1957: Max 1,630 Min 38 Mean 199 Cfs/m 2.53 In. 34.46 Ac-ft 144,400  
 Water year 1957-58: Max 1,430 Min 27 Mean 191 Cfs/m 2.43 In. 33.06 Ac-ft 138,600

Peak discharge (base, 2,000 cfs).--No peak above base.

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for nearby stations.

Note.--Shifting-control method used July 6 to Aug. 26, Sept. 4-30.

## 970. White River at Greenwater, Wash.

Location.--Lat 47°08'50", long 121°38'50", in SE $\frac{1}{4}$  sec. 10, T. 19 N., R. 9 E., on right bank three-quarters of a mile southeast of Greenwater, three-quarters of a mile upstream from Greenwater River, and 18 $\frac{1}{2}$  miles east of and 25 miles upstream from Buckley.

Drainage area.--216 sq mi.

Records available.--December 1911 to May 1912 (fragmentary), March 1929 to September 1957. Published as "near Enumclaw" 1911-12.

Gage.--Water-stage recorder. Altitude of gage is 1,725 ft (from river-profile map). Prior to May 6, 1912, staff gage at site  $\frac{1}{2}$  miles upstream at different datum.

Average discharge.--29 years (1929-58), 841 cfs (608,900 acre-ft per year).

Extremes.--Maximum discharge during year, 3,360 cfs May 25 (gage height, 4.90 ft); minimum, 244 cfs Oct. 21, 22 (gage height, 1.93 ft).  
1911-12, 1929-58: Maximum discharge, 18,100 cfs Dec. 21, 1933 (gage height, 9.38 ft), from rating curve extended above 3,600 cfs by logarithmic plotting; minimum, 120 cfs Nov. 2, 1935 (gage height, 1.69 ft).

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

Revisions (water years).--WSP 1286: 1932-33(M), 1934, 1943(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 6

Dec. 7 to Sept. 30

1.9	230	2.2	335	3.5	1,300
2.3	436	2.5	500	4.0	1,890
2.6	627	3.0	850	5.0	3,560
3.0	926				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	502	472	515	586	674	850	407	740	1,680	938	818	618
2	484	430	522	554	639	778	429	802	1,590	922	818	512
3	408	397	502	*506	618	725	418	882	1,510	956	770	440
4	359	375	484	476	586	702	396	914	1,560	1,030	674	418
5	338	364	460	464	566	674	390	*964	1,860	1,060	688	440
6	322	348	866	476	554	618	380	1,020	2,100	1,100	755	482
7	317	358	1,070	500	548	592	385	1,170	1,930	1,140	762	542
8	312	327	850	506	580	554	385	1,440	1,740	1,090	755	606
9	*297	317	740	494	625	524	390	1,980	1,620	990	794	599
10	302	327	674	542	*702	494	446	1,640	1,510	964	834	586
11	302	472	606	548	653	476	452	1,640	1,430	990	850	536
12	292	554	566	586	667	458	470	1,370	1,380	990	778	*440
13	364	712	524	566	762	440	536	1,140	1,310	938	732	396
14	366	641	500	695	732	429	592	1,060	1,370	890	702	482
15	332	547	464	1,490	702	418	546	1,100	1,400	882	718	429
16	312	484	452	1,420	718	407	725	1,290	1,480	914	710	440
17	317	448	452	1,810	732	402	810	1,540	*1,710	956	660	458
18	287	425	440	1,480	964	390	810	1,800	1,800	981	653	402
19	268	*402	564	1,130	1,050	385	965	2,090	1,790	930	646	548
20	254	359	710	938	972	390	2,060	2,090	1,800	866	646	418
21	249	343	667	810	898	434	1,820	2,240	1,850	858	732	429
22	312	348	606	748	998	434	1,430	2,540	1,760	890	725	390
23	448	364	560	748	1,150	424	1,160	2,850	1,700	882	718	370
24	502	364	618	826	1,540	*488	998	2,780	1,790	882	770	340
25	534	386	772	762	1,750	488	890	3,150	1,420	850	786	350
26	502	386	1,150	732	1,420	464	818	3,060	1,310	882	740	340
27	430	369	866	718	1,120	452	748	2,950	1,340	860	560	350
28	386	419	810	755	947	440	732	2,560	1,150	*1,030	586	370
29	375	375	748	748	-	434	718	2,090	1,020	1,010	681	375
30	652	397	702	732	---	429	718	1,800	964	882	573	360
31	547	---	632	710	---	418	---	1,770	---	826	580	---
Total	11,692	12,490	20,092	24,056	23,867	15,611	22,024	54,072	46,874	29,457	22,314	13,476
Mean	377	416	648	716	852	504	1,744	1,562	950	720	680	449
Cfs/m	1.75	1.93	3.00	3.59	3.94	2.33	3.40	2.87	7.23	4.40	3.33	2.08
In.	2.01	2.15	3.46	4.14	4.11	2.69	3.79	9.31	8.07	5.07	3.84	2.32
Ac-ft	23,190	24,770	39,850	47,710	47,340	30,960	43,680	107,300	92,970	58,430	44,260	26,730
Calendar year 1957: Max	2,360											
Water year 1957-58: Max	3,150											
Calendar year 1957: Min	249											
Water year 1957-58: Min	249											
Calendar year 1957: Cfs/m	3.65											
Water year 1957-58: Cfs/m	3.75											
Calendar year 1957: In.	49.60											
Water year 1957-58: In.	50.96											
Calendar year 1957: Ac-ft	571,200											
Water year 1957-58: Ac-ft	587,200											

Peak discharge (base, 2,400 cfs).--May 25 (11 p.m.) 3,360 cfs (4.90 ft).

\* Discharge measurement made on this day.

## 975. Greenwater River at Greenwater, Wash.

Location.--Lat 47°09'15", long 121°38'00", in NW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec. 11, T. 19 N., R. 9 E., on left bank 1 mile upstream from mouth, 1 mile east of Greenwater, and 19 miles east of Buckley.

Drainage area.--73.9 sq mi.

Records available.--September 1911 to August 1912 (fragmentary), May 1929 to September 1958. Published as "near Enumclaw" 1911-12.

Gage.--Water-stage recorder. Altitude of gage is 1,725 ft (from topographic map). Prior to Aug. 10, 1912, staff gages at approximately same site at different datums. May 1, 1929, to Aug. 14, 1934, water-stage recorder at site 900 ft upstream at different datum.

Average discharge.--29 years (1929-58), 205 cfs (148,400 acre-ft per year).

Extremes.--Maximum discharge during year, 816 cfs Apr. 21 (gage height, 4.28 ft); minimum, 34 cfs Oct. 1, 21, 22, Sept. 12, 13; minimum gage height, 2.13 ft Oct. 1, 21, 22. 1911-12, 1929-58: Maximum discharge, 4,280 cfs Dec. 11, 1946 (gage height, 7.50 ft), from rating curve extended above 2,000 cfs; minimum, 23 cfs Oct. 7, 1934; minimum gage height, 2.00 ft Nov. 28 to Dec. 2, 1952.

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

Revisions (water years).--WSP 1246: Drainage area. WSP 1286: 1947(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Nov. 12

Nov. 13 to Sept. 30

2.1	31	2.1	29	3.2	251
2.6	100	2.3	48	3.7	460
		2.7	111	4.2	760

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	56	111	148	180	266	120	251	345	115	56	40
2	37	52	151	136	172	244	126	262	320	111	54	40
3	36	50	118	*126	166	224	124	277	304	107	54	39
4	36	46	107	118	158	208	118	288	284	103	54	38
5	36	44	96	113	153	198	113	*304	277	102	53	37
6	36	42	229	115	150	183	111	312	277	98	52	36
7	37	41	388	118	148	172	109	332	273	96	50	36
8	37	40	262	118	148	164	113	379	255	90	50	35
9	*36	42	211	115	153	153	113	420	241	89	50	36
10	36	50	183	118	*175	146	146	438	234	87	49	36
11	35	70	161	122	166	140	161	456	227	84	47	35
12	35	85	148	133	164	133	161	433	217	80	46	*34
13	35	110	133	136	189	129	180	388	205	78	46	34
14	38	90	124	178	186	124	195	353	192	77	45	57
15	38	82	113	388	178	120	220	341	180	75	45	53
16	36	75	105	402	180	115	266	357	172	74	44	45
17	39	65	103	570	180	111	292	397	*164	70	44	48
18	36	60	102	522	198	107	296	428	161	70	43	44
19	36	*56	125	397	227	105	320	475	153	69	43	59
20	35	53	183	316	237	105	648	495	148	66	41	55
21	34	49	172	262	234	111	746	522	140	64	41	49
22	45	48	153	227	266	109	588	570	153	63	40	50
23	55	48	133	211	336	107	485	606	129	63	40	49
24	51	48	153	234	388	*143	406	606	146	62	39	46
25	48	49	198	227	442	148	362	642	138	59	39	45
26	51	54	328	214	392	143	328	606	131	56	38	42
27	46	55	262	202	341	138	296	576	136	55	39	40
28	42	75	237	211	296	136	270	534	124	*56	40	39
29	40	63	214	214	-	131	251	465	126	56	44	37
30	75	64	186	208	-----	129	244	410	122	55	44	36
31	66	-----	164	192	-----	122	-----	379	-----	58	41	-----
Total	1,277	1,762	5,333	6,791	6,203	4,564	7,888	13,302	5,954	2,388	1,411	1,270
Mean	41.2	58.7	172	219	222	147	263	429	198	77.0	45.5	42.3
Cfs/m	0.558	0.794	2.33	2.96	3.00	1.99	3.56	5.81	2.68	1.04	0.616	0.572
In.	0.64	0.89	2.68	3.42	3.12	2.30	3.97	6.69	3.00	1.20	0.71	0.64
Ac-ft	2,530	3,490	10,580	13,470	12,300	9,050	16,650	26,380	11,810	4,740	2,800	2,520

Calendar year 1957: Max 754 Min 34 Mean 168 Cfs/m 2.27 In. 30.80 Ac-ft 121,400  
 Water year 1957-58: Max 746 Min 34 Mean 159 Cfs/m 2.15 In. 29.26 Ac-ft 115,300

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 2-18; discharge estimated on basis of recorded range in stage and records for nearby stations.

## 980. Mud Mountain Reservoir near Buckley, Wash.

Location.--Lat 47°08'30", long 121°55'50", in NE $\frac{1}{4}$  sec. 17, T. 19 N., R. 7 E., on left bank of reservoir just upstream from Mud Mountain Dam on White River, 5 miles southeast of Buckley and 6 miles downstream from Clearwater River.

Drainage area.--400 sq mi.

Records available.--October 1943 to September 1958. Month-end contents only October 1943 to September 1944, published in WSP 1816.

Gage.--Staff gage read once daily. Datum of gage is at mean sea level (levels by Corps of Engineers).

Extremes.--Maximum contents observed during year, 14,200 acre-ft July 29 (elevation, 1,059.2 ft); minimum observed, 43 acre-ft Oct. 1 to Dec. 6 (elevation, 908.0 ft).  
1943-58: Maximum contents observed since dam was completed, 37,300 acre-ft June 20, 1956 (elevation, 1,117.1 ft); no pool at times some years.

Remarks.--Reservoir, for flood control, is formed by earth-fill dam. Embankment completed and storage began on small scale in 1942. Capacity, 106,000 acre-ft between elevations 895 (invert of outlet tunnel) and 1,215 ft (spillway crest). Storage is not retained but is dissipated as soon after a flood as is possible without creating damaging flows downstream in order to have the maximum capacity available for any following flood which might develop.

Cooperation.--Records of reservoir elevations and capacity table furnished by Corps of Engineers.

Capacity table, water year 1957-58 (elevation, in feet,  
and total contents, in acre-feet)

908	43	970	1,520
910	52	990	2,910
915	77	1,020	6,260
920	107	1,050	11,850
930	191	1,110	33,800
950	641		

Total contents, in acre-feet, at 12:30 p.m., water year October 1957 to September 1958												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43	43	43	141	141	12,600	8,280	134	9,280	2,440	11,200	3,500
2	43	43	43	141	134	11,900	4,450	134	8,580	1,950	11,100	3,540
3	43	43	43	127	127	11,500	2,730	134	9,250	1,700	11,200	3,080
4	43	43	43	120	127	11,300	1,360	134	9,560	1,410	10,600	3,220
5	43	43	43	120	127	11,400	674	134	10,200	937	10,600	3,170
6	43	43	43	120	127	11,300	519	134	11,600	779	10,900	2,870
7	43	43	1,640	120	127	9,680	167	134	12,300	519	11,000	2,440
8	43	43	641	120	127	7,620	89	235	13,100	149	10,700	2,570
9	43	43	127	120	127	5,590	89	464	14,000	149	10,700	2,170
10	43	43	120	124	141	3,770	113	519	14,000	149	9,150	2,120
11	43	43	120	124	979	1,820	113	519	13,600	149	9,250	2,120
12	43	43	120	124	3,950	72	113	366	13,400	149	8,550	1,610
13	43	43	120	131	7,590	72	113	149	14,000	149	8,200	1,070
14	43	43	120	130	7,130	72	113	134	13,100	149	8,290	1,110
15	43	43	107	1,990	6,470	72	117	149	12,200	149	8,290	1,250
16	43	43	95	3,380	6,010	72	131	153	11,400	149	8,220	1,260
17	43	43	95	5,920	5,590	72	143	266	11,300	149	8,200	1,310
18	43	43	95	4,950	5,480	72	149	491	11,300	149	8,180	1,070
19	43	43	95	4,810	6,060	72	179	1,260	11,200	149	6,900	1,070
20	43	43	146	4,250	6,400	72	2,860	1,900	11,000	149	6,530	1,070
21	43	43	134	1,400	6,230	72	6,280	2,860	10,900	743	6,180	1,110
22	43	43	107	151	6,040	72	6,840	7,890	10,700	2,710	6,130	1,260
23	43	43	95	143	7,350	72	5,050	9,320	10,700	4,690	6,180	1,110
24	43	43	95	207	8,690	1,040	2,900	9,680	10,300	7,430	6,180	1,110
25	43	43	134	160	11,400	3,430	925	10,500	10,000	9,930	5,090	149
26	43	43	1,620	149	13,100	5,810	141	11,600	8,660	11,900	4,520	120
27	43	43	809	143	13,500	8,030	134	12,000	7,600	13,100	4,580	107
28	43	43	284	161	15,100	10,000	134	11,900	5,970	14,100	4,530	107
29	43	43	168	151	-	10,100	134	10,500	4,240	14,200	4,520	95
30	43	43	147	147	-----	9,930	134	9,680	3,340	13,800	3,630	82
31	43	-----	141	141	-----	9,620	-----	9,280	-----	12,500	3,630	-----
(+)	908.0	908.0	925.0	925.0	1,054.2	1,036.5	924.0	1,038.0	989.7	1,049.9	997.3	924.5
(*)	0	0	+98	0	+12,730	-3,870	-8,870	+9,150	-8,390	+8,940	-8,260	-3,430

Calendar year 1957..... \* -27

Water year 1957-58..... \* +95

† Elevation, in feet, at 12 p.m. on last day of month.

\* Change in contents, in acre-feet.

985. White River near Buckley, Wash.

Location.--Lat 47°09'05", long 121°57'00", in SW¼ sec. 8, T. 19 N., R. 7 E., on right bank 0.7 mile upstream from Red Creek, 1 mile downstream from Mud Mountain Dam, 4 miles east of Buckley, and 8 miles downstream from Clearwater River.

Drainage area.--401 sq mi.

Records available.--October 1928 to November 1933, October 1938 to September 1958.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929 (Corps of Engineers bench mark). Oct. 26 to Dec. 9, 1928, staff gage and Dec. 9, 1928, to Nov. 30, 1933, water-stage recorder, at site 3 miles upstream at different datum. Nov. 26, 1936, to Feb. 14, 1939, staff gage at present site and datum.

Average discharge.--25 years, 1,413 cfs (1,023,000 acre-ft per year), adjusted for storage since December 1943.

Extremes.--Maximum discharge during year, 3,620 cfs May 26; maximum elevation, 803.80 ft Jan. 18; minimum discharge, 48 cfs Mar. 24 (elevation, 798.26 ft); minimum daily, 59 cfs Mar. 26.

1928-33, 1938-58: Maximum discharge, 17,000 cfs Feb. 26, 1932 (gage height, 17.5 ft, site and datum then in use), from rating curve extended above 4,000 cfs; minimum, 10 cfs Sept. 26, 1948 (elevation, 796.92 ft); minimum daily, 59 cfs June 25, 1957, Mar. 26, 1958.

Maximum stage known, 23.4 ft in December 1933, from floodmarks, at former site (discharge, 28,000 cfs, from rating curve extended above 3,000 cfs).

Remarks.--Records good except those for period Dec. 8 to Mar. 6, which are fair. Diversion for some community use within basin. Flow regulated by Mud Mountain Reservoir for flood control (see preceding page). Storage is not retained and observed annual runoff closely represents natural runoff of basin.

Cooperation.--Water-stage recorder inspected by employees of Corps of Engineers.

Revisions.--WSP 1246: Drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Dec. 10 to Mar. 11)

798.2	49	802.0	1,550
799.0	165	803.0	2,570
800.0	440	804.0	3,940
801.0	895		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	578	745	984	1,210	1,230	1,810	1,780	1,440	1,930	1,680	1,330	702
2	*578	650	1,180	1,140	1,170	1,680	1,670	1,510	1,940	1,290	834	750
3	502	582	1,080	1,170	1,460	1,500	1,490	*1,370	1,630	1,020	*526	498
4	440	535	917	1,000	1,100	1,260	1,260	1,640	1,980	1,380	933	498
5	411	506	859	978	1,070	1,190	994	1,690	2,000	1,330	774	564
6	400	478	1,350	1,020	1,040	1,370	834	1,730	2,050	1,320	789	735
7	408	463	2,650	1,070	1,040	1,790	839	1,860	2,090	1,480	972	687
8	404	444	2,280	1,080	1,080	1,750	834	2,110	2,110	1,370	917	785
9	386	422	1,570	1,080	1,160	1,670	839	2,280	2,110	1,260	1,080	765
10	383	422	1,340	1,170	*1,490	*1,640	1,150	2,360	2,220	*1,220	1,390	688
11	383	677	1,200	1,210	651	1,520	1,170	2,420	2,110	1,220	1,250	765
12	369	980	1,110	1,300	263	1,150	1,120	2,240	1,780	1,220	1,050	753
13	422	*1,500	1,000	1,290	1,190	870	1,200	1,850	1,770	1,160	880	522
14	506	1,450	983	1,530	1,790	834	1,280	1,720	2,250	1,090	789	595
15	448	1,140	928	2,610	1,780	814	1,480	1,720	2,210	1,070	849	636
16	415	928	895	2,970	1,760	799	1,850	1,910	2,140	1,100	809	551
17	429	779	*890	3,060	1,730	794	2,000	2,150	1,980	1,160	794	706
18	397	707	870	3,160	1,720	779	2,070	2,350	2,250	1,190	966	556
19	372	669	1,270	2,990	1,760	765	2,070	2,580	2,250	1,140	1,210	783
20	359	595	1,760	2,750	1,780	770	2,940	2,770	2,250	1,040	774	678
21	352	535	1,610	2,380	1,780	875	3,350	1,990	2,260	616	917	586
22	438	522	1,350	1,410	1,770	880	3,410	2,020	2,280	369	789	609
23	760	531	1,190	1,310	1,810	864	*3,770	3,480	2,250	210	819	543
24	755	526	1,350	1,750	1,870	301	3,150	3,500	2,230	106	1,000	663
25	721	556	1,730	1,600	1,960	62	2,640	3,500	2,230	316	1,380	578
26	740	564	2,530	1,430	2,000	59	1,880	3,560	2,220	478	859	824
27	613	543	2,420	1,350	2,010	64	1,660	3,540	2,180	490	789	1,360
28	539	721	1,980	1,520	1,970	352	1,510	3,520	2,110	898	726	1,730
29	505	627	1,730	1,510	1,998	352	1,490	3,480	1,930	1,190	819	1,130
30	1,030	632	1,510	1,450	-----	988	1,380	3,370	1,790	1,450	928	518
31	922	-----	1,310	1,330	-----	1,380	-----	2,390	-----	1,510	805	-----
Total	15,966	20,429	43,716	50,568	41,124	31,508	52,620	74,280	62,810	32,963	29,341	21,766
Mean	515	681	1,412	1,634	1,469	1,016	1,754	2,396	2,094	1,063	946	726
Ac-ft	31,670	40,520	86,710	100,500	81,570	62,500	104,400	147,300	124,600	65,580	58,200	43,170
(+)	0	0	+98	0	+12,730	-3,870	-8,870	+9,150	-6,390	+8,940	-0,260	-3,430

Adjusted for change in reservoir contents

Mean	515	681	1,412	1,634	1,469	954	1,605	2,544	1,986	1,209	812	668
Cfs/m	1.28	1.70	3.52	4.07	4.23	2.38	4.00	6.34	4.95	3.01	2.02	1.67
In.	1.48	1.89	4.06	4.70	4.41	2.74	4.47	7.31	5.53	3.48	2.34	1.96
Ac-ft	31,670	40,520	86,810	100,500	94,300	58,630	95,530	156,400	118,200	74,320	49,940	39,740

Observed

Calendar year 1957: Max	3,720	Min	59	Mean	1,216	Ac-ft	880,400
Water year 1957-58: Max	3,560	Min	59	Mean	1,307	Ac-ft	946,500

Adjusted

Calendar year 1957: Mean	1,216	Cfs/m	3.03	In.	41.15	Ac-ft	880,400
Water year 1957-58: Mean	1,308	Cfs/m	3.26	In.	44.27	Ac-ft	946,600

\* Discharge measurement made on this day.

† Change in contents, in acre-feet, in Mud Mountain Reservoir, furnished by Corps of Engineers.

## 1005. Stuck River near Sumner, Wash.

Location.--Lat 47°14'55", long 122°14'35", in NE¼SW¼ sec. 1, T. 20 N., R. 4 E., on right bank 300 ft downstream from county bridge, 3 miles north of Sumner, and 4½ miles upstream from mouth.

Drainage area.--470 sq mi, excludes that of Lake Tapps.

Records available.--January 1945 to September 1958.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (Intercounty River Improvement Commission bench mark).

Average discharge.--13 years, 595 cfs (430,800 acre-ft per year).

Extremes.--Maximum discharge during year, 2,900 cfs Feb. 27 (elevation, 54.88 ft); minimum, 53 cfs Aug. 27; minimum elevation, 49.87 ft Oct. 6, 9-11.  
1945-58: Maximum discharge, 15,100 cfs Dec. 12, 1955 (elevation, 61.40 ft); minimum, 32 cfs Nov. 29, 30, 1952; minimum elevation, 48.48 ft Feb. 1, 1945 (channel affected by dredging).

Remarks.--Records good. An average of 600 to 900 cfs diverted from White River (head of Stuck River) above station into Lake Tapps for Dieringer powerplant of Puget Sound Power & Light Co. High flow influenced by regulation in Mud Mountain Reservoir (see P. 86).

Revisions.--WSP 1216: Drainage area.

Rating tables, water year 1957-58 (elevation, in feet, and discharge, in cubic feet per second)

Oct. 1 to Feb. 27

Feb. 28 to Sept. 30

49.8	47	52.0	660	50.0	56	52.0	630
50.2	102	53.0	1,240	50.5	140	53.0	1,240
50.6	180	54.1	2,120	51.0	255	54.5	2,500
51.0	285						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	59	86	107	180	222	228	142	112	576	211	118	64
2	*69	73	148	154	190	216	144	105	*389	168	107	*69
3	75	68	128	136	185	165	105	103	211	150	99	69
4	66	69	115	128	172	179	98	114	204	146	98	62
5	68	69	106	120	166	153	89	116	194	122	91	64
6	62	68	122	116	156	142	76	114	194	128	87	72
7	62	67	1,020	111	*154	*144	78	122	211	148	91	68
8	68	67	685	113	164	150	80	161	223	155	91	66
9	62	69	210	113	182	144	84	280	268	*150	91	66
10	59	66	152	148	345	144	99	403	482	150	94	65
11	58	72	136	188	561	144	94	470	486	142	81	70
12	60	96	128	198	570	144	84	406	400	148	96	68
13	68	*170	100	185	466	142	81	174	188	142	81	69
14	72	180	107	225	250	140	87	103	571	142	81	78
15	69	150	99	830	228	140	105	87	548	146	78	*82
16	68	124	96	1,320	345	142	225	92	454	153	80	78
17	69	97	*100	2,040	273	142	225	159	310	128	80	66
18	64	97	100	1,830	270	142	316	717	289	122	81	62
19	238	94	134	1,670	220	142	292	1,310	350	130	92	69
20	412	91	176	1,440	192	128	1,060	1,040	655	134	89	65
21	309	88	248	1,030	188	142	*1,670	821	904	270	91	56
22	91	88	230	390	235	144	1,880	204	892	396	89	60
23	142	82	172	315	291	148	1,740	2,040	585	265	91	74
24	92	72	178	558	324	307	1,500	2,110	615	84	82	61
25	86	79	198	422	352	201	928	2,110	548	56	84	103
26	89	79	845	279	398	170	392	2,220	544	96	80	571
27	75	78	866	250	1,600	161	230	2,340	553	98	62	522
28	73	88	401	339	1,700	157	176	2,480	558	98	69	474
29	72	79	312	294	-	163	146	2,430	466	109	72	466
30	98	82	245	279	-	130	120	2,330	278	109	69	454
31	115	-----	185	264	-----	124	-----	1,530	-----	114	64	-----
Total	3,060	2,695	7,849	15,665	10,399	4,918	12,346	26,803	13,146	4,590	2,659	4,213
Mean	98.7	89.8	253	505	371	159	412	865	438	148	85.8	140
Ac-ft	6,070	5,350	15,570	31,070	20,630	9,750	24,490	53,160	26,070	9,100	5,270	8,360
Calendar year 1957: Max				2,240	Min 53				Ac-ft 202,800			
Water year 1957-58: Max				2,480	Min 56		Mean 280		Ac-ft 214,900			
							Mean 297					

\* Discharge measurement made on this day.

1010. Lake Tapps near Sumner, Wash.

Location.--Lat 47°14'30", long 122°11'30", in NE $\frac{1}{4}$  sec. 8, T. 20 N., R. 5 E.,  $1\frac{1}{2}$  miles east of Dieringer and 3 miles northeast of Sumner.

Drainage area.--12.5 sq mi.

Records available.--November 1911 to September 1958. October 1934 to October 1950 change in contents published with records for Puyallup River at Puyallup. Month-end contents only November 1911 to September 1950, published in WSP 1316.

Gage.--Staff gage read hourly. Datum of gage is 0.7 ft above mean sea level (levels by Puget Sound Power & Light Co.).

Extremes.--Maximum contents observed during year, 51,710 acre-ft June 30 (gage height, 541.57 ft); minimum observed, 15,300 acre-ft Apr. 10 (gage height, 522.50 ft).  
1911-58: Maximum contents observed, that of June 30, 1958; minimum observed, 458 acre-ft June 24, 1912 (gage height, 505.70 ft).

Remarks.--Reservoir is formed on natural lake into which a great part of the low-water flow of White River is diverted. Usable capacity, 50,400 acre-ft between elevations 505 and 541 ft. Storage used for power.

Cooperation.--Gage-height record and contents curve furnished by Puget Sound Power & Light Co.

Month-end gage height and usable contents, water year October 1957 to September 1958

Date	Gage height (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	538.65	45,130	-
Oct. 31.....	539.30	46,560	+1,430
Nov. 30.....	537.32	42,200	-4,360
Dec. 31.....	539.60	47,220	+5,020
Calendar year 1957.....	-	-	+7,410
Jan. 31.....	539.96	48,010	+790
Feb. 28.....	540.53	49,320	+1,310
Mar. 31.....	525.09	18,740	-30,580
Apr. 30.....	536.01	39,320	+20,580
May 31.....	539.57	47,150	+7,830
June 30.....	541.46	51,460	+4,310
July 31.....	538.44	44,670	-6,790
Aug. 31.....	540.55	49,360	+4,690
Sept. 30.....	538.20	44,140	-5,220
Water year 1957-58.....	-	-	-990

† Gage height at 12 p.m.

1011. Lake Tapps diversion at Dieringer, Wash.

Location.--Lat 47°14'20", long 122°13'40", in NW $\frac{1}{4}$  sec. 7, T. 20 N., R. 5 E., on right bank 900 ft downstream from Dieringer powerplant, 1,200 ft upstream from mouth, and 2 $\frac{1}{2}$  miles north of Sumner.

Records available.--April to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 60 ft (from topographic map).

Extremes.--Maximum daily discharge during period April to September, 2,050 cfs May 27-29; minimum daily, 80 cfs Sept. 28.

Remarks.--Records good prior to May 1, excellent thereafter. Regulation by White River powerplant.

Discharge, in cubic feet per second, April to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							-	1,500	1,670	1,650	1,330	557
2							-	1,570	*1,700	1,670	<u>1,380</u>	*1,140
3							-	1,480	1,650	1,660	818	<u>1,300</u>
4							-	820	1,640	496	1,160	<u>720</u>
5							-	1,520	1,630	1,360	876	578
6							-	1,480	1,590	768	796	544
7							-	1,450	1,500	1,500	762	370
8							-	1,450	<u>1,170</u>	1,420	747	697
9							-	1,340	<u>1,620</u>	*1,420	499	726
10							-	982	<u>1,800</u>	1,450	<u>123</u>	745
11							†1,140	235	1,750	1,390	735	778
12							439	1,530	1,900	844	692	760
13							310	1,550	1,680	170	792	717
14							947	1,600	1,520	1,580	846	586
15							1,140	1,650	1,330	<u>1,730</u>	856	706
16							1,220	1,620	1,630	1,700	520	594
17							1,200	1,390	1,790	1,730	131	601
18							1,190	850	1,640	1,420	714	582
19							1,150	1,720	1,610	708	788	892
20							154	1,590	1,780	<u>130</u>	840	734
21							1,330	1,570	1,570	1,050	844	528
22							1,310	1,540	1,450	1,040	874	602
23							1,300	1,600	1,580	748	846	626
24							1,340	2,020	1,600	706	634	556
25							1,410	1,960	1,580	704	820	518
26							1,260	1,900	1,520	350	1,080	554
27							545	2,050	1,680	*158	1,030	132
28							1,420	2,050	1,640	646	900	80
29						-	1,460	2,050	1,480	647	900	210
30						-	1,440	1,740	1,560	786	648	150
31						-	-----	1,750	-----	1,130	166	-----
Total							-	47,557	48,140	32,761	24,147	18,263
Mean							-	1,534	1,605	1,057	779	609
Ac-ft							-	94,330	95,480	64,980	47,890	36,220
Calendar year	: Max		Min		Mean		Ac-ft					
Water year	: Max		Min		Mean		Ac-ft					

\* Discharge measurement made on this day.

† Result of discharge measurement.



## 1015. Puyallup River at Puyallup, Wash.

Location.--Lat 47°12'30", long 122°19'35", in NW¼ sec. 20, T. 20 N., R. 4 E., on left bank 0.8 mile upstream from bridge at Clark Creek, 1 mile northwest of Puyallup, and 7 miles upstream from mouth.

Drainage area.--948 sq mi.

Records available.--May 1914 to September 1958.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929. Prior to Dec. 3, 1919, at sites 1½ miles upstream and 900 ft upstream at different datums.

Dec. 3, 1919, to Nov. 9, 1935, at site 500 ft upstream at datum 9.61 ft higher than present datum.

Average discharge.--44 years, 3,291 cfs (2,383,000 acre-ft per year), adjusted for storage in Lake Tapps since October 1934, and Mud Mountain Reservoir October 1944 to September 1947.

Extremes.--Maximum discharge during year, 10,700 cfs Jan. 17 (elevation, 15.41 ft); minimum, 498 cfs Oct. 19 (elevation, 8.49 ft); minimum daily, 677 cfs Oct. 12.

1914-58: Maximum discharge, 57,000 cfs Dec. 10, 1933 (elevation, 31.0 ft, present datum); minimum, 306 cfs Sept. 25, 1955 (elevation, 8.23 ft); minimum daily, 400 cfs Nov. 30, 1952.

Remarks.--Records good. All diverted water returned to river above gage. Large part of flow of White River diverted into Lake Tapps (see preceding page) returned via Stuck River above station. Flood flow regulated by Mud Mountain Reservoir on White River (see p. 86). Some pondage on tributaries and upper Puyallup River. Diurnal fluctuations caused by powerplants and glacial melts above station. Since 1912 the city of Tacoma pipe-line diversion from Green River has spilled 0 to 110 cfs daily (an average of 40 cfs or 2,380 acre-ft per month) into Puyallup River at south line of sec. 7, T. 19 N., R. 5 E., half a mile east of McMillin. Monthly mean discharge, in cubic feet per second, for 1958 water year is as follows:

October.....	48.7	February.....	35.3	June.....	24.0
November.....	39.1	March.....	38.0	July.....	14.2
December.....	51.5	April.....	51.4	August.....	3.8
January.....	49.8	May.....	24.3	September.....	35.0

Revisions.--WSP 832: Drainage area.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,540	2,400	1,930	3,340	3,530	3,790	2,420	3,220	4,240	3,450	2,630	1,660
2	1,720	1,830	3,380	3,300	3,400	3,420	2,460	3,420	3,950	3,350	2,790	2,020
3	*1,530	1,060	2,890	3,210	3,440	3,470	2,370	3,220	3,700	3,210	2,240	2,070
4	1,430	1,670	2,580	2,860	3,360	3,340	2,280	2,650	3,470	2,260	2,250	1,390
5	742	1,600	2,630	2,780	3,520	3,270	2,230	3,200	*3,570	2,940	2,000	1,220
6	698	1,540	3,360	3,000	3,230	3,130	1,940	3,270	3,990	2,580	2,020	1,340
7	1,230	1,510	5,980	2,960	3,220	3,020	2,140	3,230	3,320	3,230	2,090	1,240
8	1,280	1,500	4,240	3,030	3,200	2,950	2,160	3,420	3,530	3,210	2,030	1,660
9	1,140	1,350	3,840	3,040	3,120	2,790	2,220	3,540	3,460	3,040	1,810	1,810
10	1,110	711	3,460	3,070	4,360	2,780	2,600	3,230	4,050	3,010	1,520	1,720
11	1,150	2,040	3,190	3,270	4,190	*2,860	2,460	2,630	3,980	2,880	2,100	1,660
12	677	*2,680	3,100	3,150	4,850	2,800	1,760	3,450	4,160	2,520	1,950	1,490
13	732	4,440	2,850	3,320	*5,120	2,710	1,610	3,580	1,680	1,580	1,790	1,370
14	1,510	2,670	2,670	3,360	4,820	2,650	2,220	3,110	3,740	2,810	1,920	1,440
15	1,360	3,760	1,710	5,550	4,440	2,470	2,860	3,010	3,580	3,140	1,940	*1,820
16	1,270	2,730	2,580	6,120	5,000	2,360	4,300	3,310	3,670	*3,180	1,690	1,520
17	1,350	1,530	2,720	*9,510	4,750	2,540	4,380	3,260	3,960	3,350	1,190	1,670
18	1,240	2,300	2,720	7,680	4,890	2,640	4,440	3,270	3,930	3,240	1,670	1,400
19	795	2,340	3,390	6,230	4,780	2,520	4,090	5,260	3,950	2,560	1,700	2,160
20	972	2,230	4,520	5,470	4,290	2,510	6,120	4,610	4,480	1,590	1,850	1,680
21	1,180	1,990	4,370	5,400	3,940	2,650	7,530	4,780	4,530	2,460	2,010	1,480
22	1,100	2,020	3,160	3,800	4,070	2,660	7,420	4,070	4,360	2,710	2,080	1,500
23	2,210	1,880	3,540	3,590	4,280	2,380	6,730	5,900	4,160	2,410	1,990	1,460
24	2,070	1,060	3,860	5,580	5,320	2,950	*5,920	6,560	4,350	2,000	1,910	1,380
25	1,870	2,010	4,320	5,620	5,710	2,930	5,220	6,600	4,400	2,010	2,090	1,530
26	1,620	2,070	6,980	4,110	5,220	2,770	4,170	6,490	3,760	1,740	2,210	2,000
27	1,050	2,020	6,470	5,050	5,270	2,670	2,860	6,600	4,210	1,680	2,210	1,550
28	1,380	1,710	5,850	4,560	5,890	2,510	3,450	6,550	4,190	2,200	1,970	1,480
29	1,500	1,980	4,620	4,840	-	2,340	3,370	6,230	3,780	2,330	1,990	1,540
30	2,950	1,910	4,090	4,260	-	2,240	3,290	5,570	3,550	2,210	1,870	1,380
31	3,030	-	3,670	4,040	-	2,230	-	5,030	-	2,450	1,250	-
Total	43,436	62,051	114,670	134,400	121,910	86,250	107,020	132,060	118,010	81,230	60,760	47,860
Mean	1,401	2,068	3,699	4,335	4,354	2,782	3,567	4,260	3,934	2,620	1,960	1,595
Ac-ft	86,150	123,100	227,400	266,600	241,800	171,100	212,300	261,900	234,100	161,100	120,500	94,930
(t)	+1,430	-4,360	+5,020	+790	+1,310	-30,580	+20,580	+7,830	+4,310	-6,790	+4,690	-5,220

Adjusted for change in contents in Lake Tapps

Mean	1,424	1,995	3,780	4,349	4,377	2,285	3,914	4,386	4,006	2,509	2,036	1,508
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-
Ac-ft	87,580	118,700	232,400	267,400	243,100	140,500	232,900	269,700	238,400	154,300	125,200	89,710

Observed

Calendar year 1957: Max	9,170	Min	657	Mean	2,893	Ac-ft	2,094,000
Water year 1957-58: Max	9,510	Min	677	Mean	3,040	Ac-ft	2,201,000

Adjusted

Calendar year 1957: Mean	2,902	Cfsm	-	In.	-	Ac-ft	2,101,000
Water year 1957-58: Mean	3,039	Cfsm	3.21	In.	43.51	Ac-ft	2,200,000

\* Discharge measurement made on this day.

† Change in contents, in acre-feet, in Lake Tapps, based on information furnished by Puget Sound Power & Light Co.

## DUWAMISH RIVER BASIN

1035. Snow Creek near Lester, Wash.

Location.--Lat 47°15'00", long 121°24'00", in NW¼ sec. 3, T. 20 N., R. 11 E., on right bank at bridge a quarter of a mile upstream from mouth and 5½ miles northeast of Lester.

Drainage area.--11.9 sq mi.

Records available.--October 1945 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,950 ft (from topographic map). Prior to Apr. 17, 1957, at site 200 ft upstream at datum 3.84 ft higher.

Average discharge.--13 years, 67.2 cfs (48,650 acre-ft per year).

Extremes.--Maximum discharge during year, 449 cfs Apr. 20 (gage height, 3.26 ft), from rating curve extended above 120 cfs on basis of slope-area measurement of peak flow; minimum, 4.0 cfs Oct. 1; minimum gage height, 1.00 ft Sept. 12, 13.

1945-58: Maximum discharge, 1,730 cfs Dec. 9, 1956 (gage height, 4.00 ft, from floodmarks, at present site and datum), from rating curve extended above 120 cfs on basis of slope-area measurement of peak flow; maximum gage height, 4.87 ft Jan. 31, 1953, Dec. 11, 1955, site and datum then in use; minimum, 3.0 cfs Nov. 29, 30, 1952; minimum gage height, that of Sept. 12, 13, 1958.

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

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 6

Dec. 6 to Sept. 30

1.04	4.0	1.0	4.2	2.0	94
1.5	16.5	1.2	12.8	2.3	139
1.6	41	1.4	26	2.7	225
2.0	90	1.7	55	3.2	410
2.4	156				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.0	21	56	44	a52	75	53	108	52	16.4	6.6	5.4
2	8.2	18.6	77	40	a51	65	55	117	48	*15.8	6.2	5.1
3	7.0	16.5	82	37	a49	57	51	122	44	14.6	6.6	4.8
4	5.4	15.3	72	35	a48	53	48	118	44	14.0	6.6	4.8
5	5.0	13.5	62	33	53	50	46	122	46	13.4	6.2	4.5
6	5.0	10.7	153	31	56	46	50	122	44	12.8	5.8	4.5
7	5.0	11.7	178	30	55	42	56	131	39	12.2	*6.2	4.5
8	5.0	10.7	162	29	56	40	61	153	33	11.7	5.8	4.5
9	4.7	10.2	129	28	66	37	60	148	31	11.7	5.8	4.5
10	4.4	10.7	105	27	95	35	77	141	30	11.2	5.8	4.5
11	*4.4	22	91	28	86	33	83	133	28	10.7	5.4	4.5
12	4.4	45	84	30	79	31	97	105	26	10.2	5.4	4.2
13	4.4	80	75	29	125	30	122	88	24	10.2	5.4	5.8
14	4.4	79	66	35	111	29	123	*86	23	10.2	5.1	12.8
15	4.4	72	56	90	84	29	120	102	22	9.7	5.1	10.2
16	4.7	53	51	114	74	27	129	123	22	9.2	5.1	7.8
17	6.6	*43	48	162	72	29	139	134	21	9.2	5.1	*13.4
18	5.0	37	44	126	98	28	153	144	19.7	9.2	5.1	10.2
19	4.4	33	74	97	*116	29	178	146	18.3	8.8	4.8	20
20	4.4	28	98	79	111	35	380	131	17.6	8.3	4.8	21
21	4.4	26	79	67	112	39	231	136	16.4	8.3	4.8	21
22	6.2	24	65	a55	146	46	154	137	15.2	8.3	4.5	22
23	7.0	24	55	a50	170	51	120	129	15.2	7.8	4.5	22
24	8.7	26	59	a65	185	*67	102	120	17.6	7.8	4.5	19.7
25	11.7	30	72	a66	168	72	90	118	15.8	7.4	*4.5	23
26	14.7	36	91	a55	128	68	77	116	17.0	7.4	4.5	20
27	12.3	35	75	a50	104	65	72	102	19.7	7.0	4.5	18.3
28	10.7	36	67	a60	84	61	71	83	22	7.0	4.8	15.8
29	10.7	32	61	a60	-	59	77	67	19.7	6.6	7.0	14.6
30	36	35	55	a57	-----	56	93	59	17.6	6.6	5.4	13.4
31	25	-----	48	a54	-----	53	-----	56	-----	6.6	5.4	-----
Total	248.2	934.9	2,490	1,763	2,634	1,437	3,168	3,597	808.8	310.3	167.3	346.8
Mean	8.01	31.2	80.3	56.9	94.1	46.4	106	116	27.0	10.0	5.40	11.6
Cfsm	0.673	2.62	6.75	4.78	7.91	3.90	8.91	9.75	2.27	0.840	0.454	0.975
In.	0.78	2.92	7.78	5.51	8.23	4.49	9.90	11.24	2.53	0.97	0.52	1.08
Ac-ft	492	1,850	4,940	3,500	5,220	2,850	6,280	7,130	1,600	615	332	668

Calendar year 1957: Max 324 Min 4.0 Mean 43.5 Cfsm 3.66 In. 49.67 Ac-ft 31,500  
 Water year 1957-58: Max 380 Min 4.0 Mean 49.1 Cfsm 4.13 In. 55.95 Ac-ft 35,500

Peak discharge (base, 350 cfs).--Apr. 20 (3:15 a.m.) 449 cfs (3.26 ft).

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of recorded range in stage, weather records, and records for nearby stations.

1040. Friday Creek near Lester, Wash.

Location.--Lat 47°13'10", long 121°27'10", in SE¼NW¼ sec. 18, T. 20 N., R. 11 E., on left bank 0.4 mile upstream from mouth and 2 miles northeast of Lester.

Drainage area.--4.55 sq mi.

Records available.--October 1945 to September 1958.

Gage.--Water-stage recorder. Concrete control since Aug. 9, 1951. Altitude of gage is 1,760 ft (from topographic map).

Average discharge.--13 years, 27.4 cfs (19,840 acre-ft per year).

Extremes.--Maximum discharge during year, 181 cfs Apr. 20 (gage height, 3.80 ft); minimum, 1.2 cfs Sept. 6 (gage height, 2.46 ft).  
1945-58: Maximum discharge, 497 cfs Dec. 11, 1946 (gage height, 4.90 ft); minimum, that of Sept. 6, 1958; minimum gage height, 2.28 ft Sept. 20, 30, 1946.

Remarks.--Records excellent except those for period of no gage-height record, which are good. Small diversion for domestic use. No regulation.

Revisions.--WSP 1216: Drainage area.

Rating table, water year 1957-58 (gage height, in feet,  
and discharge, in cubic feet per second)

2.5	1.6	3.3	57
2.7	6.3	3.5	96
2.9	16.3	3.8	181
3.1	32		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.2	6.3	24	16.9	19	26	14.5	36	17.6	a5.5	2.8	2.2
2	6.4	5.2	31	15.7	19	24	15.1	40	16.9	*5.2	2.8	2.0
3	3.5	4.6	28	14.5	17.6	20	15.1	43	14.5	4.8	3.0	1.8
4	2.6	4.2	23	13.3	16.9	19	13.9	44	13.9	4.6	2.8	1.8
5	2.4	4.0	19.7	12.3	17.6	18.3	13.9	46	13.9	4.2	2.6	1.7
6	2.4	3.8	56	11.3	18.3	16.3	13.9	46	13.3	4.0	2.6	1.6
7	2.4	3.5	59	10.8	17.6	15.7	15.1	47	12.3	4.0	*2.8	1.7
8	2.0	3.5	50	10.3	17.6	13.9	16.3	56	11.3	4.0	2.8	1.7
9	2.3	3.2	40	9.8	20	13.3	16.9	57	11.3	4.0	2.6	1.8
10	2.2	3.5	33	9.8	31	12.8	24	57	10.8	4.0	2.4	1.8
11	*2.2	11.3	29	9.8	25	11.8	26	54	10.8	3.8	2.4	1.8
12	2.2	24	28	12.3	23	11.3	28	46	9.8	3.8	2.4	1.7
13	2.3	35	24	11.8	50	10.8	35	39	9.3	3.5	2.3	3.2
14	2.4	29	21	15.1	40	10.3	39	*36	8.8	3.5	2.3	9.8
15	2.3	25	19	47	28	9.8	46	40	8.3	3.2	2.3	3.8
16	2.3	18.3	16.9	50	25	9.3	57	49	7.5	3.2	2.2	2.8
17	3.2	*13.9	15.7	71	26	9.3	57	54	7.5	3.2	2.2	*5.5
18	2.4	11.8	15.1	50	31	8.8	54	57	7.5	3.2	2.2	3.2
19	2.3	10.8	30	36	*34	8.8	74	57	6.7	3.2	2.3	7.1
20	2.2	9.3	41	28	34	9.3	162	51	6.7	3.5	2.3	6.3
21	2.2	8.3	30	24	35	11.3	106	53	6.3	3.5	2.3	5.5
22	3.2	7.5	23	20	47	12.3	70	51	6.3	3.2	2.3	5.5
23	3.2	7.9	19.7	19	61	12.8	54	50	5.9	3.2	2.3	5.5
24	6.3	7.9	22	28	62	17.6	46	43	7.9	3.2	2.2	4.8
25	7.5	9.3	31	25	57	*19	39	39	6.7	3.2	2.2	5.5
26	6.7	10.8	41	22	46	18.3	32	38	6.3	3.2	*2.0	4.6
27	4.6	10.8	29	19.7	38	16.9	29	32	a7.4	3.2	1.8	4.2
28	3.8	13.3	28	24	30	16.3	27	27	a8.5	3.2	2.0	4.0
29	3.5	11.3	26	24	-	15.7	27	23	a7.2	3.0	2.8	3.5
30	12.5	13.3	21	22	-----	15.7	29	19.7	a6.4	3.0	2.3	3.2
31	8.3	-----	19	21	-----	14.5	-----	19.7	-----	3.0	2.0	-----
Total	114.0	330.6	893.1	704.4	886.6	449.2	1,195.7	1,350.4	287.6	113.3	74.3	109.6
Mean	3.68	11.0	28.8	22.7	31.7	14.5	39.9	43.6	9.59	3.65	2.40	5.65
Cfsm	0.809	2.42	6.33	4.99	6.97	3.19	8.77	9.58	2.11	0.802	0.527	0.802
In.	0.93	2.70	7.30	5.76	7.25	3.67	9.77	11.04	2.35	0.93	0.61	0.90
Ac-ft	226	656	1,770	1,400	1,760	891	2,370	2,680	570	225	147	217

Calendar year 1957: Max 124 Min 2.0 Mean 18.8 Cfsm 4.13 In. 56.20 Ac-ft 13,640  
Water year 1957-58: Max 162 Min 1.6 Mean 17.8 Cfsm 3.91 In. 53.21 Ac-ft 12,910

Peak discharge (base, 150 cfs).--Apr. 20 (2:45 a.m.) 181 cfs (3.80 ft).

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of recorded range in stage and records for nearby stations.

## 1045. Green River near Lester, Wash.

Location.--Lat 47°12'30", long 121°33'10", in NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 20, T. 20 N., R. 10 E., on right bank three-eighths of a mile downstream from Champion Creek,  $1\frac{1}{4}$  miles downstream from McCain Creek and 3 miles west of Lester.

Drainage area.--104 sq mi.

Records available.--October 1945 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,480 ft (from river-profile map).

Average discharge.--13 years, 420 cfs (304,100 acre-ft per year).

Extremes.--Maximum discharge during year, 2,860 cfs Apr. 20 (gage height, 8.10 ft); minimum, 27 cfs Oct. 1 (gage height, 2.67 ft).

1945-58: Maximum discharge, 10,200 cfs probably Dec. 11, 1946 (gage height, 12.7 ft, from high-water mark in well), from rating curve extended above 4,500 cfs; minimum, 22 cfs Nov. 30, 1952; minimum gage height, 2.67 ft Sept. 30, Oct. 1, 1957.

Remarks.--Records good except those below 50 cfs, which are fair. No regulation or diversion above station.

Revisions (water years).--WSP 1286: 1947(M). WSP 1316: 1948(M).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Sept. 14-30)

2.6	24	4.5	330
3.0	48	5.0	510
3.5	98	6.0	1,050
4.0	190	8.0	2,700

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*28	86	248	304	380	487	271	626	308	99	49	36
2	42	73	353	277	374	430	286	680	283	*97	47	36
3	44	64	377	254	363	384	280	744	282	94	47	34
4	36	60	343	232	337	350	262	738	248	92	46	35
5	32	54	298	212	333	327	248	750	240	88	45	31
6	32	51	598	197	350	295	251	756	237	85	44	30
7	32	48	1,130	183	346	277	268	786	224	82	*44	30
8	33	46	810	174	346	254	289	906	204	80	44	30
9	31	44	650	*169	360	237	292	936	197	79	42	31
10	29	44	542	163	526	224	360	900	190	77	40	32
11	*28	93	464	163	494	416	416	852	183	75	39	32
12	28	184	416	185	441	202	452	690	174	73	38	30
13	28	333	366	195	608	190	564	564	165	71	37	31
14	30	333	330	276	613	181	600	*514	154	70	36	59
15	32	286	292	690	494	174	622	538	146	67	36	58
16	30	227	262	828	438	167	774	626	141	65	37	42
17	37	181	243	1,190	434	163	804	696	135	62	37	54
18	37	*152	232	948	518	161	810	768	128	60	37	*50
19	32	139	287	690	608	154	952	810	123	60	36	71
20	30	123	564	559	*654	156	2,650	750	118	60	35	80
21	30	109	502	471	631	181	1,990	738	112	60	34	72
22	38	101	416	405	816	204	1,300	756	106	58	34	79
23	52	96	343	374	1,050	222	996	738	102	57	33	76
24	50	94	343	452	1,170	311	828	680	120	56	33	72
25	56	97	452	445	1,130	*363	702	660	115	54	*32	72
26	64	117	708	416	882	353	618	618	108	53	*32	70
27	57	122	577	384	675	333	554	554	132	52	33	62
28	50	156	494	416	564	314	518	483	123	50	34	56
29	46	159	460	452	-	298	502	412	114	49	41	52
30	102	146	492	430	-	292	542	360	106	49	43	48
31	105	---	346	416	---	280	---	337	---	49	37	---
Total	1,301	3,818	13,848	12,546	15,926	8,176	20,001	20,946	4,998	2,122	1,204	1,489
Mean	42.0	127	447	405	569	264	667	676	167	68.5	38.8	49.6
Cfsm	0.404	1.22	4.30	3.89	5.47	2.54	6.41	6.50	1.61	0.659	0.373	0.477
In.	0.47	1.37	4.95	4.49	5.70	2.92	7.15	7.49	1.79	0.76	0.43	0.53
Ac-ft	2,580	7,570	27,470	24,880	31,590	16,220	39,670	41,550	9,910	4,210	2,390	2,950

Calendar year 1957: Max 2,000 Min 28 Mean 273 Cfsm 2.62 In. 35.62 Ac-ft 197,600  
Water year 1957-58: Max 2,650 Min 28 Mean 291 Cfsm 2.80 In. 38.05 Ac-ft 211,000

Peak discharge (base, 1,500 cfs).--Dec. 6 (11 p.m.) 1,620 cfs (6.78 ft); Apr. 20 (1 p.m.) 2,860 cfs (8.10 ft).

\* Discharge measurement made on this day.

1050. Smay Creek near Lester, Wash.

Location.--Lat 47°15'40", long 121°33'50", in SW $\frac{1}{4}$  sec. 32, T. 21 N., R. 10 E., on right bank  $\frac{3}{4}$  miles upstream from mouth and  $\frac{1}{2}$  miles northwest of Lester.

Drainage area.--8.71 sq mi.

Records available.--September 1946 to September 1958.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 1,900 ft (from topographic map). Prior to Dec. 11, 1946, water-stage recorder at site 200 ft upstream at datum 4.28 ft higher (destroyed by high water of Dec. 11, 1946).

Average discharge.--12 years, 51.2 cfs (37,070 acre-ft per year).

Extremes.--Maximum discharge during year, 230 cfs Apr. 20 (gage height, 3.95 ft); minimum, 5.5 cfs Sept. 11-13 (gage height, 2.49 ft).

1946-58: Maximum discharge not determined, probably occurred Dec. 11, 1946, when recorder was destroyed by high water; minimum, 4.2 cfs Nov. 21 to Dec. 1, 1952.

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

Revisions.--WSP 1216: Drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

2.5	5.8	3.2	58
2.7	13.7	3.5	109
2.9	26	4.0	247

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.1	9.8	35	48	57	61	29	58	39	*15.7	9.4	6.4
2	9.0	9.4	48	43	54	55	31	61	36	15.2	9.4	6.4
3	8.2	8.6	54	40	52	52	30	64	33	15.2	9.4	6.1
4	7.0	8.6	50	38	49	48	28	66	32	15.2	9.0	6.1
5	7.0	8.2	45	35	48	45	28	66	30	14.7	9.0	6.1
6	6.7	7.8	86	33	46	42	27	66	29	14.7	*8.6	5.8
7	5.7	7.4	113	31	46	40	27	64	28	14.2	8.6	5.8
8	6.7	7.4	94	*30	48	37	28	68	26	13.7	8.6	5.8
9	6.4	7.4	78	28	54	35	28	72	25	13.7	8.2	5.8
10	*6.4	8.2	67	28	76	33	36	72	25	13.2	8.2	5.8
11	6.1	14.2	60	29	70	32	37	72	24	12.7	7.8	5.8
12	6.1	26	54	34	68	30	39	64	23	12.7	7.8	5.8
13	6.4	46	48	32	92	28	45	57	22	12.7	7.8	6.4
14	6.4	53	45	40	68	28	53	53	22	12.2	7.4	11.4
15	6.1	52	40	87	75	27	62	53	20	12.2	7.4	8.6
16	6.4	41	37	103	70	26	76	58	20	11.8	7.0	7.8
17	6.7	*33	36	144	70	26	96	66	19.8	11.8	7.0	9.4
18	6.4	29	34	122	*76	25	100	70	19.2	11.8	7.0	*7.8
19	5.8	26	54	94	82	25	113	75	18.6	11.4	7.0	11.4
20	5.8	23	80	78	82	25	208	70	18.0	11.4	6.7	10.6
21	5.8	21	72	66	80	26	176	70	17.4	11.4	6.7	9.4
22	7.4	19.8	60	57	94	26	129	72	16.8	11.0	6.7	9.4
23	7.4	19.2	53	57	111	26	103	70	16.8	10.6	6.4	9.4
24	9.0	18.6	55	73	116	*31	90	66	18.6	10.6	6.4	9.0
25	9.4	19.2	64	68	111	32	80	62	17.4	10.6	6.4	8.6
26	8.2	20	80	64	94	33	72	60	18.6	10.2	*6.4	8.6
27	7.4	20	72	60	82	32	66	57	19.8	10.2	6.4	8.2
28	7.4	25	70	73	70	32	60	52	18.6	10.2	6.4	8.2
29	7.0	22	66	70	-	31	55	46	17.4	10.2	7.8	7.8
30	13.7	23	58	66	-----	31	55	43	16.2	9.8	6.7	7.8
31	11.0	-----	53	61	-----	30	-----	42	-----	9.4	6.4	-----
Total	226.1	653.8	1,861	1,832	2,061	1,050	2,007	1,935	687.2	380.4	234.0	231.5
Mean	7.29	21.1	60.0	59.1	73.5	33.9	65.9	62.4	22.9	12.3	7.55	7.72
Cfsm	0.837	2.42	6.89	6.79	8.45	3.89	7.68	7.16	2.63	1.41	0.867	0.886
In.	0.97	2.71	7.95	7.82	8.80	4.48	8.57	8.26	2.93	1.62	1.00	0.99
Ac-ft	448	1,260	3,690	3,630	4,090	2,080	3,980	3,840	1,360	755	464	459

Calendar year 1957: Max 184 Min 5.8 Mean 35.1 Cfsm 4.03 In. 54.67 Ac-ft 25,590  
 Water year 1957-58: Max 208 Min 5.8 Mean 36.0 Cfsm 4.13 In. 56.10 Ac-ft 26,060

Peak discharge (base, 200 cfs).--Apr. 20 (12 m.) 230 cfs (3.95 ft).

\* Discharge measurement made on this day.

1057. North Fork Green River near Eagle Gorge, Wash.

Location.--Lat 47°18'47", long 121°46'12", in NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 15, T. 21 N., R. 8 E., on right bank 2.6 miles upstream from mouth and 3.2 miles northwest of Eagle Gorge.

Drainage area.--16.5 sq mi.

Records available.--September 1956 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,320 ft (from topographic map).

Extremes.--Maximum discharge during year, 645 cfs Jan. 17; maximum gage height, 5.28 ft Dec. 6; minimum discharge, 6.2 cfs Sept. 7, 8, 11-13; minimum gage height, 2.73 ft Oct. 1.

1956-58: Maximum discharge, 1,100 cfs Dec. 10, 1956 (gage height, 6.27 ft); minimum, that of Sept. 7, 8, 11-13, 1958; minimum gage height, 1.74 ft Sept. 19, 20, 23, 1956.

Remarks.--Records fair prior to June 11, good thereafter. No regulation or diversion above station.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13.5	48	140	97	120	83	42	72	31	*23	9.6	11
2	38	40	205	88	109	77	46	72	31	22	9.2	8.8
3	19	35	205	79	99	71	43	72	31	22	10	8.0
4	13	31	164	72	91	65	39	67	27	22	10.5	7.2
5	12.5	28	138	69	91	65	37	65	24	21	9.6	6.9
6	11.5	25	310	66	86	59	36	62	24	19.5	9.2	6.9
7	12	24	292	63	91	56	35	64	24	18.5	9.6	6.5
8	13.5	22	221	62	93	53	37	65	22	18	*9.6	6.2
9	11.5	20	159	63	112	50	37	63	23	17.5	9.2	6.5
10	10.5	22	122	80	212	48	63	59	29	17	8.8	6.9
11	11	68	103	96	140	47	57	56	26	16	8.8	6.5
12	10.5	136	94	124	151	44	58	53	27	15.5	8.4	6.2
13	12.5	250	77	110	248	41	63	47	27	15	8.0	6.5
14	17.5	227	80	219	174	40	63	44	26	14.5	8.0	23
15	13.5	206	70	447	149	39	75	46	24	14	8.0	*18.5
16	12	150	65	428	166	37	94	48	24	13.5	8.0	14.5
17	25	118	65	518	150	37	119	48	23	13.5	8.0	24
18	*14	*97	61	306	172	38	110	48	22	13.5	7.6	16
19	11	89	279	195	135	*37	180	*50	21	13	7.6	53
20	9.4	76	329	135	108	41	300	44	21	13	7.2	31
21	8.6	68	245	105	*98	58	183	44	20	12.5	7.2	26
22	17	61	175	88	126	54	138	41	19.5	12.5	6.9	24
23	42	60	232	93	141	52	118	40	*18	12	6.9	25
24	58	58	158	165	160	62	111	38	24	11.5	6.9	22
25	51	66	212	143	147	59	104	36	24	11.5	6.5	29
26	54	71	301	113	122	57	96	35	21	11	6.5	24
27	42	66	225	104	107	54	88	33	28	10.5	7.2	22
28	35	91	218	*216	92	51	82	31	29	10	8.4	20
29	30	75	182	197	-	48	77	29	26	10	*13.5	18
30	81	82	142	170	-----	48	73	29	24	*10	10	17.5
31	59	-----	112	146	-----	43	-----	31	-----	9.6	8.8	-----
Total	769.0	2,412	5,381	4,858	3,690	1,614	2,604	1,530	740.5	463.1	263.7	501.6
Mean	24.8	80.4	174	157	132	52.1	86.8	49.4	24.7	14.9	8.51	16.7
Cfsm	1.50	4.87	10.5	9.52	8.00	3.16	5.26	2.99	1.50	0.903	0.516	1.01
In.	1.73	5.44	12.13	10.95	8.32	3.64	5.87	3.45	1.67	1.04	0.59	1.13
Ac-ft	1,530	4,780	10,670	9,640	7,320	3,200	5,160	3,030	1,470	919	523	995

Calendar year 1957: Max 400 Min 8.6 Mean 72.1 Cfsm 4.37 In. 59.28 Ac-ft 52,170  
 Water year 1957-58: Max 518 Min 6.2 Mean 68.0 Cfsm 4.12 In. 55.96 Ac-ft 49,240

Peak discharge (base, 500 cfs).--Dec. 6 (3:15 p.m.) 640 cfs; Dec. 19 (5 p.m.) 602 cfs; Jan. 17 (12:30 a.m.) 645 cfs.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation indefinite Oct. 1 to June 11; discharge computed on basis of flow past gage plus estimated amount in bypass channel.

1065. Green River near Palmer, Wash.

Location.--Lat 47°17'40", long 121°49'20", in SW¼ sec. 20, T. 21, N., R. 8 E., on right bank 1½ miles upstream from diversion dam and intake of Tacoma water-supply system, 2½ miles downstream from North Fork, and 3½ miles southeast of Palmer.

Drainage area.--230 sq. mi.

Records available.--October 1931 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 912.6 ft above mean sea level (river-profile survey). Prior to Nov. 18, 1931, staff gage at same site and datum.

Average discharge.--27 years, 1,072 cfs (776,100 acre-ft per year).

Extremes.--Maximum discharge during year, 5,700 cfs Apr. 20 (gage height, 11.34 ft); minimum, 108 cfs Sept. 8-10, 12, 13; minimum gage height, 4.30 ft Oct. 1.

1931-58: Maximum discharge, 23,200 cfs Dec. 11, 1946 (gage height, 19.95 ft, from high-water mark in well); minimum, 81 cfs Sept. 4, 5, 1934; minimum gage height, 3.35 ft Sept. 2, 3, 1945.

Flood in December 1917 reached a stage of about 20 ft, from crest head over city of Tacoma diversion dam and gage-height relationship curve (discharge, about 25,000 cfs).

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

Revisions (water years).--WSP 1062: 1932-34, 1935(M), 1938(M). WSP 1216: Drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Nov. 13

Nov. 14 to Sept. 30

4.3	131	6.0	850	4.3	103	7.0	1,460
4.6	215	7.5	1,750	4.6	199	9.0	2,950
5.0	370			5.0	385	11.0	5,210
				6.0	885		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	134	397	965	1,040	1,510	1,330	685	1,270	625	290	140	133
2	182	343	1,510	935	1,390	1,170	725	1,340	595	276	140	125
3	185	305	1,410	850	1,290	1,050	710	1,380	570	267	140	122
4	157	282	1,150	790	1,150	985	680	1,360	535	254	146	119
5	149	264	980	740	1,110	930	650	1,360	510	258	136	116
6	144	246	1,900	700	1,100	850	635	1,340	500	244	133	114
7	144	232	2,810	670	1,090	815	645	1,330	495	232	133	111
8	144	218	2,040	655	1,100	775	675	1,440	460	224	133	108
9	141	212	1,650	650	1,260	735	690	1,520	435	215	130	108
10	139	222	1,350	*695	2,190	710	885	1,470	450	*211	130	108
11	136	415	1,150	825	1,810	680	970	1,420	430	203	127	111
12	134	790	1,040	935	1,690	655	970	1,240	415	199	127	108
13	141	1,550	905	910	2,450	630	1,090	1,030	395	192	125	111
14	163	1,600	890	1,410	2,120	615	1,210	925	380	188	125	173
15	154	1,260	795	2,910	1,780	595	1,470	925	360	184	122	*207
16	149	945	745	2,990	1,830	580	2,050	1,020	345	180	122	173
17	168	775	715	4,300	*1,690	570	2,220	1,130	330	177	122	203
18	157	685	700	3,100	1,760	570	2,270	1,210	320	173	122	195
19	*152	625	1,580	2,310	1,830	555	2,460	*1,270	305	173	119	430
20	149	555	2,370	1,850	1,780	*555	5,160	1,180	295	169	119	335
21	144	*505	2,130	1,550	1,680	625	4,180	1,140	290	166	116	290
22	168	460	1,630	1,300	1,970	635	2,980	1,150	280	166	*116	290
23	246	440	1,300	1,230	2,410	655	2,370	1,130	267	162	114	280
24	285	425	1,390	1,910	2,550	775	2,050	1,030	310	159	114	258
25	305	440	1,820	1,780	2,510	855	1,840	1,030	330	159	114	267
26	352	485	2,580	1,570	2,130	855	1,630	965	290	159	111	262
27	301	495	2,050	1,420	1,780	820	1,450	885	365	156	111	232
28	264	715	1,850	1,930	1,520	785	1,320	810	345	152	116	203
29	236	635	1,705	1,735		755	1,210	730	325	149	123	177
30	464	620	1,420	1,760		745	1,180	675	305	*146	136	177
31	464		1,200	1,690		710		655		143	130	
Total	6,251	17,141	45,525	47,335	48,480	23,550	47,060	35,360	11,857	6,026	3,905	5,661
Mean	202	571	1,469	1,527	1,731	760	1,569	1,141	395	194	126	189
Cfs/m	0.878	2.48	6.39	6.64	7.53	3.30	6.82	4.96	1.72	0.843	0.548	0.822
In.	1.01	2.77	7.36	7.95	7.84	3.61	7.61	5.72	1.92	0.97	0.63	0.92
Ac-ft	12,400	34,000	90,300	93,890	96,160	46,710	93,340	70,340	23,520	11,950	7,750	11,230
Calendar year 1957: Max		4,560		134	Min	794	Cfs/m	3.45	In.	46.84	Ac-ft	574,700
Water year 1957-58: Max		5,160		108	Min	817	Cfs/m	3.55	In.	48.21	Ac-ft	591,400

Peak discharge (base, 6,000 cfs).--No peak above base.

\* Discharge measurement made on this day.

## 1085. Newaukum Creek near Black Diamond, Wash.

Location.--Lat 47°16'30", long 122°03'30", in SW $\frac{1}{4}$  sec. 28, T. 21 N., R. 6 E., on right bank three-quarters of a mile upstream from mouth and  $3\frac{1}{2}$  miles southwest of Black Diamond.

Drainage area.--25.5 sq mi.

Records available.--July 1944 to November 1950, September 1952 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 310 ft (from topographic map).

Average discharge.--12 years, 65.0 cfs (47,060 acre-ft per year).

Extremes.--Maximum discharge during year, 596 cfs probably Jan. 17 (gage height, 2.68 ft, from high-water mark in well); minimum, 11.5 cfs Aug. 14-18, 20-22, 24-27 (gage height, 0.62 ft).  
1944-50, 1952-58: Maximum discharge, 1,820 cfs probably Feb. 17, 1949 (gage height, 3.54 ft, from recorded range in stage), from rating curve extended above 600 cfs; minimum, 8.0 cfs Oct. 13, 14, 1952; minimum gage height, that of Aug. 26, 1958.

Remarks.--Records excellent except those for period of no gage-height record, which are good. Many small diversions above station for irrigation and domestic use. No regulation.

Revisions (water years).--WSP 1286: Drainage area. WSP 1396: 1946(M), 1949(P).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 16			Jan. 17 to Sept. 30		
0.75	16		0.6	10.5	
1.0	33		.8	22	
1.3	66		1.1	46	
1.6	122		1.5	100	
1.9	205		2.0	240	
			2.5	480	

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	21	76	60	90	74	43	45	28	23	13.5	14.5
2	24	19	79	58	85	70	52	43	27	22	13.5	13.5
3	22	18.5	53	53	80	65	46	42	27	22	14.5	13.5
4	20	18.5	43	49	75	62	42	41	26	21	14.5	13
5	17.5	18	44	46	70	65	40	*40	25	20	13	13
6	17	18	68	*44	67	60	39	40	28	20	13	13
7	17.5	17.5	60	43	64	60	38	39	28	20	13.5	13
8	17.5	17.5	46	44	63	58	37	37	25	20	13.5	13
9	17	17.5	40	50	60	57	38	36	25	20	13.5	13.5
10	16.5	18	58	87	*150	55	48	35	29	19	13	13
11	*16	21	36	111	104	52	42	36	26	19	13	13
12	18.5	38	38	124	140	51	39	35	28	18	12.5	*13
13	18	65	35	98	140	49	39	34	26	17.5	12.5	13
14	19.5	77	44	120	97	47	40	32	25	19	12	15
15	18	43	40	120	93	46	53	32	25	18.5	11.5	15
16	18	33	37	200	190	45	111	30	25	16	11.5	17.5
17	19	28	40	450	122	48	102	30	*25	16	11.5	16.5
18	17.5	28	43	300	118	46	78	30	24	18.5	12	15.5
19	17	31	89	200	95	45	152	30	23	16.5	12	20
20	16.5	*26	86	150	81	46	134	30	23	17.5	11.5	15.5
21	16.5	24	137	110	76	53	87	29	23	16.5	12	16
22	19	23	115	80	120	52	102	29	22	16.5	12	15.5
23	35	22	79	100	127	53	83	29	22	16	12	15
24	22	21	79	150	154	*69	83	29	27	15.5	12	14.5
25	21	22	89	130	130	67	71	29	27	15	11.5	14.5
26	22	22	127	110	111	55	62	28	24	15	11.5	13.5
27	19.5	22	80	95	90	48	56	28	25	15	12.5	13.5
28	18.5	28	80	120	78	46	55	29	24	14.5	15	13.5
29	18	24	95	110	-	46	49	28	24	15	15.5	13.5
30	24	24	88	105	-----	46	47	28	24	15.5	13.5	14.5
31	22	-----	65	100	-----	43	-----	29	-----	*13.5	13	-----
Total	601.5	805.5	2,067	3,617	2,868	1,679	1,908	1,032	762	547.5	396.0	431.0
Mean	19.4	26.8	66.7	117	102	54.2	63.6	33.3	25.4	17.7	12.8	14.4
Cfsm	0.761	1.05	2.62	4.59	4.00	2.13	2.49	1.31	0.996	0.694	0.502	0.565
In.	0.88	1.17	3.01	5.28	4.18	2.45	2.78	1.51	1.11	0.80	0.58	0.63
Ac-ft	1,190	1,600	4,100	7,170	5,690	3,330	3,780	2,050	1,510	1,090	785	855

Calendar year 1957: Max 370 Min 16 Mean 53.7 Cfsm 2.11 In. 28.57 Ac-ft 38,860  
Water year 1957-58: Max 450 Min 11.5 Mean 45.8 Cfsm 1.80 In. 24.38 Ac-ft 33,150

Peak discharge (base, 350 cfs).--Probably Jan. 17 (time unknown) 596 cfs (2.68 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Jan. 14 to Feb. 10; discharge estimated on basis of 1 discharge measurement, records for South Fork Prairie Creek at South Prairie and other nearby stations.



1110. Lake Sawyer near Black Diamond, Wash.

Location.--Lat 47°20'00", long 122°02'15", in SE $\frac{1}{4}$  sec. 4, T. 21 N., R. 6 E., on west shore about three-eighths of a mile south of lake outlet and 2 miles northwest of Black Diamond.

Drainage area.--9.77 sq mi.

Records available.--April 1952 to September 1958.

Gage.--Staff gage read once daily. Datum of gage is 512.34 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Extremes.--Maximum gage height observed during year, 6.88 ft Jan. 18; minimum observed, 4.54 ft Sept. 30.  
1952-58: Maximum gage height observed, 7.20 ft Dec. 12, 1955; minimum observed, 3.04 ft Dec. 1, 2, 1952.

Remarks.--Lake controlled for elevation by concrete dam at outlet constructed during July and August 1952. No known diversion.

Revisions.--WSP 1396: Drainage area.

Gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.26	5.24	5.96	6.46	6.68	6.62	6.40	6.46	6.32	6.30	5.74	5.00
2	5.26	5.24	6.00	6.46	6.66	6.60	6.42	6.46	6.32	6.28	5.70	4.98
3	5.26	5.24	6.02	6.44	6.66	6.58	6.44	6.45	6.30	6.26	5.68	4.97
4	5.24	5.22	6.04	6.44	6.68	6.58	6.42	6.44	6.30	6.26	5.66	4.49
5	5.22	5.22	6.06	6.42	6.64	6.56	6.42	6.44	6.28	6.24	5.64	4.92
6	5.20	5.20	6.10	6.43	6.62	6.56	6.40	6.42	6.28	6.24	5.62	4.90
7	5.20	5.18	6.14	6.40	6.60	6.54	6.40	6.42	6.26	6.24	5.60	4.88
8	5.18	5.18	6.16	6.42	6.82	6.52	6.38	6.42	6.26	6.22	5.56	4.86
9	5.16	5.18	6.14	6.42	6.64	6.52	6.40	6.40	6.26	6.22	5.54	4.84
10	5.14	5.18	6.16	6.46	6.66	6.50	6.42	6.40	6.28	6.20	5.52	4.82
11	5.12	5.18	6.18	6.46	6.66	6.50	6.42	6.40	6.30	6.20	5.50	4.80
12	5.10	5.26	6.18	6.48	6.66	6.48	6.40	6.38	6.32	6.18	5.48	4.78
13	5.12	5.38	6.20	6.50	6.68	6.48	6.40	6.38	6.34	6.16	5.44	4.76
14	5.14	5.56	6.22	6.52	6.68	6.48	6.40	6.38	6.32	6.14	5.40	4.74
15	5.16	5.64	6.22	6.54	6.68	6.48	6.42	6.36	6.32	6.12	5.38	4.72
16	5.16	5.68	6.24	6.56	6.70	6.48	6.46	6.36	6.32	6.10	5.36	4.70
17	5.16	5.70	6.26	6.78	6.72	6.48	6.48	6.36	6.32	6.08	5.34	4.70
18	5.16	5.72	6.28	6.88	6.70	6.48	6.48	6.36	6.30	6.06	5.32	4.72
19	5.14	5.74	6.30	6.84	6.78	6.48	6.48	6.36	6.30	6.04	5.30	4.72
20	5.12	5.76	6.36	6.78	6.68	6.48	6.54	6.34	6.30	6.02	5.28	4.70
21	5.12	5.78	6.38	6.76	6.66	6.48	6.58	6.34	6.30	6.00	5.24	4.68
22	5.10	5.78	6.40	6.78	6.66	6.46	6.58	6.34	6.30	5.98	5.20	4.66
23	5.18	5.80	6.42	6.74	6.68	6.48	6.58	6.34	6.30	5.96	5.18	4.66
24	5.22	5.80	6.44	6.70	6.66	6.48	6.58	6.34	6.30	5.94	5.16	4.64
25	5.24	5.80	6.46	6.68	6.70	6.48	6.56	6.34	6.30	5.92	5.12	4.62
26	5.26	5.82	6.48	6.66	6.68	6.46	6.54	6.34	6.32	5.90	5.10	4.60
27	5.24	5.84	6.50	6.66	6.66	6.46	6.54	6.32	6.32	5.88	5.06	4.60
28	5.24	5.86	6.52	6.68	6.64	6.44	6.52	6.32	6.32	5.86	5.04	4.58
29	5.22	5.90	6.50	6.68	-	6.42	6.50	6.32	6.30	5.82	5.04	4.56
30	5.26	5.94	6.50	6.68	-----	6.42	6.48	6.32	6.30	5.78	5.04	4.54
31	5.26	-----	6.48	6.70	-----	6.40	-----	6.32	-----	5.76	5.02	-----

Note.--Gage read once daily between 10 and 11 a.m.

1115. Covington Creek near Black Diamond, Wash.

Location.--Lat 47°20'10", long 122°02'40", in NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 4, T. 21 N., R. 6 E., on left bank 1,000 ft east of outlet of Lake Sawyer, 3 miles northwest of Black Diamond, and 5 miles upstream from mouth.

Drainage area.--9.77 sq mi.

Records available.--January 1953 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 526.5 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Average discharge.--5 years, 26.0 cfs (18,820 acre-ft per year).

Extremes.--Maximum discharge during year, 112 cfs Jan. 18 (gage height, 2.98 ft); no flow for many days.

1953-58: Maximum discharge, 210 cfs Dec. 12, 1955 (gage height, 4.04 ft); no flow at times each year.

Remarks.--Records good except those below 2 cfs, which are fair. Natural and some artificial regulation by Lake Sawyer. Probably some small diversions for domestic use.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

0.5	0	1.2	12.5
.6	.7	1.6	28
.7	1.6	2.2	60
.9	4.6	3.0	114

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		0	1.6	34	70	55	22	30	11.5	2.1		
2		0	2.1	32	64	52	22	*28	10.5	2.0		
3		0	2.1	31	61	48	23	27	10	1.6		
4		0	2.2	28	59	44	20	26	8.9	1.5		
5		0	2.4	25	57	44	20	26	7.9	1.2		
6		0	4.0	*24	53	41	18.5	24	7.9	.8		
7		0	3.8	23	50	40	17.5	24	9.2	.2		
8		0	4.2	23	51	40	17	24	12	0		
9	(*)	0	4.6	25	55	36	18	23	5.4	0		
10		0	5.0	28	62	34	21	22	1.9	0		
11		0	5.6	30	62	32	19.5	22	3.1	0		
12		0	5.6	34	*64	31	18.5	22	4.4	.3		
13		0	5.6	34	64	28	19	20	4.6	1.0		
14		0	6.3	39	62	27	19	19	4.6	0		
15		0	6.5	46	62	27	21	18.5	4.4	0		
16		0	6.7	52	68	26	29	18	*4.1	0		
17		0	6.5	89	71	27	34	17	3.8	0		
18		0	6.7	110	68	27	34	16	3.6	0		
19		0	9.8	98	62	26	41	17	3.0	0		
20		*0	13.5	85	58	28	49	16	2.8	0		
21		0	17.5	74	54	*28	52	15	3.0	0		
22		.2	22	65	56	27	53	14.5	3.3	0		
23		.5	23	61	56	27	50	14	1.6	0		
24		.4	28	67	61	30	48	14.5	4.1	0		
25		.5	32	66	65	28	44	15	4.0	0		
26		.8	35	61	64	26	41	14	3.0	0		
27		1.0	34	61	60	24	38	12.5	3.3	0		
28		1.5	39	65	56	23	36	11.5	2.4	*0		
29		1.5	40	65	-	23	34	11	2.4	0		
30		1.5	38	68	-----	23	32	11	2.2	0		
31		-----	36	69	-----	22	-----	12	-----	0		
Total	0	7.9	449.3	1,612	1,695	994	911.0	584.5	152.9	10.7	0	0
Mean	0	0.26	14.5	52.0	60.5	32.1	30.4	18.9	5.10	0.35	0	0
Ac-ft	0	16	891	3,200	3,360	1,970	1,810	1,160	303	21	0	0

Calendar year 1957: Max 112 Min 0 Mean 19.7 Ac-ft 14,290  
 Water year 1957-58: Max 110 Min 0 Mean 17.6 Ac-ft 12,730

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

1130. Green River near Auburn, Wash.

Location--Lat 47°18'45" (revised), long 122°12'10", in lot 3, sec. 17, T. 21 N., R. 5 E., on left bank 1½ miles east of Auburn and 2 miles downstream from Big Soos Creek.

Drainage area--382 sq mi (excludes 4 sq mi in the vicinity of Youngs Lake, flow from which has been diverted to Cedar River basin since about 1935).

Records available--August 1936 to September 1958.

Gage--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929. Prior to Oct. 19, 1936, staff gage at same site and datum.

Average discharge--22 years, 1,300 cfs (941,200 acre-ft per year).

Extremes--Maximum discharge during year, 5,780 cfs Apr. 20 (elevation, 60.02 ft); minimum, 121 cfs Aug. 26 (elevation, 53.85 ft).

1936-58: Maximum discharge, 22,000 cfs Dec. 11, 1946 (elevation, 68.16 ft); minimum, 81 cfs Sept. 23, 1952; minimum elevation, that of Aug. 26, 1958.

Remarks--Records excellent. City of Tacoma diverts about 110 cfs from river near Palmer, several miles above station, for municipal use. Minor regulation on Little Soos Creek, a tributary.

Revisions--WSP 1246: Drainage area.

Rating tables, water year 1957-58 (elevation, in feet, and discharge, in cubic feet per second)

Oct. 1 to Nov. 14

Nov. 15 to Sept. 30

53.9	120	56.0	1,240	53.8	111	55.0	595
54.2	195	57.0	2,200	54.1	183	57.0	2,280
55.0	555			54.5	334	60.0	5,750

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	134	465	916	1,470	2,200	1,840	918	1,470	772	330	153	150
2	148	410	1,620	1,350	2,010	1,890	974	1,530	695	304	150	150
3	226	369	1,660	1,240	1,900	1,580	958	1,560	688	287	148	145
4	209	333	1,400	1,140	1,760	1,450	902	1,560	621	275	153	141
5	183	302	1,240	1,070	1,680	1,380	863	1,540	589	279	153	136
6	160	292	1,400	1,010	1,640	1,310	835	1,530	565	271	150	133
7	158	270	3,200	950	1,610	1,250	828	*1,500	589	259	150	131
8	160	258	2,280	926	1,620	1,210	835	1,550	535	255	153	131
9	155	250	1,820	918	1,690	1,170	878	1,630	508	259	150	133
10	*145	238	1,530	1,050	2,790	1,090	1,030	1,610	524	255	148	133
11	140	297	1,330	1,190	2,550	1,050	1,200	1,590	513	247	141	136
12	136	624	1,230	1,390	*2,300	1,010	1,180	1,480	496	237	138	133
13	150	1,500	1,100	1,390	3,060	950	1,230	1,280	480	229	136	131
14	165	1,870	1,070	1,640	2,880	918	1,360	1,160	460	222	136	136
15	174	1,550	982	3,250	2,470	886	1,560	1,090	435	209	133	*189
16	182	1,210	902	3,670	2,560	849	2,220	1,150	420	196	131	219
17	180	966	865	5,350	2,390	842	2,420	1,240	395	189	133	212
18	*186	*835	849	4,500	2,400	835	2,690	1,300	390	186	133	226
19	168	793	1,180	3,370	2,410	828	2,620	1,370	*362	186	133	291
20	158	681	2,520	2,660	2,330	800	5,140	1,350	357	189	131	357
21	150	602	2,570	2,260	2,190	878	4,880	1,270	343	189	129	283
22	152	553	2,060	1,930	2,430	910	3,700	1,280	330	189	129	267
23	266	530	1,650	1,800	2,980	918	2,900	1,270	312	186	129	267
24	310	502	1,610	2,530	3,280	1,040	2,460	1,250	334	183	129	255
25	328	491	1,970	2,530	2,350	1,170	2,240	1,180	405	177	127	240
26	378	595	3,000	2,210	2,900	*1,170	1,990	1,140	357	172	123	251
27	364	595	2,530	2,040	2,420	1,120	1,800	1,060	365	163	127	237
28	320	744	2,230	2,480	2,070	1,060	1,650	982	415	158	133	215
29	284	779	2,200	2,680	-	1,020	1,450	894	380	155	141	202
30	346	709	1,900	2,520	-----	1,010	1,520	821	362	153	150	189
31	520	-----	*1,650	2,500	-----	958	-----	779	-----	*153	153	-----
Total	6,715	19,614	52,462	65,024	65,870	34,192	55,231	40,396	13,988	6,742	4,323	5,819
Mean	217	654	1,692	2,098	2,352	1,103	1,841	1,303	466	217	139	194
Ac-ft	13,320	38,900	104,100	129,000	130,700	67,820	109,500	80,120	27,740	13,370	8,570	11,540
Calendar year 1957: Max	4,650											
Min	132											
Mean	986											
Ac-ft	713,900											
Water year 1957-58: Max	5,360											
Min	123											
Mean	1,015											
Ac-ft	734,700											

Peak discharge (base, 6,000 cfs).--No peak above base.

\* Discharge measurement made on this day.

## 1135. North Fork Cedar River near Lester, Wash.

Location--Lat 47°19'00", long 121°30'00", in SW¼ sec. 11, T. 21 N., R. 10 E., on right bank 120 ft downstream from falls, 1 mile upstream from confluence with South Fork, and 7½ miles north of Lester.

Drainage area--8.81 sq mi.

Records available--October 1944 to September 1958.

Gage--Water-stage recorder. Altitude of gage is 2,320 ft (from topographic map). Prior to Nov. 30, 1951, at site 100 ft upstream and Nov. 30, 1951, to Sept. 23, 1953, at site 70 ft upstream at datum 2 ft higher than present datum.

Average discharge--14 years, 70.2 cfs (50,820 acre-ft per year).

Extremes--Maximum discharge during year, 402 cfs Apr. 20 (gage height, 3.05 ft); minimum, 7.0 cfs Oct. 1 (gage height, 0.03 ft).

1944-58: Maximum discharge, 2,320 cfs Dec. 9, 1956 (gage height, 4.95 ft), from rating curve extended above 490 cfs on basis of slope-area measurement of peak flow; maximum gage height, 8.9 ft, datum then in use, probably Jan. 31, 1953 (from high-water mark, backwater from logjam); minimum daily discharge, 5.4 cfs Nov. 27-30, 1952.

Remarks--Records excellent except those below 10 cfs, which are good. No regulation or diversion above station.

Revisions (water years)--WSP 1246: Drainage area. WSP 1286: 1945-47. WSP 1446: 1954-55.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

0.0	6.6	1.5	87
.3	12.5	2.0	146
.6	22	2.5	232
1.0	45	3.0	380

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.5	29	46	44	41	66	39	89	115	33	11.3	8.9
2	13.6	25	54	41	41	58	41	107	104	32	11.1	8.4
3	9.5	23	63	37	38	52	39	121	95	30	11.3	8.0
4	8.2	21	60	34	37	47	36	119	102	28	11.1	7.9
5	8.0	19.2	54	32	38	44	36	127	114	27	10.6	7.9
6	7.9	17.4	107	30	39	40	37	129	102	25	10.1	7.7
7	8.4	16.5	137	28	40	37	39	140	87	24	10.1	7.5
8	8.4	15.3	146	28	42	36	42	173	77	*23	10.1	7.5
9	7.9	14.5	116	26	51	34	41	174	74	22	9.7	7.7
10	7.5	15.6	94	25	61	32	54	173	71	21	9.5	7.7
11	7.4	26	81	26	55	30	56	163	63	20	9.5	7.5
12	7.4	52	74	27	57	28	64	123	58	19.2	9.3	7.4
13	7.9	89	64	25	70	27	86	98	55	18.0	9.1	7.2
14	8.2	73	57	26	58	26	99	96	54	17.7	9.3	16.2
15	7.5	62	51	68	51	25	98	*127	54	17.1	9.1	11.5
16	*7.9	51	47	98	48	24	105	165	53	16.5	9.1	*10.6
17	9.5	44	44	159	54	24	125	183	53	16.2	9.1	15.3
18	8.0	39	41	125	67	24	119	208	49	15.9	9.1	11.8
19	7.5	34	67	94	73	23	152	220	46	15.6	8.9	37
20	7.4	*30	75	75	75	25	334	197	43	15.0	8.7	46
21	7.4	28	65	63	81	30	210	230	39	14.8	8.7	37
22	9.3	26	56	*55	116	32	149	243	36	14.5	8.6	34
23	8.7	28	51	51	146	35	114	236	53	14.0	8.6	30
24	11.5	28	52	54	174	46	174	228	54	13.2	8.4	44
25	19.6	34	62	48	*159	48	81	241	32	13.0	8.4	44
26	24	37	81	45	123	*48	72	236	32	12.8	8.2	34
27	20	34	68	43	95	46	66	210	39	12.3	8.4	29
28	16.5	34	66	51	77	45	62	170	46	12.5	*8.4	24
29	15.9	30	59	48	-	43	62	136	40	12.0	9.9	22
30	54	34	54	44	-----	44	72	119	56	11.8	8.6	19.2
31	37	-----	49	42	-----	40	-----	119	-----	*11.5	8.2	-----
Total	389.5	1,009.5	2,141	1,594	2,007	1,159	2,625	5,100	1,836	578.6	290.5	552.9
Mean	12.6	33.6	69.1	51.4	71.7	37.4	87.5	165	61.2	18.7	9.37	18.4
Cfsm	1.43	3.81	7.84	5.83	8.14	4.25	9.93	18.7	6.95	2.12	1.06	2.09
In.	1.64	4.26	9.04	6.73	8.47	4.89	11.08	21.53	7.75	2.44	1.23	2.35
Ac-ft	773	2,000	4,250	3,160	3,980	2,300	5,210	10,120	3,640	1,150	576	1,100

Calendar year 1957: Max 315 Min 7.2 Mean 50.3 Cfsm 5.71 In. 77.55 Ac-ft 36,450  
 Water year 1957-58: Max 334 Min 7.4 Mean 52.8 Cfsm 5.99 In. 81.39 Ac-ft 38,260

Peak discharge (base, 400 cfs)--Apr. 20 (4 to 5:30 a.m.) 402 cfs (3.05 ft).

\* Discharge measurement made on this day.

## 1140. South Fork Cedar River near Lester, Wash.

Location.--Lat 47°18'30", long 121°31'00", in SW 1/4 sec. 15, T. 21 N., R. 10 E., on left bank about half a mile upstream from confluence with North Fork and 7 miles northwest of Lester.

Drainage area.--6.00 sq mi.

Records available.--October 1944 to September 1958.

Gage.--Water-stage recorder. Concrete control Aug. 31, 1951, to Dec. 9, 1956. Altitude of gage is 2,300 ft (from topographic map).

Average discharge.--14 years, 40.3 cfs (29,180 acre-ft per year).

Extremes.--Maximum discharge during year, 284 cfs Apr. 20 (gage height, 6.03 ft); minimum, 2.2 cfs Oct. 13, 16 (gage height, 4.42 ft).  
1944-58: Maximum discharge, 2,340 cfs Dec. 9, 1956 (gage height, 10.41 ft, from floodmarks), from rating curve extended above 300 cfs on basis of slope-area measurement of peak flow; minimum, 1.9 cfs Nov. 27, 28, 1952; minimum gage height, 1.25 ft Oct. 17-19, 1946.

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

Revisions (water years).--WSP 1446: 1953-54.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

4.43	2.4	5.3	71
4.5	3.8	5.6	134
4.7	10.5	6.0	270
5.0	32		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1	2.6	10.1	25	30	28	47	28	58	39	16.0	4.6	3.0	
2	2.8	8.8	30	27	28	41	28	65	35	14.0	4.4	3.0	
3	2.9	8.8	40	25	27	38	28	71	32	13.0	4.4	3.2	
4	2.6	8.0	35	22	25	32	26	71	30	12.5	4.4	2.6	
5	2.6	7.3	30	21	25	30	25	73	31	11.5	4.4	2.6	
6	2.6	7.0	95	20	26	28	25	75	31	10.5	4.1	2.6	
7	2.6	6.3	85	19	26	25	26	76	28	10.1	4.1	2.6	
8	*2.6	6.0	75	18	27	22	28	91	25	*8.8	4.6	2.6	
9	2.6	5.7	65	17	30	21	28	91	23	8.0	4.4	2.6	
10	2.4	6.0	55	16	44	19.5	39	89	22	7.6	4.4	2.6	
11	2.6	11.4	45	17	42	18.8	41	85	22	7.6	4.1	2.6	
12	2.4	28	40	21	42	17.4	47	70	21	7.3	4.1	2.6	
13	2.4	59	35	20	55	16.7	62	59	20	7.0	3.8	3.0	
14	2.6	50	32	25	50	15.0	70	55	19.5	6.6	3.6	5.1	
15	2.4	41	29	45	42	14.5	76	*62	18.8	6.3	3.4	4.1	
16	*2.6	33	27	70	40	14.0	84	78	18.1	6.0	3.4	*3.4	
17	3.2	28	26	110	42	13.5	97	76	17.4	*6.0	3.4	6.3	
18	2.8	24	25	80	52	13.5	95	95	16.7	6.3	3.4	4.1	
19	2.6	22	60	60	60	12.5	122	100	16.0	6.3	3.4	9.2	
20	2.4	*18.8	70	50	62	13.5	254	85	15.0	6.3	3.4	7.6	
21	2.4	17.5	50	43	64	15.0	159	95	14.0	6.0	3.4	8.0	
22	3.2	17	40	*38	89	16.7	*108	95	13.0	5.7	3.4	7.6	
23	3.2	16	35	35	110	19.5	80	91	12.5	5.7	3.2	8.4	
24	4.4	15.5	35	36	*124	25	65	84	14.0	5.4	3.0	8.0	
25	6.0	15.5	45	33	112	28	58	82	12.5	5.4	3.2	10.5	
26	6.3	18	60	31	85	*30	50	80	14.6	5.4	3.0	10.1	
27	5.7	17	55	29	66	29	44	70	16.0	4.8	*3.0	10.1	
28	5.1	19	58	34	55	29	42	59	17.4	4.8	2.8	9.2	
29	5.1	17	44	34	-	28	42	48	16.7	4.8	4.1	8.4	
30	17.3	16	40	32	-----	28	47	42	16.7	4.8	3.2	8.0	
31	12.5	-----	35	29	-----	28	-----	42	-----	*4.6	3.0	-----	
Total	123.5	557.7	1,419	1,087	1,479	729.1	1,922	2,313	627.9	235.1	115.1	163.7	
Mean	3.98	18.6	45.8	35.1	52.8	23.5	64.1	74.6	20.9	7.58	3.71	5.46	
Cfsm	0.663	3.10	7.63	5.85	8.80	3.92	10.7	12.4	3.48	1.26	0.618	0.910	
In.	0.77	3.46	8.80	6.74	9.17	4.52	11.91	14.34	3.89	1.46	0.71	1.01	
Ac-ft	245	1,110	2,810	2,180	2,930	1,450	3,810	4,590	1,250	466	228	325	
Calendar year 1957: Max	170			Min	2.4	Mean	26.8	Cfsm	4.47	In.	60.61	Ac-ft	19,390
Water year 1957-58: Max	254			Min	2.4	Mean	29.5	Cfsm	4.92	In.	66.78	Ac-ft	21,370

Peak discharge (base, 200 cfs).--Apr. 20 (5 a.m.) 284 cfs (6.03 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-7, Nov. 21 to Jan. 21; discharge estimated on basis of records for stations on North Fork Cedar River near Lester and Cedar River below Bear Creek, near Cedar Falls.

1145. Cedar River below Bear Creek, near Cedar Falls, Wash.

Location.--Lat 47°20'40", long 121°33'00", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 32, T. 22 N., R. 10 E., on right bank 500 ft downstream from Bear Creek and 12 miles southeast of Cedar Falls.

Drainage area.--25.4 sq mi.

Records available.--October 1945 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,880 ft (from topographic map).

Average discharge.--13 years, 178 cfs (128,900 acre-ft per year).

Extremes.--Maximum discharge during year, 938 cfs Apr. 20 (gage height, 5.18 ft); minimum, 16 cfs Oct. 1, 11-13, Sept. 7, 8, 11-13 (gage height, 2.33 ft).  
1945-58: Maximum discharge, 2,720 cfs Dec. 9, 1956 (gage height, 7.08 ft); minimum, 12.5 cfs Nov. 27, 1952; minimum gage height, 2.33 ft Sept. 29, 30, Oct. 1, 11-13, 1957, Sept. 7, 8, 11-13, 1958.

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

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

2.5	14	3.5	185
2.6	38	4.0	340
3.0	85	5.1	890

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17.5	56	117	131	152	183	105	206	188	64	27	19.5
2	34	50	152	115	150	161	110	236	158	81	27	19
3	21	45	175	108	143	105	258	157	157	*58	27	17.5
4	18	42	161	98	133	129	98	258	159	56	27	17.5
5	18	40	143	90	135	121	95	267	168	54	26	17.5
6	17.5	38	304	84	137	110	96	270	161	50	25	17
7	18	35	360	78	139	103	98	284	137	48	25	17
8	18	34	336	74	143	96	105	340	123	46	25	17
9	17.5	33	273	71	163	88	105	348	117	45	24	17
10	17	34	228	69	222	84	135	344	114	44	23	17
11	17	56	201	72	193	79	141	329	105	43	23	17
12	16	112	180	81	203	75	154	264	98	41	23	16
13	18	219	157	77	264	71	203	217	93	40	22	19.5
14	19.5	201	146	95	222	69	225	206	90	39	22	35
15	17.5	173	127	222	190	66	248	*239	90	37	21	26
16	*18	139	117	309	188	65	273	301	87	36	21	*23
17	*23	114	112	458	190	64	359	333	84	35	21	34
18	18	103	105	340	225	64	340	384	79	36	20	27
19	17.5	*90	201	258	*233	63	483	404	74	35	20	66
20	17	78	248	211	228	66	866	364	70	35	20	74
21	17	71	208	178	231	75	620	404	65	34	19.5	61
22	23	66	173	157	311	81	429	424	61	34	19	58
23	23	66	150	*150	388	88	329	408	58	33	18	56
24	27	65	154	188	452	110	270	388	83	32	18	51
25	38	71	201	163	434	115	233	404	58	31	18	71
26	42	81	251	152	336	*117	206	396	70	30	18	61
27	36	77	206	143	261	115	180	348	78	28	18	54
28	33	84	203	195	214	114	168	284	82	28	*19	48
29	32	75	190	180	-	110	163	228	74	27	24	43
30	91	79	161	166	-----	110	175	201	67	27	19.5	40
31	67	-----	146	157	-----	105	-----	198	-----	*27	19	-----
Total	807.0	2,427	5,886	4,865	6,280	3,040	7,117	9,535	3,038	1,234	679.0	1,056.5
Mean	26.0	80.9	190	157	224	98.1	237	308	101	39.8	21.9	35.2
Cfsm	1.02	3.19	7.48	6.18	8.32	3.86	9.33	12.1	3.98	1.57	0.862	1.39
In.	1.18	3.55	8.62	7.12	9.20	4.45	10.42	13.96	4.45	1.81	0.99	1.55
Ac-ft	1,600	4,810	11,670	9,650	12,460	6,030	14,120	18,910	6,030	2,450	1,350	2,100

Calendar year 1957: Max 782 Min 16 Mean 123 Cfsm 4.84 In. 65.85 Ac-ft 89,200  
Water year 1957-58: Max 866 Min 16 Mean 126 Cfsm 4.96 In. 67.30 Ac-ft 91,180

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

\* Discharge measurement made on this day.

1150. Cedar River near Cedar Falls, Wash.

Location.--Lat 47°22'20", long 121°37'30", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 23, T. 22 N., R. 9 E., on left bank 2 miles upstream from Cedar Lake and 8 miles southeast of Cedar Falls. Prior to Oct. 26, 1957, at site 80 ft downstream.

Drainage area.--41.8 sq mi.

Records available.--October 1945 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,560 ft (from topographic map). Prior to Oct. 26, 1957, at site 80 ft downstream at same datum.

Average discharge.--13 years, 277 cfs (200,500 acre-ft per year).

Extremes.--Maximum discharge during year, 1,810 cfs Apr. 20 (gage height, 6.58 ft); minimum daily, 25 cfs Oct. 13.

1945-58: Maximum discharge, 6,090 cfs Dec. 10, 1956 (gage height, 10.16 ft), from rating curve extended above 2,000 cfs on basis of slope-area measurement of peak flow; maximum gage height, 11.4 ft Feb. 11, 1951 (backwater from Cedar Lake); minimum discharge, 20 cfs Nov. 30 to Dec. 1, 1952; minimum gage height recorded, 1.84 ft Sept. 30, 1957.

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

Revisions (water years).--WSP 1286: 1946-48, 1950(P), 1951. WSP 1516: 1946(M), 1947-48(P), 1950-51(M), 1953-54(P), 1955(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-11			Oct. 12 to Sept. 30		
1.8	23		1.9	23	3.5
2.0	35		2.2	44	4.0
2.2	53		2.6	86	5.0
			3.0	150	6.5
					1,750

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	90	191	236	283	308	170	320	246	90	*38	32
2	48	81	264	207	267	269	175	359	226	86	38	31
3	41	73	308	187	248	238	170	383	207	*82	38	30
4	33	67	280	170	228	215	155	380	205	80	38	30
5	31	62	248	156	226	195	150	392	214	76	37	29
6	29	59	452	143	228	178	150	395	209	72	36	28
7	32	55	607	136	226	170	155	404	183	70	36	28
8	32	52	555	130	233	156	170	470	167	67	36	27
9	29	49	448	127	272	146	170	487	154	65	36	27
10	27	49	371	130	401	137	215	473	152	63	35	27
11	26	80	320	139	350	130	225	462	139	61	34	27
12	26	178	297	172	350	124	240	383	130	59	33	28
13	25	414	254	164	466	115	325	311	124	57	32	28
14	29	401	246	224	404	110	360	286	118	56	32	44
15	31	314	212	498	344	106	407	329	114	53	32	46
16	28	261	191	599	344	102	440	*407	108	52	32	40
17	*40	205	185	880	332	100	620	456	106	50	32	*48
18	29	178	183	648	383	100	*595	504	100	49	32	42
19	28	*156	339	484	*404	97	754	543	94	49	31	96
20	27	134	508	386	389	100	1,580	487	90	48	30	109
21	27	117	424	329	386	120	965	523	85	48	30	82
22	36	108	332	280	494	129	694	559	78	46	29	80
23	38	106	275	278	611	137	539	539	73	45	29	60
24	43	102	286	*586	680	178	448	498	80	43	29	74
25	52	108	374	338	680	189	386	515	76	42	29	92
26	58	127	535	294	547	196	338	501	80	42	28	86
27	52	122	398	269	434	*187	297	448	112	41	29	74
28	45	152	398	*383	365	180	278	377	117	40	*30	67
29	43	129	371	368	-	175	264	303	103	39	35	62
30	130	132	308	338	-----	175	278	261	94	39	34	57
31	112	-----	267	314	-----	170	-----	259	-----	39	31	-----
Total	1,254	4,181	10,427	9,393	10,575	4,932	11,713	13,014	3,979	1,749	1,021	1,551
Mean	40.5	139	336	303	378	159	390	420	133	56.4	32.9	51.7
Cfsm	0.969	3.33	8.04	7.25	9.04	3.80	9.33	10.0	3.16	1.35	0.787	1.24
In.	1.12	3.70	9.28	8.36	9.41	4.39	10.42	11.08	3.54	1.56	0.91	1.38
Ac-ft	2,490	8,250	20,680	18,630	20,980	9,780	23,230	25,810	7,890	3,470	2,030	3,080

Calendar year 1957: Max 1,180 Min 25 Mean 196 Cfsm 4.69 In. 63.76 Ac-ft 142,100  
Water year 1957-58: Max 1,580 Min 25 Mean 202 Cfsm 4.83 In. 65.65 Ac-ft 146,300

Peak discharge (base, 1,000 cfs).--Apr. 20 (4 a.m.) 1,810 cfs (6.58 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 12-25, 29, Mar. 4, 5, Mar. 28 to Apr. 17; discharge estimated on basis of 1 discharge measurement, recorded range in stage, and records for station below Bear Creek, near Cedar Falls.

## LAKE WASHINGTON BASIN

1155. Rex River near Cedar Falls, Wash.

Location.--Lat 47°21'10", long 121°39'50", in NE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 33, T. 22 N., R. 9 E., on right bank  $\frac{1}{2}$  miles upstream from mouth and Cedar Lake and 7 miles southeast of Cedar Falls.

Drainage area.--13.0 sq mi.

Records available.--October 1945 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,600 ft (from topographic map).

Average discharge.--13 years, 103 cfs (74,570 acre-ft per year).

Extremes.--Maximum discharge during year, 1,070 cfs Apr. 19 (gage height, 5.54 ft); minimum, 5.7 cfs Aug. 28, 27 (gage height, 2.64 ft).  
1954-58: Maximum discharge, 2,550 cfs Dec. 9, 1956 (gage height, 7.19 ft in gage well, 7.57 ft from outside gage), from rating curve extended above 1,050 cfs on basis of contracted-opening measurement of peak flow; minimum, 4.3 cfs Nov. 29, 1952 (gage height, 2.43 ft).

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

Revisions (water years).--WSP 1286: 1946, 1948(P), 1949(M), 1950(P), 1952(M). WSP 1446: 1946(M), 1951, 1953-55(M).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

2.65	5.9	3.7	119
2.8	11	4.3	305
3.0	24	5.0	695
3.3	54		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.6	54	119	78	103	94	57	96	52	22	*7.9	11
2	37	48	180	68	94	82	58	103	52	21	7.9	7.9
3	15.3	42	163	62	87	72	57	105	44	20	9.3	7.0
4	11	37	124	58	79	64	52	103	41	18.6	8.9	6.7
5	11	34	99	54	85	62	50	105	39	17.9	7.9	6.4
6	9.7	31	255	54	85	57	50	103	39	17.2	7.6	6.4
7	13	28	233	53	89	52	52	109	35	15.9	8.2	6.1
8	12.5	26	188	53	94	48	57	117	31	15.3	7.9	6.1
9	9.7	24	145	53	124	44	57	115	30	*14.7	7.6	6.4
10	8.9	29	117	64	207	43	126	113	33	14.1	7.3	6.4
11	8.9	68	107	76	147	40	101	111	29	13.5	7.0	6.1
12	8.5	163	105	101	147	38	101	94	29	13	6.7	6.1
13	16.1	301	85	90	219	36	113	82	27	12.5	6.7	7.9
14	17.2	223	82	155	155	35	124	80	25	12	6.7	46
15	12.5	168	72	346	145	34	185	92	24	11	6.7	19.3
16	15.1	115	64	351	171	34	213	*103	22	10.5	6.7	17.2
17	*24	87	67	444	155	33	305	109	21	10.1	6.4	*36
18	15.3	74	64	261	174	34	240	121	19.3	10.1	6.4	17.2
19	13.5	*64	280	171	165	34	495	121	18.6	9.7	6.4	96
20	12	55	258	128	*150	37	676	107	17.9	9.7	6.4	41
21	11.5	48	180	103	140	57	297	111	17.2	9.3	6.1	41
22	19.3	44	128	87	200	57	216	109	15.9	8.9	6.1	35
23	30	46	99	111	240	58	165	99	15.3	8.9	6.1	38
24	43	44	111	*191	247	78	142	92	25	8.5	5.9	33
25	43	54	161	160	226	82	119	87	21	8.5	5.9	53
26	44	57	210	128	174	82	103	84	19.3	8.2	5.9	38
27	36	54	152	92	135	*73	92	73	35	8.2	6.1	32
28	32	70	177	207	111	68	85	63	33	7.9	7.0	29
29	29	59	142	168	-	63	84	57	27	7.9	17.4	26
30	212	73	111	133	-----	63	87	50	24	7.9	8.2	23
31	64	-----	89	119	-----	57	-----	57	-----	7.9	7.3	-----
Total	842.6	2,220	4,367	4,219	4,148	1,711	4,559	2,971	861.5	380.9	228.6	711.2
Mean	27.2	74.0	141	136	148	55.2	152	95.8	28.7	12.3	7.37	23.7
Cfs	2.09	5.69	10.8	10.5	11.4	4.25	11.7	7.37	2.21	0.946	0.567	1.82
In.	2.41	6.35	12.49	12.07	11.87	4.89	13.04	8.50	2.46	1.09	0.65	2.03
Ac-ft	1,670	4,400	8,660	8,570	8,230	3,390	9,040	5,890	1,710	756	453	1,410

Calendar year 1957: Max 494 Min 7.6 Mean 74.4 Cfs 5.72 In. 77.66 Ac-ft 53,830  
Water year 1957-58: Max 676 Min 5.9 Mean 74.6 Cfs 5.74 In. 77.85 Ac-ft 53,980

Peak discharge (base, 700 cfs).--Apr. 19 (11:30 p.m.) 1,070 cfs (5.54 ft).

\* Discharge measurement made on this day.



1165. Cedar River at Cedar Falls, Wash.

Location.--Lat 47°25'10", long 121°47'20", in SE $\frac{1}{4}$  sec. 4, T. 22 N., R. 8 E., on right bank three-quarters of a mile downstream from Seattle municipal powerplant at Cedar Falls and 3 miles downstream from Cedar Lake.

Drainage area.--84.2 sq mi.

Records available.--April 1914 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 910 ft (from river-profile map).

Average discharge.--44 years, 303 cfs (219,400 acre-ft per year).

Extremes.--Maximum discharge during year, 958 cfs Apr. 21, 22 (gage height, 7.52 ft); minimum, 1.3 cfs Sept. 30 (gage height, 4.37 ft); minimum daily, 1.4 cfs Sept. 30, 1914-58; Maximum discharge, 6,440 cfs Dec. 22, 1933 (gage height, 11.5 ft); no flow part of each day Nov. 25, 1917, Aug. 18, 1923; minimum daily, 1.4 cfs Sept. 30, 1958.

Remarks.--Records excellent. All artificially diverted water returned to river above station. Some regulation by Cedar Lake for power.

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

Revisions (water years).--WSP 722: 1930. WSP 1286: 1934(M), drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-22			Oct. 23 to Sept. 30		
4.9	19	4.37	1.3	5.6	108
5.1	35	4.5	3.5	6.0	200
5.4	72	4.7	10	6.5	365
5.7	132	4.9	20	7.5	945
6.1	240	5.2	46		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	52	224	713	556	458	82	350	95	31	58	70
2	29	29	238	707	519	425	90	319	95	30	57	68
3	24	28	250	695	513	546	80	332	94	42	57	68
4	24	50	262	491	542	559	64	372	94	53	53	68
5	25	52	251	146	544	532	41	446	94	53	52	68
6	25	50	277	308	529	543	41	*487	94	52	54	67
7	25	46	298	235	512	538	41	517	94	49	54	65
8	24	50	276	*204	480	466	66	484	94	45	54	65
9	24	26	468	211	178	145	66	550	94	44	54	65
10	24	26	707	115	462	529	74	548	94	44	54	67
11	25	48	436	262	*731	460	66	592	94	44	54	67
12	25	116	330	142	570	186	56	637	94	43	53	67
13	29	100	496	434	578	118	43	372	94	43	53	67
14	28	152	402	358	576	136	64	657	94	42	53	68
15	26	145	552	510	538	64	94	635	94	41	54	42
16	27	93	512	562	527	64	92	589	92	42	57	*21
17	29	64	302	570	532	99	122	521	92	43	57	21
18	*26	230	324	562	508	41	130	396	*92	43	57	21
19	25	229	491	496	533	118	123	290	92	42	60	29
20	25	154	522	548	532	40	196	311	92	41	64	28
21	25	*110	504	719	521	76	556	322	92	41	64	24
22	217	64	666	448	498	62	945	308	90	44	65	23
23	237	54	542	725	349	66	912	350	88	46	70	23
24	135	29	534	757	558	180	854	433	90	45	70	21
25	35	70	541	596	550	*110	803	366	81	53	70	13
26	49	116	592	509	564	128	755	413	68	62	70	2.8
27	28	134	731	743	552	101	598	412	68	62	70	2.4
28	55	78	540	642	560	95	587	401	68	62	70	2.1
29	58	69	695	642	-	49	378	429	68	61	70	1.7
30	74	181	542	751	-	43	358	101	54	*60	70	1.4
31	46	----	544	575	-----	78	-----	97	-----	60	70	-----
Total	1,473	2,646	14,049	15,336	14,612	7,055	8,397	13,037	2,639	1,463	1,868	1,216.4
Mean	47.5	88.2	453	495	522	228	280	421	88.0	47.2	60.3	40.5
Ac-ft	2,920	5,250	27,870	30,420	28,980	13,990	16,660	25,860	5,230	2,900	3,710	2,410
Calendar year 1957: Max	736				Min 24		Mean 260		Ac-ft 188,100			
Water year 1957-58: Max	945				Min 1.4		Mean 230		Ac-ft 166,200			

\* Discharge measurement made on this day.

1167. Middle Fork Taylor Creek near Selleck, Wash.

Location.--Lat 47°21'15", long 121°47'30", in NW $\frac{1}{4}$  sec. 33, T. 22 N., R. 8 E., on left bank 0.7 mile upstream from mouth and 4 miles southeast of Selleck.

Drainage area.--4.85 sq mi.

Records available.--August 1956 to September 1958.

Gage.--Water-stage recorder, and concrete control since Aug. 15, 1958. Altitude of gage is 1,440 ft (from topographic map).

Extremes.--Maximum discharge during year, 231 cfs Apr. 19 (gage height, 2.49 ft); minimum, 4.7 cfs Sept. 7-9.

1956-58: Maximum discharge, 450 cfs Dec. 9, 1956 (gage height, 2.90 ft), from rating curve extended above 230 cfs; minimum, that of Sept. 7-9, 1958.

Remarks.--Records good except those for period of indefinite stage-discharge relation, which are fair. No regulation or diversion above station.

Rating tables, water year 1957-58, except period of indefinite stage-discharge relation (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Aug. 14

Aug. 15 to Sept. 30

1.1	5.6	1.7	43	1.77	4.7
1.2	8.8	2.0	85	1.9	9.6
1.4	18.5	2.4	195	2.0	16
				2.2	38

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*5.6	13.5	29	39	53	35	18.5	30	11.5	8.8	5.9	7.4
2	15	12	37	36	47	34	19.5	28	11	8.4	5.6	6.0
3	7.7	11.5	32	34	*44	30	19	26	10.5	8.0	6.2	*5.6
4	6.8	11	30	31	39	29	17	25	10	7.7	5.9	5.3
5	6.5	10.5	28	30	39	28	16.5	23	9.6	7.7	5.3	5.3
6	6.5	10	51	29	37	26	16	22	9.6	7.4	5.6	5.0
7	7.1	9.6	40	27	35	26	16	22	9.6	7.1	5.9	5.0
8	7.7	8.6	35	27	36	23	16	21	9.2	7.1	5.6	4.7
9	6.5	9.2	32	29	50	22	16.5	20	10.5	7.1	5.6	5.0
10	6.2	12.5	29	38	59	22	33	19.5	*13.5	7.1	5.6	5.0
11	6.2	21	28	44	54	20	23	19	11	6.8	5.6	5.0
12	6.2	40	26	50	62	19.5	22	19	11	6.8	*5.6	5.0
13	7.7	53	23	44	74	19	22	18	10.5	6.8	5.3	5.0
14	8.8	45	26	93	61	18.5	22	16.5	10	6.8	5.3	8.2
15	*7.4	35	22	151	56	18	33	16	9.6	6.5	5.3	6.6
16	9.1	28	20	131	68	17	43	15.5	8.8	6.5	5.3	9.5
17	11.5	24	22	167	56	*17	65	15	8.4	6.5	5.3	7.4
18	8.0	23	20	108	56	17	56	14	8.0	6.5	5.3	6.3
19	7.1	21	83	79	50	17	113	14	8.0	6.5	5.3	30
20	6.8	18.5	66	63	45	19	120	13	8.0	6.5	5.3	7.8
21	6.8	17	53	53	43	23	77	12.5	8.0	6.5	5.0	7.0
22	9.1	16.5	43	*47	50	19.5	65	12	7.7	*6.5	5.0	6.3
23	20	16	39	53	51	19	56	11.5	7.7	6.5	5.0	7.8
24	17	15	55	82	58	24	54	11.5	9.6	6.2	5.0	6.6
25	15	16.5	91	69	54	22	47	11.5	8.8	6.2	5.0	8.2
26	15.5	*16	*87	58	47	22	41	11	8.0	6.2	5.0	7.0
27	12	17	74	53	42	20	38	11	11	6.2	5.3	6.3
28	11	23	80	89	38	19.5	*34	11	11.5	5.9	6.0	6.0
29	11	18	65	71	-	19	33	10.5	9.6	5.9	7.0	5.6
30	22	19.5	51	63	-----	19.5	31	10.5	9.6	5.9	6.0	5.6
31	15.5	-----	44	61	-----	18.5	-----	12.5	-----	5.9	5.6	-----
Total	309.3	592.4	1,361	1,949	1,404	683.0	1,183.0	522.0	289.8	210.5	170.7	211.5
Mean	9.98	19.7	43.9	62.9	50.1	22.0	39.4	16.8	9.66	6.79	5.61	7.05
Cfsm	2.06	4.06	9.05	13.0	10.3	4.54	8.12	3.46	1.99	1.40	1.14	1.45
In.	2.37	4.54	10.44	14.95	10.77	5.24	9.07	4.00	2.22	1.61	1.31	1.62
Ac-ft	613	1,180	2,700	3,870	2,780	1,350	2,350	1,040	575	418	339	420

Calendar year 1957: Max 167 Min 5.6 Mean 27.0 Cfsm 5.57 In. 75.49 Ac-ft 19,540  
 Water year 1957-58: Max 167 Min 4.7 Mean 24.3 Cfsm 5.01 In. 68.14 Ac-ft 17,640

Peak discharge (base, 250 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation indefinite July 30 to Aug. 14; discharge estimated on basis of 1 discharge measurement and records for Taylor Creek near Selleck.

1168. North Fork Taylor Creek near Selleck, Wash.

Location.--Lat 47°22'20", long 121°48'20", in NE $\frac{1}{4}$  sec. 29, T. 22 N., R. 8 E., on left bank at upstream side of bridge, 1 mile upstream from mouth and 3 miles east of Selleck.

Drainage area.--3.16 sq mi.

Records available.--June 1956 to September 1958.

Gage.--Water-stage recorder and log control. Altitude of gage is 1,500 ft (from topographic map).

Extremes.--Maximum discharge during year, 108 cfs Jan. 17 (gage height, 2.32 ft); minimum, 0.8 cfs Aug. 21; minimum gage height, 0.57 ft July 28.  
1956-58: Maximum discharge, 185 cfs Dec. 10, 1956 (gage height, 2.86 ft); minimum, that of Aug. 21, 1958; minimum gage height, that of July 28, 1958.

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

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

(Shifting-control method used July 30 to Sept. 50)

Oct. 1-2

Oct. 3 to Sept. 30

0.64	1.5	0.63	0.9	1.3	18
.8	3.6	.8	2.6	1.8	52
1.0	8.3	1.0	6.8	2.3	105

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*3.5	9.2	22	24	35	17	8.3	16.5	4.7	4.1	1.2	1.7
2	7.6	8.6	35	21	30	15	9.2	15.5	4.1	3.7	1.2	1.3
3	3.8	8.0	38	18	*25	13.5	8.3	14.5	3.9	3.6	1.3	*1.1
4	2.8	7.0	30	16.5	21	12.5	7.3	13.5	3.6	3.2	1.3	1.1
5	2.5	6.2	25	15	19.5	12	7.0	13	3.2	2.9	1.2	1.1
6	2.2	5.6	33	14.5	17.5	11.5	7.0	12	3.7	2.8	1.2	1.0
7	2.3	5.2	38	13.5	16.5	11	6.5	11.5	3.9	2.6	1.4	.9
8	2.2	4.7	35	15	18.5	10.5	7.0	11	3.4	2.8	1.3	.9
9	1.9	4.5	37	15.5	25	9.9	7.0	10.5	4.1	2.6	1.2	1.0
10	1.7	5.4	21	22	42	9.6	17	9.9	*6.5	2.5	1.2	1.0
11	1.7	9.2	19.5	26	33	9.2	14.5	10.5	5.2	2.3	1.1	.9
12	1.7	25	16	33	37	8.6	13	9.6	4.9	2.2	*1.1	.9
13	4.3	45	13.5	32	51	8.6	12.5	8.6	4.7	2.2	1.1	1.0
14	4.7	48	14.5	55	44	8.3	13	8.0	4.3	2.1	1.1	1.7
15	*3.7	38	12	78	38	8.0	17.5	7.3	4.1	1.8	1.1	1.7
16	4.1	28	11	74	44	8.0	29	7.0	3.7	1.7	1.1	2.1
17	5.6	20	11.5	98	38	*7.6	47	6.5	3.4	1.6	1.1	2.1
18	4.1	18	10.5	70	33	8.0	50	6.2	3.2	1.7	1.1	1.7
19	3.7	14.5	33	49	28	7.6	61	5.9	3.2	1.7	1.1	7.6
20	3.4	12	42	39	23	8.3	74	5.6	3.1	1.7	1.0	5.1
21	3.2	10.5	40	31	21	9.2	56	5.4	2.9	1.6	1.0	2.5
22	6.6	9.6	31	*25	24	8.9	45	4.9	2.8	*1.5	.9	2.2
23	18.5	8.6	28	30	26	8.3	39	4.9	2.6	1.5	.9	2.3
24	12	8.0	40	49	33	12	38	4.9	3.7	1.3	.9	2.1
25	10.5	9.9	62	47	32	11.5	35	4.5	3.6	1.1	.9	2.2
26	11.5	*11.5	*78	40	26	11	30	4.3	3.1	1.1	.9	2.1
27	9.2	13	58	36	22	10.5	25	4.1	3.7	1.1	1.1	1.9
28	8.0	19.5	61	54	19.5	9.9	*22	4.5	4.7	1.0	1.4	1.9
29	7.0	15.5	52	50	-	9.2	19.5	4.1	4.7	1.1	1.5	1.8
30	12.5	16.5	38	45	-----	9.2	17.5	4.3	4.7	1.2	1.2	1.7
31	9.6	-----	30	41	-----	8.3	-----	5.2	-----	1.3	1.2	-----
Total	173.9	444.7	1,003.5	1,177.0	820.5	312.7	743.1	254.2	117.4	63.6	35.3	54.6
Mean	5.61	14.8	32.4	38.0	29.3	10.1	24.8	8.20	3.81	2.05	1.14	1.82
Cfsm	1.78	4.68	10.3	12.0	9.27	3.20	7.85	2.59	1.24	0.649	0.361	0.576
In.	2.05	5.23	11.81	13.85	9.66	3.68	8.75	2.99	1.38	0.75	0.42	0.64
Ac-ft	345	882	1,990	2,330	1,630	620	1,470	504	233	126	70	108

Calendar year 1957: Max 144 Min 1.4 Mean 17.0 Cfsm 5.38 In. 72.91 Ac-ft 12,290  
Water year 1957-58: Max 98 Min 0.9 Mean 14.2 Cfsm 4.49 In. 61.21 Ac-ft 10,310

Peak discharge (base, 130 cfs).--No peak above base

\* Discharge measurement made on this day.

## 1170. Taylor Creek near Selleck, Wash.

Location.--Lat 47°23'10", long 121°50'45", in NW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 19, T. 22 N., R. 8 E., on left bank half a mile upstream from mouth and  $1\frac{1}{4}$  miles northeast of Selleck.

Drainage area.--16.4 sq mi.

Records available.--June to October 1945, August 1956 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 940 ft (from topographic map). June to October 1945 on right bank 350 ft downstream at different datum.

Extremes.--Maximum discharge during year, 425 cfs Jan. 17 (gage height, 3.86 ft); minimum, 16.5 cfs Aug. 25-27 (gage height, 2.46 ft).  
1945, 1956-58: Maximum discharge, 1,090 cfs Dec. 9, 1956 (gage height, 4.38 ft), from rating curve extended above 490 cfs; minimum, that of Aug. 25-27, 1958.

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

Revisions.--WSP 1516: Drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Dec. 26-30)

Oct. 1 to Jan. 16		Jan. 17 to Sept. 30	
2.48	19.5	2.46	16.5
2.8	54	2.8	48
3.1	105	3.1	99
3.3	152	3.4	185
3.6	271	3.8	384

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	35	76	124	164	125	67	91	48	32	23	20
2	37	33	87	118	154	115	72	89	43	31	22	17
3	27	30	92	107	*144	106	65	85	43	30	24	*17
4	22	30	76	101	136	104	62	83	41	29	23	17
5	22	28	76	92	130	104	61	79	40	27	21	17
6	21	28	112	88	122	95	59	77	41	27	22	17.5
7	23	26	101	84	120	97	58	74	41	27	23	17.5
8	23	26	90	86	120	91	59	70	40	27	22	17
9	21	25	78	90	150	91	59	70	41	26	21	17.5
10	20	29	69	109	210	87	99	67	*51	26	21	17.5
11	19.5	48	69	122	160	85	76	67	45	26	21	17.5
12	20	95	64	134	168	81	69	67	43	26	20	17.5
13	29	144	62	126	205	79	69	62	42	26	19	18.5
14	27	139	69	173	178	77	72	61	41	26	19	21
15	*23	101	60	206	168	76	98	58	39	25	19	20
16	23	78	57	225	185	74	136	56	36	25	19	24
17	33	64	58	330	171	*74	174	55	36	25	19	21
18	25	63	58	217	168	72	168	54	35	25	19	18.5
19	21	58	159	178	150	70	220	54	34	25	19	54
20	21	50	176	160	142	74	213	52	34	25	19	23
21	21	48	162	144	139	81	174	51	33	25	19	20
22	28	44	131	133	150	74	168	51	32	*25	18.5	18.5
23	63	42	118	144	150	72	150	51	32	24	18.5	21
24	46	40	162	197	168	83	144	49	35	24	17.5	20
25	39	45	214	174	160	81	136	48	34	23	16.5	23
26	42	*46	*248	157	154	76	125	47	33	23	16.5	19
27	38	47	225	154	142	74	113	47	36	23	17	17.5
28	50	71	221	205	133	70	*104	47	40	23	17	17.5
29	28	68	209	185	122	70	101	49	35	23	19	17
30	52	56	169	182	122	70	95	48	35	23	17	17
31	38	---	142	174	---	65	---	49	---	23	18.5	---
Total	902.5	1,622	3,702	4,719	4,341	2,593	3,266	1,908	1,159	795	610.0	600.5
Mean	29.1	54.1	119	152	155	83.6	109	61.5	38.6	25.6	19.7	20.0
Cfs/m	1.77	3.30	7.26	9.27	9.45	5.10	6.65	3.75	2.35	1.56	1.20	1.22
In.	2.05	3.68	8.59	10.70	9.84	5.88	7.41	4.33	2.65	1.80	1.38	1.36
Ac-ft	1,790	3,220	7,340	9,360	8,610	5,140	6,480	3,780	2,300	1,580	1,210	1,190

Calendar year 1957: Max 386 Min 19.5 Mean 79.3 Cfs/m 4.84 In. 65.67 Ac-ft 57,450  
Water year 1957-58: Max 330 Min 16.5 Mean 71.8 Cfs/m 4.38 In. 59.45 Ac-ft 52,000

Peak discharge (base, 650 cfs).--No peak above base.

\* Discharge measurement made on this day.

## 1175. Cedar River near Landsburg, Wash.

Location.--Lat 47°23'35", long 121°56'50", in NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 17, T. 22 N., R. 7 E., on left bank 2 miles upstream from Landsburg and intake of Seattle water-supply system,  $\frac{1}{4}$  miles east of Maple Valley, 5 miles downstream from Taylor Creek, and 12 miles downstream from Cedar Lake.

Drainage area.--125 sq mi, excludes that of Rock Creek.

Records available.--July 1895 to September 1958 (prior to October 1948, flow of Rock Creek included). Monthly discharge only for some periods, published in WSP 1316. Published as "near Seattle" 1895-98, "near Maple Valley" 1902, and as "near Ravensdale" 1898-1901, 1903-12.

Gage.--Water-stage recorder. Altitude of gage is 600 ft (from river-profile map). Prior to Oct. 1, 1898, staff gage at site  $\frac{1}{2}$  miles downstream at different datum. Mar. 24, 1901, to May 15, 1913, staff gage at site 2 miles downstream at datum 535.84 ft above mean sea level (levels by city of Seattle). Apr. 30, 1914, to Oct. 22, 1928, water-stage recorder a quarter of a mile downstream at different datum.

Average discharge.--63 years, 688 cfs (498,100 acre-ft per year), unadjusted.

Extremes.--Maximum discharge during year, 1,570 cfs Jan. 17 (gage height, 3.10 ft); minimum, 183 cfs Nov. 10; minimum gage height, 0.80 ft Sept. 30. 1895-98, 1901-58: Maximum discharge, 14,200 cfs Nov. 19, 1911 (gage height, 10.0 ft, from graph based on gage readings, site and datum then in use), from computation of peak flow over dam, peak caused by failure of flashboards at Cedar Lake; minimum observed, 83 cfs Sept. 19, 1898.

Remarks.--Records excellent except those for periods of no gage-height record and shifting control, which are good. All diversions except Rock Creek returned to river above station. Rock Creek which entered naturally just above station prior to 1932, has been diverted to enter river at a point about 2 miles downstream from Seattle municipal water-supply intake. Some regulation by Cedar Lake.

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

Revisions (water years).--WSP 313: 1895-98, 1902-9. WSP 1246: Drainage area. WSP 1286: 1912. WSP 1316: 1896-98(M), 1902-11(M).

Rating table, water year 1957-58, except period of shifting control (gage height, in feet, and discharge, in cubic feet per second)

0.8	180
1.4	414
2.0	750
3.0	1,480

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	207	239	456	1,040	1,050	900	401	721	410	316	*300	284
2	239	214	514	1,020	973	884	428	684	405	312	296	277
3	214	204	535	995	983	994	405	678	401	312	296	277
4	204	221	500	796	946	1,010	379	712	396	324	292	273
5	204	214	491	515	970	992	357	782	392	320	288	269
6	200	221	580	570	962	982	349	834	392	320	288	265
7	200	225	586	510	932	985	349	*860	396	320	296	265
8	200	211	552	*492	864	922	362	822	388	316	292	261
9	197	197	675	485	695	618	366	876	388	316	292	261
10	194	194	925	430	941	694	423	899	405	312	288	261
11	194	239	720	562	1,200	878	396	954	396	312	288	261
12	194	357	568	530	1,070	668	379	1,000	392	312	284	258
13	211	442	660	746	*1,200	515	357	714	388	308	284	258
14	207	562	670	840	1,120	536	392	995	368	308	280	261
15	197	439	670	1,050	1,060	446	437	960	383	304	280	*246
16	200	358	736	1,120	1,090	442	500	939	379	300	280	221
17	*211	309	572	1,280	1,080	475	565	855	379	300	280	221
18	197	406	a540	1,090	1,010	423	565	764	374	300	280	214
19	194	446	a650	975	1,030	494	655	607	370	300	280	261
20	194	411	a800	972	1,010	414	778	625	*370	300	284	228
21	190	320	a850	1,140	992	442	1,020	649	366	300	280	214
22	311	261	a1,000	829	994	423	1,410	625	366	300	280	211
23	451	251	a900	1,130	814	419	1,340	649	362	300	284	214
24	392	225	a850	1,230	1,100	568	1,290	750	370	300	284	211
25	232	*254	a900	1,060	1,080	470	1,220	667	374	300	284	214
26	243	317	1,100	962	1,050	480	1,160	730	349	312	280	211
27	221	328	1,150	1,160	1,020	*457	1,020	724	353	312	280	207
28	325	325	1,010	1,160	1,030	423	990	718	353	308	280	204
29	232	264	1,140	1,160	-	388	774	737	349	308	284	200
30	277	376	928	1,200	-----	379	726	455	345	308	280	197
31	243	-----	888	1,080	-----	405	-----	419	-----	308	280	-----
Total	7,075	9,028	23,124	28,109	28,266	19,506	19,793	23,404	11,379	9,568	8,844	7,205
Mean	228	301	746	907	1,010	623	660	755	379	309	285	240
Ac-ft	14,030	17,910	45,870	55,750	56,060	38,290	39,260	46,420	22,570	18,980	17,540	14,290

Calendar year 1957: Max 1,460 Min 190 Mean 588 Ac-ft 425,400  
 Water year 1957-58: Max 1,410 Min 190 Mean 535 Ac-ft 387,000

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of record for station at Cedar Falls.

Note.--Shifting-control method used May 30 to Sept. 30.

1183. Rock Creek near Ravensdale, Wash.

Location.--Lat 47°21'45", long 121°59'45", in E½SE¼ sec. 26, T. 22 N., R. 6 E., on right bank half a mile upstream from State Highway 5-A and 1 mile northwest of Ravensdale.

Records available.--August 1956 to October 1958 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 580 ft (from topographic map).

Extremes.--Maximum discharge during period October 1957 to October 1958, 30 cfs Feb. 16-18, 26-28; maximum gage height, 2.11 ft Feb. 26-28; minimum discharge, 0.1 cfs Sept. 18, 20, 22-25, Sept. 29 to Oct. 3, Oct. 8-16; minimum gage height, 0.37 ft Sept. 24.  
1956-58: Maximum discharge, 46 cfs Mar. 11-13, 1957 (gage height, 2.34 ft); minimum, that of Sept. 18, 20, 22-25, Sept. 29 to Oct. 3, Oct. 8-16, 1958; minimum gage height, that of Sept. 24, 1958.

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

Rating tables, Oct. 1, 1957, to Oct. 17, 1958 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 27

May 28 to Oct. 17

0.7	0.4	1.3	4.0	0.4	0.1	1.0	2.4
.9	.9	1.6	9.4	.5	.3	1.3	5.3
1.1	2.0	2.1	30	.8	1.2		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.6	0.5	0.9	6.5	25	28	9.4	11.5	5.1	2.6	1.3	0.4
2	.6	.5	.9	6.6	26	28	9.2	11	4.8	2.6	1.3	.4
3	.6	.5	1.0	6.8	25	27	9.2	11	4.7	2.5	1.3	.4
4	.6	.5	1.0	6.8	24	26	8.9	10.5	4.6	2.3	1.2	.4
5	.6	.5	1.1	7.0	24	25	8.7	10	4.5	2.3	1.2	.4
6	.5	.5	1.1	7.0	22	24	8.2	9.7	4.4	2.2	1.2	.4
7	.5	.5	1.2	*7.0	22	23	8.0	*9.2	4.4	2.1	1.1	.4
8	.5	.5	1.3	7.0	21	22	7.8	9.2	4.2	2.1	1.0	.4
9	.5	.5	1.3	7.0	21	21	7.6	8.9	4.1	1.9	.9	.4
10	*.5	.5	1.4	7.0	22	20	7.4	8.7	4.0	1.9	.8	.3
11	.5	.5	1.4	7.0	24	20	7.2	8.7	4.0	1.9	.7	.3
12	.5	.5	1.4	7.0	*24	18.5	6.8	8.2	3.8	1.9	.7	.3
13	.6	.6	1.4	7.0	26	18	6.8	8.2	3.7	1.9	.7	.2
14	.6	.7	1.5	7.2	28	17	6.6	8.2	3.6	1.8	.6	.2
15	.6	.8	1.5	7.8	28	16.5	6.5	8.0	3.6	1.8	.6	*.3
16	.5	.8	1.5	8.7	29	16	6.5	7.6	3.5	1.8	.5	.2
17	.5	.8	1.5	12.5	30	15	6.5	7.4	3.5	1.8	.5	.2
18	.5	.8	1.6	16.5	30	14.5	6.6	6.8	3.4	1.7	.5	.2
19	.5	.8	1.7	19	29	14	7.0	6.6	*3.3	1.6	.5	.2
20	.5	.8	1.9	21	28	13	8.0	6.6	3.3	1.6	.5	.2
21	.5	.8	2.2	22	28	12.5	9.2	6.3	3.2	1.6	.5	.2
22	.5	.8	2.6	22	28	12.5	10	6.3	3.1	1.6	.5	.1
23	.6	.8	3.0	21	27	11.5	11.5	6.1	3.0	1.6	.5	.1
24	.5	.8	3.2	21	28	11.5	12.5	6.0	3.0	1.5	.5	.1
25	.5	.8	3.5	21	28	11.5	12.5	5.6	3.0	1.5	.5	.1
26	.5	.8	4.1	21	29	*11	12.5	5.5	3.0	1.5	.5	.2
27	.5	*.8	4.7	21	30	11	13	5.5	2.9	1.5	.5	.2
28	.5	.8	5.0	21	29	11	13	5.3	2.7	1.4	.4	.2
29	.5	.8	5.6	22	-	10.5	12.5	5.2	2.6	1.4	.4	.2
30	.5	.8	6.0	23	-	10	12.5	5.1	2.6	1.4	.4	.1
31	.5	-----	6.1	24	-----	10	-----	5.1	-----	*1.3	.4	-----
Total	16.3	20.1	72.6	421.4	735	529.5	272.1	238.0	109.6	56.6	22.2	7.7
Mean	0.53	0.67	2.34	13.6	26.2	17.1	9.07	7.68	3.65	1.83	0.72	0.26
Ac-ft	32	40	144	836	1,460	1,050	540	472	217	112	44	15

Calendar year 1957: Max 46 Min 0.5 Mean 9.35 Ac-ft 6,770

Water year 1957-58: Max 30 Min 0.1 Mean 6.85 Ac-ft 4,960

\* Discharge measurement made on this day.

Note.--No gage-height record Aug. 17 to Sept. 14; discharge estimated on basis of records for nearby stations. Shifting-control method used Oct. 1, 2, Dec. 7 to Feb. 2, Feb. 19 to June 16, Sept. 16, 17, 23-30.

Discharge, in cubic feet per second, 1958

Day	Discharge	Day	Discharge	Day	Discharge	Day	Discharge
Oct. 1.....	0.1	Oct. 9.....	0.1	Oct. 17.....	*0.2	Oct. 25.....	-
2.....	.1	10.....	.1	18.....	-	26.....	-
3.....	.2	11.....	.1	19.....	-	27.....	-
4.....	.2	12.....	.1	20.....	-	28.....	-
5.....	.2	13.....	.1	21.....	-	29.....	-
6.....	.2	14.....	.1	22.....	-	30.....	-
7.....	.2	15.....	.1	23.....	-	31.....	-
8.....	.2	16.....	.1	24.....	-		

\* Discharge measurement made on this day.

Note.--Shifting-control method used Oct. 1-17.

1184. Rock Creek at State Highway 5A, near Ravensdale, Wash.

Location.--Lat 47°21'45", long 122°00'35", in NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 26, T. 22 N., R. 6 E., on left bank near upstream ends of culverts on State Highway 5A,  $\frac{1}{2}$  miles northeast of Ravensdale.

Records available.--June 1956 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 530 ft (from topographic map).

Extremes.--Maximum discharge during year, 33 cfs Feb. 15 (gage height, 2.24 ft); minimum, 2.7 cfs Sept. 13-15 (gage height, 1.44 ft).  
1956-58: Maximum discharge, 50 cfs Mar. 11, 12, 1957; maximum gage height, 2.35 ft Mar. 11, 1957; minimum discharge, that of Sept. 13-15, 1958; minimum gage height, 1.07 ft Oct. 12, 14, 1958.

Remarks.--Records good except those for period Oct. 2-10 and those for period of no gage-height record, which are fair. No regulation or diversion above station.

Rating tables, water year 1957-58 (gage height, in feet, and discharge,  
in cubic feet per second)  
(Shifting-control method used Oct. 1)

Oct. 1 to Feb. 16			Feb. 17 to Sept. 30		
1.6	5.7		1.44	2.7	
1.8	12.5		1.6	6.4	
2.0	21		1.8	13	
2.3	36		2.0	21	
			2.3	36	

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.6	5.7	7.2	14	28	30	12.5	17.5	9.8	a6.4	5.6	4.4
2	6.9	5.7	8.4	13.5	28	30	12.5	17	9.4	6.4	5.4	4.4
3	6.0	5.4	8.7	13	28	30	13	16	9.4	6.4	5.4	4.4
4	6.0	5.4	9.8	13	28	28	14.5	16	9.4	6.2	5.4	4.4
5	6.0	5.4	9.8	13.5	28	28	14.5	14.5	9.4	6.2	5.2	4.6
6	6.6	5.4	9.0	14	26	27	14	12.5	8.8	5.9	5.2	4.6
7	6.6	5.4	8.7	*13.5	26	26	14	*12.5	8.2	5.6	5.2	4.6
8	6.9	5.4	8.4	13.5	26	24	14	12.5	7.9	5.9	5.2	4.4
9	6.9	5.1	6.6	13	26	24	14.5	12	7.9	5.6	5.2	4.4
10	*6.3	5.4	7.8	13.5	28	24	12.5	12	*7.9	5.6	4.9	4.4
11	6.3	5.4	8.1	14.5	28	24	10.5	11	7.6	5.2	4.9	4.4
12	6.3	6.0	8.7	14	*29	22	10	11	7.6	4.4	4.9	3.7
13	6.6	6.6	8.4	14	30	24	10	*11	7.3	4.4	4.9	2.9
14	6.0	6.9	9.0	14.5	30	22	10	13	7.3	4.4	4.9	2.7
15	6.0	6.6	8.7	16	31	21	10	13.5	7.6	4.2	4.6	*3.3
16	6.0	6.6	8.4	18	32	21	11.5	13	7.6	4.2	4.6	4.6
17	6.3	6.3	8.4	24	32	21	13.5	13	7.3	4.4	4.6	4.6
18	6.9	6.0	8.1	26	32	20	13.5	12.5	7.3	5.4	4.6	4.4
19	6.9	6.0	9.0	26	31	18.5	15	12.5	*7.0	5.6	4.6	4.4
20	6.9	*5.7	9.8	27	30	16	16	12.5	7.3	5.6	4.6	3.3
21	6.6	5.4	10.5	27	30	16	16	12	7.0	5.6	4.6	3.3
22	6.9	5.4	11.5	26	30	15.5	17.5	12	6.7	5.6	4.6	3.3
23	6.9	5.1	12	26	30	15	16.5	11.5	6.7	5.6	4.6	3.3
24	6.9	4.8	12	26	30	15	16.5	11	7.0	5.6	4.6	3.3
25	6.9	4.8	12.5	26	31	15	16	11	6.4	5.6	4.6	3.3
26	6.6	4.8	14	26	32	*14.5	16	11	6.4	5.6	4.6	3.3
27	6.3	5.4	13	26	32	14.5	16	11	6.4	5.9	4.6	3.3
28	6.0	5.7	14	26	30	14	15.5	10.5	a6.4	6.2	4.6	3.3
29	6.0	6.0	14	26	-	13.5	16	10	a6.4	5.6	4.6	3.3
30	6.0	6.3	14	27	-----	13.5	18	10	a6.4	5.6	4.6	3.3
31	5.7	-----	14	28	-----	13	-----	10	-----	*5.9	4.6	-----
Total	199.8	170.1	312.5	618.5	822	640.0	420.0	385.5	227.8	170.8	150.5	115.9
Mean	6.45	5.67	10.1	20.0	29.4	20.6	14.0	12.4	7.58	5.51	4.85	3.86
Ac-ft	386	337	620	1,250	1,630	1,270	833	765	482	339	299	236
Calendar year 1957: Max	50				Min 4.8	Mean 16.4		Ac-ft 11,860				
Water year 1957-58: Max	32				Min 2.7	Mean 11.5		Ac-ft 8,400				

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for stations near Maple Valley and near Ravensdale.

## LAKE WASHINGTON BASIN

1185. Rock Creek near Maple Valley, Wash.

Location.--Lat 47°22'50", long 122°01'10", in NE<sup>1</sup>/<sub>4</sub> sec. 22, T. 22 N., R. 6 E., on left bank 650 ft upstream from mouth and 2 miles southeast of Maple Valley.

Drainage area.--14.0 sq mi.

Records available.--June 1945 to September 1958.

Gage.--Water-stage recorder and woodbox culvert control. Altitude of gage is 425 ft (from topographic map). Prior to Mar. 16, 1953, at site 50 ft downstream at datum 0.82 ft higher.

Average discharge.--13 years, 21.4 cfs (15,490 acre-ft per year).

Extremes.--Maximum discharge during year, 45 cfs Feb. 17, 18 (gage height, 2.12 ft); minimum, 2.8 cfs Sept. 13-15 (gage height, 1.35 ft).

1945-58: Maximum discharge, 165 cfs Feb. 11, 1951 (gage height, 4.26 ft, datum then in use, from recorded range in stage); minimum, 2.7 cfs Dec. 23, 24, 1952; minimum gage height, 0.19 ft, Oct. 9-12, 14, 15, 1953, datum then in use.

Remarks.--Records good except those for December and January, which are fair. No regulation or diversion above station.

Revisions.--WSP 1246: Drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Dec. 12 to Jan. 30)

Oct. 1 to Jan. 31

Feb. 1 to Sept. 30

1.43	5.2	1.35	2.8	1.9	24
1.7	17.5	1.5	5.4	2.1	43
2.0	42	1.7	12		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.2	5.8	8.3	17	41	40	14.5	22	9.9	6.9	5.6	4.4
2	6.2	5.5	8.0	17	42	39	14.5	*21	9.9	6.7	5.6	4.3
3	5.5	5.5	7.6	17	41	39	15	21	9.9	6.7	5.4	4.3
4	5.2	5.5	8.3	17	40	36	16	20	9.9	6.7	5.4	4.1
5	5.5	5.8	8.3	16.5	39	35	16	19	9.5	6.4	5.4	4.1
6	5.5	5.8	7.6	16.5	38	34	15.5	16	9.5	6.4	5.4	4.1
7	5.5	5.5	6.8	*16.5	35	31	15.5	15.5	8.7	6.4	5.4	4.1
8	5.5	5.5	9.2	16.5	35	30	15.5	14.5	8.3	6.2	5.4	4.1
9	5.5	5.5	7.6	16	38	29	15.5	14.5	8.3	6.2	5.2	4.3
10	5.5	5.8	8.3	16.5	38	28	14	14	8.3	6.2	5.2	*4.1
11	*5.5	5.8	8.3	16	39	28	12	13.5	8.3	5.6	5.2	4.1
12	5.5	7.2	8.7	16	40	26	12	13	8.3	4.8	5.0	3.8
13	6.5	8.7	8.0	16	*41	27	11.5	15	8.3	4.6	5.0	2.8
14	5.8	9.2	8.0	16.5	41	25	11.5	14.5	8.0	4.4	5.0	2.8
15	5.8	8.0	8.0	17	41	23	12	14.5	8.0	4.4	5.0	3.1
16	6.2	8.0	7.6	19	43	23	13	14	8.0	4.4	5.0	4.4
17	5.8	7.6	7.2	24	43	24	14.5	13.5	7.7	4.4	5.0	4.4
18	6.2	7.6	6.8	28	42	22	15	13.5	7.7	5.4	5.0	4.6
19	5.8	7.2	7.6	30	42	21	17	13.5	*7.7	5.6	4.8	4.6
20	5.8	*7.2	7.6	32	41	19	18	13	*7.7	5.4	4.8	3.6
21	5.5	7.2	8.3	32	40	18	19	13	7.5	5.4	4.8	3.6
22	6.2	6.8	9.2	32	40	17.5	21	13	7.5	5.4	4.8	3.6
23	6.5	6.8	9.6	32	39	16	20	12.5	7.2	5.6	4.8	3.6
24	6.2	6.8	10	33	40	16	21	12	7.7	5.6	4.6	3.6
25	5.8	7.2	11	34	41	15.5	19.5	12	7.5	5.6	4.4	3.6
26	5.8	6.8	12.5	34	41	15.5	20	11.5	7.5	5.6	4.4	3.6
27	6.2	7.6	13.5	34	41	*15.5	19.5	11	7.2	5.6	4.4	3.6
28	5.2	7.6	15.5	36	41	15.5	19.5	10.5	7.2	5.6	4.4	3.4
29	5.8	7.6	16	38	-	15	20	10.5	7.2	5.6	4.4	3.4
30	6.2	7.6	17	39	-----	15	22	9.9	6.9	*5.6	4.4	3.4
31	5.8	-----	17	41	-----	14.5	-----	10.5	-----	5.6	4.3	-----
Total	179.2	204.7	297.4	766.0	1,123	751.0	490.0	439.9	245.3	175.2	153.5	115.5
Mean	5.78	6.82	9.53	24.7	40.1	24.2	16.3	14.2	8.18	5.65	4.95	3.85
Cfs/m	0.413	0.487	0.685	1.76	2.86	1.73	1.16	1.01	0.584	0.404	0.354	0.275
In.	0.48	0.54	0.79	2.03	2.98	1.99	1.30	1.17	0.65	0.47	0.41	0.31
Ac-ft	355	406	590	1,520	2,230	1,490	972	873	487	348	304	229

Calendar year 1957: Max 59 Min 5.2 Mean 17.6 Cfs/m 1.26 In. 17.04 Ac-ft 12,710  
Water year 1957-58: Max 43 Min 2.8 Mean 13.5 Cfs/m 0.964 In. 13.12 Ac-ft 9,800

\* Discharge measurement made on this day.



1190. Cedar River at Renton, Wash.

Location.--Lat 47°29'00", long 122°12'10", in NW¼ sec. 17, T. 23 N., R. 5 E., on left bank 125 ft downstream from bridge on U. S. Highway 10 at Renton and 1½ miles upstream from mouth.

Drainage area.--197 sq mi (includes 4 sq mi in vicinity of Youngs Lake in Big Soos Creek basin).

Records available.--March 1901 to July 1903 (fragmentary), September 1906 to December 1907 (monthly discharge only), August 1945 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 15.20 ft above mean sea level, datum of 1929, supplementary adjustment of 1947. Prior to Jan. 1, 1908, staff gages within 1 mile of present site, at datum 10.67 ft below mean sea level, unadjusted. Aug. 7, 1945, to Aug. 15, 1947, water-stage recorder at site 700 ft upstream at datum 20.13 ft above mean sea level and Aug. 16, 1947, to Dec. 7, 1950, at datum 19.13 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Average discharge.--13 years (1945-58), 706 cfs (511,100 acre-ft per year).

Extremes.--Maximum discharge during year, 2,160 cfs Jan. 17 (gage height, 6.06 ft); minimum not determined.

1901-3, 1906-7, 1945-58: Maximum discharge not determined, probably occurred Feb. 11, 1951, during period of no gage-height record (discharge measurement of 6,640 cfs, gage height, 9.48 ft, made Feb. 10, 1951); minimum recorded, 39 cfs Sept. 5, 6, 11, 12, 1957 (gage height, 2.51 ft).

Remarks.--Records good except those for period of shifting control, which are fair, and those for periods of no gage-height record, which are poor. Flow partly regulated by Cedar Lake for operation of powerplant. More than 250 cfs is diverted at Landsburg at times by the city of Seattle for municipal use.

Revisions (water years).--WSP 1246: Drainage area. WSP 1316: 1901-2.

Rating table, water year 1957-58, except period of shifting control (gage height, in feet, and discharge, in cubic feet per second)

2.4	33	4.0	547
2.7	83	5.0	1,200
3.3	248	6.0	2,100

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	112	137	304	989	1,170	978	305	700	222	98		
2	137	134	394	*968	1,070	912	328	*632	206	87		
3	145	112	446	947	1,050	952	332	619	200	54		
4	124	107	418	744	1,010	980	316	609	187	43		
5	119	115	411	628	*1,010	972	294	673	184	51		
6	117	115	460	446	988	933	283	700	181	49		
7	117	112	510	450	968	930	276	714	193	46		
8	*122	117	462	424	935	884	272	705	184	42		a43
9	129	142	502	440	836	750	324	744	178			
10	127	139	757	451	960	759	369	755	196			(*)
11	110	158	677	517	1,310	827	360	808	187			
12	105	248	490	622	1,180	694	328	894	181			
13	129	462	484	672	1,360	498	313	765	178			
14	152	649	576	865	1,240	485	332	853	184		a41	
15	129	554	600	1,120	1,210	421	373	814	206			a47
16	127	358	688	1,350	1,240	386	473	801	*193			a50
17	152	299	496	1,310	1,260	390	512	879	184			a43
18	145	*288	419	1,580	1,140	377	595	595	155			a43
19	134	343	618	1,180	1,140	*377	644	478	150			a77
20	129	346	960	1,100	1,070	390	905	435	150		a41	127
21	127	240	1,020	1,210	1,060	373	989	459	147			105
22	132	199	1,160	964	1,070	394	1,460	426	139			79
23	371	174	870	1,110	1,000	377	1,450	412	137			58
24	450	159	829	1,460	1,160	478	1,360	532	160			55
25	187	134	866	1,180	1,250	459	1,290	466	155	(*)		55
26	155	186	1,270	1,040	1,180	435	1,200	507	132			
27	147	213	1,280	1,220	1,120	440	1,030	497	119		a45	a50
28	122	240	1,110	1,250	1,090	348	987	497	119		a41	
29	132	168	1,240	1,360	-	313	656	512	119		a41	
30	150	198	986	1,260	-	294	694	369	110		a41	
31	170	-----	887	1,270	-----	293	-----	232	-----		a41	-----
Total	4,704	6,866	22,188	30,747	31,077	18,104	19,250	18,884	5,026	1,393	1,275	1,586
Mean	152	229	716	992	1,110	584	642	609	168	44.9	41.1	52.9
Ac-ft	9,330	13,620	44,010	60,990	61,640	35,910	38,180	37,460	9,970	2,760	2,530	3,150
Calendar year 1957: Max 1,890 Min 42 Mean 537 Ac-ft 368,900												
Water year 1957-58: Max 1,910 Min - Mean 441 Ac-ft 319,600												

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of 2 discharge measurements and records for station near Landsburg.

Note.--Shifting-control method used Oct. 1 to Jan. 16.

1195. May Creek near Renton, Wash.

Location.--Lat 47°31'25", long 122°11'45", in SW 1/4 sec. 32, T. 24 N., R. 5 E., 1 mile upstream from mouth and 2½ miles north of Renton.

Drainage area.--12.5 sq mi.

Records available.--June 1945 to October 1950, June 1955 to September 1958 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 60 ft (from topographic map). Prior to June 1955 at different datum.

Average discharge.--8 years, 21.2 cfs (15,350 acre-ft per year)

Extremes.--Maximum discharge during year, 180 cfs Jan. 17 (gage height, 2.49 ft); minimum, 1.7 cfs for many days July to September; minimum gage height, 0.86 ft Aug. 9, 10, 14-16, 18-27, Sept. 10-14.  
1945-50, 1955-58: Maximum discharge, 401 cfs Feb. 17, 1949 (gage height, 3.98 ft, datum then in use); minimum, that of July to September 1958.

Remarks.--Records good except those for periods of shifting control, which are fair. Some small diversions for irrigation and domestic use. No regulation.

Revisions (water years).--WSP 1316: 1947(M). WSP 1446: Drainage area.

Rating tables, water year 1957-58, except periods of shifting control (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 17

Jan. 18 to Sept. 30

0.9	2.0	1.4	32	0.86	1.7	1.2	16
1.0	4.8	1.8	81	.9	2.6	1.4	32
1.1	8.9	2.4	166	1.0	5.9	2.0	108
1.2	14.5			1.1	10.5		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.7	3.5	8.4	36	44	25	12	*13.5	4.0	2.6	1.9	2.2
2	4.4	3.2	8.9	30	38	22	12.5	13.5	3.8	2.6	1.9	2.2
3	3.8	3.2	7.0	25	35	20	12.5	12.5	3.3	2.6	1.9	2.2
4	3.2	3.0	7.0	22	31	20	11.5	11.5	3.0	2.4	1.9	2.2
5	3.0	2.7	7.0	18.5	32	19	10.5	11.5	3.0	2.2	1.7	*2.2
6	2.7	3.0	8.4	*15.5	31	17.5	9.9	10.5	3.0	1.9	1.7	1.9
7	3.0	3.0	7.9	13.5	*30	17	9.4	9.4	3.3	1.9	1.9	1.9
8	*2.8	2.7	7.4	14.5	31	17.5	9.0	9.0	3.0	1.9	1.7	1.9
9	2.7	2.7	7.0	15.5	36	17.5	9.4	8.5	3.0	1.9	1.7	1.9
10	2.7	3.2	6.2	28	41	15.5	12	8.1	3.3	1.9	1.7	1.7
11	2.7	4.1	6.2	36	44	14.5	10.5	8.1	3.3	1.9	1.9	1.7
12	2.7	7.0	5.4	48	42	13.5	9.4	7.7	3.0	1.9	1.9	1.7
13	4.8	*14	5.8	47	55	12.5	9.4	7.2	3.0	1.7	1.9	1.7
14	5.1	18.5	7.4	65	47	13	9.4	6.8	2.6	1.9	1.7	1.9
15	3.8	12	7.0	81	38	12.5	9.9	5.9	2.6	1.7	1.7	2.2
16	3.5	8.9	7.4	96	44	12	13	5.6	*2.6	1.7	1.9	2.4
17	4.1	6.6	7.4	156	40	12.5	19	5.2	2.6	1.7	1.9	2.2
18	3.2	5.8	7.0	108	39	12	18	4.9	2.6	1.7	1.9	2.2
19	3.0	5.8	9.4	72	36	12.5	24	5.2	2.6	1.7	1.7	2.4
20	3.0	5.1	12	44	32	12	29	4.9	2.6	1.9	1.7	2.2
21	3.0	4.8	22	42	29	*13.5	26	4.6	2.4	1.9	1.7	2.4
22	3.2	4.4	22	29	28	13.5	28	4.3	2.2	1.9	1.7	2.4
23	7.4	4.8	21	29	27	12.5	29	4.0	2.2	1.9	1.7	2.4
24	5.4	4.4	26	34	38	15.5	24	4.3	3.6	1.9	1.7	2.4
25	4.8	4.1	35	32	49	17	24	4.0	4.0	*1.9	1.7	2.2
26	4.4	4.1	53	30	41	15.5	26	3.6	3.3	1.9	1.7	2.2
27	3.8	4.4	47	29	34	13.5	22	3.6	2.6	1.9	2.2	2.2
28	3.5	4.8	62	39	29	12.5	19	4.0	2.6	1.9	2.2	2.2
29	3.5	4.4	65	43	-	13	16	3.6	2.6	1.9	2.4	2.2
30	5.1	4.8	85	48	-----	14.5	15	3.3	2.6	1.9	2.2	2.2
31	4.1	-----	44	48	-----	12.5	-----	4.3	-----	1.9	2.2	-----
Total	115.1	163.0	602.2	1,371.5	1,041	471.5	489.3	213.1	88.1	60.6	57.6	63.7
Mean	3.71	5.43	19.4	44.2	37.2	15.2	16.3	6.87	2.94	1.95	1.86	2.12
Cfs/m	0.297	0.434	1.55	3.54	2.98	1.22	1.30	0.550	0.235	0.156	0.149	0.170
In.	0.34	0.48	1.79	4.08	3.10	1.40	1.46	0.63	0.26	0.18	0.17	0.19
Ac-ft	228	323	1,190	2,720	2,060	935	971	423	175	120	114	126

Calendar year 1957: Max 156 Min 2.2 Mean 16.3 Cfs/m 1.30 In. 17.65 Ac-ft 11,780  
Water year 1957-58: Max 156 Min 1.7 Mean 13.0 Cfs/m 1.04 In. 14.08 Ac-ft 9,380

Peak discharge (base, 130 cfs).--Jan. 17 (10:30 a.m.) 180 cfs (2.49 ft).

\* Discharge measurement made on this day.

Note.--Shifting-control method used Nov. 1-30, Jan. 17 to Feb. 28.

1200. Mercer Creek near Bellevue, Wash.

Location.--Lat 47°36'10", long 122°10'55", in NW¼ sec. 4, T. 24 N., R. 5 E., on right bank 50 ft. downstream from State Highway 2-A road crossing, 1 mile southeast of Bellevue, and 1½ miles upstream from mouth.

Drainage area.--12.0 sq mi.

Records available.--June to October 1945, June 1955 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 20 ft (from topographic map). Prior to June 1955, at different datum.

Extremes.--Maximum discharge during year, 238 cfs Jan. 17 (gage height, 5.05 ft); minimum, 1.9 cfs Aug. 6 (gage height, 1.52 ft).  
1945, 1955-58: Maximum discharge, 242 cfs Dec. 20, 1955 (gage height, 5.08 ft); minimum, that of Aug. 6, 1958.

Remarks.--Records good except those for periods of no gage-height record and those prior to Dec. 20, which are fair. Many small diversions for irrigation and domestic use. No regulation.

Revisions.--WSP 1446: Drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1 to Dec. 20, Jan. 7, 8, 28-31, Mar. 9-18)

Oct. 1 to Jan. 16		Jan. 17 to Sept. 30	
1.6	4.6	1.5	1.7
1.8	9.6	1.7	5.4
2.0	16.5	2.0	13.5
3.0	56	3.0	54
4.0	116	4.0	116
		5.0	231

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.8	5.8	26	25	52	30	*15	13	7.2	4.4	3.1	4.1
2	9.9	5.0	22	18	40	28	16	12.5	5.9	4.1	3.0	4.6
3	8.0	4.8	16.5	15	40	26	17	11.5	5.9	3.9	3.3	4.6
4	7.0	4.6	14.5	14	35	24	14.5	11	5.6	3.7	3.3	4.6
5	6.8	4.6	15	13	45	51	13	11	5.2	3.3	3.1	*4.1
6	6.8	5.2	19.5	*12	35	45	13	11	5.9	3.3	3.0	3.7
7	6.8	5.5	18	*11.5	*30	40	12.5	10	7.2	3.3	3.5	3.7
8	*7.5	5.2	19	24	29	39	13	10	5.6	3.5	3.3	3.7
9	6.5	5.0	18.5	32	48	28	14	9.2	5.6	3.7	3.5	3.9
10	5.8	7.5	19	51	64	24	21	8.9	6.6	3.5	3.3	3.9
11	6.0	13.5	19	50	42	21	15.5	9.7	6.4	3.5	3.5	4.1
12	6.0	28	18.5	66	62	19.5	13.5	9.7	*5.9	3.5	3.3	3.9
13	21	*46	21	45	75	17.5	13	9.2	5.6	3.5	3.3	4.4
14	17.5	52	16.5	66	47	16.5	16.5	8.7	5.2	3.1	3.1	5.0
15	10.5	24	13.5	86	37	15.5	14.5	8.2	5.0	2.8	3.1	5.9
16	12	14	22	103	64	14.5	24	7.9	4.6	2.5	3.1	7.4
17	19.5	11	22	177	56	17	36	7.6	4.1	2.7	3.5	7.4
18	11	11.5	19	94	58	14.5	24	6.6	3.7	2.8	3.3	6.4
19	9.0	12	19.5	68	44	15	29	8.4	3.9	3.1	3.3	6.6
20	7.5	9.9	34	58	34	18	32	7.6	4.4	3.1	3.3	5.9
21	6.8	9.9	29	65	31	*24	30	7.2	4.1	3.1	3.1	5.6
22	9.3	10	24	46	38	19.5	56	6.6	3.7	3.1	3.3	5.4
23	34	10	30	62	34	17.5	36	6.6	3.5	3.0	3.1	8.4
24	17.5	9.3	40	77	74	25	24	6.6	7.6	2.8	3.3	7.9
25	15.5	10	65	60	80	23	21	6.2	6.6	*2.8	3.3	7.4
26	13.5	11	70	45	55	18	22	5.6	5.6	2.8	3.3	6.4
27	10	13.5	52	54	41	16	18	5.6	5.2	2.8	3.9	5.9
28	8.5	19	70	84	34	15.5	16	6.2	4.8	2.8	4.4	5.6
29	8.2	15	55	73	-	14.5	14.5	6.2	5.0	2.8	4.6	5.6
30	15.5	14	40	84	-----	17	*13.5	5.9	4.6	3.1	4.6	5.6
31	7.8	-----	30	66	-----	15.5	-----	7.6	-----	3.3	4.4	-----
Total	337.5	396.8	899.0	1,744.5	1,322	709.5	618.0	262.0	160.2	99.7	106.5	161.7
Mean	10.9	13.2	29.0	56.3	47.2	22.9	20.6	8.45	5.34	3.22	3.44	5.39
Cfsm	0.098	1.10	2.42	4.69	3.93	1.91	1.72	0.704	0.445	0.268	0.287	0.449
In.	1.05	1.23	2.78	5.41	4.10	2.20	1.92	0.81	0.50	0.31	0.33	0.50
Ac-ft	669	787	1,780	3,460	2,620	1,410	1,230	520	318	198	211	321

Calendar year 1957: Max 160 Min 3.4 Mean 18.0 Cfsm 1.50 In. 20.29 Ac-ft 12,990  
Water year 1957-58: Max 177 Min 2.5 Mean 18.7 Cfsm 1.56 In. 21.14 Ac-ft 13,520

Peak discharge (base, 100 cfs).--Jan. 15 (2 a.m.) 103 cfs (3.85 ft); Jan. 17 (12:45 a.m.) 238 cfs (5.05 ft); Feb. 24 (4:30 p.m.) 106 cfs (3.88 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 21 to Jan. 6, Feb. 1-6, Mar. 19-21; discharge estimated on basis of 1 discharge measurement, weather records, and records for North Creek near Bothell.

## 1210. Issaquah Creek near Issaquah, Wash.

Location.--Lat 47°28'55", long 122°02'10", in NW¼ sec. 15, T. 23 N., R. 6 E., on left bank 3½ miles south of Issaquah and 4 miles upstream from East Fork Issaquah Creek.

Drainage area.--26.4 sq mi.

Records available.--June 1945 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 210 ft (from topographic map). Prior to Oct. 1, 1948, at datum 0.99 ft higher. Oct. 1, 1948, to July 6, 1952, at site 70 ft upstream at datum 0.41 ft lower.

Average discharge.--13 years, 70.1 cfs (50,750 acre-ft per year).

Extremes.--Maximum discharge during year, 566 cfs Jan. 17 (gage height, 2.68 ft); minimum, 9.4 cfs Aug. 21 (gage height, 0.58 ft).  
1945-58: Maximum discharge, 2,610 cfs Feb. 9 or 10, 1951 (gage height, 6.08 ft, site and datum then in use); minimum, that of Aug. 21, 1958.

Remarks.--Records good. Many small diversions for irrigation and domestic use. No regulation.

Revisions (water years).--WSP 1092: 1946. WSP 1286: 1950. WSP 1346: 1953(M).  
WSP 1446: Drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 16

Jan. 17 to Sept. 30

0.7	12	1.4	107	0.6	10	1.5	133
.9	27	1.9	251	.9	31	2.0	283
1.1	52			1.2	71	2.6	530

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15.5	24	47	96	167	87	42	50	24	18	12.5	13.5
2	30	22	61	*86	135	79	53	46	22	17	12.5	12.5
3	22	22	55	76	119	73	48	42	22	16.5	12.5	12.5
4	18.5	22	48	66	103	68	43	39	21	16.5	12.5	12.5
5	17	21	48	61	*101	71	40	37	20	15.5	12.5	12.5
6	17	21	59	56	93	63	37	36	22	15	12	12
7	18.5	20	56	52	95	63	37	33	24	15	12.5	12
8	18	20	48	53	87	66	36	31	21	15	13	12
9	16.5	19.5	44	56	108	62	38	30	20	15.5	12.5	12.5
10	15.5	21	42	74	170	57	62	29	22	15	12.5	*12.5
11	*15.5	32	39	82	131	55	48	31	21	15	12	12.5
12	16.5	32	38	109	153	52	43	30	20	14.5	12	12.5
13	31	112	37	103	205	50	40	28	20	14.5	12	12.5
14	32	144	42	150	156	47	39	27	19.5	14.5	12	14.5
15	22	84	37	202	138	46	47	26	18.5	13.5	11.5	15.5
16	21	59	35	228	167	43	78	26	*18	13	12	16.5
17	25	47	35	494	138	48	85	25	18	13	12	16.5
18	21	43	34	283	128	46	78	25	17	13	12	15
19	19.5	44	77	187	110	*43	108	25	17	13.5	11.5	18.5
20	18.5	36	96	145	97	46	122	24	17	13.5	12	15
21	18	34	124	145	91	57	101	24	16.5	13.5	11.5	14.5
22	18.5	33	112	115	110	51	112	23	15.5	13	11.5	14.5
23	43	31	92	122	110	48	110	22	15.5	13	11.5	15.5
24	30	29	107	148	162	63	97	23	22	12.5	11.5	15
25	27	*31	142	135	162	59	87	22	24	*12.5	11.5	15
26	29	32	181	117	131	52	79	20	21	12.5	11.5	14.5
27	25	32	153	122	110	48	69	19.5	20	12.5	12	13.5
28	23	39	218	173	97	46	63	20	19.5	12.5	12.5	13
29	22	33	193	165	-	44	57	19.5	18.5	12.5	13	13
30	32	33	147	184	-----	46	*52	20	18.5	12.5	12.5	13
31	27	-----	114	217	-----	42	-----	23	-----	12.5	12.5	-----
Total	705.0	1,194.5	2,561	4,302	3,564	1,721	1,951	876.0	595.0	436.5	375.5	415.0
Mean	22.7	39.8	82.6	139	127	55.5	65.0	28.3	19.8	14.1	12.1	13.8
Cfs/m	0.860	1.51	3.13	5.72	4.81	2.10	2.46	1.07	0.750	0.534	0.458	0.523
In.	0.99	1.68	3.61	6.06	5.02	2.42	2.75	1.23	0.84	0.61	0.53	0.58
Ac-ft	1,400	2,370	5,080	8,530	7,070	3,410	3,870	1,740	1,180	866	745	823

Calendar year 1957: Max 495 Min 14 Mean 57.1 Cfs/m 2.16 In. 29.35 Ac-ft 41,320

Water year 1957-58: Max 494 Min 11.5 Mean 51.2 Cfs/m 1.94 In. 26.32 Ac-ft 37,080

Peak discharge (base, 400 cfs).--Jan. 17 (2 a.m.) 566 cfs (2.68 ft).

\* Discharge measurement made on this day.

1218. Pine Lake near Issaquah, Wash.

Location.--Lat 47°35'15", long 122°03'00", in NW $\frac{1}{4}$  sec. 9, T. 24 N., R. 6 E., on north shore  $\frac{4}{5}$  miles northwest of Issaquah.

Drainage area.--1.06 sq mi.

Records available.--May 1956 to September 1958.

Gage.--Staff gage read once daily. Altitude of gage is 390 ft (from topographic map).

Extremes.--Maximum gage height observed during year, 3.86 ft Feb. 25; minimum observed, 1.20 ft Sept. 27, 28.

1956-58: Maximum gage height observed, that of Feb. 25, 1958; minimum observed, that of Sept. 27, 28, 1958.

Remarks.--Records good. No diversion or regulation.

Gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.86	-	-	-	3.56	3.50	3.39	-	3.00	2.99	-	-
2	-	1.92	2.07	-	-	-	-	-	2.98	-	1.97	1.36
3	1.86	-	-	-	3.60	3.45	-	-	-	2.96	-	-
4	-	1.90	2.04	-	-	-	3.40	3.36	-	-	1.88	1.32
5	1.84	1.90	-	-	3.54	-	-	3.36	2.94	2.93	-	-
6	-	-	2.06	-	3.48	3.42	3.38	-	-	-	-	1.30
7	-	1.88	-	2.70	-	-	3.40	-	-	2.89	1.80	-
8	1.86	-	-	-	-	-	-	3.35	-	-	-	-
9	-	-	2.05	-	-	-	3.38	-	-	-	1.76	-
10	-	-	-	-	3.45	-	-	3.36	-	2.84	-	1.26
11	-	-	-	-	-	3.34	3.40	-	-	-	1.70	1.25
12	-	1.92	-	-	3.44	-	-	-	-	2.79	1.70	-
13	-	-	2.00	-	-	3.36	-	3.24	-	-	1.68	-
14	-	1.98	-	-	-	-	-	-	-	-	1.66	-
15	-	2.01	-	-	-	-	-	3.22	-	-	1.64	-
16	-	2.00	2.04	-	-	-	3.46	-	2.78	2.69	-	1.30
17	-	-	-	-	3.66	-	-	-	-	-	-	-
18	-	-	2.05	-	-	3.34	-	-	2.76	-	-	1.32
19	-	2.00	-	-	3.70	3.35	-	3.16	-	-	1.60	-
20	-	-	-	-	-	3.34	-	3.18	-	-	-	1.32
21	-	1.99	-	-	-	-	-	3.14	2.68	2.15	1.55	1.34
22	-	-	-	-	-	-	3.77	-	-	2.12	1.54	-
23	1.90	-	-	-	-	-	-	-	-	-	-	-
24	-	-	2.18	-	-	-	-	3.10	2.70	-	-	-
25	-	-	-	-	3.86	3.34	-	-	-	-	1.46	1.22
26	-	1.99	2.18	-	-	-	3.75	-	2.67	-	-	-
27	-	-	-	-	-	3.35	-	3.06	-	-	1.44	1.20
28	1.90	2.00	2.20	3.69	-	-	-	-	2.68	-	-	1.20
29	-	-	2.66	-	-	-	-	-	-	1.97	-	-
30	1.92	2.00	2.68	-	-	-	3.43	-	2.62	-	1.41	-
31	-	-	2.68	-	-----	3.39	-----	3.00	-----	1.96	-----	-----

Note.--Gage read once daily at various times.

1220. Sammamish Lake near Redmond, Wash.

Location.--Lat 47°38'40", long 122°06'10", in NE $\frac{1}{4}$  sec. 24, T. 25 N., R. 5 E., on west shore 0.6 mile upstream from outlet and 1.8 miles south of Redmond.

Drainage area.--97.7 sq mi.

Records available.--January 1939 to September 1958.

Gage.--Staff gage read once daily. Datum of gage is 24.04 ft above mean sea level, datum of 1929, supplementary adjustment of 1947. Prior to June 22, 1942, staff gage 1,000 ft downstream at datum 1.00 ft higher. June 22, 1942, to Aug. 22, 1951, staff gage at present site at datum 1.00 ft higher.

Extremes.--Maximum gage height observed during year, 6.26 ft Feb. 2; minimum observed, 1.55 ft Oct. 12, Sept. 11-15.

1939-58: Maximum gage height observed, 9.40 ft Feb. 12, 1951 (present datum); minimum observed, 1.09 ft Aug. 25-27, 1951.

A stage of 10.83 ft (present datum) was observed on Dec. 22, 1933, from information by Corps of Engineers.

Remarks.--Many small diversions from tributaries for irrigation and domestic use. Slight regulation on tributaries.

Revisions.--WSP 1446: Drainage area.

Gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.60	1.83	2.33	3.98	6.24	5.99	4.10	4.18	3.12	2.62	1.98	1.60
2	1.59	1.81	2.38	4.00	6.26	5.92	4.06	4.14	3.10	2.59	1.97	1.59
3	1.65	1.80	2.42	3.99	6.20	5.82	4.04	4.08	3.08	2.57	1.94	1.59
4	1.64	1.79	2.40	3.98	6.16	5.72	4.00	4.04	3.05	2.56	1.91	1.58
5	1.63	1.78	2.40	3.94	6.09	5.68	3.96	4.00	3.03	2.55	1.89	1.57
6	1.61	1.78	2.44	3.92	6.04	5.63	3.91	3.95	3.01	2.52	1.89	1.56
7	1.59	1.77	2.46	3.86	5.96	5.58	3.86	3.90	3.00	2.50	1.88	1.56
8	1.58	1.77	2.48	3.86	5.88	5.54	3.81	3.85	2.99	2.48	1.87	1.56
9	1.56	1.77	2.48	3.84	5.90	5.47	3.80	3.80	2.97	2.46	1.86	1.56
10	1.56	1.78	2.48	3.86	5.92	5.40	3.79	3.76	2.96	2.44	1.84	1.56
11	1.56	1.84	2.47	3.88	5.95	5.33	3.78	3.72	2.95	2.42	1.82	1.55
12	1.55	1.90	2.47	3.96	5.98	5.24	3.76	3.68	2.94	2.39	1.80	1.55
13	1.60	2.06	2.47	4.00	6.10	5.16	3.72	3.65	2.93	2.36	1.79	1.55
14	1.68	2.16	2.48	4.08	6.16	5.07	3.70	3.61	2.90	2.33	1.78	1.55
15	1.68	2.26	2.50	4.36	6.18	4.98	3.68	3.56	2.88	2.32	1.76	1.55
16	1.68	2.30	2.52	4.48	6.24	4.90	3.71	3.53	2.87	2.31	1.75	1.57
17	1.69	2.36	2.52	5.08	6.25	4.84	3.75	3.50	2.85	2.30	1.74	1.58
18	1.70	2.37	2.52	5.48	6.24	4.77	3.82	3.46	2.85	2.28	1.73	1.58
19	1.69	2.37	2.53	5.66	6.20	4.69	3.87	3.45	2.83	2.26	1.71	1.58
20	1.68	2.36	2.60	5.72	6.12	4.62	3.94	3.43	2.80	2.23	1.70	1.59
21	1.67	2.36	2.68	5.76	6.08	4.62	4.00	3.39	2.78	2.20	1.70	1.60
22	1.67	2.36	2.74	5.76	6.04	4.56	4.12	3.35	2.76	2.18	1.70	1.59
23	1.80	2.35	2.84	5.75	6.02	4.49	4.24	3.32	2.75	2.16	1.70	1.58
24	1.81	2.35	2.90	5.84	6.04	4.47	4.28	3.28	2.76	2.14	1.69	1.58
25	1.82	2.33	3.02	5.86	6.12	4.45	4.30	3.27	2.74	2.12	1.67	1.57
26	1.83	2.34	3.24	5.85	6.14	4.40	4.31	3.25	2.72	2.11	1.66	1.57
27	1.82	2.28	3.36	5.84	6.11	4.36	4.30	3.22	2.70	2.10	1.64	1.57
28	1.81	2.30	3.54	5.86	6.08	4.30	4.29	3.19	2.68	2.07	1.63	1.57
29	1.81	2.32	3.78	6.00	-	4.26	4.24	3.17	2.66	2.04	1.62	1.57
30	1.82	2.32	3.82	6.14	-	4.20	4.20	3.15	2.65	2.02	1.61	1.56
31	1.83	-	3.94	6.22	-	4.15	-	3.12	-	2.00	1.60	-

Note.--Gage read once daily usually between 7:30 and 11:30 a.m.

1230. Cottage Lake Creek near Redmond, Wash.

Location.--Lat 47°44'15", long 122°04'45", in NE<sup>1</sup>/<sub>4</sub> sec. 18, T. 26 N., R. 6 E., on left bank 100 ft downstream from county road bridge, 2 miles upstream from mouth, and 4½ miles northeast of Redmond.

Drainage area.--11.0 sq mi.

Records available.--June to September 1945, June 1955 to September 1958. Prior to June 1955, at different datum.

Gage.--Water-stage recorder. Altitude of gage is 210 ft (from topographic map).

Extremes.--Maximum discharge during year, 59 cfs Jan. 16 (gage height, 1.69 ft); minimum, 3.4 cfs Aug. 24-26 (gage height, 0.72 ft).  
1945, 1955-58: Maximum discharge, 132 cfs Jan. 6, 1956, and on or about Feb. 26, 1957; maximum gage height, 2.19 ft Jan. 6, 1956; minimum discharge, that of Aug. 24-26, 1958; minimum gage height, 0.68 ft Aug. 19, 1956.

Remarks.--Records excellent except those for period Dec. 20 to Jan. 15, which are good. Several small diversions for irrigation and domestic use above station. No regulation.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Dec. 23 to Jan. 15)

Oct. 1 to Jan. 16		Jan. 16 to Sept. 30	
0.74	5.8	0.74	3.9
1.1	11.5	1.1	8.4
1.3	23	1.3	17
	38	1.3	26
		1.6	50

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.8	8.0	11.5	15	23	21	11	11.5	7.0	5.3	4.1	5.3
2	7.3	7.6	12	14	22	19	11	10.5	7.0	5.3	4.1	4.8
3	*7.3	7.0	11.5	12.5	21	17.5	11	10	7.0	5.0	4.6	4.8
4	6.8	6.8	12	11.5	*19	17	11	9.6	6.1	4.8	4.3	*4.3
5	6.8	6.8	12	10.5	20	19	10	9.1	5.3	4.6	4.3	4.3
6	6.5	6.8	13	10	19.5	18	9.6	8.7	5.3	4.3	4.3	4.3
7	6.5	6.8	13	9.5	18.5	19.5	9.1	8.4	5.3	4.3	4.6	4.1
8	6.8	6.5	13	10	19	21	10	8.0	4.8	4.3	4.6	4.1
9	6.5	6.5	12.5	10	24	20	11.5	7.6	4.8	4.3	4.3	4.1
10	6.2	6.5	12	12.5	35	18.5	15.5	7.6	5.0	4.3	4.1	4.1
11	6.5	8.0	12	13.5	31	17.5	13	7.6	*5.3	4.1	4.3	4.3
12	6.5	*9.8	11.5	16.5	38	16.5	11.5	7.6	5.3	4.1	4.1	4.1
13	9.1	14.5	12	14	47	14.5	11	8.0	5.0	4.1	4.1	4.1
14	8.3	19	13	20	41	13	11	8.0	4.8	4.1	4.1	4.1
15	7.3	14	13	22	34	14	11	7.6	4.8	4.1	4.1	4.3
16	7.6	12	15	37	34	13	15	7.3	4.8	4.1	4.1	4.8
17	7.6	12	17	45	32	13	17	7.3	4.6	4.3	4.1	5.0
18	7.3	11.5	17.5	34	32	*12	14.5	7.0	4.8	4.3	4.1	4.8
19	7.3	11	17	30	28	11.5	17.5	7.3	7.3	4.3	4.1	5.6
20	6.8	10	15	28	24	12	18.5	7.0	8.7	4.6	4.1	5.3
21	6.8	10	16	27	22	14.5	19.5	7.3	8.0	4.6	4.1	5.3
22	7.3	9.5	14.5	24	22	14	24	7.3	7.3	4.3	4.1	5.0
23	11.5	9.5	14	27	22	13	22	7.0	7.0	*4.2	4.1	5.8
24	9.1	10	15	27	31	15	19	7.3	7.0	4.1	3.9	5.8
25	9.1	10	17.5	24	33	15	17.5	7.0	6.6	3.9	3.9	6.1
26	8.7	10	22	22	29	14	16.5	7.0	6.1	3.9	3.9	6.1
27	8.3	10.5	*18.5	23	27	12.5	16	7.0	5.8	3.9	4.3	5.8
28	8.0	11.5	23	27	24	12	14.5	7.0	5.8	3.9	4.6	5.6
29	8.0	10.5	23	26	--	11	*14.5	7.0	5.6	4.1	4.6	5.6
30	8.7	10	21	26	--	11.5	12.5	7.0	5.3	4.1	4.6	5.6
31	8.0	--	17.5	25	--	11	--	7.3	--	4.1	4.6	--
Total	234.3	292.6	467.5	653.5	772.0	471.0	425.7	243.9	177.5	133.7	131.2	147.3
Mean	7.56	9.75	15.1	21.1	27.6	15.2	14.2	7.87	5.92	4.31	4.23	4.91
Cfsm	0.687	0.886	1.37	1.92	2.51	1.38	1.29	0.715	0.538	0.392	0.385	0.446
In.	0.79	0.99	1.58	2.21	2.61	1.59	1.44	0.82	0.60	0.45	0.44	0.50
Ac-ft	465	580	927	1,300	1,530	934	844	484	352	265	260	292
Calendar year 1957: Max	110				Min 5.6	Mean 12.8	Cfsm 1.16	In. 15.80	Ac-ft 9,270			
Water year 1957-58: Max	47				Min 3.9	Mean 11.4	Cfsm 1.04	In. 14.02	Ac-ft 8,230			

\* Discharge measurement made on this day.

1240. Evans Creek above mouth, near Redmond, Wash.

Location.--Lat 47°40'30", long 122°04'50", on line between secs. 6 and 7, T. 25 N., R. 5 E., on right bank 25 ft upstream from county bridge, three-quarters of a mile upstream from mouth, and 2 miles east of Redmond.

Drainage area.--13.0 sq mi.

Records available.--June 1955 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 50 ft (from topographic map).

Extremes.--Maximum discharge during year, 103 cfs Jan. 17 (gage height, 3.00 ft); minimum, 5.6 cfs Aug. 15, 16.  
1955-58: Maximum discharge, 145 cfs Dec. 22, 1955 (gage height, 3.49 ft); minimum, that of Aug. 15, 16, 1958; minimum gage height, 1.46 ft Sept. 1, 2, 1957.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Several small diversions for irrigation and domestic use. No regulation.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used June 22-26, July 5-22)

Oct. 1 to July 22

July 23 to Sept. 30

1.5	7.4	2.2	40	1.5	5.2
1.7	12.5	2.5	67	1.8	8.4
1.9	20	3.0	106		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8	9.9	13.5	24	47	34	17.5	21	10.5	7.4	6.2	6.4
2	10	9.6	14.5	23	40	31	19.5	20	11.5	7.1	6.1	6.5
3	*9.6	9.9	12.5	22	38	28	19	18.5	10.5	6.9	6.3	6.4
4	9.2	9.9	11.5	20	*35	26	17.5	17.5	9.6	6.9	6.3	*6.4
5	8.7	9.6	11.5	18	34	38	16.5	16.5	9.2	6.4	6.3	6.3
6	8.5	9.4	12.5	17	35	33	15.5	15.5	9.6	6.3	6.3	6.3
7	8.5	9.4	12.5	16.5	32	35	15.5	15	9.9	6.3	6.5	6.2
8	8.5	9.4	11.5	17	31	38	15.5	14	9.2	6.1	6.6	6.2
9	8.5	9.4	11	18.5	35	35	19.5	13.5	9.0	6.3	6.6	6.3
10	8.3	9.9	11	22	45	30	28	13	9.2	6.5	6.6	6.7
11	8.3	12.5	14	24	42	27	25	13.5	*9.4	6.3	6.6	7.2
12	8.3	*17.5	11	29	57	25	22	13.5	9.2	6.3	6.3	7.2
13	13.5	28	10.5	28	72	24	19.5	13	9.0	6.1	5.8	7.3
14	13	38	11.5	34	64	23	21	12.5	8.7	6.0	5.9	7.6
15	10.5	27	11	47	57	22	21	11.5	8.5	6.0	5.8	7.7
16	9.9	16	11	54	62	21	27	11	8.3	6.0	5.8	8.2
17	14	13	11.5	100	59	20	31	11	8.1	6.1	5.9	7.9
18	10.5	13	12	36	56	*20	31	11	7.9	6.3	5.9	7.7
19	9.9	14	12	80	49	19.5	32	11.5	7.9	6.5	5.9	8.0
20	9.4	12.5	12.5	62	38	21	36	11.5	7.6	6.5	5.9	7.8
21	9.2	11.5	18.5	55	35	24	39	11	7.2	6.5	5.9	7.8
22	9.9	11.5	17.5	48	38	23	55	10.5	6.9	6.5	5.9	7.9
23	17.5	11	19	45	35	22	56	11	6.7	*8.3	5.9	8.4
24	13	11	25	53	45	26	50	10.5	6.3	6.2	6.0	8.4
25	11.5	10.5	27	49	52	26	42	10	8.7	6.3	5.9	8.3
26	10.5	10.5	38	44	47	23	35	9.9	7.9	6.3	6.0	8.2
27	10	11	*37	41	42	22	31	9.9	7.3	6.1	6.2	8.0
28	9.9	14	40	52	38	21	27	9.9	7.4	6.2	6.4	7.9
29	9.6	12.5	39	53	-	20	*24	9.6	7.6	6.2	6.5	7.9
30	12	11.5	34	56	---	20	23	9.6	7.4	6.2	6.5	7.9
31	10.5	---	27	54	---	19	---	10.5	---	6.1	6.4	---
Total	318.7	402.9	561.0	1,302.0	1,260	796.5	831.5	396.9	258.8	197.2	191.2	221.0
Mean	10.3	13.4	18.1	42.0	45.0	25.7	27.7	12.8	8.63	6.36	6.17	7.37
Cfs/m	0.792	1.03	1.39	3.23	3.46	1.98	2.15	0.985	0.684	0.489	0.475	0.567
In.	0.91	1.15	1.60	3.72	3.60	2.28	2.38	1.14	0.74	0.56	0.55	0.63
Ac-ft	632	799	1,110	2,580	2,500	1,580	1,650	787	513	391	379	438
Calendar year 1957: Max	132				Min 6.9	Mean 19.0	Cfs/m 1.46	In. 19.79	Ac-ft 13,720			
Water year 1957-58: Max	100				Min 5.8	Mean 18.5	Cfs/m 1.42	In. 19.26	Ac-ft 13,360			

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1, 2, Feb. 22 to Mar. 17; discharge estimated on basis of recorded range in stage and records for Bear Creek at Redmond and Patterson Creek near Fall City.



1245. Bear Creek at Redmond, Wash.

Location--Lat 47°40'10", long 122°06'30", in SW1/4 sec. 12, T. 25 N., R. 5 E., on right bank 300 ft downstream from State Highway 2 crossing, half a mile east of Redmond, and three-quarters of a mile upstream from mouth.

Drainage area--47.5 sq mi.

Records available--June 1945 to November 1950, June 1955 to October 1958 (discontinued).

Gage--Water-stage recorder. Altitude of gage is 30 ft (from topographic map). Prior to June 1955, at different datum.

Average discharge--8 years (1945-50, 1955-58), 82.4 cfs (59,660 acre-ft per year).

Extremes--Maximum discharge during period October 1957 to October 1958, 492 cfs Jan. 17 (gage height, 5.40 ft); minimum, 14 cfs July 16, 27-29; minimum gage height, 1.49 ft Sept. 7.

1945-50, 1955-58: Maximum discharge, 654 cfs Mar. 5, 1950; maximum gage height, 6.53 ft Jan. 22, 1950, datum then in use; minimum discharge, 13 cfs Aug. 26, 1947; minimum gage height, that of Sept. 7, 1958.

Remarks--Records good. Many small diversions for irrigation and domestic use. Minor regulation by fish trap half a mile above station.

Revisions (water years)--WSP 1316: 1947(M), 1949(M), drainage area. WSP 1446: 1949(P).

Rating table, Oct. 1, 1957, to Oct. 15, 1958 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Jan. 25 to Feb. 12, Mar. 2-18, Aug. 28 to Sept. 16, Sept. 18 to Oct. 8)

1.7	16	3.0	130
2.0	38	4.0	258
2.5	79	5.5	511

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	35	48	97	177	140	65	68	32	21	18	20
2	31	32	52	89	154	126	69	64	30	22	17.5	19
3	*54	31	48	83	145	114	69	60	28	21	18.5	18.5
4	28	30	45	76	*132	103	64	57	26	20	19	*18.5
5	26	29	44	69	133	128	60	54	24	19	17.5	17.5
6	25	28	48	64	132	131	56	52	24	18.5	18.5	17.5
7	25	28	50	61	124	139	54	49	26	18	20	17.5
8	25	28	47	68	122	161	56	47	24	18	21	17.5
9	24	28	44	74	164	140	80	44	24	18	20	18
10	23	31	42	91	243	123	117	43	26	19	19	18
11	22	48	44	102	223	108	95	44	*26	18.5	18.5	19
12	22	*60	40	139	252	100	80	44	25	18.5	19	20
13	44	91	40	128	311	88	73	43	25	17.5	18.5	20
14	45	129	47	158	281	82	77	40	24	17.5	18.5	21
15	36	95	44	202	223	78	71	38	22	16.5	18.5	22
16	34	68	46	228	253	72	107	36	21	16	19	25
17	41	55	49	462	235	72	120	34	19	16	21	25
18	32	48	53	341	237	*70	117	33	19	16	18.5	22
19	29	49	53	262	203	68	120	36	20	16.5	17.5	25
20	28	44	58	211	173	69	133	35	25	17.5	18	24
21	28	40	77	210	153	87	139	33	24	17.5	18.5	22
22	29	39	73	176	163	82	199	31	22	16.5	19	22
23	61	38	81	190	159	75	185	32	20	*17.5	19	25
24	57	36	107	231	203	92	154	31	25	17.5	20	24
25	50	36	114	204	237	97	154	29	28	16.5	19	24
26	46	35	170	177	206	84	120	28	25	16.5	18	22
27	40	36	*148	175	189	77	105	28	23	16	21	22
28	36	52	161	254	160	74	93	28	24	16	21	22
29	34	46	161	234	-	72	*82	28	23	16	18.5	22
30	43	43	137	226	-	73	74	28	22	17.5	18.5	22
31	40	-	111	206	-	68	-	32	22	18	18	-
Total	1,058	1,388	2,280	5,288	5,365	2,993	2,969	1,249	726	550.5	586.5	632.0
Mean	34.1	46.3	73.5	171	192	96.5	99.0	40.3	24.2	17.8	18.9	21.1
Cfsm	0.718	0.975	1.55	3.60	4.04	2.03	2.08	0.848	0.509	0.375	0.398	0.444
In.	0.83	1.09	1.79	4.14	4.20	2.34	2.32	0.98	0.57	0.43	0.46	0.49
Ac-ft	2,100	2,750	4,520	10,490	10,640	5,940	5,890	2,480	1,440	1,090	1,160	1,250

Calendar year 1957: Max 570 Min 18.5 Mean 70.2 Cfsm 1.48 In. 20.06 Ac-ft 50,810  
Water year 1957-58: Max 462 Min 16 Mean 68.7 Cfsm 1.45 In. 19.64 Ac-ft 49,750

Peak discharge (base, 300 cfs).--Jan. 17 (8:30 to 10 a.m.) 492 cfs (5.40 ft); Feb. 13 (5 to 7 a.m.) 327 cfs (4.50 ft).

\* Discharge measurement made on this day.

Discharge, in cubic feet per second, 1958

Day	Discharge	Day	Discharge	Day	Discharge	Day	Discharge
Oct. 1.....	21	Oct. 9.....	25	Oct. 17.....	-	Oct. 25.....	-
2.....	21	10.....	27	18.....	-	26.....	-
3.....	21	11.....	26	19.....	-	27.....	-
4.....	21	12.....	26	20.....	-	28.....	-
5.....	21	13.....	35	21.....	-	29.....	-
6.....	22	14.....	28	22.....	-	30.....	-
7.....	25	15.....	*27	23.....	-	31.....	-
8.....	25	16.....	-	24.....	-		

\* Discharge measurement made on this day.

1260. North Creek near Bothell, Wash.

Location.--Lat 47°47'30", long 122°11'45", on line between secs. 29 and 32, T. 27 N., R. 5 E., on left bank 2 miles north of Bothell and 2½ miles upstream from mouth.

Drainage area.--23.7 sq mi.

Records available.--June 1945 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 70 ft (from topographic map). Apr. 5, 1950, to Sept. 30, 1951, at datum 0.59 ft higher.

Average discharge.--13 years, 36.4 cfs (26,350 acre-ft per year).

Extremes.--Maximum discharge during year, 266 cfs Jan. 16 (gage height, 3.96 ft); minimum, 4.2 cfs Aug. 3; minimum gage height, 0.70 ft July 25, Aug. 1-3.

1945-58: Maximum discharge, 680 cfs Mar. 5 or 6, 1950 (gage height, 7.0 ft, present datum, from high-water mark pointed out by local resident); minimum, 1.0 cfs Aug. 10, 1946 (gage height, 0.45 ft, present datum).

Remarks.--Records excellent except those for period of no gage-height record, which are good. Many small diversions for irrigation and domestic use. Slight regulation for farm use.

Revisions (water years).--WSP 1286: 1950(M). WSP 1446: Drainage area.

Rating table, water year 1957-58 (gage height, in feet,  
and discharge, in cubic feet per second)

0.7	4.4
.9	8.0
1.2	23
2.0	90
3.3	207

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.7	14.5	28	37	66	75	28	*22	14	9.7	5.1	6.2
2	13.5	13	25	35	57	65	29	22	10	9.4	4.8	6.2
3	18.5	12.5	20	30	58	56	32	20	9.7	9.0	5.8	6.2
4	11.5	12.5	17.5	27	50	49	28	17.5	9.7	9.0	5.7	6.0
5	10.5	12.5	18.5	25	59	64	24	15.5	9.4	9.0	5.1	*6.0
6	10	11	21	24	*54	61	21	14.5	9.4	8.7	5.1	5.8
7	9.7	11	20	*22	54	88	18.5	13.5	9.4	8.4	5.6	5.8
8	11	11	17.5	32	58	101	20	12.5	9.0	8.7	5.6	6.0
9	10	12	15.5	34	84	78	26	12.5	9.0	9	5.4	6.2
10	9.4	16	15	63	176	64	62	16	9.4	8.5	5.1	6.2
11	9.4	25	14.5	66	150	57	36	20	9.4	8.5	5.2	6.4
12	10	28	13.5	87	163	47	26	16.5	*9.6	8.5	5.1	6.2
13	22	52	13	61	158	40	23	13.5	10	8.5	5.1	6.4
14	19	66	16	88	115	37	22	12	9.7	7.5	5.2	6.6
15	13	*32	14	115	92	35	28	11.5	9.7	6.5	5.1	7.4
16	14.5	20	24	164	112	32	59	11	9.4	5.5	5.2	8.4
17	19	17.5	33	202	110	32	72	10.5	9.0	5.5	5.4	9.0
18	13.5	18	35	125	135	29	51	11	9.0	5.5	5.4	8.4
19	12	18	28	91	111	32	58	14.5	8.7	6	5.2	11.5
20	11.5	16.5	29	78	87	*34	56	12	8.7	6	5.0	8.4
21	*11	18.5	42	78	77	50	52	10.5	8.7	6	4.8	8.0
22	13	16	31	67	87	39	71	10	8.7	6	5.1	8.0
23	44	15	43	97	72	34	58	9.7	9.7	5.5	5.1	8.1
24	25	14	59	110	162	43	48	9.7	10.5	*5.1	5.0	8.4
25	20	14	92	86	174	43	55	9.7	11.5	5.1	5.1	8.7
26	16.5	15.5	96	69	146	36	57	9.4	9.7	5.4	5.1	8.0
27	14	15.5	78	73	117	31	43	9.0	9.7	5.4	5.8	7.7
28	13	24	94	98	91	32	36	9.4	11.5	5.6	6.2	7.7
29	13	18	79	90	-	31	30	9.4	10	5.8	6.8	8.1
30	29	16.5	86	102	-	39	25	9.7	10	6.0	7.4	7.7
31	18	-	43	82	-	31	-	14	-	5.7	6.2	-
Total	473.2	586.0	1,131.0	2,358	2,875	1,485	1,194.5	409.0	291.2	219.0	167.8	219.7
Mean	15.3	19.5	36.5	76.1	103	47.9	39.8	13.2	9.71	7.06	5.41	7.32
Cfsm	0.646	0.823	1.54	3.21	4.35	2.02	1.68	0.557	0.410	0.298	0.228	0.309
In.	0.74	0.92	1.77	3.70	4.51	2.33	1.87	0.64	0.46	0.34	0.26	0.34
Ac-ft	939	1,160	2,240	4,680	5,700	2,950	2,370	811	578	454	333	436

Calendar year 1957: Max	329	Min	6.9	Mean	34.7	Cfsm	1.46	In.	19.88	Ac-ft	25,140
Water year 1957-58: Max	202	Min	4.8	Mean	31.3	Cfsm	1.32	In.	17.88	Ac-ft	22,630

Peak discharge (base, 250 cfs).--Jan. 16 (10 p.m.) 266 cfs (3.96 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record July 9-23; discharge estimated on basis of weather records and records for nearby stations.

## 1265. Sammamish River at Bothell, Wash.

Location.--Lat 47°45'20", long 122°11'35", in NW¼SE¼ sec. 8, T. 26 N., R. 5 E., on left bank in Bothell a quarter of a mile downstream from North Creek and 3½ miles upstream from mouth.

Drainage area.--209 sq mi.

Records available.--October 1939 to September 1958.

Gage.--Water-stage recorder. Datum of gage is at mean lower low water at Seattle (Corps of Engineers bench mark) or 6.54 below mean sea level, datum of 1929, supplementary adjustment of 1947. Prior to Dec. 28, 1939, staff gages at same site and datum.

Average discharge.--19 years, 363 cfs (262,800 acre-ft per year).

Extremes.--Maximum discharge during year, 1,160 cfs Jan. 17 (gage height, 29.32 ft); minimum, 63 cfs Aug. 25, 26 (gage height, 22.86 ft).  
1939-58: Maximum discharge, 1,910 cfs Jan. 6, 1956 (gage height, 32.22 ft), but may have been higher Feb. 12 or 13, 1951; minimum, 62 cfs Aug. 22, 23, 1951 (gage height, 22.92 ft).

Remarks.--Records excellent. Some small diversions from tributaries for irrigation and domestic use. Slight regulation on some tributaries.

Revisions.--WSP 1446: Drainage area.

Rating table, water year 1957-58 (gage height, in feet,  
and discharge, in cubic feet per second)

22.8	58	25.0	335
23.4	118	27.0	686
24.0	192	29.5	1,200

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1	96	146	215	443	846	808	418	*391	182	130	80	74	
2	111	142	223	435	818	768	418	350	189	124	79	75	
3	124	140	211	418	808	737	419	367	166	120	81	75	
4	110	137	205	406	783	705	399	353	162	119	82	73	
5	107	136	206	394	814	747	381	340	155	116	79	*70	
6	106	134	216	385	*785	743	369	328	155	114	77	69	
7	104	134	219	*373	770	775	357	314	161	111	77	68	
8	107	132	213	396	762	810	356	302	154	115	78	68	
9	104	131	205	409	838	747	386	290	154	114	77	70	
10	102	140	204	477	1,020	701	484	286	156	110	76	69	
11	100	170	205	500	996	663	421	290	158	109	74	72	
12	102	188	202	579	1,020	635	385	286	*156	108	72	71	
13	138	262	198	533	1,060	606	365	269	154	106	71	72	
14	147	343	213	610	978	579	362	257	149	103	70	75	
15	124	*269	206	759	908	561	364	244	144	100	68	82	
16	124	229	223	836	964	545	479	234	143	97	68	86	
17	144	209	248	1,120	954	538	509	227	142	95	71	97	
18	128	205	258	958	1,000	522	477	219	138	96	69	80	
19	122	205	248	840	952	513	497	229	137	96	67	96	
20	118	198	251	794	880	*509	522	219	141	97	66	93	
21	*117	196	306	804	830	556	520	208	136	96	66	90	
22	120	192	298	764	850	520	638	198	129	94	66	88	
23	202	189	326	806	820	493	596	195	125	92	66	93	
24	177	186	391	886	960	522	551	189	140	*90	66	96	
25	160	183	452	824	1,070	522	533	180	152	88	65	96	
26	154	184	569	781	996	488	520	174	141	88	64	92	
27	144	184	511	794	934	467	481	175	137	86	68	90	
28	142	219	565	802	860	462	455	176	140	82	73	89	
29	140	202	563	898	-	447	430	170	136	83	75	91	
30	170	195	507	914	-----	455	409	167	134	84	78	91	
31	155	-----	465	896	-----	436	-----	179	-----	80	73	-----	
Total	3,993	5,580	9,322	20,914	25,266	18,580	13,501	7,836	4,446	3,143	2,242	2,461	
Mean	129	186	301	675	902	599	450	253	148	101	72.3	82.0	
Cfsm	0.617	0.890	1.44	3.23	4.32	2.87	2.15	1.21	0.708	0.483	0.346	0.392	
In.	0.71	0.99	1.66	3.72	4.50	3.51	2.40	1.39	0.79	0.56	0.40	0.44	
Ac-ft	7,920	11,070	18,490	41,480	50,110	36,850	26,780	15,540	8,820	6,230	4,450	4,860	
Calendar year 1957: Max			1,500	Min	87	Mean	337	Cfsm	1.61	In.	21.89	Ac-ft	244,000
Water year 1957-58: Max			1,120	Min	64	Mean	321	Cfsm	1.54	In.	20.87	Ac-ft	232,600

\* Discharge measurement made on this day.

1330. South Fork Skykomish River near Index, Wash.

Location.--Lat 47°48'20", long 121°32'40", in NE<sup>1</sup> sec. 29, T. 27 N., R. 10 E., on right bank 600 ft upstream from Sunset Falls, 1 mile southeast of Index, and 2 miles upstream from confluence with North Fork. Discharge measurements made about 2 miles upstream from gage.

Drainage area.--355 sq mi.

Records available.--October 1902 to September 1905, April 1911 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 574.80 ft above mean sea level, datum of 1929, supplementary adjustment of 1947. Prior to Mar. 15, 1934, at site 300 ft downstream. Oct. 6, 1902, to Sept. 30, 1905, staff gage at datum 0.39 ft higher and Apr. 26, 1911, to Sept. 30, 1913, at datum 1 ft higher. Oct. 1, 1913, to Sept. 13, 1920, staff gage, Sept. 14, 1920, to Oct. 1, 1921, water-stage recorder, and Jan. 23, 1922, to Mar. 14, 1934, staff gage, at present datum.

Average discharge.--50 years, 2,378 cfs (1,722,000 acre-ft per year).

Extremes.--Maximum discharge during year, 8,520 cfs May 25 (gage height, 10.50 ft); minimum, 320 cfs Sept. 13 (gage height, 1.80 ft).  
1902-5, 1911-58: Maximum discharge, 55,000 cfs Dec. 12, 1921 (gage height, 22.8 ft, from high-water marks, site then in use), from rating curve extended above 14,000 cfs by logarithmic plotting; minimum, 165 cfs Nov. 29, 1952 (gage height, 1.35 ft).  
Flood in 1897 reached a stage of about 5 ft higher than that of Dec. 12, 1921 (discharge, about 70,000 cfs).

Remarks.--Records good. Small diversion for domestic use. No regulation.

Revisions (water years).--WSP 512: 1903-5, 1911-14. WSP 572: Drainage area. WSP 792: 1934. WSP 1286: 1903-5(M), 1912(M), 1914-29(M), 1931-34(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-25		Oct. 26 to June 11				June 11 to Sept. 30			
1.8	315	2.2	515	7.0	3,800	1.8	320	5.0	2,450
3.0	950	3.0	920	9.0	6,200	3.0	950	6.0	3,400
		5.0	2,150	11.0	9,400				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	351	1,460	1,390	1,650	2,050	2,280	1,270	2,890	3,710	1,420	525	525
2	425	1,100	1,670	1,480	1,790	2,000	1,350	3,250	3,570	1,280	510	*510
3	575	898	1,680	1,330	1,770	1,350	1,470	3,530	3,530	1,240	505	435
4	475	785	1,760	1,250	1,510	1,260	1,260	3,280	3,590	1,190	500	390
5	420	705	1,500	1,220	1,480	1,180	3,620	4,030	1,240	480	*365	
6	390	640	3,120	1,220	1,560	1,470	1,170	3,740	4,110	1,130	470	360
7	390	600	4,020	1,190	1,510	1,380	1,220	4,160	*3,580	1,090	475	365
8	400	570	5,610	1,170	1,570	1,300	1,410	*5,260	3,060	1,050	470	360
9	380	540	3,670	1,150	1,690	1,240	1,450	5,220	3,000	992	450	350
10	365	530	2,830	1,240	2,390	1,180	1,620	4,680	2,750	944	445	352
11	360	1,240	2,480	1,300	2,090	*1,120	1,620	4,840	2,790	908	450	360
12	351	2,340	2,450	1,500	1,950	1,070	1,760	3,810	2,330	890	440	334
13	385	4,180	2,020	1,490	2,610	1,010	2,230	3,100	2,180	848	430	324
14	565	3,170	1,890	1,780	2,440	958	2,770	2,970	2,150	802	415	410
15	485	2,570	1,650	5,430	2,090	931	2,960	3,490	2,250	753	415	605
16	435	1,780	1,480	5,950	2,080	898	3,590	4,530	2,380	720	410	520
17	450	1,440	*1,480	7,140	2,020	870	3,570	5,070	2,550	714	400	824
18	425	*1,230	1,640	4,470	2,240	876	3,550	5,460	2,590	714	395	914
19	395	1,120	*2,210	3,280	2,640	876	3,840	6,420	2,480	698	390	2,380
20	375	970	3,550	2,650	2,530	898	*7,000	5,920	2,100	670	385	1,760
21	351	850	2,870	2,250	2,330	1,120	5,220	6,560	2,320	645	390	1,130
22	356	800	2,210	1,950	2,930	1,260	4,200	7,410	2,170	630	390	938
23	430	815	1,880	2,010	3,580	1,350	3,460	7,440	2,050	625	385	872
24	565	904	1,980	3,530	4,590	1,520	3,010	7,080	2,040	610	390	786
25	854	942	3,190	2,970	5,180	1,720	2,650	7,830	1,810	590	385	1,290
26	1,200	1,280	5,580	*2,410	4,240	1,720	2,330	7,810	1,570	580	375	1,150
27	900	1,110	3,410	2,080	3,300	1,580	2,090	7,380	2,080	575	375	866
28	700	1,352	3,710	2,580	2,710	1,500	2,010	6,210	2,560	534	390	726
29	595	1,030	3,170	2,590	2,700	1,440	2,090	4,680	2,020	570	420	640
30	2,260	997	2,370	2,620	2,620	1,500	2,410	4,050	1,620	*565	520	580
31	2,070	-----	1,920	2,450	-----	1,340	-----	3,860	-----	540	470	-----
Total	18,678	37,536	80,590	75,310	68,750	41,347	75,660	155,700	79,270	25,798	13,450	21,431
Mean	603	1,251	2,600	2,429	2,455	1,354	2,522	5,025	2,642	852	434	714
Cfsm	1.70	3.52	7.32	6.84	6.92	3.76	7.10	14.1	7.44	2.34	1.22	2.01
In.	1.96	3.85	8.44	7.89	7.20	4.33	7.95	16.31	8.30	2.70	1.41	2.25
Ac-ft	37,050	74,450	159,800	149,400	136,400	82,010	150,100	308,800	157,200	51,170	26,680	42,510

Calendar year 1957: Max 8,710 Min 333 Mean 2,017 Cfsm 5.68 In. 77.11 Ac-ft 1,460,000  
Water year 1957-58: Max 7,830 Min 324 Mean 1,900 Cfsm 5.35 In. 72.65 Ac-ft 1,380,000

Peak discharge (base, 10,000 cfs).--No peak above base.

\* Discharge measurement made on this day.

1345. Skykomish River near Gold Bar, Wash.

Location.--Lat 47°50'15", long 121°40'00", in SW<sup>1</sup>/<sub>4</sub> sec. 9, T. 27 N., R. 9 E., on right bank 2 miles southeast of Gold Bar and 5 miles upstream from Wallace River and Startup.

Drainage area.--535 sq mi.

Records available.--September 1928 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 209.26 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Average discharge.--30 years, 3,823 cfs (2,768,000 acre-ft per year).

Extremes.--Maximum discharge during year, 14,100 cfs Jan. 17 (gage height, 9.81 ft); minimum, 488 cfs Sept. 12, 18 (gage height, 3.36 ft).  
1928-58: Maximum discharge, 88,700 cfs Dec. 21, 1933 (gage height, 21.3 ft), from rating curve extended above 32,000 cfs by logarithmic plotting; minimum, 315 cfs Nov. 29, 1952; minimum gage height, 2.73 ft Dec. 1, 1936.

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

Revisions (water years).--WSP 1316: 1932-35(M), 1944(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 16					Jan. 17 to Sept. 30				
3.4	510	6.0	3,850	3.3	455	6.0	3,670		
4.0	1,000	7.0	5,850	4.0	980	8.0	8,300		
5.0	2,210	9.0	11,400	5.0	2,050	10.0	14,800		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	546	2,450	2,240	2,620	3,150	3,490	1,870	4,500	5,830	2,120	800	881
2	*633	1,860	2,670	2,390	2,750	3,080	1,990	5,110	5,550	1,950	784	818
3	980	1,510	3,110	2,140	2,510	2,710	1,980	5,400	5,430	1,980	760	*720
4	756	1,320	2,930	2,030	2,260	2,430	1,820	5,090	5,740	1,860	768	619
5	648	1,200	2,450	1,970	2,370	2,430	1,720	5,640	6,580	1,990	728	570
6	605	1,080	4,440	1,990	2,380	2,190	1,710	5,810	6,660	1,780	704	546
7	612	930	6,030	1,940	2,310	2,050	1,810	5,910	*5,760	1,660	712	540
8	612	830	3,570	1,900	2,420	1,940	2,120	8,480	4,830	1,590	704	540
9	570	873	6,140	1,860	2,710	1,830	2,190	8,300	4,790	1,510	680	546
10	546	855	4,480	2,170	3,870	1,730	2,520	7,630	4,300	1,420	664	534
11	534	2,270	3,890	2,210	3,240	*1,650	2,570	7,600	4,010	1,370	664	540
12	516	4,230	4,030	2,570	3,170	*1,590	2,780	5,860	3,710	1,340	664	499
13	720	7,510	3,320	2,480	4,230	1,450	3,620	4,610	3,470	1,280	640	499
14	990	*5,590	3,130	3,100	3,810	1,450	4,270	4,480	3,440	1,210	626	605
15	792	4,100	2,670	8,870	5,340	1,420	4,670	5,520	3,630	1,150	619	962
16	696	3,020	2,400	10,100	3,300	1,380	5,760	7,250	3,900	1,120	619	881
17	688	2,420	*2,420	11,600	3,170	1,350	5,690	7,940	4,300	1,120	598	1,550
18	648	2,080	2,650	7,170	3,710	1,360	5,430	8,780	4,300	1,120	598	1,620
19	598	1,920	3,500	4,980	4,290	1,360	*5,890	10,200	4,170	1,100	584	4,600
20	564	1,650	5,450	3,990	3,980	1,380	11,100	9,470	4,050	1,070	570	2,920
21	540	1,470	4,400	3,400	3,630	1,760	8,420	10,500	3,850	1,040	577	1,840
22	564	1,380	3,480	2,950	4,570	1,980	6,680	11,900	3,600	1,010	584	1,600
23	756	1,390	3,060	3,120	5,710	2,130	5,290	12,000	3,320	998	577	1,510
24	1,110	1,550	3,420	5,590	7,580	2,420	4,530	11,500	3,200	971	577	1,350
25	1,550	1,650	6,610	4,610	8,420	2,710	3,960	12,700	2,760	935	577	2,510
26	1,960	2,180	9,070	*3,740	6,890	2,700	3,460	12,700	2,380	908	570	1,980
27	1,470	1,900	5,610	3,180	5,180	2,440	3,170	12,000	3,320	899	570	1,490
28	1,190	2,040	6,240	3,940	4,100	2,320	3,150	9,950	4,510	908	577	1,270
29	1,200	1,790	4,910	4,010	-	2,190	3,250	7,390	3,240	899	696	1,230
30	5,970	1,680	3,720	4,010	-----	2,180	3,780	6,400	2,480	881	792	1,020
31	3,780	-----	3,060	3,760	-----	1,990	-----	6,130	-----	*856	704	-----
Total	33,544	64,698	131,100	120,370	109,050	63,160	117,200	247,620	127,110	40,635	20,287	36,790
Mean	1,076	2,157	4,229	3,883	3,895	2,037	3,907	7,988	4,237	1,291	654	1,226
Cfs/m	2.01	4.03	7.90	7.26	7.28	3.81	7.30	14.9	7.92	2.41	1.22	2.29
In.	2.32	4.50	9.11	8.37	7.58	4.39	8.15	17.21	8.84	2.78	1.41	2.56
Ac-ft	66,140	128,300	260,000	238,800	216,300	125,300	232,500	491,100	252,100	79,410	40,240	72,970
Calendar year 1957: Max	13,900	Min	516	Mean	3,164	Cfs/m	5.91	In.	80.28	Ac-ft	2,291,000	
Water year 1957-58: Max	12,700	Min	499	Mean	3,043	Cfs/m	5.69	In.	77.22	Ac-ft	2,203,000	

Peak discharge (base, 19,000 cfs).--No peak above base.

\* Discharge measurement made on this day.

1350. Wallace River at Gold Bar, Wash.

Location.--Lat 47°51'50", long 121°41'45", in NE $\frac{1}{4}$  sec. 6, T. 27 N., R. 9 E., on right bank 30 ft downstream from highway bridge, a quarter of a mile north of Gold Bar, and  $1\frac{1}{2}$  miles upstream from Olney Creek. Prior to Aug. 25, 1958, at site directly across stream.

Drainage area.--19.8 sq mi.

Records available.--October 1928 to September 1933, July 1946 to September 1958. Monthly discharge only for some periods, published in WSP 1316.

Gage.--Water-stage recorder. Altitude of gage is 200 ft (from topographic map). December 1928 to Sept. 30, 1933, staff gage 50 ft upstream at different datum.

Average discharge.--17 years, 157 cfs (113,700 acre-ft per year).

Extremes.--Maximum discharge during year, 1,720 cfs Oct. 30 (gage height, 7.70 ft); minimum daily, 10 cfs Aug. 19-26.

1928-33, 1946-58: Maximum discharge, 2,740 cfs Feb. 26, 1932 (gage height, 8.5 ft, from graph based on gage readings, site and datum then in use); minimum recorded, 9.2 cfs Oct. 18, 19, 1952; minimum gage height observed, 0.32 ft Aug. 27, Sept. 3-5, 1930, site and datum then in use.

Remarks.--Records good except those for period of doubtful or no gage-height record, which are fair. Some natural regulation in Wallace Lake. No diversion above station.

Revisions (water years).--WSP 1062: Drainage area. WSP 1316: 1930(M), 1932-33(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 16

Jan. 17 to Sept. 30

3.2	10	4.5	235	2.9	9.5	4.5	252
3.6	45	5.0	421	3.2	22	5.0	422
4.0	105	6.0	845	3.6	52	6.0	845
				4.0	118		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*15	143	157	121	130	148	99	216	123	68	14	50
2	54	101	174	109	118	152	110	208	103	60	14	35
3	81	84	105	105	112	114	105	205	92	58	15	25
4	43	73	158	103	101	105	93	190	95	56	15	*18
5	30	65	121	107	112	108	86	205	110	54	13	17
6	27	57	327	121	139	97	86	185	105	49	13	15
7	26	53	238	113	123	93	92	205	*95	46	13	14
8	33	52	301	111	141	88	110	234	74	43	13	13
9	28	49	194	100	154	84	120	210	78	40	13	13
10	25	42	153	161	321	*78	225	199	74	37	12	13
11	23	368	173	151	216	74	166	193	79	35	12	13
12	20	412	183	174	244	70	174	146	76	32	11	12
13	149	590	117	148	390	66	231	114	68	30	11	13
14	88	*390	115	222	278	63	271	134	66	29	11	18
15	49	283	94	584	243	63	348	190	64	27	11	30
16	37	188	92	627	258	63	389	216	70	25	11	60
17	34	139	117	624	237	62	351	208	73	24	11	120
18	30	119	*117	334	331	63	268	222	68	22	11	95
19	28	113	*151	237	317	67	328	234	63	21	10	240
20	25	92	156	190	246	76	*372	199	59	20	10	78
21	24	81	123	164	210	166	344	240	56	18	10	50
22	25	73	101	141	307	158	310	246	52	19	10	45
23	56	85	98	226	304	166	262	219	48	17	10	70
24	121	87	169	348	428	188	231	216	47	16	10	51
25	113	139	381	*331	348	185	205	225	45	16	10	158
26	105	136	412	180	258	185	174	225	42	16	10	64
27	68	101	229	156	205	149	161	196	123	15	11	46
28	53	109	351	240	171	136	169	164	280	15	15	38
29	51	87	222	182	-	123	177	110	108	*15	25	33
30	808	87	174	174	-----	132	205	110	84	15	24	51
31	284	-----	141	154	-----	108	-----	125	-----	14	18	-----
Total	2,563	4,398	5,664	6,638	6,442	3,409	6,267	5,989	2,520	952	397	1,479
Mean	82.7	147	183	214	205	110	209	161	84.0	30.7	12.8	49.3
Cfs/m	4.18	7.42	9.24	10.8	11.6	5.56	10.6	9.75	4.24	1.55	0.646	2.49
In.	4.81	8.26	10.64	12.47	12.10	6.40	11.77	11.25	4.73	1.79	0.75	2.78
Ac-ft	5,080	8,720	11,230	13,170	12,780	6,760	12,430	11,880	5,000	1,890	787	2,930

Calendar year 1957: Max 1,060 Min 11.5 Mean 137 Cfs/m 6.92 In. 93.89 Ac-ft 99,140  
 Water year 1957-58: Max 808 Min 10 Mean 128 Cfs/m 6.46 In. 87.75 Ac-ft 92,660

Peak discharge (base, 1,350 cfs).--Oct. 30 (8:45 a.m.) 1,720 cfs (7.70 ft).

\* Discharge measurement made on this day.

Note.--Doubtful gage-height record July 9-17; no gage-height record July 18 to Sept 19; discharge estimated on basis of 2 discharge measurements and records for Sultan River near Startup.

1375. Sultan River near Startup, Wash.

Location.--Lat 47°58'30", long 121°46'30", in NE $\frac{1}{4}$  sec. 28, T. 29 N., R. 8 E., on left bank  $\frac{1}{2}$  miles upstream from intake of Everett water-supply system and 7 $\frac{1}{2}$  miles north of Startup.

Drainage area.--74.5 sq mi.

Records available.--May 1934 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 750 ft (from topographic map). Prior to July 2, 1934, staff gage at same site and datum.

Average discharge.--24 years, 775 cfs (561,100 acre-ft per year).

Extremes.--Maximum discharge during year, 6,500 cfs Oct. 30 (gage height, 10.75 ft); minimum, 67 cfs Aug. 26, 27 (gage height, 3.35 ft).

1934-58: Maximum discharge, 34,600 cfs Feb. 9, 1951 (gage height, 17.22 ft, from high-water mark in well), from rating curve extended above 5,000 cfs on basis of slope-area measurement of peak flow; minimum, 48 cfs Sept. 25, 27, 29, 30, 1942; minimum gage height, 3.32 ft Sept. 22, 23, 1938, Oct. 19, 20, 1952.

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

Revisions (water years).--WSP 1182: 1935, 1936(M), 1937-39, 1940(M), 1941, 1942(P), 1943-49. WSP 1216: Drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

3.3	62	6.0	790
3.7	108	7.0	1,370
4.1	170	8.0	2,230
4.5	250	10.0	5,000
5.0	385		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	93	835	816	498	668	617	427	785	686	537	98	346
2	244	573	950	462	569	533	465	785	597	296	94	222
3	*290	441	1,090	448	514	465	455	775	549	283	105	*188
4	192	363	840	448	465	417	396	705	553	271	104	145
5	156	314	645	473	506	434	360	770	650	268	95	124
6	137	280	1,400	545	605	381	348	750	650	250	89	109
7	143	252	1,210	573	557	360	360	840	609	235	88	102
8	139	228	1,840	581	621	337	455	1,000	*483	218	91	94
9	126	209	1,120	553	725	325	502	915	480	201	89	95
10	119	209	825	865	1,570	309	740	850	465	194	84	91
11	112	1,300	840	920	845	288	597	830	451	186	82	95
12	105	1,930	910	945	953	266	585	650	441	177	81	87
13	409	2,700	658	785	1,490	255	770	506	391	167	79	88
14	443	1,820	760	1,030	1,070	248	1,030	510	379	155	79	112
15	264	*1,170	565	2,890	910	246	1,550	690	391	147	75	224
16	205	800	525	3,000	1,030	246	1,940	875	431	140	75	354
17	184	605	878	3,070	880	250	1,600	880	491	139	75	875
18	162	521	*805	1,430	1,370	317	1,200	940	491	137	75	688
19	145	487	1,170	940	1,360	337	1,490	1,040	473	134	74	1,810
20	134	414	1,370	715	975	407	2,180	900	465	132	72	858
21	124	354	975	621	815	810	*2,140	1,040	437	126	71	625
22	134	322	715	525	1,180	750	1,630	1,150	407	122	71	613
23	259	345	658	885	1,230	715	1,110	1,090	376	118	71	533
24	565	382	1,070	2,000	2,040	795	865	1,050	348	112	69	424
25	480	517	2,590	1,180	1,760	795	740	1,160	303	111	69	970
26	462	641	2,320	855	1,340	780	617	1,180	264	107	67	563
27	354	521	1,180	*695	960	613	557	1,080	670	107	76	414
28	266	557	1,860	1,350	750	557	553	865	1,250	105	95	331
29	250	444	1,120	1,010	---	506	593	629	581	*90	179	278
30	3,780	444	765	965	---	581	686	605	424	105	170	243
31	1,640	---	597	885	---	473	---	621	---	103	132	---
Total	12,096	19,978	32,865	32,142	27,758	14,423	26,940	26,444	15,166	5,273	2,774	11,699
Mean	390	666	1,060	1,037	991	465	898	853	506	170	89.5	390
Cfs/m	5.23	8.94	14.2	13.8	13.8	6.24	12.1	11.4	6.79	2.28	1.20	5.31
In.	6.04	9.97	16.41	16.05	13.86	7.20	13.43	13.20	7.57	2.63	1.48	5.84
Ac-ft	23,990	39,630	65,190	63,750	55,060	28,610	53,430	52,450	30,080	10,460	5,500	23,200

Calendar year 1957: Max 4,480 Min 83 Mean 648 Cfs/m 8.70 In. 118.09 Ac-ft 469,200  
 Water year 1957-58: Max 3,780 Min 67 Mean 623 Cfs/m 8.36 In. 111.60 Ac-ft 451,400

Peak discharge (base, 6,000 cfs).--Oct. 30 (7:30 a.m.) 6,500 cfs (10.75 ft); Jan. 16 (time unknown) about 5,400 cfs.

\* Discharge measurement made on this day.

1410. Woods Creek near Monroe, Wash.

Location.--Lat 47°52'20", long 121°55'10", in W $\frac{1}{2}$  sec. 33, T. 28 N., R. 7 E., on right bank 0.4 mile downstream from West Fork and 2 miles northeast of Monroe.

Drainage area.--55.0 sq mi.

Records available.--July 1946 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 100 ft (from topographic map). Prior to June 6, 1957, at site 0.4 mile upstream at same datum.

Average discharge.--12 years, 154 cfs (111,500 acre-ft per year).

Extremes.--Maximum discharge during year, 1,050 cfs Jan. 17 (gage height, 3.85 ft), from rating curve extended above 500 cfs; minimum, 10.5 cfs Aug. 26 (gage height, 1.11 ft). 1946-58: Maximum discharge, 1,710 cfs Feb. 26, 1950 (gage height, 7.18 ft), from rating curve extended above 770 cfs; minimum, that of Aug. 26, 1958.

Remarks.--Records good. Several small diversions above station for farm use. No regulation.

Revisions.--WSP 1286: Drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

1.1	10.5	2.8	386
1.4	39	3.4	720
1.8	85	4.0	1,170
2.2	162		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	65	115	253	245	329	99	108	52	34	15	17.5
2	*28	56	130	209	212	256	101	101	39	31	15	16
3	36	50	118	179	190	212	101	95	34	28	17.5	15
4	28	47	110	155	168	184	98	90	31	27	20	*14
5	25	43	108	140	157	187	93	83	30	26	17.5	14
6	24	41	130	130	155	203	87	79	*29	25	17	15
7	23	39	157	116	143	216	83	73	29	25	17.5	13
8	27	38	143	116	145	264	82	68	28	24	17	14
9	22	37	128	116	160	238	95	*64	27	25	14	15
10	20	37	116	128	628	*209	152	63	28	25	14	16
11	19.5	58	108	176	734	179	134	64	28	24	14	18.5
12	19.5	92	99	216	480	160	120	61	29	22	14	15
13	30	*136	93	203	580	145	111	59	28	21	14	13
14	37	402	96	226	512	134	115	56	27	20	14	14
15	29	382	93	346	377	124	132	54	25	18.5	13	15
16	25	216	*88	453	377	115	298	52	22	17.5	13	19.5
17	25	152	96	930	338	113	334	50	22	17	14	26
18	24	128	135	569	329	113	272	48	21	17	14	21
19	22	113	216	377	284	108	*258	47	19.5	18.5	13	24
20	21	103	209	292	238	111	230	46	19.5	18.5	13	25
21	21	91	220	308	206	132	245	45	19.5	17.5	14	22
22	23	83	208	260	208	130	417	43	18.5	17.5	12.5	23
23	50	79	216	292	196	116	373	42	17.5	17	12.5	22
24	52	74	354	375	280	116	300	41	19.5	17	12.5	20
25	41	71	569	325	351	122	242	40	22	17	12.5	20
26	36	80	783	276	676	116	199	38	21	16	11.5	19.5
27	33	79	529	249	672	110	170	38	23	16	14	17.5
28	31	134	502	325	446	110	148	39	56	*16	18	17.5
29	30	118	563	325	-	106	152	39	43	15	17.5	17
30	70	106	427	321	-----	110	120	38	37	*75	17	16
31	90	-----	325	296	-----	106	-----	42	-----	15	16	-----
Total	979.0	3,150	7,182	8,680	9,465	4,874	5,321	1,806	845.0	643.0	456.5	535.0
Mean	31.6	105	232	280	338	157	177	58.3	28.2	20.7	14.7	17.8
Cfsm	0.575	1.91	4.22	5.09	6.15	2.85	3.22	1.06	0.513	0.376	0.267	0.324
In.	0.66	2.13	4.86	5.87	6.40	3.30	3.60	1.22	0.57	0.43	0.31	0.36
Ac-ft	1,940	6,250	14,250	17,220	18,770	9,670	10,550	3,580	1,680	1,280	905	1,060
Calendar year 1957: Max	1,200			Min 16	Mean 130		Cfsm 2.38	In. 31.96	Ac-ft 93,760			
Water year 1957-58: Max		930		Min 11.5	Mean 120		Cfsm 2.18	In. 29.71	Ac-ft 87,160			

Peak discharge (base, 700 cfs).--Dec. 26 (8 a.m.) 874 cfs (3.62 ft); Jan. 17 (5:15 a.m.) 1,050 cfs (3.85 ft); Feb. 10 (10 p.m.) 970 cfs (3.75 ft); Feb. 27 (1:30 a.m.) 776 cfs (3.48 ft).

\* Discharge measurement made on this day.



1460. Patterson Creek near Fall City, Wash.

Location.--Lat 47°34'50", long 121°56'25", in SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 8, T. 24 N., R. 7 E., 2 miles upstream from mouth and 2 $\frac{1}{4}$  miles northwest of Fall City.

Drainage area.--15.5 sq mi.

Records available.--February 1947 to October 1950, June 1955 to September 1958. Records for June to October 1945 at site 1 $\frac{1}{4}$  miles downstream not equivalent owing to intervening drainage area.

Gage.--Water-stage recorder. Altitude of gage is 70 ft (from topographic map). Prior to June 1955 at different datum.

Average discharge.--6 years, 35.2 cfs (25,480 acre-ft per year).

Extremes.--Maximum discharge during year, 209 cfs Jan. 16 (gage height, 5.48 ft); minimum, 6.4 cfs July 26; minimum gage height, 1.39 ft Aug. 21, 1947-50, 1955-58; Maximum discharge, 480 cfs Feb. 17, 1949 (gage height, 4.81 ft, datum then in use), from rating curve extended above 130 cfs; maximum gage height, that of Jan. 16, 1958; minimum discharge, 6.4 cfs July 22, 1956, July 26, 1958; minimum gage height, 1.12 ft July 22, 1956.

Remarks.--Records good except those for period Oct. 15 to Jan. 15 and those above 70 cfs, which are fair. Many small diversions for irrigation and domestic use. No regulation.

Revisions.--WSP 1446: Drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Nov. 12-15, Dec. 1, 2, 20-25, Jan. 6-8)

Oct. 1 to Jan. 16

Jan. 17 to Sept. 30

1.4	8.7	2.5	44	1.4	6.0	2.5	46
1.7	15.5	3.0	72	1.6	10.5	3.0	72
2.0	24	4.0	132	2.0	25	5.5	210

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.7	12	18.5	36	66	42	22	23	10	8.2	7.0	7.6
2	12.5	11	16	30	54	37	26	22	9.5	8.2	6.8	7.6
3	12	11	13.5	a23	49	34	25	20	9.2	8.0	6.6	7.6
4	10.5	10.5	12.5	a21	*42	31	23	18.5	9.0	7.8	7.0	*7.6
5	9.9	10.5	13	a20	45	50	21	17.5	8.8	7.8	7.0	7.6
6	9.7	10.5	16	*19.5	42	46	20	16.5	8.8	7.8	6.8	7.6
7	10.5	10.5	15	18.5	39	50	19	15.5	9.8	7.6	7.0	7.6
8	*10.5	10.5	13.5	20	38	54	19.5	15	9.5	7.6	6.8	7.4
9	9.7	10	12.5	23	47	46	21	14	9.2	7.6	6.8	7.6
10	9.5	11	12.5	30	69	40	30	14	9.8	7.6	6.8	7.6
11	9.3	13.5	11.5	33	60	37	25	15.5	*9.8	7.6	6.8	7.8
12	9.7	20	11	50	68	35	23	14.5	9.5	7.6	6.8	7.6
13	18	*34	11	42	99	32	21	13.5	9.5	8.0	7.0	7.8
14	15	53	13.5	77	88	30	25	13	9.2	7.6	6.8	8.2
15	12	22	12	111	67	28	25	12.5	9.0	7.4	6.8	8.5
16	12	15	12	127	72	25	40	11.5	8.8	7.4	6.8	10
17	15	13	12	191	67	27	57	11.5	8.8	7.2	6.8	10
18	12	13	12.5	159	62	*25	50	10	8.5	7.2	6.8	8.8
19	11.5	13	15	110	54	24	52	11	8.5	7.2	6.8	11
20	10.5	12	19	73	46	24	52	10	8.5	7.0	6.8	9.8
21	10.5	11	27	67	41	31	52	10	8.5	7.0	7.0	9.0
22	11.5	10.5	22	54	46	28	93	9.8	8.5	7.0	6.8	8.5
23	24	10.5	27	64	47	25	89	10	8.2	*6.8	7.0	9.5
24	15.5	10.5	37	83	77	35	68	10	9.5	6.6	7.0	9.5
25	13	10	57	74	95	33	54	10	10	6.8	7.0	9.8
26	13.5	10	89	60	75	29	46	10	9.2	6.6	7.0	9.0
27	12.5	10.5	76	58	58	27	38	10	9.0	7.0	7.2	8.8
28	12	14	113	88	48	26	33	10	8.5	7.0	7.4	8.8
29	12	11.5	97	88	-	25	*29	9.8	8.5	7.0	7.4	8.8
30	15.5	11	65	103	-----	25	26	9.5	8.5	7.0	7.8	8.8
31	13	-----	46	86	-----	23	-----	10	-----	7.0	7.8	-----
Total	381.5	425.0	928.5	2,039.0	1,662	1,024	1,124.5	408.1	272.1	228.2	216.0	255.8
Mean	21.3	14.2	29.9	65.8	59.4	33.0	37.5	13.2	9.07	7.36	6.97	8.53
Cfs/m	0.794	0.916	1.93	4.25	3.83	2.13	2.42	0.852	0.585	0.475	0.450	0.550
In.	0.92	1.02	2.22	4.89	3.99	2.46	2.70	0.98	0.65	0.55	0.52	0.61
Ac-ft	757	843	1,840	4,040	3,300	2,030	2,230	809	540	453	428	507

Calendar year 1957: Max 197 Min 8.4 Mean 25.5 Cfs/m 1.65 In. 22.34 Ac-ft 18,480  
Water year 1957-58: Max 191 Min 6.6 Mean 24.6 Cfs/m 1.59 In. 21.51 Ac-ft 17,780

Peak discharge (base, 200 cfs).--Jan. 16 (10:30 to 11:30 p.m.) 209 cfs (5.48 ft).

\* Discharge measurement made on this day.  
a No gage-height record; discharge estimated on basis of recorded range in stage and records for nearby stations.

1470. Griffin Creek near Carnation, Wash.

Location.--Lat 47°37'00", long 121°54'15", in SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> sec. 27, T. 25 N., R. 7 E., on left bank a quarter of a mile upstream from bridge on State Highway 15B, three-quarters of a mile upstream from mouth, and 2 miles south of Carnation.

Drainage area.--17.1 sq mi.

Records available.--June 1945 to September 1958. Prior to October 1951, published as "near Tolt."

Gage.--Water-stage recorder. Altitude of gage is 120 ft (from topographic map). Prior to Sept. 21, 1951, at site 1,000 ft downstream at different datum.

Average discharge.--13 years, 42.4 cfs (30,700 acre-ft per year).

Extremes.--Maximum discharge during year, 347 cfs Jan. 17 (gage height, 3.64 ft), from rating curve extended above 200 cfs; minimum, 1.1 cfs Aug. 14, 15, 21, 23, 25, 26 (gage height, 1.28 ft).

1945-58: Maximum discharge, 738 cfs Feb. 10, 1951 (gage height, 5.03 ft, site and datum then in use); minimum, that of Aug. 14, 15, 21, 23, 25, 26, 1958; minimum gage height, 0.75 ft Aug. 22, 23, 1945 (site and datum then in use).

Remarks.--Records good. Some small diversions for irrigation and domestic use. No regulation.

Revisions.--WSP 1286: Drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-14

Oct. 15 to Sept. 30

1.4	4.3	1.26	1.3	2.0	28
1.5	6.4	1.4	3.2	2.4	63
1.6	9.4	1.6	8.0	2.8	125
		1.8	16	3.6	335

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.3	12.5	38	82	89	64	27	40	a8	3.2	1.6	1.6
2	7.4	12	42	88	76	54	31	37	a6.5	3.7	1.6	1.6
3	6.7	12	41	57	67	32	30	29	a6	2.9	1.7	1.6
4	5.9	11.5	40	48	58	43	27	26	a5.8	2.6	1.7	1.5
5	5.5	11.5	40	43	57	49	26	24	a5.6	2.6	1.6	1.4
6	5.3	11	41	38	55	48	24	21	a5.6	2.4	1.6	1.4
7	5.7	10.5	48	35	*52	53	23	20	a6	2.2	1.7	1.4
8	5.5	10	48	34	52	59	22	19	a5.5	2.1	1.7	1.4
9	5.3	9.7	46	35	55	57	23	17.5	a5.3	2.1	1.6	1.6
10	4.9	10.5	41	40	85	55	53	17	*5.2	2.1	1.5	1.6
11	4.7	13	37	46	121	52	32	17	5.2	2.1	1.4	1.6
12	4.7	22	34	62	112	48	31	16.5	5.7	2.0	1.3	1.6
13	9.2	43	31	76	137	43	30	14.5	5.2	1.8	1.3	1.8
14	8.8	120	31	99	129	40	34	12.5	4.7	1.8	1.3	2.4
15	a7.1	125	27	163	105	36	34	11.5	4.5	1.8	1.3	2.6
16	*6.5	83	26	184	105	33	*53	11	4.3	1.7	1.4	*3.3
17	8.7	59	25	323	97	31	82	10.5	4.1	1.7	1.5	3.4
18	7.7	48	24	228	89	*29	91	10.5	3.7	1.7	1.5	2.4
19	7.1	42	26	149	77	28	94	10	3.7	1.8	1.5	4.3
20	6.8	36	27	112	67	27	97	10	3.7	2.0	1.4	4.5
21	6.5	32	37	101	60	32	94	11	3.7	*2.1	1.3	2.9
22	7.3	29	41	85	63	30	111	8.3	3.4	2.0	1.3	2.6
23	16.5	26	51	85	63	29	120	7.7	3.2	2.0	1.3	3.4
24	12.5	23	72	111	83	34	104	7.7	4.1	1.8	1.4	2.7
25	12	22	88	111	111	56	91	7.4	4.5	1.7	1.3	2.9
26	14	22	112	99	104	36	76	7.1	4.1	1.7	1.3	2.7
27	13	*21	*118	88	88	36	64	6.8	4.71	2.05	1.49	2.30
28	12	32	149	96	77	32	54	7.4	3.4	1.7	1.6	2.2
29	11.5	34	169	101	-	30	48	6.8	3.4	1.7	1.7	2.2
30	13	35	133	107	-----	31	48	6.2	3.4	1.7	1.6	2.1
31	12.5	-----	102	102	-----	28	-----	8.3	-----	1.7	1.5	-----
Total	258.6	978.2	1,785	3,008	2,334	1,249	1,654	459.2	141.2	63.4	46.1	89.1
Mean	8.34	32.6	57.6	97.0	83.4	40.3	55.1	14.8	4.71	2.05	1.49	2.30
Cfsm	0.488	1.91	3.37	5.67	4.88	2.36	3.22	0.865	0.275	0.120	0.087	0.135
In.	0.56	2.13	3.88	6.54	5.08	2.72	3.60	1.00	0.31	0.14	0.10	0.15
Ac-ft	513	1,940	3,540	5,970	4,630	2,480	3,280	911	280	126	91	137

Calendar year 1957: Max 372 Min 4.0 Mean 34.7 Cfsm 2.03 In. 27.56 Ac-ft 25,140  
 Water year 1957-58: Max 323 Min 1.3 Mean 33.0 Cfsm 1.93 In. 26.21 Ac-ft 23,900

Peak discharge (base, 220 cfs).--Jan. 17 (9 a.m.) 347 cfs (3.64 ft).

\* Discharge measurement made on this day.  
 a No gage-height record; discharge estimated on basis of recorded range in stage and records for nearby stations.

1475. North Fork Tolt River near Carnation, Wash.

Location.--Lat 47°42'40", long 121°47'35", in SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 28, T. 26 N., R. 8 E., on right bank  $\frac{1}{2}$  miles upstream from confluence with South Fork and 7 miles northeast of Carnation.

Drainage area.--39.2 sq mi.

Records available.--October 1952 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is about 600 ft above mean sea level (from river-profile map).

Average discharge.--6 years, 369 cfs (267,100 acre-ft per year).

Extremes.--Maximum discharge during year, 2,250 cfs Jan. 16 (gage height, 8.07 ft); minimum, 38 cfs Sept. 13, 14 (gage height, 3.53 ft).

1952-58: Maximum discharge, 7,360 cfs Dec. 11, 1955 (gage height, 12.2 ft, from high-water mark), from rating curve extended above 2,800 cfs; minimum, that of Sept. 13, 14, 1958, but may have been less sometime during period of no gage-height record in October 1952.

Revisions.--The minimum discharge for the water year 1957 has been revised to 50 cfs Sept. 25, 26, 1957 (gage height, 3.66 ft), superseding figure published in WSP 1516.

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

Revisions.--Revised figures of discharge, in cubic feet per second, for the water year 1957, superseding those published in WSP 1516, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1957		1957-Con.		1957-Con.		1957-Con.		1957-Con.	
Aug. 20	93	Aug. 29	74	Sept. 7	95	Sept. 16	58	Sept. 25	51
21	90	30	72	8	87	17	59	26	50
22	88	31	70	9	73	18	62	27	57
23	85	Sept. 1	68	10	68	19	59	28	63
24	84	2	67	11	64	20	57	29	55
25	82	3	66	12	63	21	54	30	52
26	80	4	64	13	60	22	53		
27	78	5	64	14	59	23	52		
28	76	6	70	15	58	24	51		

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff Inches Acre-feet
August 1957.....	3,465	326	70	112	2.86	3.29 6,870
September.....	1,859	95	50	62.0	1.58	1.76 5,690
Water year 1956-57.....	136,248	2,290	50	373	9.52	129.27 270,200

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	51	182	376	326	400	330	211	340	208	137	54	121
2	110	145	516	330	372	306	229	337	188	122	53	82
3	130	127	488	326	354	286	223	326	175	114	54	58
4	84	114	351	330	326	271	208	302	172	109	58	50
5	73	105	283	348	354	283	195	316	190	105	53	46
6	66	100	650	379	396	265	192	298	188	102	52	43
7	68	95	551	376	354	256	195	306	185	96	52	42
8	72	88	552	368	368	244	229	344	155	93	52	42
9	66	85	376	344	420	238	253	323	151	92	50	41
10	62	88	323	492	1,010	229	481	309	153	88	49	41
11	59	623	326	588	*504	220	320	312	149	85	48	41
12	57	820	344	596	538	211	295	256	*149	82	47	*39
13	179	1,360	271	456	828	205	344	223	143	80	46	39
14	164	924	280	742	554	202	396	229	139	78	44	49
15	107	578	241	1,510	552	198	577	277	137	76	43	98
16	88	379	232	1,190	620	195	793	306	139	73	43	132
17	96	292	244	1,210	516	192	*855	295	141	72	43	180
18	82	274	253	625	635	202	500	312	139	72	43	129
19	74	271	550	476	538	205	735	323	137	70	42	380
20	70	226	480	408	440	*223	725	277	127	68	42	204
21	66	202	362	*379	400	348	565	309	124	67	42	127
22	67	192	289	348	538	320	500	312	118	66	41	105
23	139	205	286	545	538	289	428	292	114	*64	41	110
24	*190	211	379	958	704	330	386	280	126	63	40	100
25	158	294	820	606	601	354	390	295	143	62	40	194
26	195	*302	782	464	480	337	354	283	116	60	39	129
27	137	235	567	404	400	283	316	262	165	59	41	102
28	112	262	1,090	615	358	253	302	241	335	58	43	85
29	105	214	596	500	-	238	302	198	202	57	58	78
30	513	229	432	468	-	253	326	188	160	57	92	72
31	268	-	365	456	-	223	-	202	-	55	66	-
Total	3,708	9,222	13,655	17,163	14,078	7,969	11,625	8,873	4,762	2,482	1,511	2,960
Mean	120	307	440	554	503	257	388	286	159	80.1	48.7	98.7
Cfsm	3.06	7.83	11.2	14.1	12.8	6.56	9.90	7.30	4.06	2.04	1.24	2.52
In.	3.52	8.75	12.95	16.28	13.56	7.56	11.03	8.42	4.52	2.35	1.43	2.81
Ac-ft	7,350	18,290	27,080	34,040	27,920	15,810	23,060	17,600	9,450	4,920	3,000	5,970
Calendar year 1957: Max	1,730				Min 50	Mean 296	Cfsm 7.55	In. 102.65	Ac-ft 214,600			
Water year 1957-58: Max	1,510				Min 39	Mean 269	Cfsm 6.86	In. 92.98	Ac-ft 194,400			

Peak discharge (base, 3,000 cfs).--No peak above base.

\* Discharge measurement made on this day.

## SNOHOMISH RIVER BASIN

1478. South Fork Tolt River at upper station, near Carnation, Wash.

Location--Lat 47°42'30", long 121°36'50", in SE $\frac{1}{4}$  sec. 26, T. 26 N., R. 9 E., on right bank 10 miles upstream from mouth and 14 $\frac{1}{2}$  miles east of Carnation.

Drainage area--6.48 sq mi.

Records available--October 1957 to September 1958.

Gage--Water-stage recorder. Altitude of gage is 1,850 ft (from topographic map).

Extremes--Maximum discharge during year, 1,300 cfs Oct. 30, from rating curve extended above 800 cfs; maximum gage height, 3.99 ft Jan. 15; minimum, 1.1 cfs Aug. 27; minimum gage height, 1.09 ft Nov. 9, 10.

Remarks--Records fair. No regulation or diversion above station.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1 to Jan. 14)

1.5	1.2	2.6	120
1.7	4.5	2.9	225
1.9	12	3.5	450
2.1	26	3.7	820
2.3	54		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7	64	80	49	54	47	32	88	66	*24	2.7	20
2	25	39	129	44	46	41	35	93	60	20	2.7	14.5
3	45	30	126	41	44	37	30	93	56	17	2.9	8.3
4	25	23	72	47	38	32	28	88	56	16.5	3.0	5.7
5	15	19	47	58	46	36	25	97	68	16.5	2.9	3.9
6	12	16	231	69	62	31	25	88	68	14	2.5	3.5
7	14	14	178	62	59	28	30	95	55	12.5	2.7	3.0
8	17	13	221	64	66	28	35	120	40	12	2.7	2.9
9	13	12.5	93	64	78	25	40	107	38	10.5	2.7	2.7
10	11	13.5	64	147	150	24	150	100	39	9.9	2.4	2.7
11	10	284	72	123	80	20	80	102	*37	9.1	2.4	2.5
12	9	396	78	126	*89	19	80	74	36	9.1	2.1	*2.4
13	30	720	49	88	157	17	70	56	33	8.3	1.9	2.7
14	50	213	47	406	88	16.5	90	58	31	7.6	1.8	7.6
15	25	115	33	782	78	16.5	130	84	31	7.0	1.7	32
16	20	68	29	564	105	16	300	107	34	6.6	1.7	29
17	35	44	36	316	84	15	*200	105	37	6.3	1.7	64
18	25	37	41	123	117	20	112	120	34	6.0	1.6	54
19	20	33	243	80	115	*21	297	123	31	6.0	1.5	277
20	15	26	154	65	86	26	320	102	29	5.7	1.4	84
21	14	20	82	*54	76	68	168	126	25	5.4	1.4	44
22	13	17	50	46	135	58	126	132	22	5.1	1.3	30
23	15	22	38	106	147	58	102	115	19	*4.5	1.2	28
24	30	28	56	256	213	66	86	115	21	3.9	1.2	23
25	84	66	407	117	164	75	78	126	23	3.7	1.2	44
26	126	*76	258	80	107	90	64	123	22	3.5	1.2	36
27	58	42	154	62	74	80	54	102	49	3.2	1.6	25
28	33	41	315	129	54	45	52	84	56	3.2	2.7	18
29	26	29	126	93	-	40	58	64	39	3.0	6.0	14.5
30	424	30	84	80	-----	45	74	60	30	3.0	13	12.5
31	132	-----	60	74	-----	40	-----	68	-----	2.7	10.5	-----
Total	1,378	2,551.0	3,713	4,414	2,610	1,160.0	2,951	3,011	1,185	265.8	86.3	897.4
Mean	44.5	85.0	120	142	93.2	37.4	98.4	97.1	39.5	8.57	2.78	29.9
Cfsm	6.87	13.1	18.5	21.9	14.4	5.77	15.2	15.0	6.10	1.32	0.429	4.61
In.	7.91	14.64	21.31	25.33	14.98	6.66	16.94	17.28	6.80	1.53	0.50	5.15
Ac-ft	2,730	5,060	7,360	8,760	5,180	2,300	5,850	5,970	2,350	527	171	1,780

Calendar year 1957: Max - Min - Mean - Cfsm - In. - Ac-ft -  
 Water year 1957-58: Max 782 Min 1.2 Mean 66.4 Cfsm 10.2 In. 139.03 Ac-ft 48,040

Peak discharge (base, 1,200 cfs)--Oct. 30 (4:15 a.m.) 1,300 cfs (3.34 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-24, Jan. 20, Mar. 25 to Apr. 17, June 6-8; discharge estimated on basis of recorded range in stage, 1 discharge measurement, and records for station near Carnation.

1480. South Fork Tolt River near Carnation, Wash.

Location--Lat 47°41'20", long 121°42'35", in SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> sec. 31, T. 26 N., R. 9 E., on left bank 7 miles upstream from confluence with North Fork and 10 miles northeast of Carnation.

Drainage area--19.7 sq mi.

Records available--October 1952 to September 1958.

Gage--Water-stage recorder. Altitude of gage is 1,300 ft (from river-profile map).

Average discharge--6 years, 187 cfs (135,400 acre-ft per year).

Extremes--Maximum discharge during year, 1,130 cfs Jan. 17 (gage height, 4.34 ft); minimum, 12.5 cfs Aug. 23-27 (gage height, 0.81 ft).  
1952-58: Maximum discharge, 5,900 cfs Dec. 11, 1955 (gage height, 7.46 ft); minimum, that of Aug. 23-27, 1958.

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

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

0.8	12	2.0	147
1.1	30	3.0	427
1.5	68	4.1	960

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	151	198	156	180	132	92	162	99	57	17.5	44
2	50	112	295	128	158	122	99	162	89	50	17	40
3	83	90	307	128	147	110	94	162	88	45	17.5	29
4	55	80	211	132	132	102	88	149	80	42	19	22
5	43	72	167	141	147	115	83	156	89	42	18	19
6	37	65	324	167	174	100	80	149	92	39	17	17.5
7	40	59	354	167	156	94	83	149	88	36	18	16.5
8	42	56	347	165	171	89	104	178	73	34	18	15.5
9	38	52	228	162	194	86	117	171	68	32	17	16
10	35	52	174	301	466	84	230	169	72	32	16.5	15.5
11	33	320	160	301	*254	80	176	162	*67	30	16	16
12	32	535	183	304	254	76	151	130	68	29	15.5	*15
13	64	882	159	241	438	75	169	105	65	28	15.5	15
14	85	524	149	400	275	75	216	98	61	26	15	21
15	65	319	117	906	246	74	340	119	60	25	14.5	58
16	57	214	108	632	319	73	480	154	60	24	14.5	60
17	68	158	115	743	246	72	*384	151	64	23	14.5	102
18	58	136	130	335	273	80	307	160	64	23	14	100
19	51	128	282	231	262	*83	423	174	60	22	14	312
20	45	108	351	183	211	90	513	147	56	22	13.5	182
21	42	94	241	*160	183	158	341	162	54	22	13.5	102
22	44	89	174	141	267	156	289	171	51	21	13	75
23	74	90	149	224	287	143	241	169	46	21	12.5	72
24	*105	96	197	553	347	158	209	149	52	20	12.5	62
25	113	132	375	331	344	167	199	165	56	19.5	12.5	91
26	167	*185	528	235	270	174	171	160	49	19	12.5	85
27	113	128	308	190	204	139	149	147	84	19	14	67
28	89	158	626	318	165	121	139	126	88	18	17.5	56
29	80	119	350	270	---	110	156	96	81	18	20	49
30	326	112	211	259	---	115	149	88	66	18	36	42
31	249	---	165	228	---	99	---	34	---	*17.5	30	---
Total	2,405	5,316	7,643	8,815	6,770	3,352	6,252	4,534	2,090	874.0	516.5	1,817.0
Mean	77.6	177	247	284	242	108	208	146	69.7	28.2	16.7	60.6
Cfsm	3.94	8.98	12.5	14.4	12.3	5.48	10.6	7.41	3.54	1.43	0.848	3.08
In.	4.54	10.04	14.43	16.64	12.78	6.33	11.80	8.56	3.95	1.65	0.98	3.43
Ac-ft	4,770	10,540	15,160	17,480	13,430	6,650	12,400	8,990	4,150	1,750	1,020	3,600
Calendar year 1957: Max	900	Min	22	Mean	153	Cfsm	7.77	In.	105.10	Ac-ft	110,400	
Water year 1957-58: Max	906	Min	12.5	Mean	138	Cfsm	7.01	In.	95.13	Ac-ft	99,920	
Peak discharge (base, 2,000 cfs)--No peak above base.												
* Discharge measurement made on this day.												

1485. Tolt River near Carnation, Wash.

Location.--Lat 47°41'45", long 121°49'30", in S<sup>1</sup>/<sub>2</sub>NE<sup>1</sup>/<sub>4</sub> sec. 31, T. 26 N., R. 8 E., on right bank 500 ft downstream from the forks, a quarter of a mile upstream from Stossel Creek, and 5 miles northeast of Carnation.

Drainage area.--79.7 sq mi.

Records available.--August 1928 to January 1932, September 1937 to September 1958. Prior to October 1951, published as "near Tolt."

Gage.--Water-stage recorder. Datum of gage is 348 ft above mean sea level (river-profile survey). Prior to Oct. 31, 1928, staff gage and Oct. 31, 1928, to Jan. 3, 1932, water-stage recorder, at site 350 ft upstream at datum 7.1 ft higher (by river-profile survey). Sept. 1 to Oct. 6, 1937, staff gage at present site at datum 1.64 ft higher.

Average discharge.--24 years (1928-31, 1937-58), 591 cfs (427,900 acre-ft per year).

Extremes.--Maximum discharge during year, 3,840 cfs Jan. 17 (gage height, 8.71 ft); minimum, 61 cfs Aug. 25-27, Sept. 12, 13 (gage height, 3.81 ft). 1928-32, 1937-58: Maximum discharge, 16,800 cfs Feb. 9, 1951 (gage height, 12.92 ft), from rating curve extended above 7,600 cfs on basis of slope-area measurement of peak flow; minimum, 53 cfs Sept. 22, 23, 1951 (gage height, 3.84 ft).

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

Revisions (water years).--WSP 1216: Drainage area. WSP 1286: 1929(M), 1930, 1938(M), 1939, 1943(M), 1945(M), 1951(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 16				Jan. 17 to Sept. 30			
3.9	64	6.0	750	3.8	60	6.0	755
4.4	153	7.0	1,600	4.4	158	7.0	1,600
5.0	315	8.0	2,750	5.0	310	8.0	2,750
5.5	495			5.5	495		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	374	628	585	743	590	354	585	340	205	80	163
2	148	280	890	566	662	536	385	590	304	182	79	137
3	222	242	883	544	625	483	371	575	288	172	82	102
4	145	212	625	535	585	458	340	526	273	158	85	85
5	122	189	527	553	595	483	317	545	294	156	80	78
6												
7	107	175	1,050	590	678	446	317	522	301	150	78	72
8	110	162	1,030	595	615	434	320	522	294	145	79	69
9	116	153	994	585	640	423	374	590	245	139	79	66
10	108	147	684	566	713	423	434	560	232	137	78	68
11	99	149	566	869	*1,840	408	807	531	240	134	74	68
12												
13	94	923	548	994	1,030	385	600	540	232	130	73	*66
14	91	1,360	580	1,030	1,010	371	526	450	*254	125	70	63
15	225	2,350	485	834	1,600	357	585	379	224	121	69	83
16	271	1,790	484	1,230	1,050	350	701	374	214	118	69	74
17	177	1,140	416	2,630	994	340	*1,050	442	212	114	68	154
18												
19	149	726	388	2,100	1,150	326	1,570	508	212	111	68	186
20	166	540	409	2,400	962	320	1,270	500	219	109	66	279
21	147	487	435	1,260	1,090	343	1,020	518	214	107	66	245
22	128	480	867	914	978	350	1,360	545	202	106	65	673
23	120	402	914	*749	794	*364	1,540	462	196	104	65	418
24												
25	110	356	672	690	701	575	1,110	500	191	102	65	234
26	*116	332	531	615	938	540	994	526	180	*101	*65	187
27	222	339	523	876	986	500	848	508	170	98	64	182
28	305	352	678	1,760	1,180	545	743	466	187	94	63	168
29	290	444	1,240	1,180	1,180	560	725	500	210	91	63	272
30												
31	377	523	1,600	890	954	585	656	483	178	88	61	232
2	265	*413	1,060	762	755	479	595	446	245	86	65	174
3	215	491	2,060	1,130	646	423	550	400	438	85	72	152
4	192	406	1,250	970	-	393	540	326	391	84	84	137
5	844	402	876	938	-----	419	565	301	237	84	135	128
6	553	-----	684	885	-----	378	-----	326	-----	82	111	-----
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
Total	6,299	16,347	24,557	30,823	25,694	13,587	21,567	15,045	7,307	3,719	2,321	4,995
Mean	203	545	792	994	918	438	719	485	244	120	74.9	166
Cfs/m	2.55	6.84	9.94	12.5	11.5	5.50	9.02	6.09	3.06	1.51	0.940	2.08
In.	2.94	7.63	11.46	14.38	11.99	6.34	10.06	7.02	3.41	1.74	1.08	2.33
Ac-ft	12,480	32,420	48,710	61,140	50,960	26,950	42,780	29,840	14,490	7,380	4,600	9,910

Calendar year 1957: Max 2,960 Min 74 Mean 507 Cfs/m 6.36 In. 86.36 Ac-ft 357,000  
 Water year 1957-58: Max 2,630 Min 61 Mean 472 Cfs/m 5.92 In. 80.38 Ac-ft 341,700

Peak discharge (base, 3,400 cfs).--Jan. 17 (12:15 a.m.) 3,840 cfs (8.71 ft).

\* Discharge measurement made on this day.

1487. Stossel Creek near Carnation, Wash.

Location.--Lat 47°41'45", long 121°49'50", in SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> sec. 31, T. 26 N., R. 8 E., on right bank 550 ft upstream from mouth and 5 miles northeast of Carnation.

Drainage area.--5.58 sq mi.

Records available.--July 1957 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 340 ft (from topographic map).

Extremes.--1957: Maximum discharge during period July to September, 8.2 cfs Aug. 8 (gage height, 1.25 ft); minimum, 0.7 cfs Aug. 30 (gage height, 0.78 ft).  
1957-58: Maximum discharge during water year, 173 cfs Dec. 29 (gage height, 2.26 ft); minimum, 0.2 cfs Sept. 6 (gage height, 0.81 ft).

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

Discharge, in cubic feet per second, 1957

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1	-	*1.1	1.8	9	-	3.9	2.6	17	-	1.8	1.7	25	-	1.6	1.2
2	-	1.1	1.5	10	-	3.1	2.4	18	-	2.0	1.6	26	1.4	1.5	1.1
3	-	1.4	1.4	11	-	2.6	2.2	19	-	2.0	1.4	27	1.4	1.6	1.9
4	-	2.6	1.1	12	-	2.8	2.1	20	-	1.9	1.2	28	1.4	*1.3	1.8
5	-	2.2	1.3	13	-	2.2	2.2	21	-	*1.9	1.1	29	1.3	1.4	1.4
6	-	3.2	1.9	14	-	2.1	1.9	22	-	1.5	1.2	30	1.1	1.2	1.3
7	-	3.4	3.2	15	-	2.0	1.8	23	-	1.4	1.4	31	1.1	1.8	-
8	-	5.9	2.8	16	-	1.8	1.8	24	-	1.4	1.3				
Total.....														-	65.7
Mean.....														-	2.12
Cubic feet per second per square mile.....														-	0.380
Runoff in inches.....														-	0.44
Runoff in acre-feet.....														-	130

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.4	4.9	20	35	34	23	10	11.5	3.5	2.0	0.7	0.8
2	4.1	4.1	24	30	30	21	11	10.5	3.4	1.9	0.7	0.7
3	3.4	3.7	22	25	27	18	10.5	9.7	3.2	1.7	.9	.6
4	2.3	3.0	21	21	22	17	9.4	9.1	3.0	1.7	1.1	.6
5	1.8	3.2	22	17.5	21	21	9.0	8.8	2.9	1.9	.9	.6
6	1.7	2.8	31	14	18.5	20	8.8	8.2	2.8	1.6	.9	.3
7	2.2	2.6	38	12.5	17.5	22	7.7	3.1	1.4	.9	.4	.4
8	2.1	2.3	35	12	17.5	25	7.5	7.0	2.9	1.3	.9	.5
9	1.9	2.2	31	13	21	21	10	6.5	2.8	1.2	.9	.6
10	1.8	2.8	27	15.5	*56	23	12	6.2	2.7	1.3	.9	.6
11	1.8	5.4	25	19	62	22	11	6.5	2.6	1.3	.8	*.6
12	1.8	16	21	27	52	22	10	6.2	*2.6	1.3	.7	.6
13	6.0	48	19	28	56	19	9.5	6.2	2.6	1.2	.7	.7
14	4.0	94	21	38	49	17	11	5.6	2.6	1.2	.7	.8
15	3.0	66	17.5	61	42	15.5	*14	5.1	2.6	1.2	.6	1.0
16	2.5	40	15.5	73	46	14	20	5.0	2.4	1.2	.7	1.6
17	4.0	29	15.5	128	40	13.5	34	4.6	2.3	1.2	.7	1.4
18	3.7	22	15.5	70	40	13	33	4.6	2.3	1.1	.7	1.1
19	3.5	20	17	48	37	12.5	37	4.6	2.1	1.2	.6	1.3
20	2.6	15.5	19	*43	33	12	36	4.6	2.0	1.2	.7	1.3
21	2.5	13	27	41	29	*14.5	32	4.8	1.9	1.2	.6	1.2
22	*3.0	12	29	34	29	12.5	33	4.5	1.9	*1.1	.6	1.1
23	6.2	10.5	38	34	26	11.5	30	4.2	1.9	1.1	.6	1.1
24	4.3	9.5	54	40	35	13	27	3.8	2.6	1.0	.6	1.0
25	3.9	9.5	66	43	37	13	25	3.7	2.9	.9	.6	1.3
26	3.4	8.6	100	40	35	12.5	22	3.5	2.5	.9	.6	1.3
27	2.8	*9.5	112	37	32	12	20	3.5	2.5	.9	.7	1.1
28	2.7	19	140	43	27	11.5	17	3.7	2.5	.9	.8	1.1
29	3.0	15.5	137	46	-	11.5	15	3.5	2.4	.9	.9	1.0
30	5.4	15.5	63	48	-	11.5	13	3.3	2.3	.9	1.0	1.0
31	6.5	-	43	41	-	10.5	-	4.0	-	1.0	.7	-
Total	99.3	510.1	1,266.0	1,177.5	971.5	508.5	548.2	180.7	77.8	38.9	23.4	27.3
Mean	3.20	17.0	40.8	38.0	34.7	16.4	18.3	5.83	2.59	1.25	0.75	0.91
Cfs/m	0.573	3.05	7.31	6.81	6.22	2.94	3.28	1.04	0.464	0.224	0.134	0.163
In.	0.66	3.40	8.44	7.85	6.47	3.39	3.65	1.20	0.52	0.26	0.16	0.18
Ac-ft	197	1,010	2,510	2,340	1,930	1,010	1,090	358	154	77	46	54

Calendar year 1957: Max	-	Min	-	Mean	-	Cfs/m	-	In.	-	Ac-ft	-
Water year 1957-58: Max	140	Min	0.3	Mean	14.9	Cfs/m	2.67	In.	36.18	Ac-ft	10,780

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 11-22, Apr. 5-17, May 21 to June 11, Sept. 11-15; discharge estimated on basis of recorded range in stage, 3 discharge measurements, and records for nearby stations.

## 1490. Snoqualmie River near Carnation, Wash.

Location.--Lat 47°39'55", long 121°55'30", in W $\frac{1}{2}$  sec. 9, T. 25 N., R. 7 E., on left bank 40 ft downstream from highway bridge, 1 mile northwest of Carnation, and 2 miles downstream from Tolt River.

Drainage area.--608 sq mi.

Records available.--October 1928 to September 1958. Prior to October 1951, published as "near Tolt."

Gage.--Water-stage recorder. Datum of gage is at mean sea level, unadjusted. Prior to Dec. 20, 1933, chain or wire-weight gage on old bridge, 100 ft upstream at datum 42.96 ft higher. Dec. 20, 1933, to Sept. 30, 1939, water-stage recorder at present site at datum 42.96 ft higher than present datum. Auxiliary water-stage recorder  $1\frac{1}{4}$  miles upstream from base gage.

Average discharge.--30 years, 3,714 cfs (2,689,000 acre-ft per year).

Extremes.--Maximum discharge during year, 15,400 cfs Jan. 17 (elevation, 51.95 ft); minimum daily, 446 cfs Aug. 13, Sept. 11.

1928-58: Maximum discharge, 59,500 cfs Feb. 27, 1932 (elevation, 59.88 ft, from graph based on gage readings); maximum elevation observed, 59.93 ft Nov. 13, 1932; minimum discharge, 239 cfs Aug. 21, 1945, but may have been less sometime during period of faulty intake action Sept. 13 or 14, 1949; minimum elevation recorded, 49.30 ft Sept. 11, 1930; minimum daily discharge, 396 cfs Sept. 24, 1938.

Remarks.--Records good except those for period of no gage-height record, and those for period Aug. 1 to Sept. 14, which are fair. Several small diversions for irrigation and domestic use above station. Low flow diverted for operation of powerplant at Snoqualmie Falls but returned to River above station. Some pondage at Snoqualmie Falls and some diurnal fluctuation caused by powerplant.

Revisions (water years).--WSP 1246: Drainage area. WSP 1316: 1932-33(M). WSP 1446: 1934(M).

Rating tables, water year 1957-58 (elevation, in feet, and discharge, in cubic feet per second)

Oct. 1 to Nov. 13

Nov. 14 to Sept. 30

44.4	520	48.0	5,610	44.0	400	48.0	5,610
45.0	930	50.0	10,200	45.0	1,070	50.0	10,200
46.0	2,060			46.0	2,200	52.0	15,600

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	546	2,200	2,790	3,760	4,570	3,680	2,040	3,460	3,170	1,580	600	632
2	742	1,640	4,040	3,510	3,950	3,260	2,140	3,700	3,010	1,380	576	848
3	1,160	1,420	4,510	3,050	3,590	3,010	2,170	3,750	2,860	1,290	563	614
4	860	1,250	3,700	2,860	3,310	2,720	2,000	3,390	2,680	1,280	585	550
5	777	1,100	3,180	2,820	3,200	2,880	1,860	3,730	2,900	1,160	574	512
6	653	984	3,450	2,840	3,420	2,760	a1,800	3,700	3,130	1,180	504	501
7	654	942	7,040	2,910	*3,290	2,670	a1,800	3,780	2,940	1,100	572	470
8	687	892	6,580	2,800	3,330	2,610	a1,950	4,480	2,540	1,080	535	496
9	666	852	5,350	2,820	3,580	2,570	a2,300	4,720	2,300	1,030	532	464
10	628	818	4,120	3,260	6,480	2,400	a2,800	4,390	*2,350	1,020	545	510
11	591	1,950	3,530	3,900	5,430	2,320	a2,950	4,350	2,220	920	532	446
12	570	4,320	3,610	4,310	4,670	2,140	a2,650	3,750	2,120	966	534	458
13	684	8,960	3,100	4,280	7,240	2,060	a3,400	3,100	2,040	869	446	464
14	1,100	8,320	2,860	4,520	6,090	1,920	a4,000	2,730	1,970	940	560	570
15	900	6,180	2,620	10,500	5,050	1,950	a5,100	2,980	1,950	784	474	*1,100
16	*794	4,370	2,630	10,200	5,350	1,850	*a6,400	3,900	1,980	786	474	1,030
17	824	3,260	2,280	14,200	4,920	1,800	5,900	4,260	2,070	788	485	1,250
18	906	2,680	2,530	9,750	5,250	*1,760	6,600	4,390	2,140	815	489	1,770
19	736	2,610	3,140	6,540	5,470	1,770	6,030	5,130	2,040	748	482	3,070
20	708	2,300	6,240	5,090	4,840	1,750	10,800	4,710	1,970	783	465	*4,110
21	665	1,970	5,330	4,650	4,240	2,300	8,070	4,590	1,920	*738	458	2,370
22	692	1,840	3,240	3,940	4,840	2,570	6,520	5,290	1,810	738	*462	1,740
23	1,020	1,750	3,700	3,780	6,180	2,550	5,550	5,430	1,640	669	460	1,560
24	1,400	1,860	3,340	7,490	7,070	2,720	4,800	4,800	1,730	696	460	1,400
25	1,550	*1,970	4,810	6,410	8,180	3,010	4,310	5,330	1,800	658	467	1,550
26	2,200	2,740	*9,580	5,190	6,430	2,970	3,880	5,430	1,600	658	450	2,000
27	1,860	2,290	6,580	4,400	5,050	2,660	3,420	5,110	1,870	614	455	1,440
28	1,410	2,432	7,440	5,510	8,160	4,020	6,520	4,540	2,350	1,447	0,503	1,190
29	1,180	2,550	7,650	5,820	9,880	2,350	3,070	3,590	2,470	622	521	1,070
30	1,450	2,140	5,610	5,350	-----	2,290	3,170	3,100	1,830	620	592	914
31	3,210	-----	4,420	5,390	-----	2,120	-----	2,930	-----	616	659	-----
Total	31,821	78,748	140,970	161,450	139,260	75,830	120,650	128,720	67,380	27,750	16,014	35,099
Mean	1,028	2,625	4,547	5,208	4,974	2,446	4,022	4,152	2,246	895	517	1,170
Cfs/m	1.69	4.32	7.48	8.57	8.16	4.02	6.52	6.85	3.59	1.47	0.803	1.90
In.	1.95	4.82	8.62	9.88	8.52	4.64	7.58	7.87	4.12	1.70	0.98	2.15
Ac-ft	63,120	156,200	279,600	320,200	276,200	150,400	239,300	255,300	133,600	55,040	31,760	69,620

Calendar year 1957: Max 12,800 Min 486 Mean 2,943 Cfs/m 4.84 In. 65.71 Ac-ft 2,131,000  
 Water year 1957-58: Max 14,200 Min 446 Mean 2,805 Cfs/m 4.61 In. 62.63 Ac-ft 2,030,000

Peak discharge (base, 16,000 cfs).--No peak above base.

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of 1 discharge measurement and records for station near Snoqualmie and Tolt River near Carnation.



1530. Little Pilchuck Creek near Lake Stevens, Wash.

Location.--Lat 48°02'00", long 122°03'00", in NW $\frac{1}{4}$  sec. 4, T. 29 N., R. 6 E., on right bank just downstream from highway crossing,  $1\frac{1}{2}$  miles northeast of Lake Stevens and 2 miles upstream from Stevens Creek.

Drainage area.--17.5 sq mi.

Records available.--June 1946 to September 1951, September 1952 to September 1958.

Gage.--Water-stage recorder and wooden control. Altitude of gage is 200 ft (from topographic map).

Average discharge.--11 years (1946-51, 1952-58), 32.1 cfs (23,240 acre-ft per year).

Extremes.--Maximum discharge during year, 200 cfs Feb. 10 (gage height, 3.90 ft); minimum, 0.5 cfs Aug. 20-24 (gage height, 0.85 ft).  
1946-58: Maximum discharge, 382 cfs Jan. 1, 1955 (gage height, 5.11 ft); minimum, that of Aug. 20-24, 1958: minimum gage height, 0.70 ft Aug. 18, 24-26, 1951.

Remarks.--Records good. Several small diversions above station for farm use. No regulation.

Revisions.--WSP 1286: Drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

0.9	0.4	1.6	18
1.0	1.0	2.0	36
1.1	2.2	2.5	64
1.2	4.1	3.0	101
1.3	6.8	4.0	213

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.7	4.3	21	38	54	72	22	16.5	11	2.7	1.7	1.6
2	2.3	3.9	23	32	43	54	22	15	6.0	2.5	1.8	1.3
3	*2.5	3.6	19.5	29	38	45	22	14	4.1	2.3	2.2	1.4
4	1.8	3.4	17	26	32	37	21	12.5	3.2	2.2	2.3	1.4
5	1.8	3.2	17	23	30	45	19	11	2.7	2.0	1.6	1.3
6	1.8	3.0	24	21	31	63	18	10	*2.5	2.0	*1.0	1.2
7	1.8	3.0	29	19.5	29	65	17	9.1	2.7	1.6	1.0	1.3
8	2.0	3.0	24	19.5	32	68	18	8.1	2.5	1.5	1.0	*1.2
9	1.8	2.8	21	19	40	53	26	7.4	2.3	1.5	1.0	1.2
10	1.8	3.4	18.5	24	160	43	53	6.2	2.7	1.6	1.0	*1.3
11	1.8	8.4	17	34	165	37	40	9.4	2.5	1.5	1.0	1.2
12	1.8	14	15.5	43	136	32	32	7.8	2.5	1.5	1.1	1.1
13	3.9	24	14	38	186	*29	28	6.5	2.3	1.5	1.0	1.4
14	3.2	28	17.5	43	159	26	33	6.2	2.2	1.5	1.0	1.4
15	2.5	54	16.5	60	109	25	43	5.1	2.0	1.3	.9	1.2
16	2.3	28	17.5	89	106	23	100	4.6	1.8	1.5	.9	1.8
17	2.5	20	24	185	91	22	99	3.9	1.7	1.6	.8	3.0
18	2.3	17	42	137	94	23	69	3.6	1.6	1.4	.8	2.5
19	2.2	*17	43	87	76	26	59	4.1	1.6	1.7	.7	2.5
20	2.2	15.5	*36	65	58	31	54	4.3	1.6	2.0	.6	1.8
21	2.2	13	40	80	48	38	43	4.1	1.5	2.3	.6	1.7
22	2.5	12	36	68	52	35	*80	3.0	1.5	2.0	.6	2.5
23	6.8	10.5	46	75	46	31	94	2.7	1.5	1.3	.6	3.4
24	4.6	9.4	69	92	96	30	70	2.3	1.6	1.2	.6	2.3
25	3.6	9.1	80	72	137	30	49	2.2	2.2	1.5	1.0	2.2
26	3.4	9.4	102	55	185	27	38	1.8	1.6	1.5	1.0	2.0
27	3.0	10	88	*51	181	25	30	1.8	3.0	1.4	.9	2.5
28	2.8	20	82	60	106	27	29	2.0	1.6	1.6	1.0	2.2
29	2.8	19	82	60	60	26	23	2.0	3.6	1.7	1.3	2.3
30	7.8	17	63	80	-----	26	17.5	2.2	2.8	1.6	1.3	2.3
31	7.4	-----	48	70	-----	23	-----	4.8	-----	1.6	1.2	-----
Total	90.9	458.9	1,193	1,795	2,500	1,135	1,265.5	194.2	85.8	53.1	33.7	54.5
Mean	2.93	14.6	38.5	57.9	89.3	36.6	42.2	6.26	2.88	1.71	1.09	1.82
Cfsm	0.167	0.834	2.20	3.31	5.10	2.08	2.41	0.359	0.209	0.126	0.062	0.104
In.	0.19	0.93	2.54	3.81	5.31	2.41	2.69	0.41	0.18	0.11	0.07	0.12
Ac-ft	180	871	2,370	3,560	4,960	2,250	2,510	385	170	105	67	108

Calendar year 1957: Max 250 Min 1.2 Mean 26.3 Cfsm 1.50 In. 20.43 Ac-ft 19,080  
Water year 1957-58: Max 186 Min 0.6 Mean 24.2 Cfsm 1.38 In. 18.77 Ac-ft 17,540

Peak discharge (base, 150 cfs).--Jan. 17 (7 to 9 a.m.) 191 cfs (3.83 ft); Feb. 10 (7 p.m.) 200 cfs (3.90 ft); Feb. 13 (10 a.m.) 194 cfs (3.84 ft); Feb. 26 (7 p.m.) 199 cfs (3.85 ft).

\* Discharge measurement made on this day.

## 1555. Snohomish River at Snohomish, Wash.

Location.--Lat 47°54'40", long 122°05'50", in SE $\frac{1}{4}$  sec. 13, T. 28 N., R. 5 E., on downstream end of drawrest of bridge on State Highway 1A in Snohomish.

Drainage area.--1,720 sq mi, approximately.

Records available.--February 1941 to September 1958 (high-water discharges only). High-water elevations prior to 1932 and high-water profiles on flood peaks since that time are available at the Seattle office of Corps of Engineers.

Gage.--Water-stage recorder. Datum of each gage is 10 ft below mean sea level, datum of 1929. Auxiliary water-stage recorder 2 $\frac{1}{2}$  miles downstream from base gage.

Extremes.--Maximum discharge during year, 37,500 cfs Jan. 17 (gage height, 23.75 ft).  
1941-58: Maximum discharge, 136,000 cfs Feb. 10, 1951 (gage height, 30.12 ft).  
Maximum stage known, 35 ft at base gage and 31 ft at auxiliary gage in 1906, from flood profile furnished by Corps of Engineers.

Remarks.--Records good. Large diurnal fluctuation because of tides. No appreciable regulation or diversion at stages for which discharges are published.

Revisions (water years).--WSP 1152: 1948(M). WSP 1316: 1947(M), drainage area.  
WSP 1396: 1951(M).

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		-	-	-	11,900		-	11,100	11,500			
2		-	-	-	10,500		-	11,300	11,400			
3		-	-	-	-		-	11,800	10,600			
4		-	-	-	-		-	11,700	10,200			
5		-	-	-	-		-	11,700	10,700			
6		-	-	-	-		-	11,800	12,000			
7		-	16,700	-	-		-	11,800	10,900			
8		-	17,000	-	-		-	*14,400	-			
9		-	15,400	-	-		-	15,700	-			
10		-	12,000	-	14,200		-	14,500	-			
11		-	10,900	-	14,600		-	14,500	-			
12		10,700	10,800	-	11,000		-	12,900	-			
13		18,800	-	-	14,900		-	10,200	-			
14		21,600	-	-	15,000		-	-	-			
15		17,100	-	19,100	12,100		11,900	-	-			
16		12,700	-	28,500	12,300		17,000	12,000	-			
17		-	-	35,000	11,500		16,400	14,100	-			
18		-	-	28,600	12,000		17,600	14,600	-			
19		-	-	20,200	15,100		15,000	16,400	-			
20		-	14,200	15,200	11,200		24,700	16,400	-			
21		-	14,100	13,100	-		24,800	16,100	-			
22		-	11,800	11,300	10,700		20,400	18,500	-			
23		-	10,000	10,500	13,400		17,600	19,600	-			
24		-	10,900	17,700	16,700		14,900	18,600	-			
25		-	13,500	17,600	20,700		12,800	19,600	-			
26		-	26,600	14,400	19,000		11,700	20,400	-			
27		-	20,600	11,500	15,100		-	20,100	-			
28		-	19,700	12,600	11,200		-	17,900	-			
29		-	20,900	15,300	-		-	14,300	-			
30		-	16,100	14,300	-----		-	12,300	-			
31	12,600	-----	12,400	13,700	-----		-----	11,200	-----			-----
Total	-	-	-	-	-	-	-	-	-	-	-	-
Mean	-	-	-	-	-	-	-	-	-	-	-	-
Ac-ft	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year

: Max

Min

Mean

Ac-ft

Water year

: Max

Min

Mean

Ac-ft

Peak discharge (base, 40,000 cfs).--No peak above base.

\* Discharge measurement made on this day.

1570. Quilceda Creek near Marysville, Wash.

Location.--Lat 48°06'20", long 122°09'40", in NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 9, T. 30 N., R. 5 E., on right bank 300 ft downstream from Middle Fork and  $\frac{3}{4}$  miles north of Marysville.

Drainage area.--13.9 sq mi.

Records available.--June 1946 to September 1958.

Gage.--Water-stage recorder and wooden control. Datum of gage is 28.2 ft above mean sea level (stadia traverse).

Average discharge.--12 years, 25.4 cfs (18,390 acre-ft per year).

Extremes.--Maximum discharge during year, 162 cfs Jan. 17 (gage height, 5.56 ft); minimum, 2.4 cfs Sept. 9; minimum gage height, 1.49 ft July 29, Aug. 2.  
1946-58: Maximum discharge, 229 cfs Dec. 31, 1954 (gage height, 6.68 ft); minimum, 2.2 cfs July 16, 1951; minimum gage height, 1.49 ft Sept. 19, 1953, July 29, Aug. 2, 1958.

Remarks.--Records fair. Several diversions above station for irrigation and domestic use. Some regulation during low flow.

Revisions (water years).--WSP 1286: 1950, drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, cubic feet per second)  
(Shifting-control method used Oct. 1 to Nov. 2, Nov. 4-13, Nov. 17 to Jan. 15, Jan. 26 to Feb. 5, Aug. 20 to Sept. 30)

1.4	2.4	3.0	42
1.6	5.2	4.0	81
2.0	13	6.0	188
2.5	26		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1	4.7	9.2	19.5	29	42	54	21	14	12	6.0	3.9	4.0	
2	5.5	9.9	19.5	26	36	45	19.5	13	*8.4	6.2	3.4	3.1	
3	4.7	12	16	24	33	39	19	12	8.2	6.0	3.7	3.1	
4	4.4	13	14.5	22	29	34	17.5	11	7.3	5.5	*3.6	3.1	
5	4.7	16	13.5	20	30	40	17	10.5	7.3	5.3	3.6	*3.4	
6	4.8	18	21	18.5	32	52	15.5	9.9	7.1	5.0	3.7	3.0	
7	4.2	20	22	17	31	53	15	9.5	7.1	5.3	3.9	3.0	
8	*4.5	22	17.5	17	32	52	17.5	8.8	6.9	5.2	3.7	3.0	
9	4.7	22	15.5	17	40	42	19.5	8.4	7.1	5.3	3.4	3.0	
10	5.0	24	14	25	117	36	42	8.4	7.3	5.3	3.4	*3.4	
11	5.5	32	13.5	31	94	32	34	9.0	7.3	5.2	3.6	4.5	
12	6.0	38	13	38	104	30	28	8.6	7.7	5.0	3.6	5.5	
13	8.6	46	13	34	151	26	28	8.0	6.9	5.0	3.4	5.0	
14	7.5	59	13	37	125	25	35	7.7	6.7	5.0	3.1	5.8	
15	6.6	39	12.5	46	81	23	37	7.3	6.4	4.8	3.1	7.7	
16	6.7	25	14.5	79	81	*21	78	7.8	6.2	4.8	3.1	10.5	
17	7.1	18	20	135	79	20	65	8.4	6.0	4.8	3.1	11.5	
18	7.1	16	25	81	98	19.5	47	8.2	5.8	5.0	3.1	13.5	
19	7.5	17	25	59	72	24	41	8.8	5.8	5.2	3.0	15	
20	7.7	14.5	24	52	55	29	38	8.4	5.8	5.0	3.1	15.5	
21	7.7	13	26	74	48	35	31	8.0	5.8	5.0	3.1	17	
22	8.2	11.5	22	62	53	32	60	7.8	5.2	5.0	2.8	17	
23	9.9	*11	*29	70	46	28	51	7.7	5.7	4.7	2.8	18	
24	9.7	10.5	40	77	105	27	*39	7.1	5.8	4.5	2.8	20	
25	9.5	10.5	51	55	114	27	32	6.9	6.2	4.5	2.7	21	
26	9.9	11	57	42	106	24	27	6.7	6.0	4.5	2.7	21	
27	10	13	56	40	87	22	23	6.9	6.9	4.5	3.0	20	
28	10.5	27	50	47	68	24	19.5	7.5	9.2	4.4	3.1	20	
29	9.9	18.5	47	48	-	23	17	7.1	6.9	4.4	3.3	21	
30	13	15.5	39	80	-----	22	15	7.7	6.7	4.4	3.1	20	
31	11	-----	34	*55	-----	21	-----	11	-----	4.2	3.3	-----	
Total	226.8	612.1	807.5	1,457.5	1,989	981.5	949.0	272.1	207.7	155.0	101.2	321.6	
Mean	7.32	20.4	26.0	47.0	71.0	31.7	31.6	8.78	6.92	5.00	3.26	10.7	
Cfs/m	0.527	1.47	1.87	3.38	5.11	2.28	2.27	0.632	0.498	0.360	0.235	0.770	
In.	0.61	1.64	2.16	3.90	5.32	2.63	2.54	0.73	0.56	0.41	0.27	0.86	
Ac-ft	450	1,210	1,600	2,890	3,950	1,950	1,880	540	412	307	201	638	
Calendar year 1957: Max	167			Min	4.2	Mean	24.6	Cfs/m	1.77	In.	24.00	Ac-ft	17,790
Water year 1957-58: Max	151			Min	2.7		22.1	Cfs/m	1.59	In.	21.63	Ac-ft	16,030

Peak discharge (base, 110 cfs).--Jan. 17 (1 a.m.) 162 cfs (5.56 ft); Feb. 10 (10:30 a.m.) 152 cfs (5.40 ft); Feb. 13 (6 a.m.) 157 cfs (5.49 ft); Feb. 24 (2 p.m.) 143 cfs (5.25 ft).

\* Discharge measurement made on this day.

1575. Lake Goodwin near Silvana, Wash.

Location.--Lat 48°08'35", long 122°18'00", in NW $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 28, T. 31 N., R. 4 E., on west shore of lake, 4.7 miles southwest of Silvana and 6 miles north of channel connecting Lake Goodwin and Lake Shoecraft.

Drainage area.--4.51 sq mi.

Records available.--April 1953 to September 1958.

Gage.--Staff gage read once daily. Altitude of gage is 321 ft (from topographic map). Prior to Feb. 15, 1955, at site 0.8 mile north of present site at datum 3.00 ft higher prior to Oct. 1, 1954, and at present datum thereafter.

Extremes.--Maximum gage height observed during year, 6.60 ft Feb. 26; minimum observed, 4.58 ft Sept. 14.  
1953-58: Maximum gage height observed, 6.76 ft Jan. 6, 7, 1956; minimum observed, that of Sept. 14, 1958.

Remarks.--Level of Lake Goodwin is controlled by flashboards in a wooden flume at mouth of Lake Shoecraft. No known diversion.

Gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.10	5.22	5.54	5.90	6.28	6.56	6.14	6.12	5.90	5.64	5.14	4.72
2	5.10	5.22	5.54	5.90	6.28	6.54	6.14	6.10	5.90	5.64	5.12	4.72
3	5.10	5.22	5.54	5.90	6.28	6.50	6.14	6.10	5.88	5.62	5.10	4.70
4	5.10	5.20	5.54	5.90	6.26	6.48	6.12	6.08	5.88	5.62	5.09	4.68
5	5.10	5.20	5.56	5.92	6.26	6.46	6.12	6.08	5.86	5.60	5.08	4.68
6	5.09	5.20	5.56	5.94	6.26	6.46	6.10	6.08	5.86	5.60	5.06	4.66
7	5.08	5.20	5.56	5.92	6.24	6.48	6.10	6.06	5.84	5.58	5.06	4.66
8	5.08	5.20	5.58	5.92	6.24	6.46	6.10	6.06	5.82	5.56	5.04	4.64
9	5.06	5.20	5.58	5.92	6.24	6.44	6.12	6.04	5.82	5.54	5.02	4.64
10	5.06	5.22	5.58	5.94	6.32	6.42	6.14	6.02	5.80	5.52	5.00	4.61
11	5.06	5.26	5.58	5.94	6.34	6.40	6.14	6.00	5.80	5.50	5.00	4.62
12	5.06	5.28	5.60	6.00	6.38	6.38	6.12	6.00	5.78	5.48	4.98	4.60
13	5.10	5.34	5.60	6.00	6.42	6.36	6.12	6.00	5.78	5.46	4.98	4.60
14	5.10	5.44	5.60	6.00	6.44	6.34	6.14	5.98	5.76	5.44	4.96	4.58
15	5.10	5.44	5.60	6.04	6.44	6.30	6.16	5.98	5.76	5.44	4.94	4.60
16	5.10	5.46	5.62	-	6.44	6.28	6.20	5.98	5.74	5.42	4.92	4.62
17	5.10	5.46	5.66	6.14	6.46	6.28	6.20	5.96	5.74	5.40	4.90	4.62
18	5.08	5.46	5.70	6.14	6.48	6.26	6.20	5.94	5.74	5.38	4.90	4.62
19	5.08	5.48	5.70	6.14	6.50	6.26	6.20	5.96	5.72	5.36	4.88	4.62
20	5.08	5.48	5.70	6.14	6.48	6.26	6.18	5.96	5.72	5.34	4.86	4.62
21	5.06	5.48	5.74	6.18	6.48	6.24	6.20	5.96	5.70	5.34	4.86	4.68
22	5.08	5.46	5.70	6.18	6.48	6.24	6.22	5.94	5.68	5.32	4.84	4.68
23	5.12	5.46	5.78	6.22	6.46	6.24	6.22	5.94	5.68	5.30	4.84	4.68
24	5.16	5.46	-	6.24	6.56	6.24	6.20	5.92	5.68	5.28	4.82	4.66
25	5.16	5.48	-	6.24	6.58	6.22	6.20	5.90	5.66	5.26	4.82	4.66
26	5.14	5.48	-	6.24	6.60	6.22	6.20	5.90	5.66	5.26	4.80	4.66
27	5.14	5.48	-	6.26	6.58	6.20	6.18	5.88	5.66	5.24	4.80	4.66
28	5.14	5.52	-	6.26	6.58	6.20	6.16	5.88	5.66	5.22	4.78	4.66
29	5.14	5.52	-	6.26	-	6.18	6.16	5.86	5.64	5.20	4.76	4.64
30	5.24	5.52	-	6.28	-	6.16	6.14	5.86	5.64	5.20	4.74	4.64
31	5.24	-	5.90	6.28	-	6.16	-	5.88	-	5.18	4.74	-

Note.--Gage read once daily usually between 4 and 7 p.m.

1580. Lake Shoecraft near Tulalip, Wash.

Location--Lat 48°07'35", long 122°18'15", in SW $\frac{1}{4}$  sec. 33, T. 31 N., R. 4 E., on piling 12 ft shoreward from boathouse on southwest shore, a quarter of a mile east of outlet and  $\frac{1}{4}$  miles north of Tulalip.

Drainage area--5.57 sq mi.

Records available--April 1953 to September 1958.

Gage--Staff gage read once daily. Altitude of gage is 324 ft (from topographic map).

Extremes--Maximum gage height observed during year, 2.36 ft Feb. 26, 27; minimum observed, 0.45 ft Sept. 13-15.  
1953-58. Maximum gage height observed, 2.48 ft Jan. 5, 1956; minimum observed, that of Sept. 13-15, 1958.

Remarks--Level of Lake Shoecraft is controlled by planks in wooden flume at outlet. No known diversion.

Gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.91	1.08	1.35	1.73	2.09	2.34	1.96	1.93	1.70	1.46	0.99	0.57
2	.93	1.08	1.37	1.72	2.07	2.30	1.96	1.93	1.72	-	.97	.56
3	.94	1.07	1.37	1.72	2.07	2.28	1.96	1.92	1.71	1.43	.95	.55
4	.92	1.06	1.38	1.73	2.06	2.26	1.95	1.91	1.69	1.42	.93	.54
5	.91	1.06	1.37	1.73	2.06	2.25	1.94	1.90	1.68	1.42	.92	.53
6	.91	1.06	1.38	1.73	2.06	2.26	1.92	1.88	1.67	1.39	.90	.52
7	.90	1.06	1.38	1.73	2.07	2.25	1.90	1.86	1.66	1.38	.88	.51
8	.89	1.05	1.36	1.74	2.05	2.25	1.91	1.86	1.64	-	.87	.49
9	.89	1.05	1.37	1.74	2.06	2.23	1.91	1.85	1.63	1.35	.84	.48
10	.88	1.06	1.39	1.76	2.11	2.21	1.96	1.84	1.62	1.34	.84	.47
11	.87	1.14	1.40	1.78	2.12	2.20	1.95	1.83	1.61	1.32	.82	.46
12	-	1.17	1.42	1.81	2.16	2.17	1.94	1.83	-	1.30	.81	.46
13	-	1.23	1.42	1.82	2.20	2.15	1.93	1.82	-	1.28	.80	.45
14	-	1.30	1.43	1.83	2.20	2.12	1.98	1.80	-	1.27	.79	.45
15	.92	1.29	1.43	1.86	2.20	2.12	1.96	1.80	1.59	1.25	.78	.45
16	.92	1.28	1.45	1.88	2.25	2.09	2.01	1.79	1.58	1.23	.76	-
17	.92	1.27	1.48	1.94	2.27	2.09	2.03	1.78	1.56	1.21	.75	-
18	.91	1.27	1.50	1.95	2.28	2.08	2.01	1.78	1.55	1.20	.73	.48
19	.91	1.29	1.52	1.95	2.28	2.08	2.00	1.78	1.54	1.19	.71	.48
20	.90	1.28	1.54	1.94	-	-	2.00	1.76	1.53	1.17	.70	.47
21	.89	1.28	1.55	1.98	2.26	2.06	2.00	1.76	1.52	1.16	.69	.50
22	.91	1.28	1.55	2.00	2.26	2.05	2.03	1.74	1.50	1.15	.68	.52
23	.95	1.28	1.58	2.01	2.25	2.04	-	1.73	1.49	1.13	.67	.51
24	.97	1.28	1.62	2.04	2.32	2.04	2.00	1.72	1.48	1.10	.66	.51
25	.96	1.28	1.63	2.05	2.34	2.04	-	1.72	1.48	1.09	.65	.51
26	-	1.28	1.67	2.04	2.36	2.03	-	1.70	1.47	1.08	.63	.51
27	-	1.29	1.68	2.04	2.36	2.02	1.97	1.69	1.46	1.07	.61	.51
28	-	1.34	1.71	2.04	2.35	2.01	1.96	1.68	1.46	1.05	.61	.50
29	-	-	1.71	2.06	-	1.99	1.94	1.68	1.47	1.04	.59	.50
30	-	1.34	1.72	2.09	-----	1.98	1.93	1.69	1.46	1.02	.58	.50
31	-	-----	1.74	2.09	-----	1.97	-----	1.69	-----	1.01	.57	-----

Note--Gage read once daily at various times.

## STILLAGUAMISH RIVER BASIN

1610. South Fork Stillaguamish River near Granite Falls, Wash.

Location.--Lat 48°06'10", long 121°56'40", in SW<sup>1</sup>/<sub>4</sub> NW<sup>1</sup>/<sub>4</sub> sec. 8, T. 30 N., R. 7 E., on right bank a quarter of a mile upstream from county road bridge, 1½ miles upstream from Canyon Creek, and 2 miles northeast of Granite Falls.

Drainage area.--119 sq mi.

Records available.--December 1902 to July 1903 (gage heights only), July 1928 to September 1958. Published as "at Robe" 1902-3.

Gage.--Water-stage recorder. Altitude of gage is 310 ft (from river-profile map). Prior to Aug. 31, 1928, staff gage at site 8 miles upstream at different datum.

Average discharge.--30 years, 1,045 cfs (756,500 acre-ft per year).

Extremes.--Maximum discharge during year, 11,100 cfs Dec. 25 (gage height, 11.40 ft); minimum, 89 cfs Aug. 23-27 (gage height, 3.20 ft).  
1928-58: Maximum discharge, 38,800 cfs Feb. 26, 1932 (gage height, 19.7 ft, from graph based on gage readings), from rating curve extended above 15,000 cfs; minimum, 55 cfs Sept. 23, 24, 1938; minimum gage height, 2.99 ft Aug. 19-21, 1941.

Remarks.--Records excellent. Some small diversions for domestic use above station. No regulation.

Revisions (water years).--WSP 902: 1939. WSP 1286: 1929-31(M), 1932, 1933-34(M), 1935, 1937(M), 1938-39(P), 1940-41(M), 1943(P), 1944(M), 1945(P), 1946(M), 1947(P), 1948(M), 1951(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-30

Oct. 31 to Sept. 30

3.3	111	5.0	910	3.2	89	5.0	830
3.6	187	6.0	1,800	3.6	182	6.0	1,680
4.0	330	8.0	4,330	4.0	312	8.5	5,120
				4.5	530		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	116	1,040	1,170	708	1,020	844	580	809	1,190	367	125	428
2	238	683	1,230	671	851	734	613	858	916	324	121	244
3	366	516	1,400	683	774	641	613	886	689	380	132	213
4	*225	423	994	671	695	580	535	823	653	332	164	159
5	179	367	754	685	721	613	482	844	*695	316	130	130
6	154	320	1,490	708	970	575	468	858	734	297	*119	112
7	154	286	1,330	754	830	570	468	928	702	275	119	106
8	156	265	2,220	865	956	530	565	1,080	613	261	125	*102
9	139	241	1,310	857	1,150	525	641	1,030	545	251	121	102
10	122	241	935	1,610	2,380	482	999	921	511	235	112	104
11	118	1,740	980	1,520	1,230	445	708	942	492	229	110	110
12	113	2,750	1,270	1,520	1,420	414	671	795	482	222	106	102
13	627	3,900	865	1,130	2,410	*392	830	635	441	210	104	95
14	632	2,680	1,370	1,820	1,610	372	1,210	570	432	190	102	128
15	339	1,490	830	4,630	1,300	363	2,090	653	432	179	97	372
16	256	994	767	4,820	1,650	355	2,600	872	459	172	95	470
17	221	734	1,280	3,990	1,300	359	2,190	942	511	174	97	1,300
18	193	608	1,300	1,810	1,830	511	1,640	963	540	174	95	665
19	170	*580	1,920	1,260	1,840	570	1,720	1,110	525	174	95	1,800
20	156	487	*2,030	970	1,310	683	3,150	1,030	511	169	93	907
21	144	423	1,340	830	1,070	1,270	1,990	1,060	482	161	91	683
22	156	388	1,020	708	1,580	1,020	*1,830	1,210	484	154	91	937
23	630	392	1,130	1,660	1,890	928	1,310	1,220	432	151	89	591
24	1,070	427	1,580	3,580	2,440	949	1,070	1,100	405	146	89	459
25	698	518	4,450	1,820	2,600	970	942	1,210	380	142	89	587
26	722	747	3,640	1,220	1,910	942	816	1,210	324	139	89	496
27	530	608	1,700	1,010	1,340	734	708	1,180	649	137	91	384
28	702	713	2,800	*2,140	1,050	728	953	1,030	1,290	179	112	320
29	348	525	1,590	1,550	---	671	653	767	586	142	188	272
30	3,960	477	1,100	1,800	-----	851	714	830	445	139	207	238
31	2,310	-----	865	1,390	-----	647	-----	809	-----	132	146	-----
Total	15,627	25,452	46,840	49,350	39,827	20,268	33,459	29,165	17,360	6,513	3,544	12,516
Mean	504	848	1,505	1,592	1,422	654	1,115	941	579	210	114	417
Cfs/m	4.34	7.13	12.6	15.4	11.9	5.28	9.37	7.91	4.97	1.76	0.958	3.50
In.	4.88	7.95	14.58	15.42	12.45	6.33	10.46	9.11	5.43	2.04	1.11	3.91
Ac-ft	31,000	50,480	92,510	97,880	79,000	40,200	66,360	57,850	34,430	12,920	7,030	24,830
Calendar year 1957: Max	9,000	Min	111	Mean	885	Cfs/m	7.44	In.	100.88	Ac-ft	640,400	
Water year 1957-58: Max	4,820	Min	89	Mean	821	Cfs/m	6.90	In.	93.67	Ac-ft	594,500	

Peak discharge (base, 8,700 cfs).--Dec. 25 (7:30 p.m.) 11,100 cfs (11.40 ft).

\* Discharge measurement made on this day.

1650. Squire Creek near Darrington, Wash.

Location.--Lat 48°16'15", long 121°40'00", in SE $\frac{1}{4}$  sec. 8, T. 32 N., R. 9 E., on left bank 150 ft upstream from road crossing, a third of a mile upstream from Ashton Creek, and  $\frac{3}{4}$  miles northwest of Darrington.

Drainage area.--18.8 sq mi.

Records available.--June 1950 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 490 ft (from topographic map).

Average discharge.--8 years, 181 cfs (131,000 acre-ft per year).

Extremes.--Maximum discharge during year, 2,120 cfs Dec. 25 (gage height, 6.75 ft); minimum, 12 cfs Oct. 12, 13 (gage height, 1.42 ft).  
1950-58: Maximum discharge, 6,440 cfs Feb. 10, 1951 (gage height, 10.52 ft), from rating curve extended above 700 cfs by logarithmic plotting; minimum, 7.3 cfs Oct. 20-24, 1952 (gage height, 0.57 ft).

Remarks.--Records good except those for period Oct. 31 to Dec. 20, which are fair. No regulation or diversion above station.

Revisions.--WSP 1286: Drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge,

in cubic feet per second)

(Shifting-control method used Feb. 25 to Apr. 18, July 23-27)

Oct. 1-29

Oct. 30 to Sept. 30

1.4	11	2.5	110	1.4	11	3.0	225
1.7	26	3.0	220	1.7	26	4.0	540
2.0	49	3.5	365	2.0	50	5.0	990
				2.4	100		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19.5	138	96	129	178	186	92	150	273	76	30	99
2	46	98	96	120	234	135	94	156	198	76	29	39
3	33	78	97	118	144	144	91	156	195	81	30	31
4	25	64	90	120	129	129	82	144	*210	75	27	25
5	22	55	77	118	121	136	77	161	212	71	*24	21
6	19	48	126	118	125	120	76	169	202	66	23	18.5
7	*19	43	140	120	125	113	76	208	174	65	24	17.5
8	19	37	228	129	144	105	90	222	150	60	22	16.5
9	17	33	144	125	167	97	94	198	150	56	20	*17
10	14	36	116	205	215	90	110	200	138	54	19.5	16.5
11	13	199	158	200	158	84	102	190	136	53	19.5	17
12	12	418	174	193	188	78	110	140	120	50	19.5	14
13	152	445	120	156	270	75	146	116	113	46	19.5	14
14	64	241	134	232	210	*72	167	130	116	42	19	39
15	40	158	113	799	188	*70	208	172	123	41	18.5	45
16	31	120	118	864	254	67	270	202	146	41	18.5	116
17	26	96	165	599	248	66	298	205	165	41	18.5	113
18	23	82	167	300	407	71	251	220	154	41	18	64
19	20	73	248	225	341	82	297	254	156	40	17.5	285
20	17.5	*62	298	181	235	98	365	225	150	39	17.5	114
21	15.5	54	218	154	198	165	262	278	144	38	17.5	166
22	18.5	51	*172	136	309	144	220	298	136	36	17	116
23	103	70	178	276	251	132	*183	292	127	35	17	85
24	272	61	208	464	467	130	161	309	108	34	17.5	67
25	144	68	739	259	494	129	138	323	86	33	17.5	102
26	118	66	534	200	362	127	127	335	118	33	17.5	62
27	77	58	273	169	264	111	116	323	246	34	18	51
28	59	66	341	270	215	113	113	258	199	35	22	45
29	91	55	251	*228	-	105	118	195	105	35	32	39
30	782	52	183	270	-----	113	136	222	84	33	24	34
31	244	-----	148	220	-----	100	-----	200	-----	31	22	-----
Total	2,556.0	3,125	6,150	7,697	6,561	3,415	4,670	6,649	4,632	1,491	656.5	1,889.0
Mean	82.5	104	198	248	234	110	156	214	154	48.1	21.2	63.0
Cfsm	4.39	5.53	10.5	13.2	12.4	5.85	8.30	11.4	8.19	2.56	1.13	3.35
In.	5.06	6.18	12.17	15.23	12.98	6.76	9.24	13.15	9.16	2.95	1.30	3.74
Ac-ft	5,070	6,200	12,200	15,270	13,010	6,770	9,260	13,190	9,190	2,960	1,300	3,750

Calendar year 1957: Max 1,660 Min 12 Mean 137 Cfsm 7.29 In. 99.29 Ac-ft 99,530

Water year 1957-58: Max 864 Min 12 Mean 136 Cfsm 7.23 In. 97.92 Ac-ft 98,170

Peak discharge (base, 2,200 cfs).--No peak above base.

\* Discharge measurement made on this day.

## STILLAGUAMISH RIVER BASIN

1670. North Fork Stillaguamish River near Arlington, Wash.

Location.--Lat 48°15'40", long 122°02'50", in SE¼NW¼ sec. 16, T. 32 N., R. 6 E., on right bank 6 miles northeast of Arlington, 7 miles upstream from mouth, and 8 miles downstream from Deer Creek.

Drainage area.--269 sq mi.

Records available.--July 1928 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 89.34 ft above mean sea level, datum of 1929. Prior to Sept. 18, 1928, staff gage at same site and datum.

Average discharge.--30 years, 1,767 cfs (1,279,000 acre-ft per year).

Extremes.--Maximum discharge during year, 15,700 cfs Jan. 16 (gage height, 10.07 ft); minimum, 195 cfs Aug. 30-27; minimum gage height, 1.60 ft Oct. 1, Aug. 20-27.  
1928-58: Maximum discharge, 30,600 cfs Feb. 9, 1951; maximum gage height, 13.46 ft Feb. 10, 11, 1951; minimum discharge, 117 cfs Sept. 23, 1938; minimum gage height, 0.97 ft Sept. 10, 12, 1944.

Remarks.--Records good. No regulation. Small diversions for domestic use.

Revisions (water years).--WSP 832: Drainage area. WSP 1286: 1938-39.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 16

Jan. 17 to Sept. 30

1.6	217	4.0	2,260	1.6	195	4.0	2,200
2.0	380	5.0	3,700	2.0	350	5.0	3,580
2.5	680	6.0	5,350	2.5	650	6.0	5,280
3.0	1,100	8.0	9,800	3.0	1,090	8.0	9,800

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	217	1,290	1,500	1,640	2,280	2,020	1,070	1,410	1,510	510	281	566
2	300	338	1,920	1,540	1,970	1,770	1,060	1,430	1,110	474	277	375
3	380	763	1,960	1,580	1,820	1,540	1,120	1,480	955	498	273	297
4	300	652	1,510	1,600	1,630	1,380	1,010	1,380	901	480	273	254
5	*272	584	1,210	1,550	1,570	1,430	928	1,380	*910	456	262	230
6	269	539	2,130	1,600	1,960	1,350	892	1,350	928	450	254	216
7	269	497	2,340	1,690	1,730	1,300	892	1,430	901	440	*258	209
8	269	458	2,140	1,810	2,020	1,240	937	1,590	775	440	258	206
9	269	420	1,760	1,870	1,770	1,170	1,130	1,530	739	430	248	*216
10	269	410	1,450	3,060	3,780	1,100	1,730	1,440	730	415	237	223
11	265	1,080	1,390	3,140	2,460	1,040	1,360	1,480	698	405	237	244
12	261	4,000	2,290	3,070	2,870	964	1,220	1,260	674	395	237	223
13	288	6,950	1,530	2,380	5,170	919	1,420	1,040	629	360	230	206
14	740	4,640	1,830	3,020	3,310	874	1,910	991	615	365	226	230
15	458	2,810	1,440	6,580	2,700	865	2,640	1,080	601	346	223	365
16	357	1,870	1,410	8,550	3,290	*838	3,940	1,280	601	348	220	474
17	326	1,380	2,390	9,790	2,920	820	3,340	1,300	643	346	216	838
18	296	1,130	2,680	4,340	4,230	883	3,130	1,350	650	346	209	524
19	272	1,050	3,300	2,910	4,040	1,090	2,830	1,520	643	346	206	1,230
20	246	912	4,150	2,250	2,810	1,500	4,560	1,390	636	341	202	820
21	251	*787	*2,890	1,990	2,280	2,320	2,960	1,430	622	332	198	1,270
22	221	732	2,160	1,710	3,200	2,010	*2,880	1,530	601	323	198	1,150
23	352	718	2,320	2,560	2,800	1,790	2,340	1,520	580	314	198	698
24	1,280	755	2,910	6,820	4,870	1,680	1,970	1,430	580	305	198	552
25	1,030	763	4,730	3,660	6,330	1,770	1,730	1,530	545	301	198	775
26	992	860	7,280	2,680	4,780	1,660	1,600	1,490	510	301	198	594
27	903	795	3,670	2,250	3,240	1,410	1,450	1,450	594	301	198	486
28	590	1,050	4,600	*3,380	2,470	1,280	1,310	1,320	1,000	301	216	430
29	521	886	3,440	3,100	-	1,210	1,270	1,060	668	301	244	390
30	3,660	787	2,420	3,840	-----	1,360	1,330	1,040	566	301	265	360
31	2,320	-----	1,940	2,890	-----	1,210	-----	1,120	-----	293	230	-----
Total	18,323	40,486	78,690	98,850	85,280	41,793	55,939	42,031	22,105	11,582	7,168	14,651
Mean	591	1,350	2,538	3,189	3,046	1,346	1,865	1,356	737	374	231	488
Water year 1957-58	2,20	5,02	9,43	11.9	11.3	5.01	6.93	5.04	2.74	1.39	0.859	1.81
In.	2.53	5.60	10.88	13.67	11.79	5.78	7.73	5.81	3.06	1.60	0.99	2.03
Ac-ft	36,340	80,300	156,100	196,100	169,200	82,900	111,000	83,370	43,840	22,970	14,220	29,060
Calendar year 1957:	Max	13,400	Min	214	Mean	1,448	Cfsm	5.38	In.	73.04	Ac-ft	1,048,000
Water year 1957-58:	Max	9,790	Min	198	Mean	1,416	Cfsm	5.26	In.	71.47	Ac-ft	1,025,000

Peak discharge (base, 11,500 cfs).--Dec. 25 (11:30 p.m.) 12,000 cfs (8.86 ft); Jan. 18 (11:45 p.m.) 15,700 cfs (10.07 ft).

\* Discharge measurement made on this day.



1685. Pilchuck Creek near Bryant, Wash.

Location.--Lat 48°16'00", long 122°09'45", in NE $\frac{1}{4}$  sec. 16, T. 32 N., R. 5 E., on right bank 500 ft upstream from highway bridge and 2 miles north of Bryant.

Drainage area.--49.7 sq mi.

Records available.--March 1929 to September 1931, June 1950 to September 1951, September 1952 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 119.8 ft above mean sea level (stadia traverse). Prior to Oct. 1, 1931, staff gage at site 100 ft downstream at different datum.

Average discharge.--9 years, 264 cfs (191,100 acre-ft per year).

Extremes.--Maximum discharge during year, 2,540 cfs Dec. 25 (gage height, 5.31 ft; minimum, 1.1 cfs Aug. 13-16, 23-27 (gage height, 1.37 ft).  
1929-31, 1950-58: Maximum discharge, 6,240 cfs Dec. 9, 1956 (gage height, 7.60 ft), from rating curve extended above 3,900 cfs; minimum observed, 0.5 cfs Aug. 29 to Sept. 1, 1931 (gage height, 0.90 ft, site and datum then in use).

Remarks.--Records good except those below 5 cfs, which are fair. No regulation or diversion above station.

Revisions (water years).--WSP 1316: 1930-31(M), drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 25

Dec. 26 to Sept. 30

1.5	3.6	2.4	170	1.3	0.5	2.5	210
1.6	8.5	2.9	400	1.4	1.5	3.0	455
1.7	15.5	3.4	710	1.5	4.2	4.0	1,160
1.8	25	4.0	1,160	1.7	17.5	5.0	2,160
2.0	55	5.0	2,160	2.0	64		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.8	109	361	271	438	333	129	129	164	11.5	1.4	28
2	12.5	77	455	240	353	281	129	118	91	9.4	1.4	27
3	28	59	384	258	290	236	149	169	50	8.2	1.2	13
4	26	50	258	290	258	198	140	140	36	6.5	1.4	8.2
5	*18	44	198	244	297	202	115	112	*25	5.5	1.4	6.5
6	14.5	38	524	219	422	202	104	98	21	5.1	1.5	4.2
7	12.5	35	498	194	304	223	101	93	19.5	5.5	1.5	3.8
8	11	31	369	219	328	240	106	91	18.5	12	1.2	3.4
9	9.8	30	244	271	539	232	155	81	17.5	12	1.2	*3.4
10	8.5	30	186	498	762	206	468	72	21	12	1.2	3.4
11	7.3	150	174	533	406	186	258	70	19.5	12	1.2	3.4
12	6.8	777	484	640	617	161	186	66	18.5	11.5	1.2	3.4
13	18	1,410	304	422	1,110	149	178	60	18.5	11.5	1.1	3.4
14	70	1,140	422	616	614	143	285	56	16.5	10.5	1.1	3.4
15	32	608	299	857	491	140	668	54	14.5	10.5	1.1	7.0
16	22	374	275	1,100	658	*129	787	48	13	9.4	1.1	79
17	17.5	267	461	1,180	497	129	557	45	11.5	8.8	1.2	112
18	14	214	569	533	569	132	485	42	10.5	8.2	1.2	64
19	12.5	210	645	364	473	198	438	47	8.2	7.6	1.2	170
20	11.5	182	627	299	328	348	438	47	7.6	7.6	1.2	75
21	10.5	*152	*533	358	276	364	309	39	7.6	7.0	1.2	89
22	10.5	134	485	348	433	299	438	36	7.0	6.5	1.2	88
23	37	122	712	595	348	240	333	30	6.0	6.0	1.1	54
24	170	118	850	912	1,060	219	*249	27	6.0	5.5	1.1	40
25	87	122	1,090	533	1,540	253	219	24	7.6	4.6	1.1	107
26	73	141	1,060	400	1,020	232	214	21	9.4	4.2	1.1	66
27	68	125	582	384	594	178	194	16.5	9.4	3.8	1.1	42
28	44	258	758	634	433	155	164	14	27	5.1	1.2	30
29	35	198	545	1,179	1,157	149	149	17.5	19.5	1.6	1.6	23
30	945	152	411	*960	-----	164	140	39	14	1.6	6.0	18.5
31	198	-----	328	614	-----	146	-----	78	-----	1.8	7.6	-----
Total	2,036.2	7,357	15,093	15,555	15,458	6,467	8,285	1,980.0	715.3	231.6	49.3	1,179.0
Mean	65.7	245	487	502	552	209	276	63.9	23.8	7.47	1.59	39.3
Cfsm	1.32	4.93	9.80	10.1	11.1	4.21	5.55	1.29	0.479	0.150	0.032	0.791
In.	1.52	5.51	11.25	11.74	11.57	4.49	6.20	1.48	0.54	0.17	0.04	0.98
Ac-ft	4,040	14,590	29,940	30,850	30,850	12,830	16,430	3,930	1,420	459	98	2,340
Calendar year 1957: Max		2,260		Min 5.8		Mean 205		Cfsm 4.12		In. 56.04	Ac-ft 148,500	
Water year 1957-58: Max		1,540		Min 1.1		Mean 204		Cfsm 4.10		In. 55.68	Ac-ft 147,600	

Peak discharge (base, 2,500 cfs).--Dec. 25 (9 p.m.) 2,540 cfs (5.31 ft).

\* Discharge measurement made on this day.

1706. Skagit River at international boundary, near Hope, British Columbia

(International gaging station)

Location.--Lat 49°00'05", long 121°04'15", on left bank 300 ft upstream from international boundary and 31 miles southeast of Hope.

Drainage area.--381 sq mi.

Records available.--December 1953 to September 1958 (gage heights only).

Gage.--Water-stage recorder. Datum of gage is 1,583.44 ft above mean sea level, datum of 1929, supplementary adjustment of 1947; 1,584.07 ft above city of Seattle 1936 datum; and 1,581.65 ft above city of Seattle Ross Dam datum. Prior to Apr. 15, 1955, staff gage 300 ft downstream at international boundary at present datum.

Extremes.--Maximum gage height during year, 18.47 ft Aug. 26; minimum, 3.95 ft Nov. 22. 1953-58: Maximum gage height, that of Aug. 26, 1958; minimum observed, 1.25 ft Mar. 5, 1955.

Remarks.--No diversion above station. Gage height subject to backwater from Ross Reservoir.

Cooperation.--This station is maintained by Canada under agreement with the United States.

Daily mean gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11.19	5.59	4.30	4.54	5.30	6.20		-	8.46	15.68	18.06	18.31
2	10.68	5.32	4.26	4.52	5.26	6.06		-	8.30	15.77	18.03	18.37
3	10.09	5.15	4.28	4.50	5.21	5.93		-	8.22	16.08	18.26	18.21
4	9.58	5.02	4.35	4.48	5.15	5.84		-	-	16.34	18.25	18.03
5	9.17	4.89	4.33	4.49	5.10	5.78		-	-	16.98	18.00	17.85
6	8.94	4.81	4.32	4.48	5.05	5.67		-	-	17.36	17.98	17.75
7	8.77	4.71	4.32	4.47	5.00	5.58		-	8.34	17.55	18.07	17.74
8	8.16	4.61	4.38	4.49	5.00	5.45		-	-	17.75	18.14	17.72
9	7.68	4.53	4.54	4.49	4.98	5.38		8.42	-	17.84	18.23	17.57
10	7.27	4.47	4.57	4.48	4.98	5.31		8.42	-	17.90	18.40	17.40
11	6.93	4.42	4.55	4.47	4.98	5.24		8.44	-	17.90	18.40	17.17
12	6.60	4.40	4.59	4.48	5.00	5.18		8.26	8.96	17.98	18.42	16.99
13	6.40	4.44	4.60	4.47	5.01	5.11		7.97	9.25	18.08	18.40	16.80
14	6.17	4.44	4.60	4.50	4.98	5.06		7.83	9.49	17.90	18.40	16.78
15	5.82	4.38	4.54	4.70	4.94	5.01		7.88	10.07	17.80	18.38	16.70
16	5.45	4.30	4.51	5.31	5.00	4.98		8.07	10.18	17.70	18.40	16.50
17	5.15	4.24	4.56	5.98	5.08	4.93		8.23	10.48	17.67	18.43	16.33
18	4.95	4.19	4.59	5.35	5.26	4.90		-	10.98	17.70	18.40	16.10
19	4.85	4.15	4.57	5.82	5.60	4.87		8.75	11.38	17.91	18.39	16.12
20	4.80	4.10	4.61	5.68	5.73	4.85		8.98	11.48	18.22	18.38	16.17
21	4.77	4.00	4.59	5.53	5.81	4.91		9.04	12.70	18.20	18.37	16.12
22	4.69	3.99	4.53	5.41	6.02	5.02		9.17	12.65	18.08	18.38	15.91
23	4.65	4.10	4.53	5.44	6.30	5.08		9.24	13.29	18.00	18.38	15.55
24	4.60	4.35	4.50	5.57	6.78	5.17		-	13.80	17.94	18.39	15.26
25	4.60	4.41	4.63	5.57	6.97	5.25		-	14.58	17.90	18.39	15.10
26	4.59	4.48	5.08	5.47	6.78	5.29		-	14.95	17.91	18.41	14.94
27	4.57	4.44	5.03	5.40	6.54	5.30		-	15.25	18.14	18.38	14.79
28	4.50	4.43	4.94	5.44	6.56	5.31		-	15.46	18.28	18.31	14.53
29	4.49	4.36	4.87	5.47	-	5.32		-	15.63	18.28	18.21	14.80
30	5.71	4.32	4.79	5.43	-----	5.34		9.00	15.70	18.25	18.13	14.40
31	5.99	-----	4.64	5.37	-----	5.30	-----	8.62	-----	18.20	18.15	-----

1750. Ross Reservoir near Newhalem, Wash.

(International gaging station)

Location.--Lat 48°44'00", long 121°04'10", in SE $\frac{1}{4}$  sec. 35, T. 38 N., R. 13 E., at Ross Dam on Skagit River 1 mile downstream from Ruby Creek and 9 miles northeast of Newhalem.

Drainage area.--980 sq mi, approximately.

Records available.--March 1940 to September 1958 (prior to October 1946, month-end elevations and contents only). Prior to October 1945, published as Ruby Reservoir near Newhalem.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (city of Seattle bench mark). Prior to Sept. 24, 1940, staff gage on west shore at site just uplake from Ross Dam at same datum. Sept. 24, 1940, to June 28, 1943, water-stage recorder at present site and datum. June 29, 1943, to Apr. 29, 1948, staff gage on right bank at site 500 ft uplake from dam at present datum.

Extremes.--Maximum contents during year, 1,405,300 acre-ft Aug. 23 (elevation, 1,600.00 ft); minimum, 582,490 acre-ft Apr. 10 (elevation, 1,511.72 ft).  
1940-58: Maximum contents observed, 1,406,500 acre-ft Aug. 23, 1954 (elevation, 1,600.10 ft, from plant log); minimum not determined.

Remarks.--Reservoir is formed by concrete dam completed to elevation 1,615 ft in 1949; storage began Mar. 11, 1940. Capacity, 1,202,920 acre-ft between elevations 1,250 (lowest outlet) and 1,582 ft (spillway crest). Dead storage negligible. Water used for power and to supplement low flow of Skagit River through city of Seattle's Diablo and Newhalem powerplants. Figures given herein represent total contents.

Cooperation.--Elevation records collected in cooperation with city of Seattle. This station is maintained by the United States under agreement with Canada.

Capacity table, water year 1957-58 (elevation, in feet, and total contents, in acre-feet)  
(Prepared by Geological Survey on basis of 15 contour areas furnished by city of Seattle)

1,510	571,110	1,570	1,078,800
1,530	718,200	1,590	1,291,700
1,550	888,320	1,600	1,405,300

Elevation, in feet, at 12 p.m., water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	592.29	581.27	567.32	552.89	538.30	530.85	514.26	517.06	581.36	597.21	599.49	599.86
2	591.75	581.14	566.65	552.19	538.28	530.91	513.87	517.70	582.06	597.58	599.66	599.82
3	591.23	580.86	565.04	551.44	537.58	530.27	513.34	519.03	582.74	597.64	599.92	599.63
4	590.69	580.34	564.25	550.95	537.09	529.43	512.95	520.43	583.72	598.21	599.61	599.43
5	590.37	579.85	564.69	550.51	536.43	528.74	512.92	521.28	584.90	598.98	599.46	599.27
6	590.47	579.22	564.11	549.74	535.86	528.27	513.00	522.32	586.13	598.99	599.54	599.26
7	589.69	578.68	563.85	548.98	535.26	527.68	512.68	524.08	586.91	599.19	599.63	599.31
8	589.14	578.16	563.71	548.25	534.96	527.10	512.22	526.37	587.72	599.31	599.67	599.15
9	588.63	577.83	563.14	547.49	534.78	527.23	511.83	528.75	588.57	599.42	599.86	599.00
10	588.23	577.61	562.43	546.71	534.12	526.29	511.74	531.08	589.09	599.41	599.86	598.76
11	587.79	577.01	561.75	546.35	533.65	525.63	511.81	533.25	589.61	599.46	599.90	598.60
12	587.45	576.51	561.23	546.13	532.97	524.87	512.02	534.77	590.09	599.53	599.90	598.35
13	587.27	576.04	560.60	545.26	532.57	524.17	512.32	536.12	590.56	599.53	599.89	598.28
14	586.80	575.46	560.58	544.56	532.00	523.36	512.40	537.40	591.10	599.38	599.93	598.30
15	586.23	574.96	560.06	544.14	531.76	522.61	512.49	538.79	591.73	599.27	599.91	598.09
16	585.65	574.54	559.64	544.31	531.96	522.51	512.58	540.54	592.05	599.20	599.94	597.92
17	585.12	574.17	559.05	544.37	531.03	521.48	512.90	542.60	592.47	599.17	599.89	597.68
18	584.71	573.52	558.40	544.62	530.77	520.58	513.15	544.92	592.91	599.30	599.87	597.46
19	584.45	572.85	557.83	544.60	530.45	519.76	513.78	547.57	593.38	599.61	599.84	597.65
20	584.46	572.19	557.40	544.12	530.07	518.93	514.72	550.44	593.79	599.81	599.80	597.56
21	583.80	571.49	557.14	543.67	530.42	518.60	515.06	553.31	594.35	599.59	599.83	597.62
22	583.27	570.88	556.88	543.12	530.05	518.38	515.40	556.44	595.02	599.56	599.91	597.18
23	582.83	570.76	556.21	542.73	530.53	518.36	515.39	559.51	595.65	599.52	599.85	596.83
24	582.38	570.63	555.74	542.12	530.40	517.57	515.37	562.81	596.13	599.43	599.89	596.60
25	581.89	570.00	555.68	541.78	530.55	516.99	515.46	566.29	596.32	599.37	599.84	596.55
26	581.72	569.30	555.19	541.67	530.73	516.54	515.81	569.48	596.54	599.57	599.86	596.33
27	581.49	568.60	554.64	540.50	530.84	515.95	516.42	572.58	596.77	599.81	599.85	596.28
28	580.97	568.44	554.58	540.00	530.64	515.41	516.33	575.81	597.00	599.77	599.69	596.45
29	580.69	567.95	554.58	539.43	-	515.35	516.37	577.87	597.23	599.74	599.61	596.08
30	581.51	567.72	553.90	538.95	-	515.43	516.61	579.34	597.20	599.71	599.61	595.68
31	581.63	-	553.29	538.40	-	514.87	-	580.47	-	599.61	599.73	-
(+)	1,199.8	1,055.7	918.1	787.35	725.02	604.53	616.57	1,188.1	1,372.9	1,400.7	1,401.8	1,355.8
(*)	-23,200	-144,100	-137,800	-130,800	-64,350	-118,500	-12,040	-571,500	-184,800	-27,800	-1,100	-48,000
Calendar year 1957..... \$ -263,600												
Water year 1957-58..... \$ +32,800												

† Contents, in thousands of acre-feet, at end of month.

\* Change in contents, in acre-feet

Note.--Add 1,000.00 ft to obtain elevation above mean sea level.

1754. Thunder Creek below McAllister Creek, near Newhalem, Wash.

Location.--Lat 48°38', long 121°03', in SE<sup>1</sup> sec. 1, T. 36 N., R. 13 E. (unsurveyed), on right bank a quarter of a mile downstream from McAllister Creek, 4 miles upstream from mouth, and 10 miles east of Newhalem.

Drainage area.--95.7 sq mi.

Records available.--October 1957 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,700 ft (from river-profile map).

Extremes.--Maximum discharge during year, 4,980 cfs Oct. 30 (gage height, 8.06 ft); minimum daily, 115 cfs Mar. 19.

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

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

0.0	110	3.0	950
1.0	265	4.0	1,500
2.0	540	6.0	2,970

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	530	470	147	130	*149	*230	130	415	1,010	686	1,100	1,260
2	490	340	143	130	145	213	*136	487	1,040	788	1,000	575
3	330	280	140	125	143	198	135	536	1,140	933	896	415
4	270	250	140	125	140	186	130	484	1,400	1,280	706	372
5	230	220	135	125	135	180	130	493	1,670	1,640	779	424
6	200	200	140	125	130	168	130	596	1,820	1,510	975	563
7	185	185	140	125	130	159	130	820	1,610	1,580	1,140	742
8	175	170	193	125	130	150	142	1,020	1,370	1,520	918	856
9	165	160	178	130	130	145	145	1,000	1,370	1,390	846	900
10	155	150	166	130	135	141	147	936	*1,180	1,430	900	860
11	170	165	162	130	135	135	152	892	1,070	1,570	1,080	771
12	180	175	166	135	140	130	174	884	1,010	1,480	990	561
13	400	*259	152	135	140	125	221	547	1,060	1,100	887	562
14	310	205	150	140	140	125	257	540	1,070	985	900	606
15	220	178	143	220	135	120	255	666	1,100	1,090	1,010	508
16	180	162	142	350	142	120	253	856	1,330	1,330	1,020	815
17	160	152	*143	394	169	120	249	970	1,660	*1,600	928	882
18	150	147	146	305	193	120	241	1,050	1,880	1,670	985	644
19	140	142	146	251	215	115	252	1,430	2,060	1,460	918	1,200
20	135	135	150	222	208	120	358	1,450	2,110	1,220	1,050	600
21	130	130	146	201	201	125	325	1,760	2,110	1,370	1,200	520
22	125	135	138	188	236	125	288	2,050	2,140	1,510	1,240	380
23	125	360	135	188	267	125	261	2,060	2,160	1,270	*1,320	310
24	165	288	135	196	355	130	245	2,340	1,950	1,180	1,380	260
25	210	228	155	188	403	135	232	2,560	1,460	1,240	1,290	550
26	220	201	194	174	348	135	222	2,620	1,420	1,400	1,180	370
27	175	180	166	164	298	135	222	2,680	1,730	1,570	932	420
28	150	168	163	164	257	135	230	2,500	1,150	1,780	806	480
29	360	153	153	160	-	135	*255	1,700	788	1,740	860	400
30	2,200	150	146	160	-----	135	325	1,250	698	1,510	674	320
31	720	-----	135	156	-----	135	-----	1,040	-----	1,250	678	-----
Total	9,355	6,118	4,688	5,491	5,349	4,450	6,372	38,432	43,566	42,082	30,588	18,126
Mean	302	204	151	177	191	144	212	1,240	1,452	1,357	987	604
Cfsm	3.15	2.12	1.57	1.84	1.99	1.50	2.21	12.9	15.1	14.1	10.3	6.29
In.	3.62	2.37	1.82	2.13	2.07	1.72	2.47	14.89	16.88	16.30	11.85	7.02
Ac-ft	18,560	12,130	9,300	10,890	10,610	8,830	12,640	76,230	86,410	83,470	60,670	35,950

Calendar year 1957: Max - Min - Mean - Cfsm - In. - Ac-ft -  
 Water year 1957-58: Max 2,680 Min 115 Mean 588 Cfsm 6.12 In. 83.14 Ac-ft 425,700

Peak discharge (base, 2,200 cfs).--Oct. 30 (4:30 a.m.) 4,980 cfs (8.06 ft); May 27 (8 p.m.) 2,960 cfs (5.99 ft); June 22 (9 p.m.) 2,410 cfs (5.31 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1 to Nov. 12, Nov. 20-22, Dec. 3-7, 23-25, Dec. 31 to Jan. 14, Feb. 3-15, Mar. 11 to Apr. 7, Sept. 19-30; discharge estimated on basis of recorded maximum gage height, 1 discharge measurement, and records for station near Newhalem.

1755. Thunder Creek near Newhalem, Wash.

Location.--Lat 48°40'20", long 121°04'20", in SE<sup>1</sup> sec. 23, T. 37 N., R. 13 E. (unsurveyed), on right bank half a mile upstream from high-water line of Diablo Reservoir at elevation 1,205 ft, 8 miles east of Newhalem, and 20 miles northeast of Marblemount.

Drainage area.--110 sq mi (revised), approximately.

Records available.--October 1930 to September 1958. Published as "above Colonial Creek, near Marblemount" 1930-31.

Gage.--Water-stage recorder. Altitude of gage is 1,220 ft (from river-profile map).

Average discharge.--28 years, 615 cfs (445,200 acre-ft per year).

Extremes.--Maximum discharge during year, 4,060 cfs Oct. 30 (gage height, 8.57 ft); minimum, 140 cfs Mar. 19 (gage height, 2.25 ft).

1930-58: Maximum discharge, 10,800 cfs Oct. 25, 1955 (gage height, 12.68 ft), from rating curve extended above 2,900 cfs on basis of logarithmic plotting; minimum not determined, probably less than 50 cfs during periods of ice effect or no gage-height record in February 1936.

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

Revisions (water years).--WSP 1012: 1943. WSP 1286: 1931(M), 1932, 1933(M), 1935(M), 1938-39(M), 1941-42(M), 1944-46(M), 1950(M), 1952 (annual runoff in acre-feet).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-29

Oct. 30 to Sept. 30

2.3	142	2.2	133	4.0	620
2.5	176	2.5	181	6.0	1,680
3.0	281	3.0	285	8.0	3,410
3.5	419				
4.1	637				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	618	548	171	156	*190	290	161	516	1,160	794	1,210	1,330
2	571	407	164	154	185	*288	*164	800	1,190	908	1,110	672
3	394	337	162	151	178	249	164	652	1,250	1,050	1,020	463
4	319	295	161	153	171	236	161	604	1,440	1,360	816	414
5	276	260	156	151	166	228	159	620	1,670	1,670	870	480
6	240	240	159	150	161	214	159	720	1,810	1,530	1,090	628
7	226	220	162	150	161	205	159	940	1,640	1,590	1,250	834
8	209	201	210	151	161	194	166	1,200	1,440	1,590	1,050	955
9	195	194	205	153	162	185	169	1,190	1,450	1,460	965	995
10	*189	186	190	154	167	176	174	1,110	*1,310	1,490	1,020	930
11	203	199	186	154	166	171	178	1,040	1,210	1,620	1,190	870
12	211	214	190	158	169	164	201	820	1,150	1,550	1,100	644
13	475	253	176	156	171	159	251	672	1,200	1,240	1,010	628
14	437	*228	174	162	169	154	295	664	1,210	1,130	1,020	708
15	272	205	164	275	167	151	300	789	1,240	1,200	1,110	592
16	221	190	162	463	178	148	298	1,000	1,410	*1,400	1,140	898
17	197	178	164	536	205	145	298	1,130	1,670	1,610	1,060	985
18	180	174	*164	394	232	144	292	1,220	1,890	1,670	1,090	732
19	171	169	167	325	256	142	300	1,550	2,020	1,520	1,050	1,330
20	160	158	181	278	251	145	446	1,560	2,070	1,330	1,140	684
21	155	150	176	249	245	153	400	1,820	2,100	1,440	1,280	612
22	153	156	162	228	278	154	358	2,030	2,110	1,550	1,320	449
23	152	430	156	230	316	154	331	2,090	2,170	1,370	*1,370	370
24	201	331	156	245	414	159	308	2,310	1,980	1,280	1,440	315
25	265	258	185	232	498	167	292	2,550	1,520	1,350	1,370	655
26	272	230	253	216	428	167	275	2,630	1,480	1,460	1,300	442
27	213	205	214	203	370	166	272	2,740	1,740	1,610	1,060	491
28	178	194	203	205	322	167	278	2,520	1,280	1,770	925	564
29	436	179	190	203	-	164	*305	1,800	920	1,740	980	474
30	2,410	174	178	205	-----	169	585	1,390	816	1,540	780	382
31	830	-----	162	197	-----	162	-----	1,220	-----	1,310	803	-----
Total	11,029	7,163	5,503	6,855	6,537	5,550	7,699	41,697	45,536	44,130	33,939	20,524
Mean	356	239	178	220	233	179	257	1,345	1,518	1,424	1,095	684
Cfsm	3.24	2.17	1.62	2.00	2.12	1.63	2.34	12.2	13.8	12.9	9.95	6.22
In.	3.73	2.42	1.86	2.31	2.21	1.88	2.60	14.10	15.40	14.92	11.47	6.94
Ac-ft	21,880	14,210	10,920	13,560	12,970	11,010	15,270	82,700	90,320	87,530	67,320	40,710

Calendar year 1957: Max 2,410 Min 86 Mean 561 Cfsm 5.10 In. 69.23 Ac-ft 406,200  
 Water year 1957-58: Max 2,740 Min 142 Mean 647 Cfsm 5.88 In. 79.84 Ac-ft 468,400

Peak discharge (base, 2,400 cfs).--Oct. 30 (5:45 a.m.) 4,060 cfs (8.57 ft); May 27 (7:30 p.m.) 5,020 cfs (7.61 ft).

\* Discharge measurement made on this day.

1775. Stetattle Creek near Newhalem, Wash.

Location.--Lat 48°43'30", long 121°09'20", in NE $\frac{1}{4}$  sec. 6, T. 37 N., R. 13 E., on left bank three-quarters of a mile upstream from mouth,  $5\frac{1}{2}$  miles northeast of Newhalem, and  $18\frac{1}{2}$  miles northeast of Marblemount. Prior to Nov. 21, 1957, at site 600 ft upstream.

Drainage area.--21.4 sq mi.

Records available.--December 1913 to November 1915 (fragmentary), September 1933 to September 1958. Published as "near Marblemount" 1913-15.

Gage.--Water-stage recorder. Altitude of gage is 925 ft (by barometer). Dec. 19, 1913, to Nov. 14, 1915, staff gage at site half a mile downstream at different datum. Sept. 7 to Oct. 20, 1933, staff gage and Oct. 21, 1933, to Aug. 26, 1937, water-stage recorder, at site 150 ft upstream at datum 1.69 ft higher. Aug. 27, 1937, to Nov. 20, 1957, water-stage recorder at site 600 ft upstream at same datum.

Average discharge.--25 years (1933-58), 176 cfs (127,400 acre-ft per year).

Extremes.--Maximum discharge during year, 1,100 cfs Oct. 30 (gage height, 4.26 ft); minimum observed, 29 cfs Oct. 9 (gage height, 0.59 ft), but may have been less during period of no gage-height record Oct. 3-12.  
1913-15, 1933-58: Maximum discharge, 8,580 cfs Nov. 26, 1949 (gage height, 9.70 ft), from rating curve extended above 1,600 cfs on basis of slope-area measurement of peak flow; minimum, 9 cfs Nov. 9-11, 1936.

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

Revisions (water years).--WSP 1316: 1935(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

(Shifting-control method used July 14 to Sept. 30)

Oct. 1 to Nov. 21

Nov. 21 to Sept. 30

0.5	23	1.9	207	1.1	35	2.6	580
.9	56	2.5	370	1.5	88	3.3	660
1.3	102	3.5	730	2.0	185		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	84	119	63	66	101	124	80	264	324	149	96	192
2	109	88	55	60	91	106	82	279	325	192	88	104
3	70	74	79	83	86	83	82	294	352	219	80	67
4	55	66	73	80	82	84	*78	255	408	246	70	51
5	45	62	66	82	76	80	73	261	472	240	73	54
6	35	58	65	79	70	70	74	308	480	216	82	52
7	33	55	79	79	76	67	78	420	412	213	96	59
8	30	52	243	84	82	63	85	468	588	200	79	62
9	*29	50	171	86	91	62	84	408	*364	188	74	65
10	32	48	133	94	101	56	85	368	320	168	79	60
11	35	70	133	106	93	52	86	312	294	190	82	51
12	100	93	158	104	96	49	117	231	285	164	79	42
13	131	160	120	94	111	46	180	190	285	132	76	65
14	102	*130	113	106	106	44	198	234	282	122	74	65
15	80	98	94	363	98	43	176	328	297	*130	80	56
16	60	81	90	532	118	42	178	404	364	145	84	115
17	50	75	98	440	135	40	171	420	412	200	82	188
18	45	65	*101	255	190	40	178	440	420	190	85	190
19	43	55	94	180	243	44	195	512	432	162	82	540
20	42	48	118	141	202	56	288	484	420	145	82	228
21	41	*42	109	117	180	90	231	560	396	145	85	264
22	40	43	93	99	240	93	185	580	400	141	85	143
23	60	170	80	113	261	93	156	580	400	122	86	106
24	84	115	94	192	352	101	137	620	308	113	90	94
25	137	128	129	158	*332	108	124	636	246	117	*86	178
26	151	111	200	130	261	104	111	624	258	124	73	115
27	99	91	139	111	190	99	111	660	285	130	66	109
28	77	79	139	130	149	94	120	812	128	737	58	99
29	287	69	106	128		90	147	408	174	135	85	80
30	562	63	86	*135	-----	91	*205	320	147	118	84	60
31	187	-----	74	118	-----	85	-----	288	-----	104	116	-----
Total	2,935	2,458	3,590	4,525	4,213	2,309	4,095	12,768	10,181	5,013	2,537	3,554
Mean	94.7	81.9	109	146	150	74.5	136	412	339	162	81.8	118
Cfs/m	4.43	3.63	5.09	6.30	7.01	3.48	6.36	19.3	15.8	7.57	3.82	5.31
In.	5.10	4.27	5.89	7.86	7.32	4.01	7.12	22.13	17.69	8.71	4.41	6.18
Ac-ft	5,620	4,880	6,720	8,980	8,360	4,580	8,120	25,320	20,190	9,940	5,030	7,050
Calendar year 1957: Max	728											
Water year 1957-58: Max	660											
Min	19											
Mean	157											
Cfs/m	7.34											
In.	99.63											
Ac-ft	113,700											

Peak discharge (base, 1,100 cfs).--Oct. 30 (4:30 a.m.) 1,100 cfs (4.26 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1, 3-12, 15-23, Nov. 4-11, 16-20; discharge estimated on basis of 1 discharge measurement and records for Thunder Creek near Newhalem.

## 1780. Skagit River at Newhalem, Wash.

Location--Lat 48°40'20", long 121°14'45", in SE $\frac{1}{4}$  sec. 21, T. 37 N., R. 12 E., on right bank a quarter of a mile upstream from Newhalem Creek, half a mile downstream from city of Seattle powerplant at Newhalem, 11 miles upstream from Bacon Creek, and 13 miles northeast of Marblemount.

Drainage area--1,160 sq. mi., approximately, of which 400 sq. mi. is in Canada.

Records available--October 1908 to May 1914 and October 1920 to September 1958 in reports of Geological Survey. October 1908 to September 1953 (monthly discharge only), in State Water-Supply Bulletin 6. Published as "near Marblemount" 1908-14, 1920-31.

Gage--Water-stage recorder. Datum of gage is 401.5 ft above mean sea level (river-profile survey). Prior to May 24, 1914, staff gages at sites half a mile upstream at datum 91 ft higher. Nov. 15, 1920, to June 4, 1923, staff gage at site 500 ft upstream at same datum.

Average discharge--50 years (1908-58), 4,393 cfs (3,180,000 acre-ft per year), adjusted for storage in Diablo Reservoir since October 1929 and Ross Reservoir since March 1940.

Extremes--Maximum discharge during year, 7,930 cfs June 20 (gage height, 85.17 ft); minimum, 222 cfs Dec. 29 (gage height, 78.98 ft); minimum daily, 1,160 cfs Dec. 29.

1908-14, 1920-58: Maximum discharge, 63,500 cfs Nov. 29, 1909 (gage height, 22.0 ft, from floodmark, site and datum then in use); minimum, 54 cfs Nov. 1, 1943 (gage height, 78.15 ft); minimum daily, 136 cfs Aug. 24, 1930.

Remarks--Records excellent. Water is diverted 3 miles above station and is returned to river at Seattle powerplant just above station. Flow regulated for power at Gorge Dam since August 1924 and by Diablo and Ross Reservoirs (see p. 164, 149), having a combined capacity of 1,279,000 acre-ft.

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

Revisions (water years)--WSP 512: 1909-14. WSP 1012: 1929. WSP 1316: 1914(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

	Oct. 1-31	Nov. 1 to Sept. 30
	81.8	2,130
	83.0	3,610
	84.0	5,290
		80.7
		82.0
		83.0
		85.1
		1,150
		2,420
		3,730
		7,760

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,880	4,400	2,600	3,440	3,760	3,780	3,450	2,860	4,690	2,760	4,170	1,530
2	4,030	3,170	4,090	4,100	2,770	2,300	3,510	2,870	5,360	2,970	3,050	2,710
3	4,120	2,790	4,590	4,120	3,930	4,280	3,300	2,570	5,450	3,460	2,760	3,210
4	4,250	4,250	4,230	4,180	4,680	5,090	3,220	2,430	5,450	1,540	3,490	3,130
5	3,360	4,230	4,590	3,680	3,840	4,820	2,990	2,740	5,410	2,330	3,070	2,840
6	2,620	3,880	4,180	4,470	4,100	4,730	1,410	2,830	6,040	1,350	2,930	2,440
7	3,860	4,120	3,680	4,520	3,600	4,730	3,040	3,150	6,800	2,530	2,950	2,010
8	4,100	4,120	3,520	4,560	3,000	4,390	2,950	3,280	6,610	4,420	2,390	2,750
9	4,110	3,500	4,180	4,470	2,640	4,170	2,650	3,070	6,180	4,580	1,420	3,000
10	*3,610	2,620	4,060	4,370	3,550	4,180	2,660	1,850	5,800	5,530	1,190	2,860
11	3,700	3,610	3,990	4,120	3,960	4,660	2,550	1,530	5,760	4,960	2,570	2,880
12	2,930	*4,590	4,590	3,930	3,600	4,620	2,370	1,920	5,580	4,080	2,810	3,050
13	3,120	3,980	4,570	4,400	3,720	4,640	2,160	1,820	5,150	5,680	2,810	2,850
14	3,840	4,270	4,420	4,640	3,600	4,590	2,730	2,450	5,490	5,000	2,610	2,810
15	3,580	4,340	1,900	4,730	3,270	3,960	2,610	1,960	4,350	4,180	2,810	3,010
16	3,530	3,790	3,660	4,820	2,470	3,410	2,790	1,920	5,160	*4,150	2,650	3,350
17	3,800	3,520	4,540	4,750	3,800	4,250	2,850	1,780	5,400	4,140	2,010	3,440
18	3,970	4,060	4,220	4,560	3,990	4,440	2,950	1,860	5,680	3,180	3,160	3,440
19	2,270	4,230	4,520	4,390	4,230	4,230	2,160	3,730	6,860	3,140	2,870	5,130
20	2,140	4,390	4,520	4,570	4,040	4,150	2,460	3,800	7,110	3,620	3,210	4,720
21	3,040	4,510	4,460	4,340	3,910	4,180	2,950	4,130	7,530	5,130	3,010	3,600
22	3,460	4,390	3,470	4,420	3,330	3,080	2,790	4,650	6,550	4,250	2,880	4,500
23	3,850	4,220	4,170	4,070	2,730	2,100	2,700	4,630	5,680	2,800	2,800	3,720
24	3,620	3,060	4,140	4,220	4,230	4,180	2,870	4,830	5,070	4,150	3,740	3,660
25	3,460	3,930	3,400	4,760	4,570	4,270	2,520	4,600	5,530	4,100	4,080	3,670
26	2,740	4,170	4,230	4,420	4,960	4,390	2,460	5,020	5,240	3,720	4,120	3,280
27	2,150	4,180	4,320	4,840	4,980	3,940	2,300	5,600	5,030	3,340	3,380	2,260
28	3,720	3,720	4,170	*5,030	4,390	3,660	2,510	5,820	4,250	3,930	2,700	1,330
29	3,980	3,780	1,160	4,680	-	*3,290	2,500	5,820	3,080	3,990	2,980	2,850
30	4,590	3,670	4,300	5,020	-----	2,300	2,700	5,620	4,370	4,230	2,080	3,380
31	4,950	-----	4,440	4,620	-----	4,010	-----	5,680	-----	4,580	1,550	-----
Total	110,370	117,290	121,810	136,400	105,810	124,820	81,310	106,600	167,250	119,140	88,450	93,390
Mean	3,560	3,810	3,923	4,398	3,779	4,026	2,710	3,439	5,375	3,843	2,853	3,113
Ac-ft	218,900	232,600	241,600	270,500	209,900	247,600	161,300	211,400	331,700	236,300	175,400	185,200
(+)	-123,700	-144,900	-135,600	-128,000	-66,460	-120,700	+15,090	+563,100	+175,900	+40,550	-1,300	-43,240

Adjusted for change in reservoir contents

	Mean	1,548	1,474	1,724	2,318	2,582	2,064	2,965	12,690	8,531	4,502	2,831	2,386
Cfsm	1.33	1.27	1.49	2.00	2.23	1.78	2.58	10.9	7.35	3.843	2.44	2.06	2.30
In.	1.54	1.42	1.71	2.30	2.32	2.05	2.85	12.62	8.20	4.47	2.81	2.30	2.30
Ac-ft	95,200	87,700	106,000	142,500	143,400	126,900	176,400	780,500	507,600	276,800	174,100	142,000	142,000

Observed

Calendar year 1957: Max	9,770	Min	1,160	Mean	4,510	Ac-ft	3,120,000
Water year 1957-58: Max	7,710	Min	1,160	Mean	3,761	Ac-ft	2,722,000

Adjusted

Calendar year 1957: Mean	3,942	Cfsm	3.40	In.	46.15	Ac-ft	2,854,000
Water year 1957-58: Mean	3,811	Cfsm	3.29	In.	44.59	Ac-ft	2,759,000

\* Discharge measurement made on this day.

† Change in contents, in acre-feet, in Ross and Diablo Reservoirs.

1790. Skagit River above Alma Creek, near Marblemount, Wash.

Location.--Lat 43°36'25", long 121°21'35", in NE¼ sec. 15, T. 36 N., R. 11 E., on right bank three-quarters of a mile upstream from Alma Creek and 7 miles north of Marblemount.

Drainage area.--1,260 sq mi, approximately, of which 400 sq mi is in Canada.

Records available.--October 1950 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 358.8 ft above mean sea level (from river-profile survey).

Average discharge.--8 years, 5,603 cfs (4,056,000 acre-ft per year).

Extremes.--Maximum discharge during year, 10,100 cfs June 20 (gage height, 9.10 ft); minimum, 990 cfs Dec. 29 (gage height, 4.55 ft); minimum daily, 1,480 cfs Aug. 10. 1950-58: Maximum discharge, 29,400 cfs Oct. 25, 1955 (gage height, 14.64 ft); minimum, that of Dec. 29, 1957; minimum daily, 1,360 cfs Mar. 18, 1956.

Remarks.--Records excellent. All diversions returned to river above gage. Flow partly regulated by powerplants on upper Skagit River and by Ross and Diablo Reservoirs (see p. 149, 164).

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,420	5,120	2,990	4,130	4,690	4,600	3,930	3,750	6,310	3,690	4,640	2,250
2	4,680	3,790	4,560	4,650	3,400	3,170	4,000	3,800	6,750	3,700	3,580	3,000
3	4,720	3,270	4,860	4,750	4,520	4,700	3,690	3,670	6,960	4,370	3,170	3,570
4	4,800	4,600	4,840	4,480	5,280	5,700	*3,640	3,350	7,240	2,540	3,930	3,430
5	3,980	4,820	4,840	4,420	4,660	5,410	3,530	3,670	7,340	3,270	3,440	3,160
6	3,100	4,240	4,640	5,100	4,750	5,280	1,940	3,890	7,940	2,400	3,320	2,830
7	4,000	4,510	4,220	5,250	4,270	5,290	3,320	4,590	8,790	3,270	3,390	2,260
8	4,590	4,540	4,450	5,280	3,570	4,910	3,420	5,020	8,250	5,240	2,740	2,980
9	4,590	3,880	4,920	5,140	3,500	4,690	3,060	4,730	7,880	5,450	1,760	3,350
10	4,150	3,070	4,850	5,090	4,080	4,620	3,080	3,550	7,180	6,470	1,480	3,180
11	4,140	3,820	4,580	4,890	4,590	5,130	2,970	2,830	*7,060	5,880	2,700	3,230
12	*3,230	5,090	5,190	4,780	4,530	5,050	2,860	2,920	6,850	4,870	3,130	3,310
13	3,810	4,930	5,270	5,070	4,320	5,060	2,820	2,610	6,330	6,460	3,130	3,140
14	4,260	5,110	5,100	5,380	4,270	4,980	3,340	3,110	6,670	5,860	3,070	3,160
15	4,180	*4,990	2,480	6,480	3,960	4,370	3,490	3,120	5,630	*4,880	3,170	3,340
16	3,900	4,300	*3,910	7,300	3,180	3,860	3,580	3,300	6,500	4,850	2,990	3,930
17	4,180	4,080	5,000	7,230	4,450	4,340	3,650	3,300	6,970	4,880	2,270	4,250
18	4,360	4,560	4,840	6,160	5,050	4,800	3,770	3,530	7,350	3,950	3,490	4,080
19	2,700	4,740	5,020	4,860	5,640	4,680	3,060	5,700	8,660	3,890	3,200	7,020
20	*2,390	4,810	5,300	5,630	5,130	4,550	3,710	5,720	9,590	4,060	3,510	5,870
21	3,320	4,930	5,200	5,280	4,890	4,610	4,050	6,220	9,380	5,770	3,380	4,780
22	3,870	4,800	4,220	5,270	4,530	5,840	5,750	7,220	8,350	4,900	3,230	5,210
23	4,320	4,950	4,720	4,950	3,920	2,520	3,510	7,170	7,280	4,840	3,140	4,470
24	4,230	3,750	4,860	5,460	5,860	4,500	3,590	7,560	6,540	4,740	4,050	4,270
25	4,160	4,500	4,290	5,680	*6,240	4,720	3,180	7,420	6,630	4,650	4,440	4,640
26	3,400	4,830	5,480	5,360	6,310	4,900	3,070	7,830	6,330	4,490	*4,540	4,010
27	2,670	4,740	5,280	5,640	6,150	4,490	2,870	8,350	6,300	3,910	3,820	2,790
28	4,080	4,260	5,160	5,890	5,330	4,140	*3,050	8,500	5,280	4,450	3,060	1,890
29	4,790	4,280	1,900	*5,550	-	3,700	3,090	7,380	4,010	4,610	3,360	3,290
30	7,030	4,120	5,010	5,820	-----	2,780	3,410	7,130	4,930	4,680	2,440	3,910
31	5,870	-----	5,100	5,500	-----	4,390	-----	7,110	-----	4,970	1,850	-----
Total	127,920	133,430	143,080	167,070	130,870	139,780	100,330	158,050	211,280	141,990	99,420	110,600
Mean	4,126	4,448	4,615	5,389	4,674	4,509	3,344	5,098	7,043	4,580	3,207	3,697
Ac-ft	253,700	264,700	283,800	331,400	259,600	277,200	199,000	313,500	419,100	281,600	197,200	219,400
Calendar year 1957: Max	11,500			Min	1,450	Mean	5,078	Ac-ft	3,676,000			
Water year 1957-58: Max	9,590			Min	1,480	Mean	4,558	Ac-ft	3,300,000			

\* Discharge measurement made on this day.



1825. Cascade River at Marblemount, Wash.

Location.--Lat 48°31'25", long 121°23'00", in N $\frac{1}{2}$  sec. 16, T. 35 N., R. 11 E., on right bank  $1\frac{1}{2}$  miles downstream from Boulder Creek, 2 miles east of Marblemount, and  $2\frac{1}{2}$  miles upstream from mouth.

Drainage area.--171 sq mi.

Records available.--September 1928 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 380.3 ft above mean sea level (river-profile survey). Prior to Oct. 10, 1928, staff gage at same site at datum 0.76 ft higher.

Average discharge.--30 years, 1,001 cfs (724,700 acre-ft per year).

Extremes.--Maximum discharge during year, 5,060 cfs Oct. 30 (gage height, 6.89 ft); minimum, 230 cfs Oct. 12, 13; minimum gage height, 1.68 ft Oct. 21, 22.  
1928-58: Maximum discharge, 17,800 cfs Nov. 27, 1949 (gage height, 11.47 ft), from rating curve extended above 5,000 cfs by logarithmic plotting; minimum, 118 cfs Nov. 30, 1952; minimum gage height, 1.11 ft Feb. 8, 1937.

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

Revisions (water years).--WSP 832: 1936. WSP 1286: Drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-13

Oct. 13 to Sept. 30

1.7	220	1.7	250	4.0	1,330
2.0	305	2.0	335	5.0	2,220
2.5	485	2.5	520	6.2	3,840
		3.0	740		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	457	865	405	512	614	795	402	992	1,780	958	800	1,000
2	561	677	408	449	582	731	416	1,120	1,780	1,020	750	618
3	445	574	426	464	560	668	402	1,200	1,800	1,120	731	472
4	370	512	412	488	532	623	388	1,090	2,120	1,240	632	398
5	326	468	394	524	508	610	*374	1,120	2,460	1,590	628	388
6	305	430	408	560	496	564	370	1,230	2,620	1,390	672	426
7	293	394	419	605	492	536	374	1,690	2,520	1,330	765	512
8	281	366	544	610	495	504	394	2,070	1,950	1,290	685	560
9	253	342	540	587	530	480	398	1,990	1,910	1,180	659	610
10	245	332	520	614	544	452	422	1,910	1,730	1,170	672	598
11	*240	402	540	610	512	436	416	1,880	*1,710	1,200	726	626
12	235	512	574	587	520	419	468	1,400	1,580	1,200	718	472
13	456	765	512	556	569	405	600	1,120	1,510	1,070	672	544
14	578	664	516	632	544	391	677	1,120	1,490	920	654	650
15	388	*569	468	1,040	516	380	677	1,340	1,540	902	664	544
16	338	492	460	1,620	548	370	770	1,770	1,800	974	664	722
17	305	444	484	1,950	578	356	820	1,970	2,030	1,070	623	986
18	281	422	504	1,320	795	349	825	2,150	2,150	*1,090	646	805
19	270	405	*524	1,060	932	356	860	2,520	2,210	1,050	654	1,690
20	*255	370	632	902	845	370	1,260	2,390	2,220	950	668	1,110
21	250	342	578	805	780	436	1,160	2,870	2,140	926	726	1,090
22	250	342	516	726	896	448	1,030	3,300	2,070	974	750	880
23	268	609	488	770	992	440	896	3,250	2,030	908	775	690
24	408	574	500	962	1,410	448	820	3,500	1,950	855	790	578
25	492	492	666	825	1,500	464	750	3,760	1,540	860	775	1,100
26	528	480	1,080	736	1,230	456	700	3,700	1,450	802	745	770
27	422	444	795	677	1,680	436	668	1,930	1,850	974	664	770
28	366	436	770	718	*890	436	*668	3,310	1,740	1,060	677	713
29	558	405	700	*695	-	422	704	2,300	1,250	1,050	695	654
30	3,040	398	618	718	-----	440	830	1,920	1,050	956	587	544
31	1,320	-----	556	659	-----	416	-----	1,780	-----	860	544	-----
Total	14,794	14,527	16,957	24,012	20,401	14,637	19,539	65,442	56,040	33,018	21,421	21,520
Mean	477	444	547	775	728	478	611	1,868	1,685	1,065	691	717
Cfs/m	2.79	2.83	3.20	4.53	4.26	2.76	3.81	12.3	10.9	6.23	4.04	4.19
In.	3.22	3.16	3.69	5.22	4.44	3.18	4.25	14.23	12.19	7.18	4.66	4.68
Ac-ft	29,340	28,810	33,630	47,630	40,460	29,030	38,760	129,800	111,200	65,490	42,490	42,680

Calendar year 1957: Max 3,460 Min 212 Mean 880 Cfs/m 5.15 In. 69.86 Ac-ft 637,100

Water year 1957-58: Max 3,760 Min 235 Mean 883 Cfs/m 5.16 In. 70.10 Ac-ft 639,300

Peak discharge (base, 3,600 cfs).--Oct. 30 (6:30 a.m.), 5,060 cfs (6.89 ft); May 24 (10:30 p.m.) 4,380 cfs (6.52 ft).

\* Discharge measurement made on this day.

1860. Sauk River above Whitechuck River, near Darrington, Wash.

Location.--Lat 48°10'00", long 121°27'45". in NW¼ sec. 24, T. 31 N., R. 10 E., on right bank half a mile upstream from Whitechuck River and 9½ miles southeast of Darrington.

Drainage area.--152 sq mi.

Records available.--August to November 1910 (fragmentary gage heights only), October 1917 to September 1922, August 1928 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 930 ft (from river-profile map). Prior to Nov. 18, 1910, staff gage three-eighths of a mile downstream at different datum.

Average discharge.--35 years (1917-22, 1928-58), 1,122 cfs (812,300 acre-ft per year).

Extremes.--Maximum discharge during year, 4,440 cfs May 26 (gage height, 6.19 ft); minimum, 181 cfs Oct. 12, 13, 22 (gage height, 2.16 ft).  
1917-22, 1928-58: Maximum discharge, 30,200 cfs Nov. 27, 1949 (gage height, 14.90 ft, in gage well), from rating curve extended above 15,000 cfs; minimum, 115 cfs Nov. 15, 16, 30, Dec. 1, 1936.

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

Revisions (water years).--WSP 752: 1932. WSP 1286: 1918(M), 1920(M), 1921, 1922(M), 1932(M), 1934(M), 1946-47(M), 1949.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

2.1	161	4.0	1,400
2.5	312	5.0	2,550
3.0	575	6.0	4,100

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	280	1,140	515	682	833	1,070	527	1,200	2,090	873	412	434
2	300	817	569	627	748	937	557	1,380	1,960	970	387	321
3	350	647	569	620	696	833	539	1,470	1,940	1,050	382	278
4	300	539	545	620	640	740	504	1,400	*2,350	1,320	363	234
5	260	476	498	650	608	740	476	1,500	2,370	1,230	*330	219
6	240	428	654	660	601	668	471	1,680	2,470	1,060	340	219
7	*223	387	785	700	582	627	471	2,070	2,280	979	368	230
8	212	353	1,470	750	601	575	521	2,470	1,930	921	340	246
9	198	330	1,120	800	654	551	551	2,420	1,920	849	321	253
10	191	317	889	900	801	510	601	2,320	1,780	801	317	*242
11	184	545	881	950	740	488	594	2,220	1,640	809	335	242
12	181	962	945	900	718	466	627	1,780	1,530	785	330	212
13	288	1,480	801	850	897	449	793	1,480	1,480	703	317	205
14	439	1,210	817	950	849	*428	954	1,430	1,510	614	303	253
15	312	889	703	1,700	778	407	1,110	1,700	1,590	582	303	312
16	269	703	668	2,500	825	402	1,330	2,100	1,730	588	303	327
17	246	594	762	3,000	793	387	1,420	2,340	1,930	634	295	809
18	226	521	809	2,000	1,020	387	1,360	2,550	2,000	661	299	668
19	208	498	962	1,500	1,290	392	1,430	3,030	2,030	634	295	1,770
20	194	444	1,190	1,200	1,160	402	2,620	2,960	2,010	582	290	1,060
21	184	402	982	1,000	1,010	504	2,110	3,180	1,940	563	308	801
22	191	378	785	1,950	1,160	545	1,750	3,660	1,850	569	312	778
23	230	397	718	1,100	1,350	575	*1,440	3,740	1,760	545	312	627
24	368	*444	785	1,700	1,930	620	1,220	3,710	1,590	510	317	504
25	527	471	1,750	1,200	2,300	675	1,070	4,070	1,240	488	312	961
26	563	539	1,880	1,100	1,880	668	962	4,070	1,240	482	299	696
27	476	488	1,310	950	1,480	614	873	4,000	1,750	498	286	575
28	387	533	1,490	1,000	1,230	608	841	5,510	1,650	527	312	504
29	439	456	1,030	*1,030	-	575	873	2,830	1,170	521	353	439
30	2,870	439	905	1,080	-----	594	1,010	2,220	979	482	321	382
31	1,890	-----	770	970	-----	551	-----	2,090	-----	444	278	-----
Total	13,226	17,837	28,657	34,639	28,174	17,988	29,605	76,380	53,519	22,074	10,040	14,801
Mean	427	595	924	1,117	1,006	580	987	2,464	1,784	712	324	493
Cfs/m	2.81	3.91	6.08	7.35	6.62	3.82	6.49	16.2	11.7	4.68	2.13	3.24
In.	3.24	4.56	7.01	8.10	6.89	4.40	7.24	18.9	13.09	5.40	2.46	3.82
Ac-ft	26,230	35,360	56,840	68,710	55,880	35,680	58,720	151,500	106,200	43,780	19,910	29,360

Calendar year 1957: Max 4,230 Min 181 Mean 955 Cfs/m 6.28 In. 85.32 Ac-ft 691,600  
Water year 1957-58: Max 4,070 Min 181 Mean 951 Cfs/m 6.26 In. 84.88 Ac-ft 688,200

Peak discharge (base, 4,000 cfs).--Probably Jan. 17 (time and discharge unknown); May 26 (12:30 a.m.), 4,440 cfs (6.19 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-6, Jan. 3-28; discharge estimated on basis of records for station near Sauk and nearby stations.

1895. Sauk River near Sauk, Wash.

Location.--Lat 48°25'15", long 121°34'00", in NW<sup>1</sup> sec. 19, T. 34 N., R. 10 E., on left bank 5 miles upstream from mouth, 5 miles southeast of Sauk, and 8 miles downstream from Suiattle River.

Drainage area.--714 sq mi.

Records available.--August to October 1910 (fragmentary gage heights), March 1911 to August 1912, July 1928 to September 1958. Published as "near Suiattle Crossing, near Sauk" 1910-12.

Gage.--Water-stage recorder. Datum of gage is 266 ft above mean sea level (river-profile survey). Prior to Aug. 4, 1912, staff or chain gages at several sites from 1 mile downstream to 5 miles upstream from present site at various datums.

Average discharge.--30 years (1928-58), 4,241 cfs (3,070,000 acre-ft per year).

Extremes.--Maximum discharge during year, 14,600 cfs May 26 (gage height, 7.94 ft); minimum, 903 cfs Oct. 22 (gage height, 2.78 ft).  
1910-12, 1928-58: Maximum discharge, 82,400 cfs Nov. 27, 1949 (gage height, 16.93 ft); minimum, 572 cfs Dec. 5, 1929, but may have been less during period of ice effect Jan. 10-27, 1930.

Remarks.--Records good except those for period Oct. 1 to Dec. 31 and those for period of no gage-height record, which are fair. No regulation. Probably some small diversions for domestic use.

Revisions (water years).--WSP 1286: 1929, 1937, 1939.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 18 to Dec. 25)

2.6	840	6.0	7,600
3.5	1,900	8.0	15,100
4.5	3,650		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,390	3,610	1,650	2,820	3,570	3,870	2,110	3,870	7,690	3,590	2,240	1,940
2	1,530	2,700	2,050	2,600	3,200	3,440	2,130	4,310	7,090	3,400	2,260	1,650
3	1,650	2,250	2,020	2,470	3,030	3,130	2,150	4,740	6,800	3,760	2,160	1,440
4	1,390	1,940	1,990	2,450	2,910	2,940	2,040	4,570	7,180	3,760	2,070	1,300
5	1,270	1,760	1,800	2,480	2,730	2,870	1,960	4,670	8,100	4,350	1,960	1,210
6	1,160	1,610	1,920	2,560	2,750	2,750	1,890	4,970	8,980	4,380	1,900	1,300
7	1,140	1,470	2,600	2,750	2,670	2,590	1,870	6,030	9,080	4,150	1,980	1,470
8	1,120	1,390	3,280	2,820	2,770	2,470	1,990	7,450	7,890	4,120	2,040	1,500
9	1,050	1,290	3,260	2,940	2,910	2,370	2,100	7,820	7,180	3,850	1,980	1,540
10	1,020	1,240	2,700	3,260	3,380	2,260	2,180	7,450	6,770	3,610	1,920	1,560
11	1,000	1,660	2,500	3,650	3,140	2,160	2,210	7,480	6,340	3,570	1,900	1,580
12	980	2,920	3,000	3,340	3,030	2,080	2,230	6,420	6,110	3,610	1,900	1,560
13	1,180	4,770	2,510	3,160	3,760	2,020	2,630	5,150	5,640	3,420	1,890	1,440
14	1,920	*3,940	2,530	3,440	3,610	1,990	3,050	4,640	5,540	3,050	1,780	1,370
15	1,420	2,890	*2,320	6,500	3,240	1,930	3,380	5,020	5,700	2,850	1,800	a1,500
16	1,230	2,340	2,230	9,020	3,520	1,870	4,350	6,250	6,030	2,800	1,860	a1,700
17	1,140	2,040	2,530	11,200	3,480	1,840	4,450	7,300	6,830	2,940	1,760	a3,000
18	1,040	1,830	2,840	7,450	4,430	1,840	4,870	7,910	7,450	*3,050	1,790	a2,500
19	1,010	1,730	3,210	5,670	5,100	1,870	4,350	9,190	7,540	3,050	1,720	a6,000
20	950	1,580	4,450	4,670	4,430	1,980	7,570	9,460	7,630	2,920	1,750	a5,000
21	921	1,440	3,780	3,960	3,890	2,340	6,800	10,100	7,480	2,780	*1,800	a3,500
22	950	1,390	3,030	3,500	4,390	2,550	5,670	11,800	7,240	2,800	1,990	a3,000
23	1,120	1,480	2,730	3,610	4,720	2,470	*4,800	12,400	6,940	2,800	1,900	a2,800
24	1,820	1,750	2,920	6,510	6,060	2,450	4,510	12,500	6,740	2,680	1,890	a2,000
25	2,040	1,660	4,600	5,000	7,480	2,580	3,800	13,700	5,750	2,620	1,860	a2,500
26	2,210	1,790	8,610	4,100	6,540	2,530	3,480	14,000	4,940	2,560	1,890	a2,200
27	1,790	1,720	5,280	3,570	5,280	2,390	3,200	13,900	5,780	2,530	1,730	a2,000
28	1,480	1,820	5,360	4,170	4,450	2,320	3,090	*12,500	6,620	2,560	1,690	a1,800
29	1,420	1,650	4,940	4,330	-	2,310	3,070	10,200	5,230	2,560	1,730	a1,600
30	7,950	1,560	8,830	4,450	-----	2,320	3,340	8,550	4,150	2,510	1,660	a1,500
31	6,540	-----	3,140	4,080	-----	2,240	-----	7,790	-----	2,430	1,530	-----
Total	52,811	61,190	99,610	132,510	110,460	74,760	101,070	252,140	99,060	58,330	63,460	-----
Mean	1,704	2,040	3,213	4,275	3,945	2,412	3,369	8,134	6,741	3,195	1,882	2,115
Cfs/m	2.39	2.86	4.50	5.99	5.53	3.38	4.72	11.4	9.44	4.47	2.64	2.96
In.	2.75	3.19	5.19	6.90	5.75	3.89	5.26	13.13	10.53	5.16	3.04	3.31
Ac-ft	104,700	121,400	197,600	262,800	219,100	148,300	200,500	500,100	401,100	196,500	115,700	125,900
Calendar year 1957: Max	16,000	Min	921	Mean	3,752	Cfs/m	5.25	In.	71.34	Ac-ft	2,716,000	-----
Water year 1957-58: Max	14,000	Min	921	Mean	3,583	Cfs/m	5.02	In.	68.10	Ac-ft	2,594,000	-----

Peak discharge (base, 13,000 cfs).--May 26 (7 to 8 a.m.) 14,600 cfs (7.94 ft).

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for station above Whitechuck River near Darrington and other nearby stations.

## SKAGIT RIVER BASIN

1915. Baker River below Anderson Creek, near Concrete, Wash.

Location.--Lat 48°39'50", long 121°40'25", in SE $\frac{1}{4}$  sec. 30, T. 37 N., R. 9 E., on right bank 100 ft downstream from Anderson Creek and 9 $\frac{1}{2}$  miles northeast of Concrete.

Drainage area.--211 sq mi.

Records available.--September 1910 to October 1925, August 1928 to November 1931, January 1955 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 521 ft above mean sea level (river-profile survey). Prior to Oct. 22, 1910, staff gage at site an eighth of a mile upstream at different datum. Oct. 22, 1910, to Oct. 3, 1925, Aug. 30, 1928, to Nov. 11, 1931, staff gages and water-stage recorder at site 250 ft downstream at different datum.

Average discharge.--21 years, 1,992 cfs (1,442,000 acre-ft per year).

Extremes.--Maximum discharge during year, 7,710 cfs Jan. 16 (gage height, 9.80 ft); minimum, 460 cfs Oct. 22; minimum gage height, 3.69 ft Nov. 9, 10.

1910-25, 1928-31, 1955-58: Maximum discharge, 36,800 cfs Dec. 29, 1917 (gage height, 13.7 ft, site and datum then in use), from rating curve extended above 8,100 cfs; minimum recorded, 219 cfs Dec. 15, 16, 1919.

Flood in about 1815 reached a stage about 2 ft higher than that of Dec. 29, 1917.

Flood in 1897 reached a stage about equal to that of Dec. 29, 1917. Flood in November 1909 reached a stage 1.6 ft higher than that of Dec. 29, 1917 (discharge, 46,200 cfs).

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

Revisions (water years).--WSP 1346: 1912-13(M), 1924, drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 4 to Nov. 8, Apr. 12-15, July 9-12)

Oct. 1 to Apr. 15		Apr. 16 to Sept. 30	
3.2	460	4.1	715
4.0	800	5.0	1,210
5.0	1,400	7.0	2,830
7.0	3,290	9.0	5,480
9.0	6,200		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a850	1,680	894	1,120	1,450	1,630	861	1,610	2,680	1,390	1,260	1,620
2	a800	1,210	944	1,070	1,510	1,410	872	1,760	2,640	1,530	1,180	1,170
3	a750	993	1,180	1,155	1,250	1,260	856	1,990	*2,670	1,780	1,060	926
4	898	861	1,180	1,420	1,170	1,140	810	1,390	3,050	2,100	959	830
5	642	780	1,060	1,410	1,130	1,130	790	1,940	3,380	2,250	970	800
6	578	*710	1,060	1,440	1,110	1,020	770	1,990	3,590	2,200	1,030	855
7	590	660	1,060	1,480	1,250	960	780	2,450	3,490	2,150	1,160	932
8	526	628	1,530	1,570	1,410	910	820	2,920	2,820	2,080	1,070	948
9	512	614	1,600	1,600	1,630	861	845	2,940	2,770	1,910	1,020	1,010
10	509	664	1,420	1,920	1,660	810	905	2,710	2,550	*1,870	1,060	981
11	523	872	1,470	2,010	1,480	775	845	2,440	2,410	1,850	1,130	937
12	520	1,440	1,920	1,940	1,660	*755	958	1,960	2,280	1,740	1,100	830
13	1,040	2,220	1,600	1,650	1,810	730	1,260	1,570	2,240	1,530	1,040	820
14	1,150	*1,970	1,480	2,030	1,560	715	1,510	1,600	2,230	1,440	1,050	825
15	872	1,530	1,280	3,260	1,420	700	1,530	2,000	2,380	1,480	1,080	810
16	720	1,240	*1,240	5,120	1,710	686	*1,620	2,570	2,760	1,620	1,090	1,260
17	628	1,050	1,510	5,630	1,880	678	1,620	2,850	3,270	1,770	1,060	1,780
18	570	949	1,560	3,540	3,500	678	1,620	3,030	3,430	1,810	1,040	*1,620
19	534	872	1,480	2,280	3,670	755	1,770	3,590	3,550	1,680	1,030	a4,000
20	509	790	1,560	1,940	2,880	932	2,220	3,600	3,510	1,560	1,100	2,560
21		*484	765	1,460	1,640	2,370	1,270	2,050	3,980	3,430	1,520	1,950
22	464	745	1,470	1,450	2,350	1,260	1,780	2,540	3,390	1,580	1,200	1,470
23	650	938	1,210	2,150	2,710	1,240	1,490	4,550	3,340	1,490	1,280	1,020
24	1,840	988	1,230	3,180	3,840	1,230	1,310	4,600	3,000	1,410	1,360	860
25	1,790	1,040	1,910	2,480	4,240	1,210	1,150	5,010	2,400	1,430	1,340	1,190
26	2,210	1,100	3,270	1,950	3,360	1,150	1,040	4,980	2,310	1,520	*1,170	986
27	1,390	1,030	2,230	*1,700	2,480	1,080	976	4,900	2,820	1,680	1,020	915
28	1,030	1,000	2,010	2,010	1,940	1,020	981	4,820	2,380	1,750	1,050	876
29	1,550	905	1,720	1,930	3,660	1,060	965	4,460	1,840	1,720	1,040	805
30	5,340	850	1,420	1,960	-----	971	1,310	2,890	1,500	1,520	959	738
31	2,880	-----	1,220	1,670	-----	905	-----	2,700	-----	1,350	954	-----
Total	33,147	31,094	45,998	65,910	58,610	30,837	36,389	93,980	84,110	52,710	33,966	36,124
Mean	1,069	1,036	1,484	2,126	2,093	995	1,213	3,032	2,804	1,700	1,096	1,204
Cfs/m	5.07	4.91	7.03	10.1	9.92	4.72	5.75	14.4	13.3	8.05	5.19	5.71
In.	5.84	5.48	8.11	11.92	10.33	3.66	6.41	15.86	14.82	9.29	5.99	6.37
Ac-ft	65,750	61,670	91,240	130,700	116,500	61,160	72,180	186,400	166,600	104,500	67,370	71,650

Calendar year 1957: Max 6,500 Min 350 Mean 1,669 Cfs/m 7.91 In. 107.41 Ac-ft 1,209,000  
Water year 1957-58: Max 5,630 Min 464 Mean 1,652 Cfs/m 7.83 In. 106.26 Ac-ft 1,196,000

Peak discharge (base, 7,200 cfs)--Jan. 16 (9:30 p.m.) 7,710 cfs (9.80 ft).

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for nearby stations.

1935. Baker River at Concrete, Wash.

Location.--Lat 48°32'35", long 121°44'35", on line between secs. 10 and 11, T. 35 N., R. 8 E., on left bank 800 ft downstream from Baker River powerplant, a quarter of a mile northeast of Concrete, and three-quarters of a mile upstream from mouth.

Drainage area.--297 sq mi.

Records available.--September 1910 to March 1915, September 1943 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 172.6 ft above mean sea level (from river-profile survey). Prior to Mar. 5, 1915, staff gage at site half a mile downstream at different datum.

Average discharge.--19 years (1910-14, 1943-58), 2,581 cfs (1,869,000 acre-ft per year), adjusted for storage.

Extremes.--Maximum discharge during year, 11,400 cfs Jan. 17 (gage height, 9.55 ft); minimum daily, 114 cfs Apr. 15-22, 30, May 1.

1910-15, 1943-58: Maximum discharge, 35,200 cfs Nov. 27, 1949 (gage height, 20.32 ft, from high-water mark), from rating curve extended above 16,000 cfs on basis of computation of peak flow over dam and through the powerplant by Puget Sound Power and Light Co.; minimum, 21 cfs Feb. 7, 1949 (gage height, 0.20 ft); minimum daily, 55 cfs Feb. 17, 1957.

Remarks.--Records good. No diversions which are not returned to river above gage. Flow regulated by Baker River powerplant and Lake Shannon (see p. 164).

Revisions (water years).--WSP 1286: 1911-13(M), 1945-46, drainage area.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,380	1,900	642	2,540	2,360	2,420	2,140	114	4,580	1,980	1,830	1,910
2	854	1,690	1,690	2,540	1,910	1,730	2,100	1,780	3,650	1,980	1,706	1,860
3	988	1,380	1,690	2,510	2,020	1,790	2,040	3,130	*3,820	2,080	1,350	1,720
4	1,380	1,870	1,700	2,520	1,950	1,810	2,270	3,260	3,970	2,100	1,760	1,480
5	848	1,890	1,540	2,510	2,300	1,800	1,960	3,260	4,590	2,910	1,770	1,360
6	464	*1,880	1,670	2,510	2,000	1,820	1,980	2,690	5,090	2,900	1,470	620
7	1,400	1,570	1,440	2,500	2,050	1,900	2,000	4,230	5,370	2,800	1,240	379
8	1,390	1,840	472	2,500	1,920	1,950	2,060	5,110	3,690	2,530	1,220	1,280
9	1,380	1,670	1,640	2,480	1,800	1,770	2,040	4,700	4,540	2,440	1,180	1,600
10	1,390	1,280	1,610	2,490	1,800	1,780	2,050	3,300	3,460	2,540	644	1,660
11	1,410	1,560	1,550	2,490	1,800	1,630	2,010	4,190	*2,490	*2,330	1,230	1,270
12	472	1,830	1,520	2,480	1,770	1,870	1,630	2,340	2,240	2,450	1,200	1,320
13	476	1,930	1,580	*2,490	2,735	1,860	1,630	2,400	3,650	1,960	1,260	1,210
14	1,800	2,040	930	2,050	1,940	1,880	115	1,730	3,330	2,060	1,370	1,100
15	1,960	2,000	812	*2,480	2,040	2,060	114	2,610	3,540	2,080	1,300	1,240
16	2,120	1,800	1,600	2,580	2,110	1,890	114	3,320	3,570	2,190	1,090	1,590
17	1,490	1,500	1,570	2,780	2,680	1,910	114	5,010	4,680	2,210	509	1,810
18	1,350	1,940	*1,590	4,720	4,420	1,980	114	4,800	4,700	2,220	1,250	2,270
19	724	1,950	1,710	2,850	5,340	2,060	114	4,950	5,680	2,040	1,320	3,560
20	452	1,940	1,820	2,480	3,650	2,160	114	5,090	5,560	1,890	1,360	3,080
21	1,340	1,830	1,780	2,460	2,740	2,000	114	5,220	5,030	1,830	1,430	2,460
22	1,340	1,840	1,380	2,450	4,190	1,950	114	6,970	5,390	2,370	1,440	2,480
23	1,270	1,570	1,890	2,620	3,350	1,850	755	6,500	3,660	2,480	1,360	2,410
24	1,350	1,220	2,350	4,310	5,780	1,850	2,930	6,530	3,990	*2,060	1,180	2,000
25	1,360	1,820	2,090	3,110	6,580	1,920	3,370	7,260	3,550	*2,350	1,740	1,910
26	1,180	1,840	2,520	2,630	4,480	2,010	3,030	7,390	2,600	2,080	1,790	2,460
27	1,190	1,850	2,550	2,500	3,290	2,080	2,720	6,850	4,060	1,650	1,540	1,540
28	1,650	1,120	2,560	3,000	2,250	2,070	2,930	7,570	3,360	1,920	1,280	1,170
29	1,760	1,840	2,560	2,700	-	1,880	1,220	5,050	2,040	2,240	1,190	1,440
30	1,860	1,530	2,550	3,060	-	1,820	114	3,340	2,080	2,220	1,260	1,240
31	2,040	-	2,540	2,510	-	1,920	-	3,760	-	2,030	142	-
Total	40,068	51,520	53,526	88,950	81,250	59,620	44,206	134,454	117,960	68,950	40,515	51,409
Mean	1,293	1,717	1,727	2,869	2,602	1,923	1,474	4,337	3,932	2,224	1,307	1,714
Ac-ft	79,470	102,200	106,200	176,400	161,200	118,300	87,680	266,700	234,000	136,800	80,360	102,000
(+)	+4,780	-20,600	+24,940	+9,200	-810	-32,890	+27,220	+5,980	-630	-4,200	+4,540	-7,990

Adjusted for change in contents in Lake Shannon

	Mean	Cfs/m	In.	Ac-ft
Mean	1,370	1,371	2,132	3,018
Cfs/m	4.61	14.62	7.16	10.2
In.	5.32	5.15	6.28	11.72
Ac-ft	84,250	81,600	131,100	185,600

Observed

Calendar year 1957: Max	6,960	Min	55	Mean	2,168	Ac-ft	1,570,000
Water year 1957-58: Max	7,980	Min	114	Mean	2,281	Ac-ft	1,651,000

Adjusted

Calendar year 1957: Mean	2,168	Cfs/m	7.30	In.	99.09	Ac-ft	1,570,000
Water year 1957-58: Mean	2,294	Cfs/m	7.72	In.	104.85	Ac-ft	1,661,000

\* Discharge measurement made on this day.

† Change in contents, in acre-feet, in Lake Shannon; furnished by Puget Sound Power &amp; Light Co.

Note.--Discharge Jan. 23 to June 11 obtained from flowmeter integrator readings, spill, and leakage figures furnished by Puget Sound Power &amp; Light Co.

## SKAGIT RIVER BASIN

1940. Skagit River near Concrete, Wash.

Location.--Lat 48°31'30", long 121°46'10", in NE¼ sec. 16, T. 35 N., R. 8 E., on right bank at dikes 1½ miles southwest of Concrete and 2½ miles downstream from Baker River.

Drainage area.--2,700 sq mi, approximately, of which 400 sq mi is in Canada.

Records available.--September 1924 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 130.0 ft above mean sea level, datum of 1929. Prior to Dec. 10, 1924, staff gage 200 ft upstream and Dec. 10, 1924, to Sept. 30, 1937, water-stage recorder at present site; both gages at datum 12.7 ft higher.

Average discharge.--34 years, 14,610 cfs (10,580,000 acre-ft per year).

Extremes.--Maximum discharge during year, 41,400 cfs Jan. 17 (gage height, 24.38 ft); minimum, 3,380 cfs Oct. 20 (gage height, 13.49 ft); minimum daily, 4,120 cfs Oct. 20.

1924-58: Maximum discharge, 154,000 cfs Nov. 27, 1949 (gage height, 40.8 ft); minimum, probably less than 2,160 cfs during period Oct. 1-24, 1925, when recorder was not operating and gates in Baker River Dam were first closed; minimum daily recorded, 2,610 cfs Nov. 14, 1936.

Maximum stage known, 69.3 ft, present datum, at site 200 ft upstream, from flood-marks (discharge, about 500,000 cfs); occurred about 1815. Records of other floods, at site 200 ft upstream, prior to establishment of station, are given in WSP 612.

Revisions.--The minimum discharge for the water year 1957 has been revised to 3,810 cfs Sept. 23, 1957 (gage height, 13.74 ft), superseding figure published in WSP 1516.

Remarks.--Records excellent. Flow regulated by powerplants on Baker and upper Skagit Rivers, by Ross Reservoir (see p. 149), and by Diablo Reservoir and Lake Shannon (see p. 164).

Revisions.--Revised figures of discharge, in cubic feet per second, for low-water period in water year 1957, superseding those published in WSP 1516, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1957		1957-Con.		1957-Con.		1957-Con.		1957-Con.	
Aug. 1	9,620	Aug. 13	8,600	Aug. 25	5,410	Sept. 6	7,660	Sept. 18	9,270
2	9,020	14	8,100	26	6,720	7	9,980	19	9,460
3	8,390	15	7,660	27	6,860	8	9,460	20	8,730
4	6,510	16	7,390	28	6,500	9	9,400	21	8,490
5	8,280	17	7,510	29	6,340	10	10,200	22	5,370
6	9,130	18	6,230	30	5,390	11	9,480	23	6,190
7	9,320	19	8,080	31	4,930	12	8,700	24	7,320
8	11,600	20	8,230	Sept. 1	4,230	13	8,700	25	6,830
9	12,200	21	7,760	2	4,430	14	8,230	26	7,270
10	11,100	22	8,080	3	6,170	15	7,420	27	7,860
11	9,980	23	7,900	4	6,740	16	8,160	28	7,880
12	9,380	24	5,890	5	7,150	17	9,080	29	6,590
								30	7,060

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
August 1957.....	248,190	12,200	4,930	8,006	492,300
September.....	233,510	10,200	4,230	7,784	463,200
Water year 1957-58.....	5,658,700	49,700	4,230	15,500	11,220,000

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7,630	13,400	8,700	12,200	14,100	14,600	9,400	10,200	23,000	12,300	9,990	7,680
2	7,730	10,400	8,890	11,700	11,300	12,000	9,510	12,600	21,200	10,600	9,290	7,020
3	8,060	8,060	9,960	11,800	11,900	11,700	9,100	14,800	21,500	12,700	8,030	7,370
4	7,980	*9,210	9,850	12,000	12,600	12,900	9,080	14,300	*23,100	11,800	8,390	6,610
5	6,720	9,290	9,210	11,800	12,100	12,600	8,340	14,800	25,200	13,600	8,100	6,170
6	5,250	8,390	9,480	12,100	11,700	12,100	7,490	14,700	27,100	13,100	7,780	5,350
7	6,160	8,160	9,850	12,900	*11,200	11,900	7,320	18,800	28,600	11,900	7,800	4,660
8	7,220	8,030	10,300	13,000	10,600	11,200	8,490	22,600	23,500	14,500	7,390	5,950
9	7,110	7,420	12,000	13,000	10,300	10,600	8,310	22,500	23,900	14,100	6,480	7,150
10	6,950	6,320	11,000	13,600	11,200	10,300	8,570	19,600	21,500	14,700	5,150	7,020
11	6,740	7,560	9,850	14,100	11,900	10,600	8,390	19,600	19,700	14,200	6,210	6,920
12	4,850	11,700	12,400	13,500	11,700	*10,500	8,030	15,500	18,900	13,400	*7,250	6,580
13	5,430	15,400	11,200	13,200	13,600	10,300	8,890	13,400	18,800	13,100	7,150	4,990
14	8,940	14,200	10,400	13,500	12,600	10,200	8,390	11,900	18,500	13,200	7,180	6,450
15	8,260	12,400	8,340	19,500	11,800	9,570	9,020	14,400	16,400	11,300	7,220	6,990
16	7,560	10,300	8,100	24,200	11,900	9,020	11,000	17,200	19,300	*11,700	6,990	7,420
17	7,180	8,970	*10,600	13,300	13,300	9,000	*10,900	20,800	22,500	11,900	5,810	10,400
18	6,880	9,460	11,600	23,700	17,700	9,680	11,800	21,400	22,500	11,700	7,040	10,400
19	5,290	9,480	11,900	18,100	20,400	9,680	10,300	24,900	25,000	11,000	7,320	17,200
20	4,120	9,210	14,600	16,400	17,300	9,850	16,500	26,200	25,800	10,200	7,390	16,200
21	5,330	8,940	13,700	15,100	15,000	10,600	15,400	26,900	25,800	11,900	7,730	13,000
22	6,000	8,810	11,500	14,300	17,200	10,500	13,500	32,600	25,000	11,900	7,540	12,700
23	6,830	9,100	11,500	14,500	16,500	8,780	12,000	32,600	22,100	11,900	7,440	11,200
24	7,980	8,600	13,500	17,300	22,100	9,680	13,300	23,900	21,200	10,900	6,730	9,480
25	8,540	8,730	13,200	18,000	26,100	11,000	12,700	35,400	19,200	11,200	9,080	11,100
26	8,470	9,730	22,100	15,600	22,800	11,100	11,600	36,200	16,600	10,800	9,240	10,900
27	7,080	9,460	17,100	14,800	19,300	10,600	10,800	35,800	19,600	9,980	*8,440	8,080
28	7,040	8,620	16,900	16,500	15,800	10,100	10,800	35,200	19,600	11,000	7,370	7,020
29	8,130	8,340	14,300	16,000	-----	9,270	9,270	28,000	14,600	11,600	6,950	6,880
30	21,500	8,600	13,500	17,300	22,100	9,680	13,300	23,900	21,200	10,900	6,730	9,480
31	18,900	-----	13,500	15,500	-----	9,100	-----	22,600	-----	11,100	4,560	-----
Total	241,850	285,770	366,430	494,400	414,000	327,760	307,060	691,500	645,900	374,760	230,630	257,440
Mean	7,802	9,526	11,820	15,950	14,790	10,570	10,240	22,310	21,530	12,090	7,440	8,581
Ac-ft	479,700	566,800	726,800	980,600	821,200	650,100	609,000	1,372	1,281	743,300	457,400	510,600

Calendar year 1957: Max 35,900 Min 4,120 Mean 13,370 Ac-ft 9,676,000  
 Water year 1957-58: Max 36,200 Min 4,120 Mean 12,710 Ac-ft 9,198,000

\* Discharge measurement made on this day.

† Expressed in thousands.

1960. Alder Creek near Hamilton, Wash.

Location.--Lat 48°31'40", long 121°57'00", in NE¼ sec. 18, T. 35 N., R. 7 E., on right bank 330 ft below railroad trestle a quarter of a mile upstream from highway bridge, three-quarters of a mile upstream from mouth, and 2 miles east of Hamilton.

Drainage area.--10.7 sq mi.

Records available.--August 1943 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 125 ft (by barometer). Prior to Nov. 15, 1945, at site 330 ft upstream at datum 4.74 ft higher. Nov. 15, 1945, to Jan. 7, 1947, at site 250 ft upstream at datum 4.84 ft higher. Jan. 8, 1947, to Aug. 24, 1951, at site 250 ft upstream at datum 3.26 ft higher. Aug. 25, 1951, to Jan. 4, 1957, at site 250 ft upstream at datum 2.28 ft higher.

Average discharge.--15 years, 34.7 cfs (25,120 acre-ft per year).

Extremes.--Maximum discharge during year, 166 cfs Jan. 16 (gage height, 2.37 ft); minimum, 5.3 cfs Aug. 23-27; minimum gage height, 1.14 ft Sept. 8, 12, 13.  
1943-58: Maximum discharge, 714 cfs Dec. 9, 1957 (gage height, 5.28 ft, site and datum then in use); minimum, 4.3 cfs Sept. 16, 1956; minimum gage height, that of Sept. 8, 12, 13, 1958.

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

Revisions (water years).--WSP 1286: 1945(M), 1947, drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Nov. 12

Nov. 13 to Sept. 30

1.1	6.0	1.1	5.0	2.0	91
1.2	9.5	1.3	13.5	2.5	188
1.4	27	1.6	38		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.0	9.0	14.5	36	58	51	20	19.5	11.5	8.7	6.7	7.1
2	9.5	8.5	15	33	52	46	20	19	11.5	8.3	6.3	6.7
3	9.5	8.5	15	32	48	43	20	19	10.5	8.3	6.3	6.7
4	9.5	8.5	14.5	31	43	38	19	18	*10.5	8.3	6.3	6.3
5	9.0	8.5	14	28	39	39	19	17.5	10.5	8.3	6.3	6.0
6	9.0	8.5	22	27	38	37	18	16	10.5	8.3	6.3	6.0
7	9.0	*7.9	24	26	*36	37	18	15	10.5	7.9	6.3	6.0
8	9.0	7.6	22	27	35	36	16.5	15	10.5	7.9	6.3	6.0
9	9.0	7.6	19.5	28	35	34	18	14.5	10.5	7.9	6.3	6.0
10	9.0	8.0	18	33	39	33	22	14.5	10.5	7.9	6.3	6.3
11	9.5	11	19	36	36	32	19.5	14.5	10	7.9	6.3	6.3
12	9.5	22	26	37	39	30	18	14	10	7.9	6.3	6.0
13	11.5	26	23	34	58	*29	18	13.5	10	7.9	5.6	6.3
14	11.5	29	27	39	54	28	19.5	13.5	9.6	7.5	5.6	6.7
15	11	22	25	45	49	27	25	13	9.6	7.5	6.0	6.7
16	11	19	25	85	50	26	31	12.5	9.6	*7.5	5.6	7.1
17	11	16.5	*33	135	46	25	*29	12.5	9.1	7.5	5.6	7.1
18	11.5	15	42	97	45	25	30	12	9.1	7.5	5.6	6.7
19	11.5	14.5	46	76	43	26	33	12.5	8.7	7.5	5.6	9.1
20	11.5	13.5	48	63	39	26	35	12	8.7	7.5	5.6	7.5
21	11.5	13.5	43	57	37	26	34	12	8.7	7.5	5.6	7.5
22	12.5	13	37	50	42	25	34	11.5	8.7	7.1	5.6	7.1
23	16.5	12.5	39	54	36	25	33	11.5	8.3	6.7	5.3	7.5
24	14	12.5	46	68	51	25	31	11.5	8.7	7.1	5.3	7.5
25	14	12.5	52	60	62	26	29	11	8.7	7.1	5.3	9.1
26	13	12.5	102	54	75	24	27	10.5	8.7	7.1	5.3	7.5
27	13	13.5	73	51	66	23	26	10.5	9.1	7.1	*5.3	7.5
28	13	16	65	55	57	23	24	11	9.6	6.7	5.6	7.1
29	16.5	14	55	57	-	23	22	11	9.1	6.7	6.7	7.1
30	25	13.5	48	75	-----	22	20	11.5	8.7	7.1	6.3	7.1
31	11.5	-----	40	68	-----	21	-----	11.5	-----	6.7	6.3	-----
Total	361.5	404.6	1,092.5	1,597	1,308	931	728.5	421.5	289.2	234.9	183.8	207.6
Mean	11.7	13.5	35.2	51.5	46.7	30.0	24.3	13.6	9.64	7.58	5.93	6.92
Cfsm	1.09	1.26	3.29	4.81	4.36	2.80	2.27	1.27	0.901	0.708	0.554	0.647
In.	1.26	1.41	3.80	5.55	4.55	3.24	2.53	1.47	1.01	0.82	0.64	0.72
Ac-ft	717	803	2,170	3,170	2,590	1,850	1,440	836	574	466	365	412

Calendar year 1957: Max 105 Min 7.6 Mean 26.3 Cfsm 2.46 In. 33.33 Ac-ft 19,020  
Water year 1957-58: Max 135 Min 5.3 Mean 21.3 Cfsm 1.99 In. 27.00 Ac-ft 15,390

Peak discharge (base, 140 cfs).--Jan. 16 (9 to 10:30 p.m.) 166 cfs (2.37 ft).

\* Discharge measurement made on this day.

1965. Day Creek near Lyman, Wash.

Location.--Lat 48°30'05", long 122°02'45", in NW $\frac{1}{4}$  sec. 28, T. 35 N., R. 6 E., on left bank at highway bridge, 1 mile upstream from mouth and  $1\frac{1}{4}$  miles southeast of Lyman.

Drainage area.--36.3 sq mi.

Records available.--July 1943 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 90 ft (from topographic map).

Average discharge.--15 years, 261 cfs (189,000 acre-ft per year).

Extremes.--Maximum discharge during year, 3,250 cfs Jan. 16 (gage height, 6.82 ft); minimum, 7.8 cfs Aug. 2, 21-24 (gage height, 0.55 ft).  
1943-58: Maximum discharge, 5,570 cfs Dec. 28, 1949 (gage height, 8.35 ft), from rating curve extended above 3,000 cfs on basis of logarithmic plotting; maximum gage height, 8.80 ft Dec. 9, 1956; minimum discharge, 5.9 cfs Feb. 1, 1945.

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

Revisions (water years).--WSP 1316: 1944(M), drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 16

Jan. 16 to Sept. 30

0.7	18	3.0	580	0.5	5.6	2.0	265
1.0	40	4.0	1,090	.7	16	3.0	660
1.5	100	5.0	1,710	1.0	43	4.0	1,180
2.0	198			1.5	125		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	100	387	223	382	238	125	139	148	27	9.1	47
2	26	67	404	223	318	196	132	139	87	23	8.7	25
3	34	53	371	283	290	164	139	223	64	22	8.7	20
4	29	*47	232	302	250	143	121	159	50	20	9.1	16
5	30	41	178	252	300	156	103	134	46	19.5	8.7	13.5
6	25	36	425	242	406	139	105	125	40	18	8.2	13
7	23	34	326	242	335	143	105	127	40	16.5	8.7	12
8	22	30	342	352	*414	136	141	125	35	16.5	9.1	12
9	22	30	212	318	665	125	164	105	33	16	9.1	12
10	19	35	169	634	528	a115	377	107	35	15.5	9.1	12.5
11	18.5	176	210	537	300	a110	193	96	33	15	a9.1	13
12	18	793	493	608	531	a100	172	84	32	15	a9.1	12.5
13	89	1,080	248	375	680	a95	205	71	31	14	9.1	12
14	68	577	302	675	386	*89	276	79	29	14	8.7	13
15	41	342	204	1,050	352	89	542	87	27	13.5	8.2	17.5
16	32	226	317	1,460	612	87	534	87	23	13	8.2	162
17	28	155	608	952	428	87	510	81	22	13	8.2	92
18	25	136	*459	482	528	109	470	84	20	*12.5	8.7	58
19	24	132	530	349	428	196	526	98	19	12.5	8.2	342
20	23	108	502	290	307	307	466	82	19	12	8.2	84
21	21	96	375	272	296	418	*314	81	18	12	*8.2	153
22	21	89	287	244	466	307	300	74	17.5	11	7.8	87
23	97	96	346	693	370	265	238	71	18	10.5	7.8	68
24	183	87	438	812	964	247	187	64	22	10	8.2	62
25	96	103	1,050	530	1,080	282	172	58	27	10	8.2	200
26	112	108	883	360	615	282	170	56	23	9.6	8.2	77
27	77	100	502	363	406	181	151	52	38	9.6	8.2	55
28	57	129	726	692	304	148	139	*50	41	9.1	8.7	43
29	53	102	458	550	-	148	136	59	30	9.1	17.5	35
30	655	93	314	610	-----	208	139	76	30	*9.1	16	30
31	176	-----	245	510	-----	148	-----	107	-----	9.6	13	-----
Total	2,162.5	5,201	12,523	15,485	12,933	5,458	7,352	2,980	1,097.5	438.1	286.0	1,799.0
Mean	69.8	173	404	500	462	176	245	96.1	36.6	14.1	9.23	60.0
Cfsm	1.92	4.77	11.1	13.8	12.7	4.85	6.76	2.65	1.01	0.388	0.254	1.65
In.	2.22	5.33	12.83	15.86	13.25	5.59	7.53	3.05	1.12	0.45	0.29	1.84
Ac-ft	4,290	10,320	24,840	30,710	25,650	10,830	14,580	5,910	2,180	869	567	3,570
Calendar year 1957: Max			1,900		Min 15	Mean 177	Cfsm 4.88	In. 66.11	Ac-ft 128,000			
water year 1957-58: Max			1,460		Min 7.8	Mean 186	Cfsm 5.12	In. 69.36	Ac-ft 134,300			

Peak discharge (base, 3,000 cfs).--Jan. 16 (4 p.m.), 3,250 cfs (6.82 ft).

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for nearby stations.



2005. Skagit. River near Mount Vernon, Wash.

Location.--Lat 48°26'40", long 122°20'00", in SE<sup>1</sup> sec. 7, T. 34 N., R. 4 E., on drawrest of, and 150 ft downstream from, bridge on U. S. Highway 99 and 1 mile north of Mount Vernon.

Drainage area.--3,060 sq mi, approximately, of which 400 sq mi is in Canada.

Records available.--October 1940 to September 1958. Monthly discharge only for October 1940, published in WSP 1316.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929.

Average discharge.--18 years, 16,010 cfs (11,590,000 acre-ft per year).

Extremes.--Maximum discharge during year, 43,900 cfs Jan. 17 (elevation, 23.60 ft); minimum, 4,380 cfs Oct. 21 (elevation, 9.86 ft).  
1940-58: Maximum discharge, 144,000 cfs Feb. 11, 1951 (elevation, 36.85 ft); minimum, 2,740 cfs Oct. 26, 1949 (elevation, 7.37 ft).  
Maximum stage known, 37 ft in 1906, from Great Northern Railway high-water profile.

Remarks.--Records good. Flow regulated by powerplants on Baker and upper Skagit Rivers, by Ross Reservoir (see p. 149), and by Diablo Reservoir and Lake Shannon (see following page). Small diversions for domestic and municipal use.

Rating table, water year 1957-58 (gage height, in feet, and discharge,  
in cubic feet per second)  
(Shifting-control method used Aug. 1 to Sept. 17)

10.3	5,090	17.0	20,000
11.0	8,320	23.0	41,200
13.0	10,300		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7,880	14,500	8,340	13,400	16,000	16,600	10,800	11,000	23,600	13,000	10,200	6,200
2	7,960	11,400	8,640	12,000	13,800	14,400	10,200	12,100	21,500	11,200	9,900	7,390
3	8,240	9,440	10,400	12,300	12,700	12,300	10,400	14,900	21,300	12,200	8,740	7,560
4	8,200	8,560	10,400	12,500	13,400	13,500	10,200	15,000	22,000	12,300	8,100	7,200
5	7,880	9,500	9,940	12,500	13,100	13,500	9,560	14,700	23,500	12,700	8,560	6,580
6	6,650	9,000	9,840	12,100	*13,100	13,100	9,330	14,800	*26,400	13,400	9,260	6,210
7	5,910	8,680	11,200	13,000	12,700	12,700	7,900	17,000	27,600	11,900	7,780	5,520
8	7,410	8,400	10,400	13,200	12,400	12,400	9,330	20,700	24,500	13,300	7,900	5,380
9	7,510	8,340	11,700	13,700	12,500	11,700	9,650	23,100	23,000	13,900	7,010	6,750
10	7,450	7,530	11,500	13,900	12,800	11,200	9,900	20,100	22,400	14,100	6,000	7,180
11	7,180	7,280	10,700	15,900	13,000	11,200	9,800	19,200	19,400	13,900	5,600	7,150
12	6,890	11,100	12,700	15,000	12,900	11,200	9,330	17,000	18,600	13,700	7,180	6,880
13	5,780	17,000	1,2100	14,300	15,300	11,000	9,590	14,800	18,200	12,700	7,360	6,500
14	7,410	16,700	11,400	14,300	15,100	*10,800	10,300	12,600	17,900	13,200	7,340	6,630
15	8,800	14,000	10,600	18,600	13,600	10,700	10,700	13,600	18,000	*11,800	7,320	6,880
16	8,080	*11,700	8,360	27,900	14,200	10,200	12,700	16,100	17,600	11,700	7,180	7,160
17	7,780	10,500	11,600	39,800	13,700	9,500	12,600	19,200	20,700	11,900	6,800	9,820
18	7,280	9,520	12,700	30,500	17,900	10,200	*13,900	20,700	22,500	12,100	6,140	10,700
19	7,130	10,100	*12,600	21,800	21,300	10,400	12,700	22,400	23,400	11,200	7,490	13,300
20	5,280	9,730	15,100	17,500	19,900	10,900	16,600	26,000	24,700	10,700	7,340	17,700
21	5,110	9,330	14,900	16,500	16,800	11,400	17,300	26,100	24,700	11,200	7,700	13,500
22	6,320	9,100	13,000	15,300	17,500	12,100	15,500	31,100	25,000	12,000	7,740	13,300
23	6,990	9,120	12,000	15,100	17,900	10,900	13,700	33,200	22,800	11,900	7,560	12,200
24	8,020	9,670	13,600	22,000	20,300	9,900	13,800	32,900	20,200	11,200	7,540	10,600
25	8,900	8,560	13,800	21,500	31,000	11,900	14,000	35,700	19,700	11,200	8,560	10,600
26	9,040	9,750	24,100	17,600	28,800	12,000	13,000	37,300	16,800	11,000	9,170	12,000
27	8,100	9,690	20,000	16,000	23,000	11,800	12,100	36,800	17,400	10,700	9,100	9,800
28	7,070	9,590	18,100	16,800	18,300	11,000	11,500	36,900	19,500	10,400	8,040	8,600
29	8,220	8,460	17,900	18,200	-----	10,600	11,600	32,700	16,200	11,400	*6,960	7,390
30	16,200	8,760	13,800	19,100	-----	10,200	9,980	24,500	13,100	11,400	7,450	8,460
31	20,300	-----	14,300	17,700	-----	9,460	-----	22,500	-----	11,200	6,000	-----
Total	250,670	305,050	395,720	540,000	463,000	358,760	347,970	694,700	632,400	374,500	238,000	265,140
Mean	8,086	10,170	12,770	17,420	16,540	11,570	11,600	22,410	21,080	12,080	7,677	8,838
Ac-ft	497,200	605,100	764,900	*1,071	918,300	711,600	690,200	*1,378	*1,254	742,800	472,100	525,900
Calendar year 1957:	Max	38,900	Min	5,110	Mean	13,910	Ac-ft	10,070,000				
Water year 1957-58:	Max	39,800	Min	5,110	Mean	13,330	Ac-ft	9,651,000				

Peak discharge (base, 55,000 cfs).-- No peak above base.

\* Discharge measurement made on this day.

† Expressed in thousands.

## Reservoirs in Skagit River basin, Wash.

Ross Reservoir.--See page 149.

Diablo Reservoir.--Lat 48°43'00", long 121°08'00", in SE $\frac{1}{4}$  sec. 5, T. 37 N., R. 13 E. (unsurveyed), in Diablo Dam on Skagit River, 1 mile downstream from Thunder Creek and 6 miles northeast of Newhalem. Drainage area, 1,100 sq mi, approximately. Records available, October 1929 to September 1958. October 1929 to September 1938, monthly change in reservoir contents published with records for Skagit River at Newhalem. Gage, water-stage recorder. Datum of gage is at mean sea level, subject to adjustment to datum of 1929. Maximum contents during year, 89,770 acre-ft June 18 (elevation, 1,205.60 ft); minimum, 74,950 acre-ft July 1 (elevation, 1,188.09 ft). Maximum contents during period 1929-58, 90,600 acre-ft July 14, 1933 (elevation, 1,206.5 ft). Reservoir is formed by concrete dam, completed in 1930; storage began in October 1929. Usable capacity, 76,220 acre-ft between elevations 1,040 (bottom of outlet pipes) and 1,205 ft (top of taintor gates). Dead storage, 13,000 acre-ft. Crest of spillway is at elevation 1,187 ft. Water is used by city of Seattle for power development at Diablo and Newhalem powerplants. Gage-height record collected in cooperation with city of Seattle. Figures given herein represent total contents.

Lake Shannon.--Lat 48°32'55", long 121°44'25", in SW $\frac{1}{4}$  sec. 2, T. 35 N., R. 8 E., at Baker Dam on Baker River near left bank, half a mile north of Concrete and 1 mile upstream from mouth of Baker River. Drainage area, 297 sq mi. Records available, November 1925 to September 1958. Gage, water-stage recorder. Datum of gage is at mean sea level, subject to adjustment to datum of 1929. Maximum contents observed during year, 160,770 acre-ft June 13 (elevation, 437.00 ft); minimum observed, 104,990 acre-ft Apr. 13 (elevation, 410.51 ft). Maximum contents observed during period 1925-58, that of June 13, 1958.

Reservoir is formed by concrete dam, completed in June 1927. Capacity, 132,500 acre-ft between elevations 360 (lowest elevation for capacity operation) and 435 ft (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 ft (center line of outlet tunnel).

Month-end elevation and contents, water year October 1957 to September 1958

Date	Elevation (feet)†	Total contents (acre- feet)	Change in contents (acre-feet)	Elevation (feet)†	Usable contents (acre- feet)	Change in contents (acre-feet)
Diablo Reservoir				Lake Shannon		
Sept. 30.....	1,199.2	84,060	-	428.51	141,880	-
Oct. 31.....	1,198.6	85,550	-510	430.70	146,680	+4,780
Nov. 30.....	1,197.7	82,770	-780	421.05	126,060	-20,600
Dec. 31.....	1,200.0	84,760	+1,990	432.66	151,000	+24,940
Calendar year 1957.....	-	-	-2,030	-	-	0
Jan. 31.....	1,203.2	87,590	+2,830	436.75	160,200	+9,200
Feb. 28.....	1,200.8	85,460	-2,130	436.39	159,390	-810
Mar. 31.....	1,198.3	85,290	-2,170	421.26	126,500	-32,890
Apr. 30.....	1,201.8	86,340	+3,050	435.88	155,720	+27,220
May 31.....	1,199.1	85,980	-2,360	436.53	159,700	+5,980
June 30.....	1,188.3	75,110	-8,870	436.25	159,070	-630
July 31.....	1,203.5	87,860	+12,750	434.39	154,870	-4,200
Aug. 31.....	1,200.8	85,460	-2,400	436.40	159,410	+4,540
Sept. 30.....	1,203.9	88,220	+2,760	432.85	151,420	-7,990
Water year 1957-58.....	-	-	+4,160	-	-	+9,540

† Elevation at 12 p.m.

Note.--Sept. 30 elevation for Diablo Reservoir furnished by city of Seattle from their powerplant logs.

2015. Samish River near Burlington, Wash.

Location.--Lat 48°32'45", long 122°20'15", in SE $\frac{1}{4}$  sec. 6, T. 35 N., R. 4 E., on left bank 500 ft downstream from bridge on U. S. Highway 99, half a mile downstream from Friday Creek, and 5 miles north of Burlington.

Drainage area.--87.8 sq mi.

Records available.--July 1943 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 45 ft (from topographic map). Prior to Dec. 1, 1948, at site 500 ft upstream at different datum. Dec. 1, 1948, to Jan. 7, 1949, staff gage 200 ft upstream at datum 3.14 ft higher than present datum.

Average discharge.--15 years, 238 cfs (172,300 acre-ft per year).

Extremes.--Maximum discharge during year, 1,490 cfs Jan. 16 (gage height, 6.55 ft); minimum, 15.5 cfs Aug. 26 (gage height, 2.21 ft).

1943-58: Maximum discharge, 5,830 cfs Dec. 28, 1949 (gage height, 11.89 ft); minimum recorded, 11 cfs July 10, 1951 (gage height, 2.01 ft).

Remarks.--Records excellent except those for periods of shifting control, which are good. State fish hatchery on Friday Creek diverts about 4 cfs, which is returned above station. There is evidence of slight regulation and there may be some pumping for irrigation.

Revisions (water years).--WSP 1216: Drainage area. WSP 1286: 1944(M), 1945.

Rating tables, water year 1957-58, except periods of shifting control (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 16

Jan. 17 to Sept. 30

2.4	20	3.5	205	2.2	15	3.5	235
2.6	37	4.0	345	2.4	30	4.0	383
3.0	97	5.0	725	2.7	66	5.0	752
				3.0	116	6.0	1,210

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	63	66	258	448	438	111	140	78	35	20	24
2	31	48	101	236	383	371	111	132	70	33	20	21
3	28	42	99	221	340	325	118	140	61	29	21	20
4	29	38	83	215	301	286	111	130	57	27	21	19
5	29	*37	76	198	289	283	102	120	51	26	21	19
6	28	36	202	182	*298	289	96	112	50	25	20	19
7	28	34	234	173	275	283	91	109	49	25	20	19
8	26	33	180	175	263	289	90	103	47	25	19	18.5
9	27	33	142	218	298	255	93	98	46	24	19	19
10	28	34	106	244	364	230	130	95	46	23	18.5	19
11	28	45	88	324	310	*213	118	91	42	22	18	18.5
12	33	94	236	355	487	198	109	90	40	21	19	18
13	37	328	195	315	692	185	103	84	39	22	19	18.5
14	34	460	*266	397	505	172	136	83	38	21	18.5	20
15	32	308	258	477	409	163	205	78	36	*21	19	21
16	33	182	236	713	610	154	313	75	34	21	20	28
17	32	122	266	1,150	557	147	321	72	34	21	20	34
18	32	95	339	853	522	145	368	70	32	21	18.5	25
19	30	101	371	481	441	154	347	74	30	21	18	42
20	30	66	345	409	361	180	386	70	29	22	18	30
21	30	45	324	415	331	182	334	65	29	23	18.5	23
22	32	36	318	355	405	172	358	62	28	21	*18.5	21
23	37	36	318	343	352	154	355	59	27	21	18	20
24	37	36	364	409	482	156	*292	57	29	20	18	21
25	35	45	456	380	735	168	249	54	29	19	17	21
26	35	74	693	322	791	145	222	51	28	21	16.5	20
27	33	68	485	295	675	132	200	48	39	22	18	19
28	32	83	404	601	543	126	185	54	43	21	19	19
29	42	73	384	663	-	126	165	*58	39	20	21	18
30	214	65	345	774	-	124	151	63	35	21	20	18.5
31	97	-	292	583	-	116	-	76	-	20	20	-
Total	1,225	2,760	8,252	12,524	12,467	6,361	5,966	2,613	1,235	714	592.0	653.0
Mean	39.5	92.0	266	404	445	205	199	84.3	41.2	23.0	19.1	21.8
Cfsm	0.450	1.05	3.03	4.60	5.07	2.33	2.27	0.960	0.469	0.262	0.218	0.248
In.	0.52	1.17	3.50	5.30	5.28	2.69	2.53	1.11	0.52	0.30	0.25	0.28
Ac-ft	2,450	5,470	16,370	24,840	24,750	12,620	11,830	5,180	2,450	1,420	1,170	1,300

Calendar year 1957: Max 842 Min 23 Mean 175 Cfsm 1.99 In. 27.06 Ac-ft 126,600  
 Water year 1957-58: Max 1,130 Min 16.5 Mean 152 Cfsm 1.73 In. 23.45 Ac-ft 109,800

Peak discharge (base, 1,100 cfs).--Jan. 16 (11:45 p.m.) 1,490 cfs (6.55 ft).

\* Discharge measurement made on this day.

Note.--Shifting-control method used Oct. 29 to Nov. 13, Sept. 17-30.

2050. Nooksack River above Cascade Creek, near Glacier, Wash.

Location.--Lat 48°54'20", long 121°50'30", in NW $\frac{1}{4}$  sec. 1, T. 39 N., R. 7 E., on right bank a quarter of a mile upstream from Cascade Creek, half a mile downstream from Dead Horse Creek,  $4\frac{1}{2}$  miles east of Glacier, and 6 miles upstream from Glacier Creek.

Drainage area.--105 sq mi.

Records available.--October 1937 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,245 ft (from river-profile map). Supplementary water-stage recorder on left bank at same datum (principal gage prior to Oct. 1, 1955).

Average discharge.--21 years, 748 cfs (541,500 acre-ft per year).

Extremes.--Maximum discharge during year, 3,460 cfs Oct. 30 (gage height, 6.73 ft); minimum, 147 cfs Mar. 17, 18.  
1937-58: Maximum discharge, 10,300 cfs Nov. 26, 1949 (gage height, 10.50 ft, supplementary gage), from rating curve extended above 2,900 cfs on basis of contracted-opening measurement at gage height 8.13 ft (supplementary gage); minimum, 73 cfs Feb. 16, 1949.

Remarks.--Records fair. No diversion above station. Some regulation at low flow by powerplant at Excelsior.

Revisions (water years).--WSP 1092: 1946.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	434	585	360	420	498	870	271	529	1,170	620	642	772
2	424	488	390	430	470	800	279	570	1,140	730	585	470
3	394	421	400	450	462	547	271	648	1,210	804	534	372
4	345	421	390	480	462	524	259	648	1,430	928	493	333
5	328	412	390	450	457	502	251	637	*1,560	1,040	506	341
6	324	398	440	426	452	493	251	654	1,640	1,030	560	408
7	324	367	410	434	452	484	251	798	1,440	1,100	605	470
8	324	345	398	475	488	450	263	977	1,240	1,010	529	488
9	324	333	390	480	542	420	271	984	1,230	*894	524	516
10	324	367	390	595	529	380	263	942	1,100	894	547	506
11	324	412	398	585	475	*291	263	858	1,010	921	595	448
12	324	426	*416	556	516	291	299	698	977	858	585	363
13	613	498	398	484	547	271	416	605	863	720	547	394
14	457	430	390	565	485	259	498	615	1,000	676	547	372
15	337	*444	390	798	457	251	*475	736	1,060	725	556	354
16	324	408	420	1,330	534	248	480	977	1,280	792	556	664
17	310	385	493	1,390	610	*240	498	1,040	1,530	876	534	692
18	305	367	470	876	1,390	236	493	1,150	1,610	858	542	524
19	300	350	444	698	1,480	*248	511	1,510	1,680	780	516	1,240
20	295	320	452	605	970	291	595	1,480	1,660	720	*552	560
21	295	312	448	*538	840	376	547	1,730	1,630	747	600	542
22	450	320	426	498	1,010	363	524	1,830	1,640	774	595	434
23	1,200	534	426	698	876	350	484	1,850	1,660	686	610	381
24	810	434	426	928	1,920	345	462	1,960	1,390	676	642	345
25	858	408	516	698	1,670	345	439	1,980	1,060	698	654	390
26	840	380	789	590	1,140	337	412	1,990	1,050	752	585	341
27	490	360	529	534	876	320	390	*2,100	1,300	828	516	350
28	403	350	516	670	752	307	390	2,000	888	870	488	363
29	662	340	462	642	-	307	408	1,460	708	828	520	341
30	2,230	340	426	642	-----	299	466	1,260	637	747	462	*320
31	822	-----	421	552	-----	291	-----	1,210	-----	681	483	-----
Total	16,294	11,955	13,594	19,507	21,368	11,348	11,680	36,428	37,873	25,263	17,210	14,094
Mean	526	398	439	629	763	366	369	1,175	1,262	815	555	470
Cfsm	5.01	3.79	4.18	5.99	7.27	3.49	3.70	11.2	12.0	7.76	5.29	4.48
In.	5.77	4.23	4.81	6.91	7.57	4.02	4.14	12.90	13.41	8.95	6.10	4.99
Ac-ft	32,320	23,710	26,960	38,690	42,380	22,500	23,170	72,250	75,120	50,110	34,140	27,960

Calendar year 1957: Max 2,230 Min 140 Mean 658 Cfsm 6.27 In. 85.12 Ac-ft 476,700  
Water year 1957-58: Max 2,230 Min 236 Mean 648 Cfsm 6.17 In. 83.80 Ac-ft 469,300

Peak discharge (base, 3,600 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 17-23, Nov. 26 to Dec. 7, Dec. 14-16, Jan. 1-5, Mar. 8-10; discharge estimated on basis of records for nearby stations.

2090. South Fork Nooksack River near Wickersham, Wash.

Location.--Lat 48°39'50", long 122°07'50", in lot 2, SW<sup>1</sup>/<sub>4</sub> sec. 26, T. 37 N., R. 5 E., on left bank three-quarters of a mile upstream from Skookum Creek and 4 miles east of Wickersham.

Drainage area.--103 sq mi.

Records available.--October 1933 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 385 ft (from river-profile map). Prior to July 9, 1934, staff gage at same site and datum.

Average discharge.--25 years, 724 cfs (524,200 acre-ft per year).

Extremes.--Maximum discharge during year, 8,020 cfs Jan. 16 (gage height, 8.59 ft); minimum, 69 cfs Aug. 26, 27 (gage height, 1.91 ft).

1933-58: Maximum discharge, 19,300 cfs Nov. 3, 1955 (gage height, 13.40 ft), from rating curve extended above 11,000 cfs; minimum, 66 cfs Oct. 9, 1940, Sept. 11-13, 1944; minimum gage height, that of Aug. 26, 27, 1958.

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

Revisions (water years).--WSP 832: 1935-36.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Feb. 24

Feb. 24 to Sept. 30

1.9	75	4.0	1,100	1.9	67	3.5	645
2.3	153	5.0	2,150	2.4	172	4.0	1,010
3.0	405	7.0	4,990	3.0	385	5.5	2,680
3.5	700						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	95	364	468	510	858	759	412	710	745	189	92	250
2	136	275	583	477	742	652	430	745	*633	186	90	129
3	127	236	628	522	680	568	460	890	591	197	90	103
4	114	210	528	661	628	520	403	808	627	200	92	86
5	104	189	466	609	*616	563	372	780	652	194	86	81
6	99	175	602	596	661	490	367	752	645	186	84	77
7	97	184	622	616	778	475	376	938	597	178	86	72
8	94	153	728	770	930	440	421	1,030	465	172	86	70
9	90	148	648	810	1,240	408	421	954	495	162	84	74
10	88	175	552	1,420	1,390	380	574	874	460	154	82	76
11	87	482	758	1,460	946	354	495	759	421	150	81	86
12	87	1,470	1,400	1,210	1,290	336	525	591	385	147	81	77
13	242	*2,210	*770	906	1,660	320	628	505	372	138	79	76
14	210	1,520	*802	1,170	1,030	308	752	553	376	129	77	103
15	139	946	616	2,900	914	300	850	752	385	124	77	152
16	116	648	680	4,490	1,450	296	1,140	882	421	124	77	402
17	110	499	1,410	3,410	1,390	285	994	882	460	*122	77	426
18	104	430	1,280	1,730	2,610	*282	1,030	946	445	122	77	312
19	99	387	*1,110	1,330	2,040	358	1,210	1,200	440	122	76	956
20	94	339	1,190	1,030	1,310	580	1,480	994	416	120	74	475
21	90	306	938	866	1,160	994	1,090	1,120	385	116	72	398
22	95	291	721	735	2,040	794	*938	1,190	362	114	70	316
23	168	494	687	1,260	1,440	738	801	1,160	340	111	72	296
24	460	488	802	2,670	2,430	684	664	1,140	304	103	72	304
25	405	482	1,290	1,340	2,630	710	591	1,160	250	101	72	577
26	382	482	2,320	1,040	1,870	627	552	1,170	233	101	70	340
27	254	400	1,130	874	1,210	541	505	1,120	300	99	70	240
28	189	405	1,190	1,710	914	510	505	954	304	101	*76	197
29	379	339	946	1,390	490	530	671	250	101	99	172	172
30	2,250	318	687	1,520	-----	505	627	697	209	99	107	157
31	576	-----	583	1,070	-----	445	-----	724	-----	95	97	-----
Total	7,580	15,025	27,135	41,102	36,857	15,712	20,193	27,661	12,968	4,257	2,525	7,080
Mean	245	501	875	1,326	1,316	507	673	892	432	137	81.5	236
Cfs/m	2.38	4.86	8.50	12.9	12.9	4.92	6.53	8.66	4.19	1.33	0.791	2.29
In.	2.74	5.43	9.80	14.84	13.31	5.67	7.29	9.99	4.68	1.54	0.91	2.56
Ac-ft	15,030	29,800	53,820	81,520	73,100	31,160	40,050	54,860	25,720	8,440	5,010	14,040

Calendar year 1957: Max 2,990 Min 87 Mean 547 Cfs/m 5.31 In. 72.05 Ac-ft 395,700  
Water year 1957-58: Max 4,490 Min 70 Mean 598 Cfs/m 5.81 In. 78.76 Ac-ft 432,600

Peak discharge (base, 4,800 cfs).--Jan. 16 (8 p.m.) 8,020 cfs (8.59 ft).

\* Discharge measurement made on this day.

2095. Skookum Creek near Wickersham, Wash.

Location.--Lat 48°40'20", long 122°08'25", in NE $\frac{1}{4}$  sec. 27, T. 37 N., R. 5 E., on left bank 100 ft upstream from private road crossing, 500 ft upstream from mouth, and  $3\frac{1}{2}$  miles northeast of Wickersham.

Drainage area.--23.1 sq mi.

Records available.--July 1948 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 400 ft (from river-profile map).

Average discharge.--10 years, 133 cfs (96,290 acre-ft per year).

Extremes.--Maximum discharge during year, 1,010 cfs Jan. 16 (gage height, 5.33 ft), from rating curve extended above 400 cfs by logarithmic plotting; minimum, 17.5 cfs Aug. 26, 27, Sept. 7, 8, 12, 13 (gage height, 2.01 ft).  
1948-58: Maximum discharge, 3,050 cfs Nov. 27 or Dec. 1, 1949 (gage height, 9.0 ft, from floodmark); from rating curve extended above 400 cfs by logarithmic plotting; minimum, 17 cfs Feb. 9, 10, 1949, Sept. 23, 24, 1951; minimum gage height, 1.70 ft Oct. 19, 20, 1952.

Remarks.--Records good except those above 400 cfs, which are fair. No regulation or diversion above station.

Revisions (water years).--WSP 1182: 1949. WSP 1286: 1950(M), drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-29

Oct. 30 to Sept. 30

2.0	16	2.0	17	3.4	251
2.3	37	2.4	52	4.0	450
2.6	70	2.8	110	5.0	865
3.0	142				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1	24	73	99	88	159	141	70	122	122	44	26	55	
2	49	59	97	88	148	124	83	122	*103	42	25	28	
3	51	52	96	101	137	110	79	137	96	42	26	23	
4	28	46	84	120	120	97	67	120	96	45	24	20	
5	26	42	70	114	*120	108	62	116	105	46	23	19	
6	26	38	114	122	132	92	58	112	105	48	22	18.5	
7	25	*36	96	124	145	110	59	112	97	45	23	17.5	
8	25	35	105	161	173	83	69	145	80	44	23	17.5	
9	24	34	94	137	219	76	76	132	82	42	22	19	
10	23	49	86	413	206	69	103	126	78	40	20	20	
11	23	101	118	263	152	65	76	106	72	39	21	20	
12	23	230	176	243	259	63	82	84	68	39	21	18.5	
13	67	298	*106	168	268	59	130	74	68	37	20	20	
14	42	227	116	259	182	58	157	83	64	35	20	28	
15	31	148	89	394	157	56	204	116	65	33	20	26	
16	28	103	144	586	286	54	204	128	73	33	20	93	
17	27	84	276	436	301	53	273	126	83	*33	19	86	
18	26	77	202	257	526	*53	194	139	83	32	19	57	
19	25	74	184	194	366	79	216	173	82	32	19	111	
20	24	63	168	154	227	126	222	134	78	32	18.5	69	
21	23	58	132	137	246	192	180	154	77	31	18.5	60	
22	24	56	110	124	320	139	*168	161	77	31	18.5	50	
23	108	121	110	334	229	120	141	159	73	30	19	84	
24	97	81	132	360	434	132	124	152	65	30	18.5	65	
25	72	86	353	212	401	110	108	170	57	29	18.5	98	
26	57	77	311	166	280	105	99	159	54	29	18.5	58	
27	45	68	177	154	212	90	89	150	72	29	20	45	
28	39	65	199	362	168	90	86	134	64	28	*20	38	
29	128	58	152	276	-	86	88	105	54	28	24	36	
30	377	54	114	257	-----	90	108	122	49	27	20	37	
31	111	-----	96	185	-----	77	-----	139	-----	26	28	-----	
Total	1,678	2,593	4,406	6,989	6,573	2,907	3,674	4,012	2,342	1,101	655.0	1,337.0	
Mean	54.1	86.4	142	225	235	93.8	122	129	78.1	35.5	21.1	44.6	
Cfs/m	2.34	3.74	6.15	9.74	10.2	4.06	5.28	5.58	3.38	1.54	0.913	1.93	
In.	2.70	4.17	7.09	11.25	10.58	4.68	5.91	6.46	3.77	1.77	1.05	2.15	
Ac-ft	3,330	5,140	8,740	13,860	13,040	5,770	7,290	7,960	4,650	2,180	1,300	2,650	
Calendar year 1957: Max	500			Min	23	Mean	103	Cfs/m	4.46	In.	60.24	Ac-ft	74,230
Water year 1957-58: Max	586			Min	17.5	Mean	105	Cfs/m	4.55	In.	61.58	Ac-ft	75,910

Peak discharge (base, 850 cfs).--Dec. 25 (6 p.m.) 874 cfs (5.02 ft); Jan. 16 (5:30 p.m.) 1,010 cfs (5.33 ft).

\* Discharge measurement made on this day.

## 2105. Nooksack River at Deming, Wash.

Location.--Lat 48°48'40", long 122°12'15", in lot 12, sec. 6, T. 38 N., R. 5 E., on left bank 800 ft downstream from South Fork and 1 mile southeast of Deming.

Drainage area.--580 sq mi.

Records available.--September 1910 to March 1911 (gage heights only), July 1935 to September 1957, October 1957 to September 1958 (discharges above 3,500 cfs only).  
Published as "near Deming" 1910-11.

Gage.--Water-stage recorder. Datum of gage is 203.6 ft above mean sea level, datum of 1929. Prior to Dec. 5, 1910, staff gage at site 1 1/3 miles downstream at different datum. Dec. 5, 1910, to Mar. 31, 1911, staff gage at site 5 miles downstream at different datum. July 20 to Sept. 19, 1935, staff gage at same site and datum.

Average discharge.--22 years (1935-57), 3,244 cfs (2,349,000 acre-ft per year).

Extremes.--Maximum discharge during year, 22,000 cfs Jan. 16 (gage height, 11.75 ft), 1935-58: Maximum discharge, 43,200 cfs Feb. 10, 1951 (gage height, 15.69 ft), from rating curve extended above 25,000 cfs; minimum recorded, 502 cfs Nov. 29, 1952 (gage height, 3.72 ft).

Remarks.--Records fair. No diversion. Slight regulation by powerplant at Excelsior.

Revisions (water years).--WSP 1286: 1951. WSP 1446: 1937(M).

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	4,380	-	-	-
6	-	-	-	-	-	-	-	-	4,620	-	-	-
7	-	(*)	-	-	-	-	-	-	4,330	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	4,020	3,820	-	-	-	-	-	-	-
11	-	-	-	4,560	-	-	-	-	-	-	-	-
12	-	3,560	(*)	3,860	3,630	-	-	-	-	-	-	-
13	-	5,060	-	-	4,890	-	-	-	-	-	-	-
14	-	4,100	-	3,890	-	-	-	-	-	-	-	-
15	-	-	-	6,540	-	-	-	-	-	-	-	-
16	-	-	-	10,700	4,130	-	-	-	-	-	-	-
17	-	-	-	14,400	4,150	-	-	-	-	-	-	-
18	-	-	-	7,220	8,750	-	4,350	4,330	-	-	-	-
19	-	-	-	5,200	7,840	-	4,120	5,450	-	-	-	3,560
20	-	-	-	4,180	4,990	-	5,420	5,030	-	-	-	-
21	-	-	-	*3,690	4,110	-	4,470	5,650	-	-	-	-
22	-	-	-	-	5,830	-	-	6,100	-	-	-	-
23	-	-	-	4,150	4,670	-	-	6,120	-	-	-	-
24	-	-	-	7,430	7,920	-	-	6,240	-	-	-	-
25	-	-	4,020	4,620	9,930	-	-	6,690	-	-	-	-
26	-	-	8,390	3,780	7,330	-	-	6,690	-	-	-	-
27	-	-	4,150	-	5,060	-	-	6,610	-	-	-	-
28	-	-	-	5,590	4,020	-	-	6,580	-	-	-	-
29	-	-	-	4,890	-	-	-	4,730	-	-	-	-
30	8,950	-	-	5,420	-	-	-	-	-	-	-	-
31	3,660	-	-	4,070	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-	-	-
Mean	-	-	-	-	-	-	-	-	-	-	-	-
Ac-ft	-	-	-	-	-	-	-	-	-	-	-	-
Calendar year	: Max		Min		Mean		Ac-ft					
Water year	: Max		Min		Mean		Ac-ft					

Peak discharge (base, 13,000 cfs).--Oct. 30 (7 a.m.) 14,700 cfs (10.05 ft); Jan. 16 (11:30 p.m.) 22,000 cfs (11.75 ft); Feb. 24 (8:30 p.m.) 13,400 cfs (9.82 ft).

\* Discharge measurement made on this day.

## NOOKSACK RIVER BASIN

2115. Nooksack River near Lynden, Wash.

Location.--Lat 48°55'10", long 122°29'10", in NE 1/4 sec. 36, T. 40 N., R. 2 E., on right bank 150 ft downstream from bridge on State Highway 1B, 1 1/2 miles upstream from Fish-trap Creek, 2 miles southwest of Lynden, and 1 1/2 miles upstream from mouth.

Drainage area.--636 sq mi.

Records available.--October 1944 to September 1958. Monthly discharge only for some periods, published in WSP 1316.

Gage.--Water-stage recorder. Datum of gage, is 24.4 ft above mean sea level, datum of 1929 (levels by Corps of Engineers).

Average discharge.--14 years, 3,666 cfs (2,654,000 acre-ft per year).

Extremes.--Maximum discharge during year, 20,900 cfs Jan. 17 (gage height, 17.15 ft); minimum, 762 cfs Nov. 10; minimum gage height, 5.34 ft Sept. 5, 6.  
1944-58: Maximum discharge, 46,200 cfs Feb. 10, 1951 (gage height, 21.76 ft); minimum, 595 cfs Nov. 30, 1952 (gage height, 5.01 ft).

Remarks.--Records good except those for period Oct. 30 to Nov. 30, which are fair. No diversion above station. Slight regulation by powerplant at Excelsior.

Revisions (water years).--WSP 1286: 1945(P), 1947-48(P), 1950-51(P), 1952(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 30 to Nov. 16)

Oct. 1 to Jan. 16

Jan. 17 to Sept. 30

5.3	780	5.4	970
6.5	1,650	6.5	1,780
8.0	3,240	8.0	3,300
10.0	6,080	10.0	6,080
12.0	9,640	13.0	11,500
		16.0	18,000

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,180	2,400	1,340	2,340	3,980	4,130	1,830	2,890	4,200	1,900	1,850	2,230
2	1,340	1,670	1,870	2,170	3,520	3,660	1,820	3,080	3,950	1,920	1,730	1,620
3	1,300	1,370	1,950	2,200	3,200	3,280	1,880	3,410	3,710	2,140	1,610	1,240
4	1,180	1,180	1,920	2,790	2,960	2,980	1,780	3,580	3,900	2,400	1,420	1,020
5	1,180	1,080	1,770	2,650	2,730	2,940	1,640	3,350	4,240	2,650	1,300	970
6	1,180	984	1,740	2,500	2,770	2,770	1,590	3,270	4,590	2,730	1,470	1,010
7	1,170	900	2,430	2,550	2,780	2,610	1,570	3,640	4,820	2,650	1,620	1,170
8	1,170	840	2,310	2,750	3,110	2,520	1,800	4,190	3,760	*2,700	1,590	1,330
9	1,160	786	2,350	3,190	3,440	2,320	1,720	4,330	3,660	2,480	1,410	1,450
10	1,150	780	2,020	3,810	4,210	*2,160	1,970	4,150	3,560	2,370	1,420	1,380
11	1,160	1,080	*1,990	5,610	3,740	2,040	2,000	3,930	3,280	2,420	1,550	1,460
12	1,170	2,160	3,390	4,600	3,820	1,920	1,900	3,340	3,060	2,400	1,630	1,100
13	1,510	4,280	2,700	3,990	5,880	1,820	2,270	2,770	3,020	2,150	1,510	1,010
14	2,420	3,800	2,470	4,210	4,600	1,740	*3,050	2,670	2,800	1,940	1,420	1,080
15	1,700	*3,240	2,200	6,690	3,760	1,680	3,060	3,060	3,020	1,840	1,440	1,050
16	1,440	2,360	2,050	9,410	4,570	1,630	4,070	3,800	3,170	2,100	1,480	1,270
17	1,320	1,860	3,180	16,000	4,740	1,590	4,080	4,120	3,700	2,520	1,410	2,940
18	1,260	1,600	3,900	7,940	8,230	1,570	4,880	4,300	3,950	2,440	*1,410	2,260
19	1,220	1,500	3,300	5,450	8,960	1,600	4,070	5,200	4,040	2,260	1,370	4,080
20	1,190	1,340	4,030	*4,300	6,160	2,240	5,720	5,220	4,100	2,070	1,380	2,840
21	1,150	1,200	3,600	3,760	4,870	2,830	4,880	5,380	4,030	2,000	1,570	2,180
22	1,120	1,130	3,100	3,280	6,250	3,070	4,530	6,110	3,980	2,130	1,590	1,990
23	1,180	1,710	2,630	3,520	5,490	2,740	4,130	6,110	4,020	*2,070	1,630	1,600
24	2,480	2,440	2,950	7,380	6,790	2,620	3,530	6,130	3,880	1,920	1,740	1,590
25	2,840	1,900	3,170	5,320	10,700	2,800	3,150	6,640	5,170	1,960	1,820	1,810
26	3,160	2,010	9,070	4,170	8,710	2,520	2,840	*6,540	2,920	2,010	1,760	1,670
27	2,400	1,670	4,980	3,610	6,250	2,310	2,610	6,500	3,580	2,240	1,490	1,390
28	1,850	1,640	4,130	4,980	4,900	2,130	2,450	6,610	3,020	2,420	1,590	1,310
29	1,640	1,460	3,950	5,530	-	2,120	2,410	5,080	2,460	2,420	1,350	*1,240
30	7,620	1,340	3,190	6,280	-----	2,080	2,590	4,380	2,110	2,240	1,340	1,120
31	3,740	-----	2,650	4,610	-----	1,970	-----	4,190	-----	2,000	1,260	-----
Total	55,590	51,710	92,330	147,790	141,120	74,390	85,620	137,970	107,400	69,390	46,960	48,410
Mean	1,793	1,724	2,978	4,767	5,040	2,400	2,854	4,451	3,580	2,238	1,515	1,614
Cfsm	2.82	2.71	4.68	7.50	7.92	3.77	4.49	7.00	5.63	3.52	2.38	2.54
In.	3.25	3.02	5.40	8.64	8.25	4.35	5.01	8.07	6.28	4.06	2.75	2.83
Ac-ft	110,300	102,600	183,100	293,100	279,900	147,600	169,800	273,700	213,000	137,600	93,140	96,020

Calendar year 1957: Max 11,100 Min 780 Mean 2,791 Cfsm 4.39 In. 59.57 Ac-ft 2,021,000  
Water year 1957-58: Max 16,000 Min 780 Mean 2,900 Cfsm 4.56 In. 61.91 Ac-ft 2,100,000

Peak discharge (base, 15,000 cfs).--Jan. 17 (5:30 a.m.) 20,900 cfs (17.15 ft).

\* Discharge measurement made on this day.



## 2120. Fishtrap Creek at Lynden, Wash.

Location.--Lat 48°57'50", long 122°26'00", on north line sec. 16, T. 40 N., R. 3 E., on right bank on downstream side of bridge on State Highway 1A, 1 mile north of Lynden.

Drainage area.--24.1 sq mi, of which 18.5 sq mi is in Canada.

Records available.--July 1948 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 110 ft (from topographic map).

Average discharge.--10 years, 34.8 cfs (25,190 acre-ft per year).

Extremes.--Maximum discharge during year, 214 cfs Jan. 24 (gage height, 4.42 ft); minimum, 1.5 cfs Sept. 11 (gage height, 1.03 ft).  
1948-58: Maximum discharge, 550 cfs Feb. 11, 1951 (gage height, 6.59 ft); minimum, 0.4 cfs Sept. 10, 1949 (gage height, 1.00 ft).

Remarks.--Records good. Probably some small diversions for minor irrigation and domestic use. Regulation from unknown source.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 13

Jan. 14 to Sept. 30

1.2	3.8	2.0	26	1.0	1.8	2.0	30
1.3	4.3	3.0	80	1.2	4.1	3.0	83
1.5	8.9			1.5	11.5	4.3	201

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.5	7.4	13	26	68	48	23	22	11.5	6.0	3.1	2.6
2	4.7	6.4	17.5	24	56	44	24	21	10.5	6.0	3.0	2.6
3	4.7	6.2	18.5	22	50	42	24	21	9.5	5.8	3.1	2.4
4	4.7	5.7	17	21	*46	40	24	19.5	9.2	5.8	3.0	2.2
5	4.5	5.7	16	21	43	40	22	18	8.9	5.6	2.8	2.0
6	4.3	5.5	20	22	42	38	21	17.5	8.6	5.1	3.0	2.2
7	4.3	5.5	26	20	43	37	20	16.5	8.9	5.0	3.3	2.1
8	4.3	*5.1	22	21	43	37	19.5	16	8.6	*4.6	3.0	2.2
9	4.3	5.1	18	21	50	35	22	15.5	8.3	*4.4	2.8	2.1
10	4.1	5.5	16	28	60	*32	28	15	8.0	4.1	3.0	2.0
11	4.3	6.4	*15	44	57	30	25	15	8.0	4.0	2.7	2.1
12	4.5	10	14	56	77	29	22	14.5	8.0	3.7	2.6	2.1
13	5.1	18	14	51	134	27	21	14	8.0	4.4	2.5	1.9
14	5.3	26	13.5	a70	97	26	*22	13.5	7.8	4.1	2.4	2.0
15	4.9	19	13.5	a90	72	26	24	13	7.5	4.1	2.4	1.9
16	4.9	14.5	13	a170	82	25	40	13	7.5	3.8	2.3	3.8
17	4.9	12.5	13	a110	84	25	47	12.5	7.2	3.7	2.4	5.1
18	4.9	11.5	13.5	a85	124	30	55	12.5	7.0	3.7	2.3	4.4
19	4.9	11	18	a80	101	35	46	12.5	7.0	3.7	*2.1	4.4
20	4.9	10.5	24	*52	73	46	62	12.5	6.5	4.0	2.3	4.1
21	5.1	9.7	24	50	66	40	54	11.5	6.2	3.8	2.1	4.0
22	4.9	9.4	32	48	96	36	44	11.5	6.2	3.7	2.0	3.7
23	5.5	9.4	37	71	80	32	37	11	6.2	3.3	2.0	3.6
24	6.4	9.7	28	193	73	30	32	10.5	6.2	3.4	2.1	3.6
25	6.2	9.7	34	116	81	33	31	10	6.2	3.2	2.3	3.4
26	6.4	10.5	60	72	76	30	34	*9.8	6.5	3.3	2.0	3.4
27	5.9	10.5	47	56	62	28	33	*9.5	6.5	3.4	1.9	3.3
28	5.7	14	50	61	54	26	28	9.8	6.2	3.4	2.4	3.3
29	6.2	13.5	48	77	-	26	25	10.5	6.2	*3.2	2.6	*3.3
30	11	12.5	38	136	-----	25	23	10.5	6.2	3.3	2.7	3.3
31	9.2	-----	30	94	-----	25	-----	11	-----	3.2	2.8	-----
Total	165.3	306.4	763.5	1,988	1,990	1,023	932.5	430.6	229.1	128.8	79.0	89.1
Mean	5.33	10.2	24.6	64.1	71.1	33.0	31.1	13.9	7.64	4.15	2.55	2.97
Ac-ft	326	608	1,510	3,940	3,950	2,030	1,850	854	454	255	157	177

Calendar year 1957: Max 188 Min 4.1 Mean 26.1 Ac-ft 18,880  
Water year 1957-58: Max 193 Min 1.9 Mean 22.3 Ac-ft 16,110

Peak discharge (base, 220 cfs).--No peak above base.

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of recorded range in stage and records for nearby stations.

## KOOTENAI RIVER BASIN

3000. Kootenay River at Newgate, British Columbia

(International gaging station)

Location.--Lat 49°01', long 115°10', on left bank at old highway bridge site, 0.7 mile northwest of Newgate and 0.9 mile north of international boundary.

Drainage area.--7,660 sq mi, approximately.

Records available.--October 1930 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 2,310.23 ft above mean sea level (datum of Geodetic Survey of Canada, adjustment of 1945). Prior to Oct. 1, 1940, staff gage at same site at datum 1.00 ft higher. Oct. 1, 1940, to Apr. 30, 1947, staff gage at present site and datum.

Average discharge.--28 years, 10,180 cfs (7,370,000 acre-ft per year).

Extremes.--Maximum discharge during year, 57,700 cfs May 25 (gage height, 11.38 ft); minimum, 1,180 cfs Jan. 3 (gage height, 1.19 ft).  
1930-58: Maximum discharge, 38,200 cfs May 28, 1948 (gage height, 15.02 ft); minimum observed, 994 cfs Feb. 7, 1936; minimum gage height observed, 0.21 ft Jan. 11, 1944.

Remarks.--Records excellent except those for periods of no gage-height record, which are good. Records give total flow of main channel and slough.

Cooperation.--This station is maintained by Canada under agreement with the United States.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 25

May 26 to Sept. 30

1.5	1,290	5.0	10,400	3.0	4,610	8.0	28,800
1.5	1,540	6.0	15,300	4.0	6,700	10.0	45,000
2.0	2,270	8.0	28,800	5.0	10,000	11.5	58,800
3.0	4,260	10.0	45,100	6.0	14,900		
4.0	6,950	11.5	58,800				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,990	4,480	2,420	1,550	2,270	2,800	3,000	4,450	41,900	18,100	8,620	5,640
2	4,050	4,210	2,490	1,390	2,080	a2,750	3,000	5,850	40,900	18,000	8,490	5,430
3	4,120	3,990	2,670	1,360	1,940	a2,580	2,980	7,590	38,700	18,100	8,560	5,330
4	4,310	3,810	2,760	1,660	2,070	*a2,380	2,930	10,100	35,600	17,500	8,260	5,380
5	4,840	3,630	2,840	1,810	2,180	2,480	3,110	*11,800	33,600	16,900	8,140	5,250
6	4,780	3,520	2,820	*1,970	2,170	2,530	3,370	12,600	31,700	16,900	7,930	5,040
7	4,580	3,500	2,730	2,070	2,180	2,480	3,480	15,500	31,900	20,200	7,450	4,880
8	4,450	3,500	2,580	2,020	2,100	2,390	3,660	19,500	34,200	22,500	7,240	4,680
9	4,280	3,390	2,600	2,080	1,940	2,370	3,770	24,800	33,500	20,600	7,090	4,610
10	4,140	3,190	2,370	2,250	1,970	2,340	3,920	29,100	33,400	19,000	7,120	*4,550
11	4,050	3,110	*2,670	2,240	2,130	2,320	3,960	32,200	36,800	17,500	7,150	4,650
12	3,900	3,170	a2,480	2,340	2,180	2,290	3,850	34,600	38,000	16,300	7,150	4,790
13	3,810	3,290	a2,470	2,410	2,130	2,240	4,120	33,600	37,100	16,500	7,120	4,790
14	3,900	3,330	a2,450	2,460	1,990	2,170	*5,000	36,100	32,600	17,400	7,060	4,970
15	4,120	3,350	2,420	2,370	1,960	2,120	6,330	32,300	29,200	17,200	6,910	5,300
16	4,190	3,250	2,340	2,390	1,970	2,020	6,500	33,900	27,100	15,300	6,790	5,400
17	4,140	3,130	2,340	2,410	2,040	2,070	6,560	38,600	24,900	13,800	6,640	5,110
18	4,080	3,110	2,480	2,530	2,080	2,170	6,470	39,500	25,400	13,000	6,520	4,940
19	3,980	3,040	2,550	2,420	2,150	2,150	6,110	38,200	22,600	12,400	6,490	*5,350
20	3,880	2,940	2,530	2,370	2,200	2,130	5,790	*38,900	22,600	12,200	6,460	6,670
21	3,830	2,890	2,550	2,370	2,320	2,170	5,570	44,300	22,400	11,900	6,520	7,000
22	3,810	2,580	2,510	2,270	2,370	2,270	5,380	49,800	20,200	11,500	6,460	6,850
23	3,680	2,660	2,480	2,220	2,510	2,320	5,190	52,800	19,100	11,400	6,280	6,040
24	3,590	2,760	2,440	2,200	2,820	2,490	4,950	55,600	18,600	11,200	6,190	5,880
25	3,520	2,850	2,410	2,300	3,150	2,690	4,680	57,200	16,200	10,800	5,960	5,610
26	3,500	3,000	2,510	2,220	3,550	2,840	4,480	57,100	17,200	10,200	5,820	5,330
27	3,550	3,040	2,510	2,220	3,330	2,910	4,360	55,200	16,300	9,720	5,770	5,040
28	3,500	2,930	2,460	2,240	3,020	2,930	4,260	52,400	16,300	9,410	5,850	4,900
29	*3,440	2,840	2,410	2,250	---	3,020	4,170	50,100	17,800	9,110	5,960	4,900
30	3,550	2,580	2,370	2,250	---	3,020	4,080	48,300	19,800	*8,900	6,040	4,920
31	4,190	---	1,360	2,250	---	3,040	---	44,700	---	8,790	5,850	---
Total	123,610	97,070	77,980	66,890	64,800	76,480	134,940	1,072,470	835,600	452,330	213,690	159,330
Mean	3,990	3,240	2,520	2,160	2,310	2,470	4,500	34,600	27,900	14,600	6,890	5,310
Cfsm	0.52	0.42	0.33	0.28	0.30	0.32	0.59	4.52	3.64	1.91	0.90	0.69
In.	0.60	0.47	0.38	0.32	0.31	0.37	0.66	5.21	4.06	2.20	1.04	0.77
Ac-ft	245,200	192,500	154,700	132,700	128,500	151,700	267,600	*2,127	*1,657	897,200	423,800	316,000
Calendar year 1957: Max	45,600	Min	1,650	Mean	9,320	Cfsm	1.22	In.	16.52	Ac-ft	6,750,000	
Water year 1957-58: Max	57,200	Min	1,360	Mean	9,250	Cfsm	1.21	In.	16.39	Ac-ft	6,694,000	

\* Discharge measurement made on this day.

† Expressed in thousands.

a No gage-height record; discharge estimated on basis of records for stations at Wardner and at at Libby.

3020. Fisher River near Jennings, Mont.

Location--Lat 48°14'40", long 115°17'10", in NW¼ sec. 27, T. 29 N., R. 29 W., on right bank 80 ft below bridge, 1 mile downstream from Wolf Creek, 9 miles upstream from mouth, and 9 miles southeast of Jennings.

Drainage area--780 sq mi.

Records available--December 1950 to September 1958.

Gage--Water-stage recorder. Datum of gage is 2,443.23 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark).

Average discharge--7 years (1951-58), 554 cfs (401,100 acre-ft per year).

Extremes--Maximum discharge during year, 2,540 cfs May 10 (gage height, 4.92 ft); minimum, 73 cfs Aug. 26, 27 (gage height, 1.12 ft).

1950-58: Maximum discharge, 6,320 cfs Apr. 17, 1956 (gage height, 7.32 ft); minimum daily, 60 cfs Nov. 30, 1952.

Maximum discharge known, 6,560 cfs about May 22, 1948, from slope-area measurement of peak flow at site  $\frac{1}{2}$  miles downstream.

Remarks--Records good except those for periods of ice effect, which are poor.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 16-30)

1.1	69	3.0	805
1.5	161	4.0	1,550
2.0	322	5.0	2,640
2.5	550		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	99	174	151	b120	144	472	817	878	745	234	134	90
2	105	161	129	b110	141	432	825	1,080	688	227	129	88
3	129	151	*129	b150	136	400	829	1,380	620	250	122	84
4	151	141	126	b135	139	372	853	1,560	600	260	117	86
5	138	138	124	b140	136	360	884	1,630	*575	237	114	84
6	129	*136	124	b140	*134	*345	917	1,700	580	257	*112	84
7	131	134	126	*b140	134	311	937	1,910	575	234	108	82
8	136	131	126	b135	136	311	951	*2,010	555	*227	105	80
9	131	126	131	b135	134	289	965	2,310	526	234	108	77
10	124	129	131	b135	136	274	*944	<u>2,350</u>	565	224	105	*77
11	122	129	131	b135	144	268	904	2,160	516	208	103	80
12	119	134	131	b140	141	254	878	2,260	555	200	101	77
13	117	138	126	b140	146	237	910	2,050	526	191	99	77
14	117	151	126	b140	144	234	1,150	*1,670	467	185	97	82
15	114	146	124	141	141	234	1,430	1,470	555	180	92	84
16	112	141	124	151	144	227	1,570	1,490	503	174	90	84
17	122	141	129	161	146	220	1,660	1,550	444	169	90	84
18	136	136	138	161	144	220	1,700	1,450	412	172	88	88
19	136	134	138	156	148	217	1,550	1,350	392	180	88	92
20	131	124	148	151	154	<u>214</u>	1,620	1,410	372	164	86	110
21	131	b120	169	148	185	227	1,660	1,440	349	156	84	103
22	148	b124	169	146	208	278	1,600	1,420	330	148	80	101
23	148	b125	156	148	268	315	1,450	*1,350	289	141	77	103
24	136	126	154	156	412	368	1,280	1,370	326	138	77	103
25	134	126	151	161	555	521	1,140	1,310	380	134	77	108
26	141	129	188	156	674	697	1,060	1,240	315	134	75	114
27	166	126	197	151	635	763	978	1,170	285	129	73	108
28	166	126	183	148	535	775	916	1,090	278	126	80	103
29	161	b115	174	154	-	769	853	1,030	264	129	88	99
30	161	b110	164	151	-----	781	823	847	247	136	101	97
31	183	-----	b140	148	-----	811	-----	757	-----	134	99	-----
Total	4,177	4,022	4,437	4,463	6,273	12,196	34,047	46,722	13,814	5,712	2,999	2,728
Mean	135	134	143	144	224	393	1,135	1,507	460	184	96.7	91.0
Cfsm	0.173	0.172	0.183	0.185	0.287	0.504	1.46	1.93	0.590	0.236	0.124	0.117
In.	0.20	0.19	0.21	0.21	0.30	0.58	1.62	2.23	0.66	0.27	0.14	0.13
Ac-ft	8,280	7,980	8,800	8,850	12,440	24,190	67,530	92,670	27,400	11,330	5,950	5,410

Calendar year 1957: Max 3,840 Min 80 Mean 478 Cfsm 0.613 In. 8.31 Ac-ft 346,100  
 Water year 1957-58: Max 2,380 Min 73 Mean 388 Cfsm 0.497 In. 6.74 Ac-ft 280,800

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

## 3030. Kootenai River at Libby, Mont.

Location.--Lat 48°24'00", long 115°33'10", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 34, T. 31 N., R. 31 W., on right bank 1,800 ft downstream from highway bridge at Libby and 1 mile downstream from Libby Creek.

Drainage area.--10,240 sq mi, approximately.

Records available.--October 1910 to September 1958. Monthly discharges only for some periods, published in WSP 1316.

Gage.--Water-stage recorder. Datum of gage is 2,041.54 ft above mean sea level, datum of 1929, supplementary adjustment of 1947. Prior to Apr. 28, 1931, staff, chain, and wire-weight gages 1,800 ft upstream at different datum.

Average discharge.--48 years, 11,830 cfs (8,565,000 acre-ft per year).

Extremes.--Maximum discharge during year, 63,100 cfs May 25 (gage height, 14.08 ft); minimum, 2,060 cfs Jan. 1 (gage height, 0.65 ft).

1910-58: Maximum discharge, 121,000 cfs June 21, 1916 (gage height, 20.7 ft, present datum, derived from gage-relation study); minimum observed, 895 cfs Jan. 11, 1930 (discharge measurement).

Remarks.--Records excellent except those for periods of no gage-height record, which are fair. Diversions for irrigation of about 14,500 acres from tributaries above station in Canada and United States.

Revisions (water years).--WSP 1042: 1933. WSP 1246: 1912(M), 1915(M), 1916, 1918-19(M), 1924-27(M).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

0.7	2,120	6.0	17,700
1.0	2,590	8.0	26,600
2.0	4,800	11.0	43,500
4.0	10,500	14.5	66,000

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,610	5,300	3,250	2,120	2,710	4,560	5,190	7,020	44,000	19,700	9,840	6,380
2	4,680	5,100	3,060	2,120	2,710	4,250	5,160	5,340	42,700	18,900	9,630	6,180
3	4,950	5,000	*3,120	2,200	2,500	3,960	5,140	11,000	40,400	19,100	9,510	6,050
4	5,010	4,800	3,270	2,260	2,390	3,720	5,150	14,400	37,400	18,900	9,330	6,050
5	5,240	*4,630	3,400	2,300	2,520	3,600	5,240	17,200	35,400	18,100	*9,180	5,970
6	5,660	4,420	3,470	2,440	*2,640	*3,560	5,530	18,800	*33,400	17,900	9,090	5,740
7	5,550	4,320	3,450	*2,380	2,640	3,580	5,810	20,800	33,000	19,100	8,580	5,530
8	5,420	4,300	3,200	2,420	2,640	3,490	6,020	24,800	34,300	*22,300	8,250	5,320
9	5,220	4,300	3,140	2,520	2,540	3,400	6,210	*30,300	35,100	21,400	8,100	5,240
10	5,030	4,150	3,200	2,760	2,450	3,540	*6,380	35,600	33,900	20,100	7,950	*5,140
11	4,930	4,030	3,230	2,890	2,500	3,270	6,410	38,600	36,500	18,900	7,980	5,100
12	4,800	3,960	3,140	3,160	2,680	3,230	6,320	41,200	38,800	17,700	7,980	5,200
13	4,660	4,030	3,120	3,120	2,710	3,100	6,410	45,800	38,200	17,200	7,950	5,300
14	4,610	4,150	3,060	3,100	2,640	3,030	7,500	*44,200	34,700	17,800	7,920	5,400
15	4,730	4,200	2,970	3,160	2,450	2,970	9,570	38,700	31,400	18,300	7,770	5,600
16	4,980	4,130	2,910	3,160	2,490	2,910	11,000	38,200	28,800	16,900	7,590	6,100
17	5,010	4,060	2,860	3,140	2,500	2,820	11,300	42,600	26,600	15,600	7,390	6,100
18	5,010	3,940	2,890	3,080	2,570	2,870	11,400	45,400	24,800	14,700	7,250	5,800
19	4,900	3,860	3,010	3,160	2,640	2,970	11,000	44,100	23,600	14,200	7,190	5,600
20	4,600	3,770	3,120	2,970	2,730	2,930	10,800	45,800	23,300	13,800	7,140	6,500
21	4,600	3,650	3,180	2,880	2,880	2,980	10,700	47,700	23,200	13,400	7,160	7,500
22	4,800	3,510	3,160	2,870	3,060	3,230	10,400	49,500	21,900	13,000	7,140	7,800
23	4,600	3,310	3,060	2,710	3,270	3,470	9,720	*59,800	20,700	12,800	6,940	8,100
24	4,300	3,310	3,030	2,710	3,770	3,720	9,000	61,800	20,200	12,600	6,860	6,900
25	4,300	3,400	3,010	2,740	4,540	4,270	8,370	62,800	19,900	12,500	6,770	6,700
26	4,300	3,560	3,120	2,780	5,220	4,750	7,890	62,200	19,100	11,800	6,520	6,400
27	4,300	3,740	3,230	2,890	5,450	4,960	7,500	60,000	18,200	11,200	6,490	6,100
28	4,300	3,720	3,300	2,710	5,060	5,010	7,150	57,000	17,000	10,700	6,520	5,800
29	4,300	3,580	3,080	2,730	5,060	5,060	6,940	53,600	18,200	10,400	6,630	5,600
30	4,100	3,420	2,950	2,740	-----	5,140	6,770	51,300	20,300	10,100	6,770	5,800
31	4,600	-----	2,540	2,740	-----	5,240	-----	47,800	-----	9,990	6,660	-----
Total	147,880	121,650	96,430	84,740	84,860	115,400	232,030	*122,556	875,900	489,090	240,080	180,800
Mean	4,770	4,055	3,111	2,734	3,031	3,723	7,734	39,500	29,200	15,780	7,745	6,100
Cfsm	0.466	0.396	0.304	0.217	0.296	0.364	0.755	3.86	2.85	1.54	0.756	0.580
In.	0.54	0.44	0.35	0.31	0.42	0.56	0.84	4.45	3.18	1.78	0.87	0.66
Ac-ft	293,300	241,300	191,300	168,100	168,300	228,900	460,200	*2,429	*1,737	970,100	476,200	358,600
Calendar year 1957: Max	56,400	Min	1,500	Mean	11,230	Cfsm	1.10	In.	14.89	Ac-ft	8,130,000	
Water year 1957-58: Max	62,800	Min	2,120	Mean	10,670	Cfsm	1.04	In.	14.15	Ac-ft	7,722,000	

Peak discharge (base, 37,000 cfs).--May 25 (11 to 12 p.m.) 63,100 cfs (14.08 ft).

\* Discharge measurement made this day.

\* Expressed in thousands.

Note.--No gage-height record Oct. 19 to Nov. 4, Sept. 11-30; discharge estimated on basis of once-daily (except Sat. and Sun.) telemark readings as furnished by Bonneville Power Administration.

3042. Yaak River near Yaak, Mont.

Location.--Lat 48°50', long 115°49', in NE $\frac{1}{4}$  sec. 1, T. 35 N., R. 32 W., on right bank 300 ft upstream from Whitetail Creek and  $\frac{1}{2}$  miles west of Yaak.

Drainage area.--493 sq mi.

Records available.--April 1957 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 2,895 ft (river-profile survey).

Extremes.--Maximum discharge during year, 3,500 cfs May 10 (gage height, 8.72 ft); minimum daily, 40 cfs Jan. 2.

1957-58: Maximum discharge, 4,660 cfs May 5, 1957 (gage height, 10.34 ft); minimum daily, that of Jan. 2, 1958.

Flood in May 1956 reached a discharge of 6,650 cfs at site  $\frac{1}{2}$  miles upstream.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 11 to June 1)

0.8	44	3.0	430
1.0	58	4.0	780
1.2	77	5.0	1,220
1.5	115	7.0	2,350
2.0	184	9.0	3,700

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	178	66	45	68	158	370	1,010	840	229	a100	55
2	80	135	73	40	66	140	376	1,460	734	222	a95	54
3	77	105	74	45	65	135	397	1,980	678	224	a90	55
4	92	90	*74	50	66	131	468	2,280	633	224	a86	56
5	82	*95	72	55	66	139	619	2,250	*584	243	*84	56
6	78	94	72	55	66	138	686	2,270	566	238	81	54
7	78	90	69	55	*66	*127	706	2,530	608	231	78	52
8	79	84	68	*54	66	123	731	*2,900	619	218	76	50
9	75	73	70	55	66	121	773	3,240	532	*278	74	50
10	73	77	69	60	68	117	752	3,420	748	270	72	49
11	72	92	62	65	69	113	*710	3,370	672	231	71	*48
12	74	101	68	70	68	106	731	3,240	965	202	70	47
13	78	101	69	65	70	98	880	3,120	762	198	67	46
14	82	100	68	65	67	100	1,360	*2,480	612	176	65	48
15	104	95	66	65	66	101	1,510	2,140	605	171	63	48
16	103	92	66	70	68	101	1,550	2,200	521	164	62	49
17	90	86	67	75	70	101	1,540	2,310	465	156	60	51
18	88	82	69	73	71	101	1,610	2,180	418	152	58	68
19	86	80	69	72	72	101	1,340	2,030	388	152	57	71
20	81	70	73	72	77	103	1,440	2,060	388	149	57	108
21	80	58	73	71	86	105	1,470	2,160	365	138	56	95
22	85	61	72	71	92	125	1,340	2,100	335	131	55	76
23	76	74	69	73	96	150	1,140	1,990	312	130	54	74
24	72	88	69	78	120	191	990	1,910	338	125	55	74
25	82	86	69	74	168	275	900	1,740	328	120	52	77
26	88	84	79	72	220	362	832	1,550	298	a115	51	76
27	89	75	79	70	204	376	776	1,400	275	a110	51	72
28	90	70	76	71	179	368	738	1,230	262	a105	52	69
29	90	64	72	71	-	355	714	1,120	252	a103	55	68
30	116	62	68	71	-----	355	773	940	243	a105	58	67
31	216	-----	55	70	-----	382	-----	832	-----	a108	57	-----
Total	2,692	2,640	2,165	1,996	2,526	5,398	28,222	65,432	15,346	5,408	2,060	1,863
Mean	88.8	88.0	69.8	64.4	80.2	174	941	2,111	512	174	66.5	62.1
Cfs/m	0.176	0.178	0.142	0.131	0.183	0.553	1.91	4.28	1.04	0.353	0.135	0.126
In.	0.20	0.20	0.16	0.15	0.19	0.41	2.13	4.94	1.16	0.41	0.16	0.14
Ac-ft	5,340	5,240	4,290	3,960	5,010	10,710	55,980	129,800	30,440	10,730	4,090	3,700

Calendar year 1957: Max - Min - Mean - Cfs/m - In. - Ac-ft -  
 Water year 1957-58: Max 3,420 Min 40 Mean 372 Cfs/m 0.755 In. 10.25 Ac-ft 269,300

\* Discharge measurement made on this day.

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

Note.--Stage-discharge relation affected by ice Dec. 31 to Jan. 21.

## 3045. Yaak River near Troy, Mont.

Location.--Lat 48°33'45", long 115°58'05", in N $\frac{1}{2}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 5, T. 32 N., R. 34 W., on right bank 400 ft upstream from bridge on U. S. Highway 2, a quarter of a mile upstream from mouth, and  $7\frac{1}{2}$  miles northwest of Troy.

Drainage area.--766 sq mi.

Records available.--October 1910 to September 1916 (fragmentary record), March 1956 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,850 ft (river-profile survey). Oct. 15, 1910, to Sept. 30, 1916, staff gage at several sites within 11 miles of present site at various datums.

Extremes.--Maximum discharge during year, 6,270 cfs May 10 (gage height, 7.90 ft in gage well, 8.10 ft from outside gage); minimum daily, 80 cfs Jan. 2.  
1956-58: Maximum discharge, 12,100 cfs May 21, 1956 (gage height, 9.70 ft in gage well, 10.8 ft from outside gage); minimum daily, 80 cfs, Jan. 19, 1957, Jan. 2, 1958.  
Flood in May to June 1948 reached a stage of 11.0 ft, from floodmarks (discharge, 12,500 cfs). Flood in May 1954 reached a stage of 11.4 ft, from floodmarks (discharge, 13,400 cfs).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.8	82	4.0	540	6.0	2,310
3.0	112	4.5	870	7.0	4,010
3.3	192	5.0	1,230	8.0	6,560
3.6	315				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	95	392	b120	b110	147	498	877	1,690	1,700	468	182	109
2	105	292	150	b80	137	444	877	2,370	1,470	458	168	a107
3	144	228	144	b95	147	347	898	3,080	1,340	468	163	a110
4	160	186	*139	b100	147	376	968	3,490	1,250	474	152	a115
5	147	*186	137	b105	142	376	1,130	3,560	1,160	492	*147	a117
6	142	179	134	b100	142	360	1,230	3,640	*1,110	492	144	a116
7	142	176	132	b100	*144	*335	1,270	4,160	1,220	468	139	a112
8	142	157	139	*b97	144	325	1,300	4,820	1,200	438	139	a110
9	134	150	132	b100	144	302	1,360	*5,450	1,070	*462	134	a108
10	130	155	b130	b105	157	292	1,330	5,720	1,410	504	130	a106
11	130	163	b120	b120	157	284	*1,250	5,640	1,300	450	127	*105
12	132	182	b130	b145	152	266	1,270	5,580	1,610	398	127	104
13	139	203	b140	b140	152	249	1,470	4,750	1,410	360	127	105
14	152	203	139	b150	147	245	2,220	3,970	1,170	340	121	112
15	179	186	127	b160	152	245	2,420	3,840	1,150	325	119	110
16	186	173	147	166	147	241	2,490	4,190	1,030	306	114	109
17	176	163	132	179	152	245	2,480	4,300	940	288	112	112
18	173	157	137	176	163	236	2,640	4,030	870	274	110	127
19	166	152	127	166	186	232	2,220	3,990	800	279	110	150
20	155	134	147	160	221	232	2,370	4,300	807	262	109	217
21	147	116	147	157	288	245	2,420	4,460	758	249	107	206
22	160	127	147	152	297	330	2,210	4,320	691	228	105	186
23	152	142	137	173	345	420	1,920	*4,160	639	224	104	160
24	144	152	137	163	468	546	1,680	4,080	691	214	104	163
25	144	157	137	160	684	793	1,540	3,740	691	206	102	160
26	157	157	182	155	758	954	1,450	3,300	620	199	100	176
27	168	147	173	152	652	954	1,360	2,920	570	192	107	163
28	170	144	163	157	570	926	1,300	2,590	558	182	114	152
29	173	110	150	155	-	877	1,250	2,310	528	179	127	147
30	260	b100	144	155	-----	863	1,350	1,930	504	186	125	139
31	462	-----	b130	155	-----	891	-----	1,690	-----	192	116	-----
Total	5,064	5,179	4,350	4,276	7,142	13,969	48,550	118,070	30,247	10,255	3,883	4,013
Mean	163	173	140	138	255	451	1,618	3,809	1,008	331	125	134
Cfsm	0.213	0.226	0.163	0.180	0.333	0.589	2.11	4.97	1.32	0.432	0.163	0.175
In.	0.25	0.25	0.21	0.21	0.35	0.68	2.36	5.73	1.47	0.50	0.19	0.19
Ac-ft	10,040	10,270	8,630	8,480	14,170	27,710	96,300	234,200	59,990	20,340	7,700	7,960
Calendar year 1957: Max	7,470				80	Mean 727		Cfsm 0.949	In. 12.89	Ac-ft 526,400		
Water year 1957-58: Max	5,720				80	Mean 699		Cfsm 0.913	In. 12.39	Ac-ft 505,800		

\* Discharge measurement made on this day.

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

b Stage-discharge relation affected by ice.

## 3050. Kootenai River at Leonia, Idaho

Location.--Lat 48°37', long 116°03', in NW<sup>1</sup>/<sub>4</sub> sec. 20, T. 33 N., R. 34 W., on right bank at Leonia, 450 ft east of Montana-Idaho State line and half a mile upstream from Boulder Creek.

Drainage area.--11,740 sq mi, approximately.

Records available.--March 1928 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,700.25 ft above mean sea level, datum of 1929, supplementary adjustment of 1947. Prior to Nov. 13, 1928, chain gage on bridge 250 ft upstream at datum 0.41 ft lower.

Average discharge.--30 years, 13,560 cfs (9,820,000 acre-ft per year).

Extremes.--Maximum discharge during year, 72,700 cfs May 24 (gage height, 116.16 ft); minimum daily, 2,400 cfs Jan. 3.

1928-58: Maximum discharge, 123,000 cfs May 28, 1948 (gage height, 123.40 ft); minimum, 996 cfs Dec. 9, 1936; minimum gage height, 97.56 ft Dec. 10, 1929.

Floods in June 1894 and 1916 reached stages of 124.6 and 121.6 ft, respectively, from information by Great Northern Railway.

Remarks.--Records excellent except those for periods of ice effect or no gage-height record, which are good. Diversions above station for irrigation of about 14,600 acres.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used July 19 to Sept. 25)

99.4	2,380	103.0	9,000	112.0	45,000
100.0	3,000	104.0	12,500	115.0	64,500
101.0	4,420	106.0	19,000	118.0	86,500
102.0	6,350	109.0	30,000		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,500	5,440	3,500	a2,600	3,240	6,220	6,680	9,590	48,100	20,500	10,200	6,460
2	4,750	*5,580	3,370	a2,500	3,220	5,730	6,580	11,900	43,800	19,500	9,920	6,310
3	5,010	5,460	3,240	a2,000	3,120	5,530	6,630	15,500	43,000	19,500	9,730	6,130
4	5,200	5,160	3,320	a2,500	2,940	4,900	6,680	19,400	*39,600	19,600	9,590	6,020
5	5,240	4,880	3,410	a2,500	2,940	4,730	6,920	22,400	36,900	18,900	9,400	6,000
6	5,600	4,700	3,490	a2,700	3,070	4,570	7,260	24,500	34,700	18,500	9,230	5,860
7	5,720	4,470	3,590	a2,700	3,100	4,490	7,590	27,200	33,900	19,100	8,870	5,660
8	5,580	4,390	3,500	b2,800	3,110	4,400	7,790	*32,400	34,700	22,100	8,470	5,480
9	5,420	4,370	3,360	b2,900	3,090	4,220	8,090	39,300	36,000	22,100	8,210	5,310
10	5,240	4,320	3,310	b3,000	3,010	4,140	8,240	46,000	35,000	20,800	8,150	5,240
11	5,060	4,200	3,330	b3,200	2,970	3,950	8,180	49,400	36,700	19,600	7,960	5,220
12	4,930	4,120	3,390	b3,400	3,070	3,880	8,150	51,700	40,100	18,500	7,960	5,330
13	4,840	4,120	*3,310	b3,400	3,210	3,750	8,410	54,500	39,400	*17,600	7,870	5,460
14	4,750	4,260	3,300	3,190	3,170	3,640	10,700	53,000	36,300	18,000	7,790	5,520
15	4,770	4,350	3,230	3,360	3,030	3,560	13,100	46,500	32,600	18,500	7,690	5,680
16	4,970	4,280	3,210	3,560	2,990	3,440	14,800	45,600	29,900	17,600	*7,540	5,980
17	5,120	4,220	3,160	*3,560	2,990	3,320	15,400	50,300	27,800	16,400	7,460	6,260
18	5,160	4,120	3,210	3,530	3,010	3,270	16,000	53,600	26,000	15,400	7,310	6,050
19	5,100	3,980	3,230	3,620	3,170	3,350	15,100	52,600	25,000	14,800	7,260	5,960
20	4,950	3,920	3,370	3,570	3,310	3,360	15,300	52,700	24,500	14,300	7,180	6,330
21	4,730	3,780	3,480	3,390	3,600	3,360	15,400	56,500	24,300	13,900	7,140	7,510
22	4,840	3,640	3,520	3,300	3,810	3,700	14,600	64,200	23,300	13,400	7,160	*7,850
23	4,860	3,530	3,420	3,190	4,170	4,060	13,500	68,800	22,000	13,100	7,040	7,740
24	4,680	3,440	3,330	3,230	4,930	4,570	12,300	71,300	21,400	12,800	6,870	7,160
25	4,560	3,500	3,350	3,220	6,020	5,350	11,300	72,000	21,100	12,600	6,840	6,890
26	4,500	3,550	3,570	3,260	7,060	6,240	10,600	70,900	20,400	12,200	6,630	6,600
27	4,570	3,720	3,630	3,220	*7,920	6,510	10,400	*68,400	19,000	11,600	6,510	6,280
28	4,500	3,800	3,630	3,170	6,640	6,530	9,460	64,800	18,800	11,200	6,510	5,980
29	4,560	3,740	3,560	3,230	-	*6,490	9,000	60,600	18,800	10,800	6,630	5,780
30	4,590	3,570	3,390	3,270	-----	6,530	*8,810	57,000	20,500	10,600	6,720	5,680
31	5,010	-----	2,940	3,300	-----	6,700	-----	52,900	-----	10,400	6,680	-----
Total	153,310	126,630	104,650	96,770	105,430	144,280	512,490	*1,465,49	916,000	503,900	242,520	183,730
Mean	4,945	4,221	3,576	3,122	3,765	4,534	15,920	47,270	30,530	16,250	7,823	6,280
Cfs/m	0.421	0.360	0.288	0.266	0.321	0.396	0.888	4.03	2.60	1.38	0.666	0.522
In.	0.49	0.40	0.33	0.31	0.33	0.46	0.99	4.64	2.90	1.60	0.77	0.58
Ac-ft	304,100	251,200	207,600	191,900	209,100	286,200	619,800	*2,907	*1,817	999,500	481,000	364,400

Calendar year 1957: Max 70,500 Min 1,700 Mean 12,730 Cfs/m 1.08 In. 14.72 Ac-ft 9,214,000  
Water year 1957-58: Max 72,000 Min 2,400 Mean 11,950 Cfs/m 1.02 In. 13.80 Ac-ft 8,639,000

\* Discharge measurement made on this day.

† Expressed in thousands.

a No gage-height record; discharge estimated on basis of weather records and records for stations at Bonners Ferry and Libby.

b Stage-discharge relation affected by ice.

## 3055. Boulder Creek near Leonia, Idaho

Location.--Lat 48°36', long 116°06', in NE $\frac{1}{4}$  sec. 32, T. 61 N., R. 3 E., on right bank three-quarters of a mile downstream from McGinty Creek, three-quarters of a mile upstream from building of the Idamont Lead-Zinc Mines Co.,  $2\frac{1}{2}$  miles southwest of Leonia, and  $2\frac{1}{2}$  miles upstream from mouth.

Drainage area.--53 sq mi, approximately.

Records available.--April 1928 to September 1958. Monthly discharge only for some periods, published in WSP 1316.

Gage.--Water-stage recorder. Altitude of gage is 2,600 ft (from topographic map). Prior to Nov. 20, 1928, staff gage at site 1 mile downstream at different datum. Nov. 20, 1928, to Nov. 29, 1933, Oct. 13, 1934, to Sept. 27, 1946, water-stage recorder, and Dec. 30, 1933, to Oct. 12, 1934, staff gage, at site a quarter of a mile upstream at different datum.

Average discharge.--30 years, 114 cfs (82,530 acre-ft per year).

Extremes.--Maximum discharge during year, 950 cfs May 8 (gage height, 5.05 ft); minimum, 7.4 cfs Aug. 24, 25, 26, 27 (gage height, 2.66 ft).

1928-58: Maximum discharge, 2,700 cfs Oct. 19, 1947 (gage height, 7.85 ft), from rating curve extended above 970 cfs on basis of contracted-opening measurement of peak flow; minimum, 2 cfs Aug. 25, Sept. 5, 1931.

Remarks.--Records good except those for periods of ice effect, which are fair. No regulation or diversion.

Revisions (water years).--WSP 1396: 1936(M).

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 29, 30)

Oct. 1 to Apr. 30				May 1 to Sept. 30			
2.6	7.0	3.4	110	2.6	4.7	3.8	206
2.8	17	3.7	209	2.8	14	4.2	392
3.0	35	4.1	380	3.0	26	4.6	616
3.2	65			3.2	50	5.0	880
				3.5	112		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.8	33	16	b26	17	105	105	*265	337	37	13	9.2
2	13	26	16	b26	b17	95	105	587	256	35	13	10
3	22	22	15	b25	b17	85	105	484	251	35	12	11
4	17	21	15	b24	b17	79	110	500	226	36	12	10
5	14	20	14	b23	b17	75	113	517	206	34	12	9.2
6	14	19		b23	17	67	116	570	206	35	12	9.2
7	14	18	b14	b22	17	63	*122	691	192	31	11	8.8
8	14	16	16	b21	17	60	134	*790	154	29	11	8.3
9	13	18	18	b21	17	56	137	803	151	31	11	8.8
10	13	17	16	b21	19	55	128	743	199	32	11	8.3
11	14	21	b17	b21	20	51	122	672	161	27	11	7.8
12	14	22	17	b22	18	48	140	635	170	24	11	7.8
13	15	26	*15	b22	19	50	177	564	136	*24	10	10
14	24	24	15	b22	18	51	322	535	148	22	9.2	14
15	17	22	b16	22	18	48	290	564	151	22	9.2	12
16	14	20	16	38	18	47	312	616	123	22	*9.2	12
17	15	19	19	31	18	44	299	604	110	20	9.2	15
18	15	18	18	*24	33	40	344	587	98	19	8.8	14
19	15	b16	21	22	39	40	286	604	89	19	8.8	24
20	14	b13	23	22	65	40	340	635	84	19	8.8	17
21	14	b16	22	21	83	60	312	647	74	17	8.8	16
22	15	17	19	b21	75	61	265	616	64	16	8.3	*14
23	13	18	18	22	140	95	228	622	59	16	7.8	12
24	16	17	18	22	173	110	205	628	55	16	7.8	15
25	16	16	21	22	277	143	184	610	52	16	7.8	20
26	*18	17	51	21	217	147	170	587	47	15	7.8	17
27	21	15	35	20	163	134	156	*541	44	15	8.8	14
28	20	16	30	19	*125	150	506	587	47	15	13	13
29	21	b16	26	19		113	150	419	41	16	14	12
30	60	b16	b26	19		113	184	347	39	15	12	12
31	50	-----	b26	18	-----	110	-----	337	-----	14	11	-----
Total	563.8	575	623	702	1,691	2,430	5,811	17,828	3,950	724	320.3	371.4
Mean	18.2	19.2	20.1	22.6	60.4	78.4	194	569	132	23.4	10.3	12.4
Cfsm	0.343	0.362	0.379	0.426	1.14	1.48	3.66	10.7	2.49	0.442	0.194	0.234
In.	0.40	0.40	0.44	0.49	1.19	1.71	4.08	12.37	2.77	0.51	0.22	0.26
Ac-ft	1,120	1,140	1,240	1,390	3,350	4,820	11,530	34,960	7,830	1,440	635	737

Calendar year 1957: Max 1,040 Min 8.8 Mean 111 Cfsm 2.09 In. 28.54 Ac-ft 80,650

Water year 1957-58: Max 803 Min 7.8 Mean 97.0 Cfsm 1.83 In. 24.84 Ac-ft 70,190

Peak discharge (base, 800 cfs).--May 8 (4 p.m.) 950 cfs (5.05 ft).

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



3065. Moyle River at Eastport, Idaho

(International gaging station)

Location.--Lat 49°00', long 116°11', in SE  $\frac{1}{4}$  sec. 10, T. 65 N., R. 2 E., on left bank at Eastport, 1,000 ft downstream from international boundary.

Drainage area.--570 sq mi, approximately.

Records available.--August 1929 to September 1958 in reports of Geological Survey. January 1915 to December 1916, and discharge measurements during 1914 and 1917, in reports of Water Resources Division, Department of Northern Affairs and National Resources, Canada.

Gage.--Water-stage recorder. Datum of gage is 2,620.06 ft above mean sea level, datum of 1929, supplementary adjustment of 1947. January 1915 to December 1916 staff gage at site 0.2 mile upstream at different datum.

Average discharge.--29 years, 691 cfs (500,300 acre-ft per year).

Extremes.--Maximum discharge during year, 4,550 cfs May 12 (gage height, 7.94 ft, from graph based on gage reading May 11 and records for station at Eileen); minimum, 35 cfs Sept. 11 (gage height, 3.34 ft).  
1929-58: Maximum discharge, 9,400 cfs May 20, 1954 (gage height, 10.55 ft); minimum, 23 cfs Nov. 7, 1936 (gage height, 3.20 ft).

Remarks.--Records excellent except those for periods of ice effect or no gage-height record, 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.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

3.3	29	4.5	445	6.0	1,740
3.5	60	5.0	770	7.0	3,060
3.7	108	5.5	1,200	8.0	4,610
4.0	202				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	48	*119	b90	b62	81	*180	322	1,050	1,960	317	38	43
2	52	103	b82	b58	b75	177	322	1,510	1,730	308	96	43
3	58	90	78	b65	b70	177	337	*2,070	1,550	298	90	45
4	65	*95	74	b65	b82	170	*390	2,370	1,400	322	88	45
5	60	93	72	b62	b90	170	469	a2,500	1,240	332	86	43
6	60	86	b72	b62	83	160	469	a2,710	1,150	308	83	43
7	62	86	b70	b70	81	154	481	a3,220	1,150	293	81	42
8	62	76	b74	b70	81	150	517	a3,640	1,060	293	74	37
9	60	76	74	b75	83	144	529	a4,020	976	293	72	36
10	60	83	b72	b80	83	144	511	a4,270	1,100	274	72	37
11	60	88	b70	b90	83	138	499	4,430	1,030	252	69	36
12	57	88	b75	b95	86	132	547	a4,420	1,190	235	69	36
13	57	88	b70	b90	88	138	686	a3,990	1,040	218	65	37
14	69	88	69	b88	83	130	1,000	a3,660	950	*210	60	37
15	86	83	b65	86	88	127	1,060	a3,660	909	202	57	37
16	74	83	b65	88	88	122	1,100	a3,810	822	195	53	39
17	69	78	76	*90	88	122	1,110	a3,810	742	184	53	37
18	67	78	*72	90	90	122	1,140	3,690	686	177	52	42
19	65	76	b70	88	96	124	1,040	a3,700	630	170	*52	58
20	62	b70	74	86	108	124	1,060	a3,910	617	160	50	88
21	65	b60	74	b85	127	130	1,060	a4,000	565	150	48	60
22	67	b70	76	b75	132	157	1,040	a3,990	523	141	46	58
23	62	81	72	b80	147	184	942	a3,950	493	138	46	58
24	74	76	72	b90	*184	227	869	a3,890	463	132	45	*58
25	67	74	76	86	239	308	815	3,740	440	130	43	57
26	67	76	90	83	256	364	770	a3,510	406	122	43	57
27	67	72	86	76	222	358	721	a3,220	385	116	43	53
28	67	b70	88	b85	198	337	693	a2,960	364	116	46	52
29	67	b65	b80	83	---	327	686	*2,670	342	113	45	49
30	106	b65	b75	86	---	322	720	*2,350	327	119	45	48
31	163	---	b70	86	---	332	---	2,080	---	108	43	---
Total	2,125	2,434	2,323	2,475	3,202	5,951	21,955	102,810	26,240	6,426	1,914	1,410
Mean	68.5	81.1	74.9	79.8	114	192	732	3,316	875	207	61.7	47.0
Cfs/m	0.120	0.142	0.131	0.140	0.200	0.337	1.28	5.82	1.54	0.363	0.108	0.082
In.	0.14	0.16	0.15	0.18	0.21	0.39	1.43	6.71	1.71	0.42	0.12	0.09
Ac-ft	4,210	4,830	4,610	4,910	6,350	11,800	43,550	208,900	52,050	12,750	3,800	2,800

Calendar year 1957: Max 5,930 Min 48 Mean 591 Cfs/m 1.04 In. 14.10 Ac-ft 428,200  
Water year 1957-58: Max 4,430 Min 36 Mean 491 Cfs/m 0.861 In. 11.69 Ac-ft 355,600

Peak discharge (base, 2,900 cfs).--May 12 (about 4 a.m.) 4,550 cfs (7.94 ft).

\* Discharge measurement made on this day.  
a No gage-height record; discharge estimated on basis of weather records, 1 gage reading, and records for station at Eileen.  
b Stage-discharge relation affected by ice.

## 3075. Moyie River at Eileen, Idaho

Location.--Lat 48°46', long 116°10", in NE $\frac{1}{4}$  sec. 35, T. 63 N., R. 2 E., on right bank 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 sq mi.

Records available.--October 1925 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 2,124.5 ft (river-profile survey). Prior to June 1, 1928, staff gage and June 1, 1928, to Sept. 30, 1944, water-stage recorder, at same site at datum 1.0 ft higher.

Average discharge.--33 years, 854 cfs (618,300 acre-ft per year).

Extremes.--Maximum discharge during year, 5,900 cfs May 11 (gage height, 5.68 ft); minimum, 75 cfs Sept. 12 (gage height, 1.76 ft).  
1925-58: Maximum discharge, 11,000 cfs May 20, 1954 (gage height, 6.99 ft); minimum, 40 cfs Nov. 27, 1936; minimum gage height, 0.50 ft Feb. 22, 1944, present datum.

Remarks.--Records excellent except those below about 200 cfs, which are good, and those for periods of ice effect, which are fair. No regulation or diversion above station.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 7-9)

1.7	62	2.5	380	4.5	2,810
1.8	79	3.0	770	5.0	3,970
2.0	133	3.5	1,310	5.5	5,590
2.2	215	4.0	1,960	6.0	7,410

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	84	197	156	b115	127	*362	552	*1,380	2,240	408	148	66
2	90	*163	141	b105	116	338	544	1,900	2,000	394	141	84
3	100	148	137	b120	b110	309	558	2,530	1,820	387	137	88
4	108	137	130	b120	130	309	816	2,890	1,650	422	133	86
5	105	141	124	b115	121	309	716	2,950	1,490	422	130	88
6	102	137	124	b115	121	287	734	3,140	1,390	408	127	86
7	97	133	b120	b130	121	276	743	3,780	1,370	360	121	84
8	102	130	133	b125	121	265	*800	*4,420	1,300	368	118	81
9	100	124	133	b130	124	245	820	5,070	1,200	374	114	77
10	100	130	130	b145	130	245	780	5,560	1,370	356	111	77
11	97	137	b125	b160	130	235	752	5,660	1,270	332	108	77
12	97	141	144	b165	130	225	800	5,700	1,390	309	108	74
13	97	152	127	b160	133	220	970	4,900	1,270	292	105	77
14	102	144	*135	156	127	211	1,380	4,260	1,170	*282	102	79
15	121	141	124	156	124	211	1,490	4,230	1,120	276	100	79
16	121	141	124	160	130	202	1,560	4,600	1,010	265	97	79
17	111	137	137	160	130	202	1,590	4,700	920	255	95	86
18	108	133	141	148	141	197	1,630	4,480	850	250	*93	86
19	108	130	130	*141	152	197	1,500	4,420	790	240	93	102
20	102	121	141	133	193	197	1,550	4,740	761	230	93	121
21	105	105	144	130	215	220	1,550	5,000	698	215	90	114
22	111	124	141	118	235	287	1,480	4,900	656	202	88	*102
23	105	133	137	133	265	344	1,370	4,870	608	197	88	105
24	108	133	135	148	350	415	1,240	4,670	600	189	88	111
25	114	127	141	137	536	560	1,170	4,290	560	184	88	105
26	111	130	193	130	552	640	1,110	4,030	506	175	88	105
27	111	127	163	127	464	808	1,040	*3,620	485	171	90	102
28	114	127	163	130	401	592	981	3,270	471	167	90	102
29	111	114	144	130	-	560	960	2,970	443	163	93	97
30	152	114	137	135	---	552	1,080	2,640	422	163	90	93
31	230	---	b125	130	---	568	---	2,350	---	163	88	---
Total	3,424	4,051	4,275	4,205	5,631	10,388	32,056	123,930	31,830	8,646	3,255	2,733
Mean	110	135	138	136	201	335	1,069	3,998	1,061	279	105	91.1
Cfsm	0.146	0.179	0.183	0.180	0.266	0.444	1.42	5.30	1.41	0.370	0.139	0.121
In.	0.17	0.20	0.21	0.21	0.28	0.51	1.58	6.10	1.57	0.43	0.16	0.13
Ac-ft	6,780	8,040	8,480	8,340	11,170	20,600	63,580	245,800	63,130	17,150	6,480	5,420
Calendar year 1957: Max	7,520				75	Mean 768		Cfsm 1.02	In. 13.79	Ac-ft 555,600		
Water year 1957-58: Max	5,700				74	Mean 642		Cfsm 0.850	In. 11.55	Ac-ft 465,000		

Peak discharge (base, 3,500 cfs).--May 11 (2:30 a.m.) 5,900 cfs (5.68 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

3085. Kootenai River at Boom Camp, near Bonners Ferry, Idaho

Location.--Lat 48°42'05", long 116°14'30", in NW $\frac{1}{4}$  sec.29, T.62 N., R.2 E., on left bank 600 ft east of Boom Camp,  $\frac{3}{4}$  miles upstream from Bonners Ferry, and 4 miles downstream from Moyie River.

Drainage area.--12,950 sq mi, approximately.

Records available.--October 1927 to September 1958 (gage heights only) in reports of Geological Survey. April 1925 to September 1927 (gage heights only) in reports of Department of Northern Affairs and National Resources, Canada.

Gage.--Water-stage recorder. Datum of gage is 1,700.00 ft above mean sea level, levels by Topographic Branch in 1928. Gage readings have been reduced to elevations above mean sea level. Datum of 1929, supplementary adjustment of 1947, is 0.04 ft higher. Prior to Aug. 23, 1934, staff gage at same site. Datum of gage was 54.08 ft higher prior to Oct. 8, 1934.

Extremes.--Maximum elevation during year, 1,774.52 ft May 26; minimum, 1,756.83 ft Jan. 4. 1927-58: Maximum elevation recorded, 1,781.38 ft May 24, 1956; minimum, 1,755.53 ft Dec. 9, 1936.

Remarks.--Elevations affected by backwater from Kootenay Lake May 10 to June 18. No drainage district dike failed during year.

Elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	58.00	58.48	57.56	57.31	57.38	-	59.11	60.28	69.48	62.49	59.88	58.73
2	58.12	58.49	57.49	57.23	57.34	58.55	59.10	60.98	68.68	62.26	59.80	58.64
3	58.22	58.43	57.43	57.03	57.30	58.40	59.10	61.92	67.98	62.25	59.75	58.58
4	58.31	58.29	57.49	57.02	57.21	58.24	59.15	62.77	67.22	62.27	59.69	58.56
5	58.32	58.18	57.53	57.00	-	58.21	59.25	63.37	66.50	62.13	59.65	58.57
6	58.48	58.12	57.57	57.11	-	58.17	59.40	63.77	65.98	62.00	59.59	58.48
7	58.53	58.02	57.60	57.12	-	58.10	59.53	64.32	65.65	62.12	59.49	58.40
8	58.45	57.97	57.57	57.18	-	58.07	59.62	65.15	65.71	62.73	59.58	58.33
9	58.39	57.97	57.48	57.29	-	57.98	59.70	66.25	65.88	62.82	59.29	58.26
10	58.32	57.95	57.46	57.36	-	57.97	59.74	67.36	65.80	62.54	59.24	58.24
11	58.25	57.89	57.48	57.45	-	57.87	59.72	68.15	65.93	62.28	59.25	58.23
12	58.20	57.86	57.52	57.53	-	57.83	59.71	68.70	66.51	62.01	59.22	58.27
13	58.16	57.87	57.46	57.49	-	57.78	59.83	69.14	66.50	61.79	59.20	58.32
14	58.14	57.94	57.45	57.47	-	57.75	60.50	69.14	66.01	61.67	59.21	58.34
15	58.15	57.97	57.41	57.50	-	57.70	61.14	68.10	65.26	61.98	59.17	58.40
16	58.23	57.93	57.40	57.58	-	57.67	61.58	67.78	64.66	61.80	59.12	58.51
17	58.29	57.90	57.37	57.60	-	57.62	61.74	68.52	64.19	61.50	59.07	58.62
18	58.30	57.84	57.42	57.58	-	57.59	61.91	69.26	63.79	61.25	59.02	58.54
19	58.27	57.78	57.42	57.62	-	57.65	61.68	69.33	63.51	61.10	58.98	58.53
20	58.22	57.76	57.52	57.58	-	57.65	61.70	69.46	63.38	60.97	58.95	58.67
21	58.13	57.66	57.56	57.49	-	57.67	61.74	70.20	63.32	60.89	58.92	59.07
22	58.18	57.63	57.58	57.44	-	57.87	61.57	71.63	63.14	60.75	58.97	59.18
23	58.18	57.59	57.51	57.41	-	58.05	61.27	72.94	62.83	60.66	58.89	59.15
24	58.09	57.53	57.47	57.42	-	58.28	60.95	73.83	62.70	60.60	58.84	58.96
25	58.05	57.58	57.50	57.40	-	58.66	60.68	74.34	62.62	60.56	58.84	58.87
26	58.03	57.60	57.63	57.41	-	59.04	60.49	74.43	62.46	60.42	58.75	58.78
27	58.07	57.68	57.63	57.40	-	59.11	60.29	74.13	62.24	60.25	58.71	58.67
28	58.03	57.70	57.63	57.36	-	59.11	60.15	73.46	62.09	60.14	58.73	58.56
29	58.06	57.64	57.59	57.39	-	59.07	60.01	72.52	62.18	60.05	58.78	58.49
30	58.10	57.58	57.50	57.39	-----	59.08	60.01	71.51	62.43	59.96	58.84	58.45
31	58.31	-----	57.28	57.40	-----	59.14	-----	70.55	-----	59.90	58.82	-----

Note.--Add 1,700 ft to obtain elevation above mean sea level.

## 3095. Kootenai River at Bonners Ferry, Idaho

Location.--Lat 48°42'00", long 116°18'45", in NE $\frac{1}{4}$  sec. 27, T.62 N., R.1 E., near right bank on downstream side of highway bridge at Bonners Ferry.

Drainage area.--13,000 sq mi, approximately.

Records available.--May to October 1904, October 1927 to September 1958 (gage heights only prior to March 1928). Gage heights collected in this vicinity since 1904 are contained in reports of U. S. Weather Bureau.

Gage.--Wire-weight gage read once daily. Water-stage recorder 800 ft across channel from wire-weight gage at same datum used as supplementary gage during high stages since May 8, 1942. Datum of gage is 1,743.00 ft above mean sea level with respect to Geological Survey bench mark V-3-1929 at elevation 1,777.08 ft. Gage readings have been reduced to elevations above mean sea level. Datum of 1929, supplementary adjustment of 1947, is 0.02 ft higher. May 1 to Oct. 15, 1904, staff gage on railroad bridge three-quarters of a mile downstream at different datum. Oct. 1, 1927, to Nov. 30, 1929, staff gage near left bank. Dec. 1, 1929, to June 12, 1933, chain or wire-weight gages on old highway bridge 40 ft downstream. Datum of gages Oct. 1, 1927, to Jan. 2, 1931, was about 0.23 ft lower.

Average discharge.--30 years (1928-58), 14,660 cfs (10,610,000 acre-ft per year).

Extremes.--Maximum discharge during year, 74,600 cfs May 26; maximum elevation, 1,772.68 ft May 26; minimum discharge, 2,420 cfs Jan. 4, but may have been less during period of ice effect; minimum elevation observed, 1,742.45 ft Mar. 19.

1927-58: Maximum discharge, 139,000 cfs May 27, 1948 (affected by dike breakage downstream); maximum elevation, 1,780.09 ft May 24, 1956; minimum daily discharge, 1,300 cfs Feb. 8, 1936; minimum elevation, 1,741.14 ft Dec. 5, 1929, Dec. 29, 1930, datum then in use.

Flood in June 1894 reached a stage of 1,777.2 ft, present datum.

Remarks.--Records excellent except those for periods of ice effect, which are good. Backwater from Kootenay Lake usually present at Bonners Ferry. Discharge for periods of backwater at Boom Camp from Kootenay Lake, May 10 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 made at station near Bonners Ferry. No drainage district dike failed during year.

Elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46.49	46.78	46.33	46.12	44.91	45.01	44.24	46.69	67.30	54.12	47.34	45.68
2	46.47	46.78	46.28	46.11	44.86	44.68	44.15	47.78	66.32	53.62	47.23	45.74
3	46.64	46.74	46.24	46.04	44.75	44.59	44.14	49.61	65.52	53.38	47.02	45.65
4	46.72	46.65	46.30	46.03	44.66	44.10	44.26	51.63	64.55	53.27	47.01	45.64
5	46.70	46.55	46.32	45.93	44.56	43.92	44.41	53.22	63.62	52.95	46.85	45.66
6	46.74	46.51	46.31	45.89	44.55	43.81	44.69	54.38	62.80	52.60	46.73	45.66
7	46.93	46.45	46.39	45.87	44.49	43.64	44.68	55.76	62.25	52.57	46.84	45.64
8	46.86	46.41	46.41	45.85	44.46	43.60	44.94	57.78	62.12	53.33	46.44	45.68
9	46.80	46.35	46.40	45.90	44.34	43.44	45.22	60.15	62.24	53.75	46.30	45.68
10	46.75	46.31	46.38	45.92	44.33	43.38	45.25	62.35	62.23	53.27	46.26	45.70
11	46.67	46.25	46.34	45.99	44.27	43.21	45.24	63.90	62.23	52.76	46.34	45.72
12	46.63	46.26	46.32	46.10	44.26	43.11	45.29	64.88	62.84	52.28	46.31	45.84
13	46.61	46.26	46.35	46.08	44.26	43.01	45.39	65.60	63.00	51.92	46.27	45.81
14	46.61	46.35	46.28	46.01	44.24	42.87	46.39	65.81	62.37	51.82	46.25	46.08
15	46.65	46.37	46.36	46.02	44.07	42.79	47.68	64.71	61.31	51.94	46.22	46.23
16	46.68	46.36	46.31	46.01	43.98	42.75	48.73	64.14	60.29	51.75	46.18	46.28
17	46.74	46.32	46.23	46.06	43.96	42.61	49.31	64.97	59.35	51.29	46.06	46.50
18	46.75	46.25	46.21	45.96	43.97	42.53	49.77	66.06	58.48	50.68	46.05	46.56
19	46.77	46.24	46.27	45.85	44.00	42.45	49.53	66.34	57.79	50.31	45.98	46.78
20	46.67	46.22	46.31	45.69	44.01	42.58	49.47	66.55	57.32	50.05	45.96	46.87
21	46.57	46.18	46.38	45.57	44.11	42.57	49.74	67.45	57.01	49.75	45.95	47.15
22	46.59	46.20	46.28	45.53	44.19	42.82	49.48	69.00	57.59	49.49	45.92	47.35
23	46.52	46.19	46.23	45.50	44.26	42.89	48.94	70.61	55.89	49.35	45.90	47.40
24	46.50	46.19	46.20	45.44	44.62	43.16	48.51	71.72	55.45	49.12	45.83	47.26
25	46.42	46.18	46.29	45.34	45.24	43.61	47.77	72.43	55.11	49.00	45.89	47.19
26	46.36	46.27	46.43	45.27	45.80	44.15	47.39	72.60	54.71	48.76	45.73	47.09
27	46.33	46.22	46.37	45.20	45.79	44.30	46.97	72.31	54.18	48.47	45.76	47.00
28	46.29	46.33	46.35	45.11	45.46	44.28	46.70	71.59	53.80	48.18	45.72	46.94
29	46.28	46.27	46.35	45.07	-	44.18	46.42	70.62	53.67	47.90	45.76	46.90
30	46.40	46.27	46.32	45.02	-----	44.12	46.32	69.50	53.90	47.65	45.67	46.85
31	46.60	-----	46.22	44.94	-----	44.20	-----	68.53	-----	47.48	45.72	-----

e Observer's readings in error. Gage height estimated on basis of observer's readings, records for adjacent periods, and records for station near Bonners Ferry.

Note.--Add 1,700 ft to obtain elevation above mean sea level.

## 3095. Kootenai River at Bonners Ferry, Idaho--Continued

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,590	5,770	3,620	b2,800	3,270	6,600	7,380	11,600	50,100	21,400	10,100	6,590
2	4,880	5,800	3,480	b2,600	3,200	*5,820	*7,350	*14,800	47,100	20,300	9,880	6,340
3	5,120	5,640	3,370	b2,500	3,130	5,440	7,350	18,800	44,100	20,200	9,690	6,180
4	5,340	5,300	3,480	b2,550	2,980	5,050	7,500	23,100	*41,100	20,400	9,500	6,130
5	5,370	5,020	3,560	b2,550	3,000	4,970	7,820	26,500	38,700	19,600	9,560	6,160
6	5,770	4,880	3,640	b2,750	3,200	4,880	8,310	29,000	36,800	19,000	9,180	5,920
7	5,900	4,640	3,700	b2,750	3,300	4,710	8,750	*32,400	35,800	19,600	8,790	5,720
8	5,700	4,520	3,640	b2,850	3,300	4,640	9,070	37,800	36,700	22,800	8,410	5,540
9	5,540	4,520	3,460	b3,000	3,300	4,430	9,360	45,100	37,900	23,200	8,170	5,370
10	5,370	4,480	3,420	b3,100	3,250	4,410	9,500	50,000	37,200	21,700	8,040	5,320
11	5,200	4,340	3,460	3,400	3,200	4,180	9,430	53,000	38,300	20,400	8,080	5,300
12	5,070	4,270	3,540	3,560	3,200	4,080	9,400	55,300	41,300	19,000	8,010	5,400
13	4,970	4,290	3,420	3,480	3,300	3,980	9,840	57,100	49,900	18,000	7,950	5,520
14	4,950	4,450	3,400	3,440	3,300	3,910	12,500	55,800	38,400	18,400	8,010	5,570
15	4,950	4,520	3,330	3,500	3,300	3,800	15,300	49,600	35,000	*18,900	7,880	5,720
16	5,140	4,430	3,310	3,660	3,200	3,740	17,300	48,800	32,200	18,100	7,760	6,000
17	5,300	4,360	3,280	3,700	3,150	3,640	18,000	53,100	30,200	16,700	7,600	6,290
18	5,320	4,220	3,350	3,660	3,200	3,580	18,800	56,100	28,600	15,600	*7,440	6,080
19	5,240	4,090	3,350	3,740	3,350	3,700	17,800	55,500	27,300	15,000	7,320	6,050
20	5,120	4,040	*3,540	3,680	3,500	3,700	17,800	55,900	26,500	14,400	7,230	6,420
21	4,900	3,830	3,620	3,480	3,800	3,740	18,000	59,400	26,100	14,100	7,140	*7,600
22	5,020	3,760	3,660	3,390	4,000	4,180	17,200	66,700	25,000	13,500	7,290	7,950
23	5,020	3,680	3,520	*3,330	4,700	4,590	15,900	71,600	23,300	13,200	7,050	7,850
24	4,810	3,560	3,440	3,350	5,400	5,140	14,400	74,000	22,600	12,900	6,900	7,260
25	4,710	3,680	3,500	3,310	6,500	6,110	13,300	74,200	22,100	12,800	6,900	6,990
26	4,660	3,700	3,760	3,330	7,500	7,170	12,500	73,800	21,300	12,200	6,650	6,730
27	*4,760	3,870	3,780	3,310	7,700	7,380	11,700	71,600	20,200	11,500	6,540	6,420
28	4,660	3,910	3,760	3,240	7,500	7,380	11,100	*68,100	19,400	11,100	6,590	6,130
29	4,730	3,780	3,680	3,290	-	7,260	10,500	63,600	19,900	10,800	6,730	5,950
30	4,830	3,660	3,500	3,290	-----	7,290	10,500	59,500	21,200	10,400	6,900	5,850
31	5,340	-----	3,100	3,310	-----	7,470	-----	54,900	-----	10,200	6,840	-----
Total	158,260	130,990	108,630	99,880	111,530	156,980	563,660	*1,566,5	965,300	515,400	243,930	186,350
Mean	5,105	4,368	3,504	3,222	3,983	5,064	12,120	50,530	32,180	16,630	7,869	6,212
Cfs/m	0.393	0.336	0.270	0.248	0.306	0.390	0.932	3.89	2.48	1.28	0.605	0.478
In.	0.45	0.37	0.31	0.29	0.32	0.45	1.04	4.48	2.76	1.47	0.70	0.53
Ac-ft	313,900	259,800	215,500	198,100	221,200	311,400	721,300	*3,107	*1,915	*1,022	483,800	369,600
Calendar year 1957:	Max 77,200	Min 1,900	Mean 13,850	Cfs/m 1.05	In. 14.25	Ac-ft 9,881,000						
Water year 1957-58:	Max 74,200	Min 2,500	Mean 12,620	Cfs/m 0.971	In. 13.17	Ac-ft 9,139,000						

\* Discharge measurement made on this day.

\* Expressed in thousands.

b Stage-discharge relation affected by ice.

Note.--No gage-height record at Boom Camp Feb. 5 to Mar. 1; discharge estimated on basis of weather records and records for stations at Leonia and near Copeland.

## 3100. Kootenai River near Bonners Ferry, Idaho

Location.--Lat 48°41'55", long 116°20'40", in NW¼ sec.28, T.62 N., R.1 E., on left bank 1.6 miles downstream from highway bridge at Bonners Ferry.

Drainage area.--13,000 sq mi, approximately.

Records available.--May 1928 to September 1958 (gage heights only, fragmentary prior to May 1929).

Gage.--Water-stage recorder. Datum of gage is 1,700.00 ft above mean sea level, levels by Topographic Branch in 1928. Gage readings have been reduced to elevations above mean sea level. Datum of 1929, supplementary adjustment of 1947, is 0.02 ft higher at Bonners Ferry. May 17 to July 20, 1928, water-stage recorder at same site at datum 43.42 ft higher. July 21 to Oct. 22, 1928, and for elevations below 1,742 ft prior to Jan. 2, 1931, staff gage at same site and datum.

Extremes.--Maximum elevation during year, 1,772.09 ft May 26; minimum, 1,741.86 ft Mar. 21. 1928-58: Maximum elevation, 1,778.94 ft May 24, 1956, from graph based on gage readings; minimum, 1,740.16 ft Mar. 29, 1944.

Remarks.--Elevations affected by backwater from Kootenay Lake. No drainage district dike failed during year.

Elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46.44	46.68	46.29	46.10	44.89	44.66	43.29	46.07	66.94	53.82	47.03	45.38
2	46.41	46.69	46.26	46.03	44.82	44.29	43.22	47.13	65.99	53.33	46.90	45.51
3	46.58	46.65	46.21	46.03	44.71	44.01	43.25	48.98	65.19	53.07	46.71	45.42
4	46.62	46.57	46.25	46.02	44.62	43.73	43.28	51.03	64.27	52.97	46.72	45.43
5	46.62	46.50	46.31	45.92	44.52	43.49	43.45	52.65	63.27	52.62	46.56	45.49
6	46.70	46.46	46.30	45.88	44.51	43.43	43.69	53.83	62.46	52.31	46.41	45.48
7	46.82	46.40	46.38	45.86	44.43	43.27	43.89	55.18	61.91	52.20	46.33	45.49
8	46.77	46.36	46.40	45.80	44.37	43.17	44.05	46.10	61.77	52.97	46.14	45.50
9	46.72	46.33	46.39	45.86	44.27	43.02	44.26	59.45	61.84	53.39	46.00	45.47
10	46.65	46.30	46.37	45.88	44.27	42.95	44.36	61.71	61.84	52.96	45.96	45.59
11	46.59	46.22	46.33	45.90	44.21	42.78	44.35	63.28	61.82	52.42	46.04	45.62
12	46.55	46.20	46.31	46.00	44.16	42.71	44.33	64.27	62.48	51.93	46.03	45.78
13	46.52	46.22	46.34	46.03	44.17	42.55	44.52	64.99	62.58	51.55	45.99	45.81
14	46.52	46.29	46.27	45.94	44.12	42.42	45.41	65.28	62.01	51.46	45.97	45.98
15	46.59	46.30	46.35	45.97	43.99	42.33	46.84	64.20	60.98	51.56	45.94	46.11
16	46.62	46.30	46.30	45.98	43.91	42.20	47.93	63.61	59.99	51.40	45.88	46.19
17	46.65	46.26	46.22	45.99	43.88	42.10	48.61	64.41	59.09	50.87	45.79	46.38
18	46.65	46.23	46.20	45.90	43.89	42.00	49.06	65.49	58.24	50.38	45.76	46.46
19	46.66	46.22	46.26	45.78	43.89	41.94	48.89	65.79	57.57	50.03	45.70	46.65
20	46.59	46.21	46.22	45.67	43.91	41.91	48.83	66.01	57.07	49.73	45.68	46.79
21	46.52	46.16	46.34	45.54	43.96	41.90	49.08	66.88	56.71	49.45	45.65	47.06
22	46.55	46.16	46.25	45.51	43.98	42.06	48.88	68.50	56.28	49.18	45.67	47.22
23	46.49	46.18	46.22	45.44	44.08	42.23	48.35	70.06	55.65	49.05	45.65	47.27
24	46.44	46.18	46.18	45.40	44.33	42.48	47.70	71.16	55.23	48.82	45.60	47.13
25	46.36	46.17	46.28	45.33	44.90	42.81	47.16	71.86	54.82	48.68	45.62	47.07
26	46.29	46.26	46.39	45.24	45.46	43.33	46.79	72.02	54.48	48.49	45.49	46.98
27	46.28	46.21	46.36	45.16	45.39	43.48	46.38	71.77	53.92	48.18	45.52	46.88
28	46.25	46.32	46.34	45.09	45.07	43.42	46.09	71.10	53.53	47.90	45.48	46.85
29	46.23	46.26	46.34	45.02	-	43.31	45.83	70.16	53.41	47.66	45.47	46.83
30	46.28	46.24	46.31	44.92	-	42.23	45.73	69.08	53.60	47.41	45.50	46.79
31	46.52	-	46.21	44.92	-	43.30	-	69.08	-	47.36	45.48	-

Note.--Add 1,700 ft to obtain elevation above mean sea level.

## 3110. Deep Creek at Moravia, Idaho

Location--Lat 48°38', long 116°24', in sec. 18, T. 61 N., R. 1 E., on downstream side of left abutment of highway bridge, 1 mile downstream from Ruby Creek and 1 mile southwest of Moravia.

Drainage area--133 sq mi.

Records available--May 1928 to September 1958. Monthly discharge only for some periods, published in WSP 1316.

Gage--Staff gage read once daily. Altitude of gage is 1,800 ft (from topographic map). Prior to Aug. 2, 1949, at datum 2.00 ft higher.

Average discharge--30 years (1928-58), 141 cfs (102,100 acre-ft per year).

Extremes--Maximum discharge observed during year, 886 cfs Feb. 25 (gage height, 6.48 ft); minimum observed, 6.5 cfs Aug. 27 (gage height, 3.65 ft).  
1928-58: Maximum discharge, 1,670 cfs May 18, 1954 (gage height, 7.40 ft, from graph based on gage readings); minimum observed, 5 cfs Aug. 14, 22, 1940.

Remarks--Records good except those for periods of ice effect or no gage-height record, which are fair. Small diversions above station for irrigation. Occasional regulation above station at migratory waterfowl refuge near Elмира.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Feb. 21-24, Mar. 1-5, 23, 24, 30, Apr. 12, 13, May 7-10, 12)

3.7	9.0	4.3	65	5.5	345
3.8	15	4.6	108	6.0	565
4.0	32	5.0	190	7.0	1,180

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	48	33	66	66	286	303	357	161	48	13	9.6
2	22	43	35	b66	64	248	303	417	157	41	13	9.6
3	28	41	35	b64	66	212	310	434	*148	39	12	9.6
4	34	37	35	b55	61	208	289	456	140	39	12	9.6
5	31	35	35	52	58	202	310	484	140	37	12	9.6
6	32	33	37	52	58	188	324	497	140	37	12	9.6
7	32	33	39	50	58	165	338	530	140	37	12	9.6
8	30	33	43	48	64	150	331	610	118	35	11	9.6
9	29	35	48	43	68	131	331	*610	215	35	11	9.6
10	29	37	b45	43	78	136	324	580	257	34	11	9.6
11	28	37	b45	43	82	131	310	575	140	34	11	10
12	27	39	b40	41	88	123	*317	580	136	34	11	10
13	27	52	59	45	91	127	421	555	136	31	11	11
14	26	59	37	a48	86	131	515	545	131	31	10	11
15	26	54	36	a54	75	118	688	530	123	30	*10	11
16	26	41	34	a70	78	106	654	515	115	28	10	11
17	26	39	36	*92	82	102	778	448	106	*28	11	14
18	24	37	*59	82	106	98	844	413	85	26	11	16
19	24	33	52	82	138	98	580	434	74	26	12	17
20	24	28	52	73	170	102	766	448	69	26	16	17
21	24	29	54	64	198	123	654	466	64	24	16	*17
22	28	31	54	59	192	195	550	466	61	24	11	15
23	35	33	54	78	254	212	470	448	61	22	9.6	14
24	34	31	78	86	292	239	405	434	57	22	8.5	14
25	38	31	118	82	886	349	373	397	57	22	7.5	14
26	41	31	175	75	880	342	342	342	57	21	7.5	14
27	*41	31	102	69	570	331	296	314	57	17	6.5	14
28	42	33	91	69	*357	317	278	289	57	17	7.5	14
29	42	33	84	68	-	296	303	242	52	17	11	14
30	81	33	66	78	-----	292	*320	239	50	16	12	14
31	57	-----	66	73	-----	303	-----	190	-----	14	11	-----
Total	1,005	1,110	1,757	1,970	5,266	6,061	13,037	13,845	3,304	892	340.1	368.0
Mean	32.4	37.0	56.7	63.5	188	196	435	447	110	28.8	11.0	12.3
Cfs/m	0.244	0.278	0.426	0.477	1.41	1.47	3.27	3.36	0.827	0.217	0.083	0.092
In.	0.28	0.31	0.49	0.55	1.47	1.69	3.65	3.87	0.92	0.25	0.10	0.10
Ac-ft	1,990	2,200	3,480	3,910	10,440	12,020	25,860	27,460	6,550	1,770	675	730
Calendar year 1957: Max	1,050	Min	14	Mean	143	Cfs/m	1.08	In.	14.63	Ac-ft	103,800	
Water year 1957-58: Max	886	Min	6.5	Mean	134	Cfs/m	1.00	In.	13.68	Ac-ft	97,080	

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records, engineer's notes, and records for Boulder Creek.

b Stage-discharge relation affected by ice.

3140. Kootenai River at Klockmann Ranch, near Bonners Ferry, Idaho

Location.--Lat 48°47'40", long 116°22'50", in SE $\frac{1}{4}$  sec. 19, T. 63 N., R. 1 E., on right bank 0.3 mile downstream from dike of drainage district No. 5 and 8 miles north of Bonners Ferry.

Drainage area.--13,300 sq mi, approximately.

Records available.--May to July, September to November 1928 (fragmentary), April to September, December 1929 (fragmentary), April 1930 to September 1958 (gage heights only).

Gage.--Water-stage recorder. Datum of gage is 1,700.00 ft above mean sea level, levels by Topographic Branch in 1928. Gage readings have been reduced to elevations above mean sea level. Datum of 1929, supplementary adjustment of 1947, is about 0.03 ft higher. Prior to Sept. 12, 1928, several staff gages within 300 ft at different datums.

Extremes.--Maximum elevation during year, 1,769.75 ft May 26; minimum, 1,741.42 ft Mar. 21, 22.

1928-58: Maximum elevation, 1,775.89 ft May 24, 1956; minimum, 1,738.76 ft Apr. 1, 1944.

Remarks.--Elevations affected by backwater from Kootenay Lake. No drainage district dike failed during year.

Elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46.18	46.32	46.10	45.95	44.66	43.99	42.14	44.73	65.35	52.71	46.24	44.92
2	46.17	46.35	46.09	45.90	44.59	43.70	42.07	45.63	64.44	52.27	46.15	45.02
3	46.28	46.51	46.06	45.88	44.50	43.48	42.07	47.24	65.68	51.91	45.92	44.96
4	46.29	46.28	46.06	45.86	44.41	43.22	42.08	49.18	62.84	51.76	45.90	44.98
5	46.30	46.20	46.13	45.77	44.34	42.99	42.19	50.76	61.94	51.48	45.75	45.04
6	46.35	46.18	46.13	45.72	44.30	42.92	42.37	51.95	61.21	51.17	45.61	45.06
7	46.46	46.14	46.18	45.69	44.23	42.77	42.55	53.26	60.67	51.02	45.57	45.08
8	46.42	46.10	46.20	45.64	44.15	42.67	42.70	55.11	60.51	51.54	45.42	45.11
9	46.39	46.07	46.20	45.67	44.07	42.53	42.86	57.39	60.53	52.01	45.30	45.11
10	46.33	46.04	46.18	45.68	44.06	42.46	42.96	59.64	60.92	51.60	45.28	45.22
11	46.29	46.01	46.14	45.69	44.00	42.30	42.98	61.16	60.45	51.14	45.36	45.27
12	46.26	45.98	46.14	45.75	43.94	42.21	42.98	62.14	60.95	50.74	45.37	45.43
13	46.25	45.98	46.15	45.79	43.93	42.08	43.12	62.76	61.06	50.43	45.33	45.49
14	46.27	46.04	46.11	45.72	43.88	41.99	43.84	63.09	60.60	50.29	45.32	45.64
15	46.32	46.05	46.17	45.72	43.79	41.91	45.09	62.26	59.64	50.32	45.30	45.73
16	46.34	46.05	46.13	45.72	43.72	41.77	46.05	61.73	58.71	50.21	45.25	45.82
17	46.35	46.03	46.08	45.74	43.66	41.70	46.78	62.42	57.87	49.77	45.19	45.99
18	46.36	45.99	46.05	45.66	43.65	41.58	47.25	63.41	57.09	49.36	45.15	46.09
19	46.37	46.00	46.10	45.53	43.62	41.52	47.20	66.78	56.44	49.04	45.12	46.27
20	46.31	45.99	46.07	45.43	43.61	41.47	47.12	64.02	55.96	48.77	45.10	46.41
21	46.24	45.96	46.15	45.33	43.64	41.43	47.34	64.79	55.62	48.50	45.08	46.53
22	46.22	45.96	46.10	45.29	43.64	41.48	47.21	66.23	55.21	48.26	45.09	46.70
23	46.19	45.97	46.05	45.22	43.77	41.60	46.76	67.68	54.60	48.12	45.10	46.76
24	46.17	45.98	46.04	45.20	43.90	41.74	46.22	68.73	54.14	47.91	45.07	46.68
25	46.10	45.99	46.11	45.14	44.23	41.95	45.72	69.47	53.82	47.77	45.10	46.63
26	46.03	46.06	46.22	45.05	44.60	42.32	45.41	69.71	53.45	47.60	45.01	46.56
27	46.00	46.02	46.17	44.95	44.55	42.41	45.06	69.58	52.98	47.32	45.05	46.48
28	45.98	46.11	46.16	44.88	44.33	42.36	44.81	69.07	52.62	47.06	45.00	46.46
29	45.97	46.05	46.16	44.81	-	42.23	44.59	68.25	52.47	46.82	44.97	46.46
30	46.04	46.03	46.13	44.74	-----	42.14	44.49	67.30	52.57	46.62	45.00	46.44
31	46.20	-----	46.06	44.71	-----	42.17	-----	66.37	-----	46.39	44.97	-----

Note.--Add 1,700 ft to obtain elevation above mean sea level. Gage height wholly or partly estimated on basis of recorder graph for stations upstream and downstream Dec. 18, Jan. 24-31, Feb. 4, 5, Feb. 15 to Mar. 2.



## 3185. Kootenai River near Copeland, Idaho

(International gaging station)

Location.--Lat 48°54'45", long 116°25'00", in NW¼NW¼SW¼ sec. 12, T. 64 N., R. 1 W., on right bank at Andrews Ranch, three-quarters of a mile downstream from Mission Creek and 1½ miles northwest of Copeland.

Drainage area.--13,400 sq mi, approximately.

Records available.--October 1927 to September 1958 (gage-height record only prior to May 1929). April 1925 to September 1927 (gage heights only) in reports of Department of Northern Affairs and National Resources, Canada.

Gage.--Water-stage recorder. Datum of gage is 1,700.00 ft above mean sea level, referred to bench mark T-10-1914, elevation, 1,791.49 ft (datum of 1929, supplementary adjustment of 1947, is about 0.04 ft higher). Prior to Nov. 20, 1929, staff or recording gage at site three-quarters of a mile upstream; datum 40.77 ft higher prior to Apr. 18, 1929 (revised). Gage readings have been reduced to elevations above mean sea level.

Average discharge.--29 years, 15,260 cfs (11,050,000 acre-ft per year).

Extremes.--Maximum daily discharge during year, 78,000 cfs May 25; maximum elevation, 1,766.24 ft May 27; minimum daily discharge, 2,700 cfs Jan. 3; minimum elevation, 1,740.91 ft Apr. 2, 3, 4.  
1929-58: Maximum daily discharge, 124,000 cfs May 30, 1948; maximum elevation, 1,771.78 ft May 28, 1956; minimum daily discharge, 1,350 cfs Feb. 8, 1936; minimum elevation, 1,738.52 ft Apr. 2, 3, 1944.

Remarks.--Records excellent except those for period of ice effect, which are good. Stage-discharge relation affected by backwater from Kootenay Lake. Discharge computed from fall-mean stage-discharge relations determined on basis of fall in reach between stations at Klockmann Ranch and at Porthill and discharge measurements made at station near Copeland. No drainage district dike failed during year.

Cooperation.--This station is maintained by the United States under agreement with Canada.

Elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46.04	46.06	46.03	45.93	44.56	43.42	41.03	43.37	62.85	51.24	45.49	44.61
2	46.02	46.11	46.03	45.87	44.50	43.20	40.95	43.98	62.05	50.86	45.37	44.68
3	46.12	46.11	46.01	45.84	44.39	43.02	40.93	45.14	61.39	50.59	45.23	44.85
4	46.10	46.09	46.01	45.82	44.32	42.80	40.94	45.68	60.69	50.59	45.22	44.89
5	46.11	46.04	46.06	45.73	44.25	42.62	41.02	48.04	59.90	50.14	45.08	44.75
6	46.16	46.02	46.06	45.68	44.19	42.54	41.12	49.13	59.26	49.87	44.95	44.78
7	46.23	46.01	46.11	45.64	44.12	42.38	41.23	50.36	58.82	49.68	44.96	44.82
8	46.23	45.97	46.13	45.59	44.05	42.28	41.33	52.03	58.56	49.94	44.85	44.87
9	46.19	45.95	46.15	45.60	43.97	42.17	41.45	54.11	58.48	50.22	44.75	44.90
10	46.15	45.92	46.11	45.59	43.96	42.10	41.52	56.08	58.45	49.97	44.76	45.02
11	46.11	45.90	46.08	45.59	43.90	41.94	41.53	57.55	58.32	49.62	44.85	45.08
12	46.10	45.87	46.07	45.64	43.84	41.83	41.53	58.55	58.62	49.34	44.86	45.25
13	46.09	45.87	46.08	45.68	43.82	41.72	41.62	59.13	58.71	49.13	44.82	45.30
14	46.12	45.91	46.06	45.60	43.76	41.65	42.08	59.53	58.36	48.97	44.81	45.43
15	46.16	45.92	46.11	45.61	43.67	41.56	43.01	59.03	57.62	48.93	44.79	45.52
16	46.17	45.93	46.06	45.60	43.61	44.44	43.80	58.67	56.85	48.85	44.77	45.59
17	46.17	45.91	46.03	45.61	43.55	41.37	44.43	59.21	56.15	48.54	44.73	45.75
18	46.18	45.90	46.02	45.52	43.54	41.27	44.85	60.04	55.51	48.24	44.70	45.86
19	46.19	45.91	46.04	45.40	43.50	41.19	44.93	60.49	54.91	47.97	44.67	46.07
20	46.13	45.89	46.01	45.31	43.48	41.14	44.89	60.82	54.45	47.73	44.65	46.18
21	46.06	45.87	46.07	45.22	43.47	41.11	45.12	61.52	54.11	47.50	44.65	46.23
22	46.04	45.87	46.02	45.18	43.45	41.09	45.09	62.73	53.73	47.29	44.66	46.35
23	46.01	45.89	46.00	45.10	43.47	41.03	44.79	64.03	53.21	47.18	44.68	46.43
24	46.01	45.91	45.99	45.08	43.51	41.16	44.43	65.06	52.78	46.99	44.68	46.39
25	45.94	45.91	46.05	45.02	43.69	41.23	44.11	65.84	52.47	46.85	44.71	46.37
26	45.87	46.00	46.14	44.94	43.90	41.41	43.85	66.17	52.13	46.71	44.65	46.30
27	45.85	45.94	46.08	44.85	43.85	41.42	43.63	66.18	51.72	46.47	44.67	46.26
28	45.82	46.02	46.07	44.79	43.65	41.34	43.44	65.84	51.41	46.23	44.64	46.26
29	45.81	45.98	46.07	44.71	-	41.23	43.28	65.23	51.25	46.02	44.60	46.28
30	45.88	45.97	46.06	44.65	-	41.11	43.21	64.43	51.21	45.84	44.61	46.25
31	46.02	-	46.01	44.61	-	41.06	-	63.68	-	45.63	44.58	-

Note.--Add 1,700 ft to obtain elevation above mean sea level. Elevations Oct. 3 to Nov. 1 wholly or partly estimated on basis of records for stations upstream and downstream.

## 3185. Kootenai River near Copeland, Idaho--Continued

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,790	*5,770	3,700	3,000	3,450	7,040	7,760	11,200	54,200	22,300	10,100	6,440
2	4,950	5,840	3,600	2,800	3,400	6,500	7,720	13,300	51,000	21,000	9,940	6,800
3	5,180	5,490	3,500	2,700	3,400	6,030	*7,800	*17,200	48,500	20,300	9,580	6,510
4	5,640	5,250	3,600	2,800	3,200	5,510	7,800	21,700	45,500	20,300	9,520	6,120
5	5,640	*4,970	3,600	2,800	3,300	5,180	8,000	25,800	*42,200	19,800	9,310	6,160
6	5,690	4,970	3,750	2,900	3,540	*5,170	8,400	28,600	39,700	19,100	9,180	5,990
7	6,010	4,650	3,750	2,900	3,530	5,060	8,840	31,900	37,900	19,200	8,790	5,740
8	5,870	4,580	3,750	3,000	3,570	5,000	9,180	37,000	38,400	21,800	8,480	5,610
9	5,840	4,550	3,600	3,100	3,480	4,730	9,440	43,500	39,600	23,600	8,150	5,500
10	5,510	4,570	3,600	3,200	3,430	4,850	9,680	50,100	39,700	22,200	7,880	5,410
11	5,380	4,400	3,600	3,500	3,400	4,700	9,710	54,300	40,300	20,800	8,020	5,300
12	5,140	4,400	3,700	3,600	3,380	4,640	9,680	56,600	43,100	19,200	7,970	5,430
13	5,040	4,400	3,500	3,600	3,520	4,480	9,890	58,400	43,700	18,200	7,930	5,470
14	4,890	4,650	3,500	3,600	3,550	4,500	11,600	58,900	41,900	18,200	7,930	5,710
15	5,050	4,720	3,400	3,600	3,480	4,480	14,200	54,400	38,100	18,600	7,880	5,780
16	5,270	4,570	*3,400	3,800	3,450	4,320	16,100	51,600	34,700	*18,400	7,690	5,990
17	5,340	4,540	3,400	3,900	3,380	4,210	17,600	54,500	32,000	17,000	7,530	6,250
18	5,480	4,320	3,500	3,900	3,360	4,060	18,400	57,700	29,800	15,700	7,380	6,220
19	5,480	4,200	3,500	4,000	3,590	4,150	18,100	58,300	28,000	15,000	*7,260	6,170
20	5,280	4,200	3,700	3,900	3,670	4,120	17,600	58,000	*27,000	14,500	7,260	*6,580
21	5,060	4,000	3,700	3,700	4,010	4,100	18,000	60,500	26,500	13,900	7,160	7,270
22	5,510	3,900	3,800	3,600	4,120	4,480	17,500	66,200	25,900	13,400	7,160	7,540
23	5,190	3,800	3,700	3,600	4,970	4,950	16,200	71,600	24,000	13,100	7,140	7,740
24	4,860	3,700	3,600	*3,600	5,700	5,490	14,800	75,400	23,200	12,700	6,920	7,350
25	4,830	3,700	3,700	3,500	6,940	6,200	15,500	78,000	22,700	12,600	6,960	6,940
26	4,790	3,700	4,000	3,600	*8,190	7,240	12,800	77,900	21,900	12,300	6,820	6,840
27	4,720	3,900	4,000	3,500	8,240	7,650	11,900	76,200	20,800	11,800	6,860	6,500
28	4,760	4,000	4,000	3,400	7,810	7,680	11,500	*72,800	20,000	11,300	6,860	6,250
29	4,760	3,900	3,800	3,500	-	7,610	10,800	68,100	19,900	10,900	6,750	6,190
30	4,950	3,800	3,700	3,350	-	7,490	10,600	65,400	21,200	10,700	6,960	6,080
31	5,250	-	3,300	3,400	-	7,760	-	58,900	-	10,400	6,860	-
Total	161,950	133,420	112,950	105,350	119,060	169,380	564,900	*1,611.8	*1,021.4	518,300	243,610	187,580
Mean	5,224	4,447	3,644	3,398	4,252	5,464	12,160	51,990	34,050	16,720	7,858	6,253
Cfsm	0.390	0.332	0.272	0.254	0.317	0.408	0.907	3.88	2.54	1.25	0.588	0.467
In.	0.45	0.37	0.31	0.29	0.33	0.47	1.01	4.47	2.83	1.44	0.68	0.52
Ac-ft	321,200	264,600	224,000	209,000	236,200	336,000	723,800	*3,197	*2,026	*1,028	483,200	372,100
Calendar year 1957: Max	79,500	Min	2,050	Mean	14,190	Cfsm	1.06	In.	14.37	Ac-ft	10,270,000	
Water year 1957-58: Max	78,000	Min	2,700	Mean	13,010	Cfsm	0.971	In.	13.17	Ac-ft	9,421,000	

\* Discharge measurement made on this day.

\* Expressed in thousands.

Note.--Stage-fall-discharge relations affected by ice Nov. 19 to Feb. 5.

## 3205. Long Canyon Creek near Porthill, Idaho

Location.--Lat 48°57', long 116°32', in NW¼ sec. 36, T. 65 N., R. 2 W., on downstream side of U. S. Forest Service bridge at mouth of canyon and 4 miles southwest of Porthill.

Drainage area.--29 sq mi, approximately.

Records available.--May 1928 to September 1958 (no winter records prior to 1931). Monthly discharge only for some periods, published in WSP 1316.

Gage.--Wire-weight gage. Altitude of gage is 1,830 ft (by barometer). Prior to Mar. 20, 1930, staff gages and Mar. 20, 1930, to Apr. 30, 1956, water-stage recorders at several nearby sites and at various datums. May 1, 1956, to Oct. 27, 1957, staff gages at sites within 200 ft at different datums.

Average discharge.--28 years (1930-58), 63.0 cfs (45,600 acre-ft per year).

Extremes.--Maximum daily discharge during year, 600 cfs May 23; minimum observed, 2.8 cfs Sept. 15, 16 (gage height, 3.09 ft).

1928-58: Maximum discharge, 1,300 cfs May 27, 1948 (gage height, 6.75 ft, site and datum then in use), by slope-area measurement of peak flow; maximum gage height, 8.55 ft June 14, 15, 1933 (datum used Sept. 4, 1941, to Aug. 23, 1948), backwater from drift; minimum discharge, 1 cfs Nov. 29, 30, 1952, and possibly other days during period of no gage-height record in that year.

Remarks.--Records fair except those for periods of ice effect or indefinite stage-discharge relation, which are poor. No regulation or diversion above station.

Revisions (water years).--WSP 1316: 1939. WSP 1396: 1942.

Rating tables, water year 1957-58, except periods of ice effect or indefinite stage-discharge relation (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Oct. 27

Oct. 28 to May 25

May 26 to Sept. 30

2.08	4.5	3.2	6.3	4.6	160	3.0	1.0	3.9	44
2.1	4.8	3.4	10	5.0	255	3.1	3.0	4.2	89
2.2	7.0	3.6	17	5.5	380	3.3	8.8	4.5	151
2.3	11	3.8	28	6.0	530	3.5	16	5.0	264
		4.0	46	6.3	630	3.7	27	6.0	530
		4.3	93						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.5	*25	b9	b8	6.6	20	23	100	281	42	11	5.2
2	4.8	14	10	b7.5	6.6	19	23	120	269	41	10	5.4
3	5.0	9.4	9.4	b7	6.6	18	24	140	202	38	10	4.9
4	5.5	9.2	8.8	b7	6.8	17	28	145	177	35	9.8	4.9
5	5.5	9.2	7.8	7.2	6.8	16	31	150	*216	37	9.1	4.6
6	5.1	8.8	7.2	6.8	6.8	15	31	200	209	40	8.5	4.6
7	5.5	9.4	7.5	6.8	7.0	*14	32	*230	204	35	8.2	4.4
8	5.5	b9	7.8	6.6	7.0	14	33	320	160	30	7.9	4.1
9	5.5	b9	7.8	6.6	7	13	33	380	150	27	7.2	3.8
10	5.5	b10	7.7	6.5	7	13	31	410	200	25	6.6	3.5
11	6.0	b11	7.7	6.5	7	13	*31	380	150	25	6.3	3.3
12	6.0	13	7.5	6.6	8	13	33	370	130	*24	6.0	3.3
13	6.0	13	7.5	6.8	8	12	39	280	120	22	6.0	3.0
14	6.0	14	7.5	7.0	8	12	54	260	110	22	5.7	3.0
15	6.0	15	7.3	7.2	8	12	54	300	104	21	5.7	2.8
16	6.0	14	7.3	7.2	8	12	58	350	102	20	5.4	2.8
17	6.4	12	*7.3	7.3	8	12	56	350	95	19	5.2	3.0
18	6.4	9.2	7.2	7.5	11	12	58	350	89	18	4.9	4.1
19	7.0	9.8	7.2	7.2	13	13	52	390	82	16	4.9	12
20	7.0	10	7.2	7.2	16	14	54	510	76	15	4.6	*10
21	6.4	b10	7.0	6.8	18	15	52	530	70	14	*4.9	9.1
22	6.4	b10	7.3	7.0	19	17	49	560	66	14	4.6	8.5
23	6.4	b11	7.8	7.0	22	20	44	600	62	14	4.6	7.2
24	7.0	12	8.6	7.2	26	23	42	560	60	14	4.6	6.6
25	7.0	13	9.2	*7.3	35	27	39	530	58	13	4.4	7.9
26	7.0	13	9.4	7.3	30	27	38	520	56	13	4.1	9.1
27	7.8	13	10	7.2	25	26	36	470	54	13	4.4	8.5
28	6.8	11	7.0	7.0	22	25	36	470	52	13	4.4	10
29	8.8	b10	13	7.0	22	24	56	*430	49	12	4.9	10
30	15	b9	b11	6.8	-----	23	86	305	45	12	5.2	10
31	27	-----	b9	6.6	-----	23	-----	293	-----	11	5.4	-----
Total	221.2	347.0	260.0	217.7	360.2	534	1,256	11,003	3,698	695	194.5	180.6
Mean	7.14	11.6	8.39	7.02	12.9	17.2	41.9	355	123	22.4	6.27	6.02
Cfsm	0.246	0.400	0.289	0.242	0.445	0.593	1.44	12.2	4.22	0.732	0.216	0.208
In.	0.28	0.44	0.33	0.28	0.46	0.68	1.63	14.11	4.74	0.89	0.25	0.23
Ac-ft	439	688	516	432	714	1,060	2,490	21,820	7,330	1,380	386	358

Calendar year 1957: Max 520 Min 4.5 Mean 66.0 Cfsm 2.28 In. 30.85 Ac-ft 47,740  
 Water year 1957-58: Max 600 Min 2.8 Mean 52.0 Cfsm 1.79 In. 24.31 Ac-ft 37,610

Peak discharge (base, 380 cfs).--Stage-discharge relation indefinite; peaks not computed.

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--Stage-discharge relation indefinite Feb. 9 to Mar. 5, Mar. 23 to Apr. 21, Apr. 23 to May 23 June 8-27; discharge estimated on basis of 3 discharge measurements, weather records, and records for Smith Creek and Boundary Creek near Porthill and other nearby streams.

## 3210. Smith Creek near Porthill, Idaho

Location.--Lat 48°57'40", long 116°33'20", in NE¼ sec. 26, T. 65 N., R. 2 W., on right bank at U. S. Forest Service bridge, 1 mile south of Smith Creek ranger station and 4 miles southwest of Porthill.

Drainage area.--70 sq mi, approximately.

Records available.--May 1928 to September 1958 (no winter records 1928-30). Monthly discharge only for some periods, published in WSP 1316.

Gage.--Water-stage recorder. Altitude of gage is 1,770 ft (from topographic map). Prior to Apr. 20, 1929, staff gage at site 40 ft downstream at datum 0.98 ft lower. Apr. 20, 1929, to Sept. 30, 1956, water-stage recorder at present site at datum 1.69 ft higher.

Average discharge.--28 years (1930-58), 189 cfs (136,800 acre-ft per year).

Extremes.--Maximum discharge during year, 2,170 cfs May 23 (gage height, 7.68 ft); minimum, 8.0 cfs Sept. 12 (gage height, 2.00 ft).  
1928-58: Maximum discharge, 3,810 cfs June 23, 1955 (gage height, 9.34 ft, present datum), from rating curve extended above 1,600 cfs by logarithmic plotting; minimum daily, 3 cfs Nov. 29, 30, 1952.

Remarks.--Records good except those for periods of ice effect, which are poor. No regulation or diversion above station.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 22				May 23 to Sept. 30			
2.1	8.7	4.5	340	2.0	8.0	4.0	210
2.3	15	5.0	510	2.2	14	4.5	324
2.5	25	5.5	720	2.5	29	5.0	495
2.8	46	6.0	980	2.8	48	6.0	950
3.2	84	7.0	1,660	3.1	75	7.0	1,590
3.6	141	8.0	2,530	3.5	125	8.0	2,420
4.0	211						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	*88	b30	b24	22	100	96	241	880	99	22	11
2	24	69	b30	b24	21	95	96	358	842	91	20	10
3	56	50	31	b23	23	89	100	474	595	83	20	11
4	35	56	30	b23	22	85	119	506	595	78	20	11
5	26	53	29	b23	21	83	124	522	*563	79	18	10
6	24	52	28	b23	22	78	124	602	567	86	18	9.5
7	24	47	28	b23	22	*75	127	*820	687	82	17	9.2
8	23	31	30	b23	22	72	130	1,050	471	84	16	8.9
9	22	40	30	b23	22	69	131	1,180	420	83	15	8.9
10	21	44	b24	b23	23	68	125	1,260	615	77	14	9.2
11	23	51	b24	b23	23	65	*120	1,180	430	66	14	8.6
12	26	50	b25	b23	23	61	131	1,170	379	*60	13	8.3
13	28	48	b28	b23	23	58	157	876	314	56	13	9.5
14	64	46	26	23	23	60	226	795	298	54	12	18
15	57	42	23	23	22	59	224	947	269	51	12	13
16	39	40	26	b27	23	58	250	1,140	234	47	12	11
17	34	38	*26	b30	23	58	239	1,140	214	45	11	17
18	32	b36	26	b28	23	58	250	1,080	193	42	11	22
19	29	b30	25	26	49	56	215	1,170	177	42	11	48
20	26	15	28	26	70	56	234	1,500	163	39	11	*40
21	26	b20	27	24	91	62	224	1,670	146	37	*11	25
22	21	b30	26	23	95	78	202	1,660	132	34	11	22
23	19	b34	26	24	109	84	185	1,780	122	32	10	20
24	30	40	25	24	139	91	176	1,730	140	31	10	22
25	34	36	25	*24	181	118	166	1,580	132	29	9.8	30
26	38	b34	b34	23	166	118	162	1,530	110	28	9.8	33
27	39	b26	b34	23	135	110	152	1,320	112	27	10	27
28	36	30	b31	23	113	106	147	1,320	161	26	12	30
29	37	b21	b28	23	-	104	151	*1,100	118	26	13	33
30	172	b28	24	23	-----	103	176	885	103	27	14	25
31	141	-----	b24	23	-----	99	-----	805	-----	25	12	-----
Total	1,219	1,225	849	740	1,559	2,476	4,959	33,371	10,002	1,666	422.6	561.1
Mean	39.3	40.8	27.4	23.9	55.7	79.9	165	1,076	333	53.7	13.6	18.7
Cfsm	0.561	0.583	0.391	0.341	0.796	1.14	2.36	15.4	4.76	0.767	0.194	0.267
In.	0.65	0.65	0.45	0.39	0.83	1.32	2.63	17.73	5.31	0.89	0.22	0.30
Ac-ft	2,420	2,430	1,680	1,470	3,090	4,910	9,840	66,190	19,840	3,300	838	1,110

Calendar year 1957: Max 1,560 Min 9.3 Mean 183 Cfsm 2.61 In. 35.44 Ac-ft 132,400  
Water year 1957-58: Max 1,780 Min 8.3 Mean 162 Cfsm 2.31 In. 31.37 Ac-ft 117,100

Peak discharge (base, 1,400 cfs).--May 10 (10 p.m.) 1,470 cfs (6.75 ft); May 23 (7 p.m.) 2,170 cfs (7.68 ft).

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

3215. Boundary Creek near Porthill, Idaho  
(International gaging station)

Location.--Lat 48°59'50", long 116°34'05", in SE $\frac{1}{4}$  sec. 11, T. 65 N., R. 2 W., on left bank near mouth of canyon, 0.2 mile south of international boundary and 3 miles west of Porthill.

Drainage area.--97 sq mi, approximately.

Records available.--May 1928 to September 1958 (no winter records 1929, 1930).

Gage.--Water-stage recorder. Altitude of gage is 1,770 ft (from topographic map). Prior to Apr. 24, 1929, staff gage at site 140 ft upstream at different datum.

Average discharge.--28 years (1930-58), 189 cfs (136,800 acre-ft per year).

Extremes.--Maximum discharge during year, 1,910 cfs May 20 (gage height, 4.61 ft); minimum, 15 cfs Sept. 12, 13; minimum gage height, 0.52 ft Nov. 20.  
1928-58: Maximum discharge, 3,280 cfs June 23, 1955 (gage height, 5.80 ft), from rating curve extended above 2,000 cfs; minimum, 5 cfs sometime between Nov. 10 and Dec. 3, 1936; minimum gage height, 0.54 ft Nov. 22, 1952.

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

Cooperation.--This station is maintained by the United States under agreement with Canada.

Revisions (water years).--WSP 1396: 1943(M), 1945(M), 1950(M), 1953(M). WSP 1446: 1930(M)

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1, 2		Oct. 2 to May 20				May 21 to Sept. 30	
0.6	18	0.6	21	2.5	375	0.6	15
0.8	28	.8	30	3.0	585	.8	29
1.0	43	1.0	44	3.5	900	1.0	44
1.2	63	1.3	80	4.0	1,310		
		1.6	136	4.5	1,800		
		2.0	232				

Note.--Same as preceding table above 1.0 ft.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	*79	b32	28	28	90	102	303	767	117	30	18
2	52	54	b33	28	28	88	102	406	596	107	29	18
3	66	38	35	28	28	83	106	545	555	94	29	23
4	45	49	32	28	28	79	132	*585	535	88	27	20
5	35	45	31	28	28	77	141	596	526	86	26	18
6	33	*45	31	28	28	*73	141	688	560	94	26	17
7	34	38	b31	28	28	70	143	900	640	94	24	16
8	33	51	31	28	28	67	148	1,110	450	119	24	16
9	32	41	32	28	28	61	146	1,250	418	138	23	17
10	31	42	b30	28	29	62	146	1,300	466	121	23	18
11	32	43	b30	28	29	61	*145	1,350	400	94	23	16
12	33	43	b30	28	29	58	159	1,250	365	85	24	16
13	34	43	b30	28	30	53	197	942	332	77	22	16
14	43	41	30	28	29	56	270	900	311	*72	20	20
15	38	39	30	28	28	58	262	1,050	281	65	20	21
16	34	37	30	32	29	54	273	1,240	257	60	19	20
17	32	36	*30	35	20	53	270	1,180	237	56	18	22
18	32	35	31	33	32	52	270	1,150	217	52	18	29
19	31	30	30	31	38	51	247	1,310	*197	50	19	60
20	29	b22	31	29	52	51	242	1,600	183	47	18	*43
21	30	b32	31	28	58	55	240	1,630	166	43	*18	31
22	27	b34	30	28	62	55	227	1,570	148	42	18	27
23	24	b38	30	28	88	74	212	1,620	141	39	18	26
24	34	b38	30	*28	128	85	202	1,560	166	38	16	31
25	36	35	30	28	*157	111	193	1,500	154	37	16	37
26	42	34	31	28	159	121	185	1,440	128	36	16	39
27	43	30	32	28	134	117	178	1,250	128	35	17	41
28	39	32	31	28	100	109	173	*1,270	176	35	20	32
29	38	b32	28	28	107	107	183	1,030	132	39	21	30
30	144	b32	28	29	-----	107	217	830	115	35	21	26
31	136	-----	28	28	-----	106	-----	760	-----	32	20	-----
Total	1,313	1,168	947	869	1,492	2,354	5,652	34,115	9,747	2,123	663	766
Mean	42.4	38.9	30.5	28.7	53.3	75.9	188	1,100	325	68.5	21.4	25.5
Cfsm	0.457	0.401	0.314	0.296	0.549	0.782	1.94	11.3	5.55	0.706	0.221	0.265
In.	0.50	0.45	0.35	0.34	0.57	0.90	2.17	13.1	3.74	0.81	0.25	0.29
Ac-ft	2,600	2,320	1,880	1,760	2,960	4,670	11,210	67,670	19,330	4,210	1,320	1,520
Calendar year 1957: Max	1,580			Min 18		Mean 178		Cfsm 1.84	In. 24.89	Ac-ft 128,800		
Water year 1957-58: Max	1,630			Min 16		Mean 168		Cfsm 1.73	In. 23.48	Ac-ft 121,400		

Peak discharge (base, 1,300 cfs).--May 11 (10 p.m.) 1,570 cfs (4.27 ft); May 20 (5:30 p.m.) 1,910 cfs (4.61 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 29 to Jan. 23, Apr. 9, 10; discharge estimated on basis of records for Smith Creek near Porthill, weather records, recorded range in stage, and flow for adjacent periods.

## 3220. Kootenai River at Porthill, Idaho

(International gaging station)

Location.--Lat 49°00'00", long 116°30'10", in SW $\frac{1}{4}$  sec. 8, T. 65 N., R. 1 W., on right bank 300 ft south of international boundary at Porthill.

Drainage area.--13,700 sq mi, approximately.

Records available.--May to July 1904 and October 1927 to March 1928 (gage heights only), and April 1928 to September 1958 in reports of Geological Survey. October 1924 to September 1927 (gage heights only) in reports of Department of Northern Affairs and National Resources, Canada.

Gage.--Water-stage recorder. Datum of gage is 1,700.00 ft above mean sea level referred to bench mark "10-M-1928", at elevation 767.68 ft. Gage readings have been reduced to elevations above mean sea level. Datum of 1929, supplementary adjustment of 1947, and datum of Geodetic Survey of Canada, Pub. 24, 1951 edition, are 0.03 ft higher. Prior to May 17, 1928, staff gages at approximately same site. Datum of gages prior to July 28, 1928, was 38.34 ft higher, except in 1904 when different datum was used.

Average discharge.--30 years, 15,580 cfs (11,280,000 acre-ft per year).

Extremes.--Maximum daily discharge during year, 81,100 cfs May 26; maximum elevation, 1,762.28 ft May 27; minimum daily discharge, 2,780 cfs Jan. 3; minimum elevation, 1,740.35 ft Apr. 2, 3, 4.

1928-58: Maximum daily discharge, 125,000 cfs June 1, 1948; maximum elevation, 1,767.53 ft June 5, 1956; minimum daily discharge, 1,380 cfs Feb. 8, 1936; minimum elevation, 1,738.21 ft Apr. 3, 1944.

Maximum elevation known, 1,772.7 ft in June 1894, present datum.

Remarks.--Records excellent except those for period of ice effect at station near Copeland, which are good. Daily discharge represents entire flow passing international boundary computed by adding tributary inflow, including that of Boundary Creek, to flow at station near Copeland and correcting for storage change in channel and flooded areas between stations near Copeland and at Porthill. Boundary dike of Reclamation Farm and U. S. Forest Service roadway dike (south side of Boundary Creek) remained intact and flow of river was confined throughout year to main channel on which gage is located. Elevations affected by backwater from Kootenay Lake. No drainage district dike failed during year.

Cooperation.--This station is maintained by the United States under agreement with Canada.

Elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45.82	45.80	45.81	45.75	44.38	43.04	40.48	42.60	60.38	50.21	45.00	44.30
2	45.79	45.82	45.82	45.68	44.32	42.84	40.40	43.02	59.76	49.81	44.89	44.38
3	45.87	45.83	45.80	45.66	44.22	42.70	40.38	43.89	59.23	49.62	44.76	44.37
4	45.82	45.82	45.80	45.65	44.15	42.52	40.38	45.07	58.66	49.42	44.74	44.42
5	45.83	45.79	45.85	45.58	44.07	42.34	40.44	46.10	58.07	49.20	44.62	44.48
6	45.87	45.77	45.84	45.53	44.02	42.27	40.52	47.00	57.56	48.96	44.49	44.53
7	45.94	45.77	45.89	45.48	43.95	42.13	40.59	48.02	57.21	48.74	44.53	44.59
8	45.92	45.74	45.91	45.43	43.86	42.03	40.65	49.42	56.90	48.84	44.43	44.64
9	45.89	45.71	45.92	45.44	43.79	41.93	40.74	51.16	56.73	49.01	44.36	44.66
10	45.87	45.68	45.89	45.42	43.79	41.83	40.78	52.90	56.70	48.82	44.39	44.79
11	45.85	45.67	45.86	45.44	43.75	41.69	40.81	54.22	56.52	48.55	44.46	44.86
12	45.85	45.64	45.86	45.47	43.67	41.60	40.82	55.17	56.65	48.39	44.48	45.01
13	45.85	45.64	45.86	45.49	43.64	41.49	40.90	55.70	56.68	48.24	44.44	45.07
14	45.89	45.67	45.84	45.44	43.58	41.39	41.21	56.10	56.44	48.07	44.43	45.20
15	45.92	45.67	45.88	45.44	43.50	41.31	41.87	55.92	55.91	48.02	44.42	45.28
16	45.91	45.69	45.86	45.42	43.43	41.19	42.46	55.77	55.33	47.93	44.40	45.35
17	45.91	45.67	45.83	45.43	43.38	41.14	42.98	56.22	54.78	47.70	44.37	45.50
18	45.90	45.66	45.81	45.33	43.37	41.04	43.35	56.92	54.22	47.48	44.35	45.61
19	45.91	45.67	45.82	45.21	43.31	40.95	43.46	57.36	53.72	47.24	44.34	45.81
20	45.87	45.65	45.79	45.12	43.28	40.90	43.48	57.75	53.32	47.03	44.32	45.93
21	45.83	45.65	45.83	45.04	43.26	40.96	43.68	58.39	52.98	46.82	44.32	45.94
22	45.77	45.65	45.81	44.99	43.24	40.82	43.71	59.28	52.62	46.64	44.33	46.04
23	45.76	45.68	45.79	44.91	43.23	40.83	43.56	60.34	52.20	46.55	44.35	46.12
24	45.78	45.70	45.79	44.90	43.25	40.83	43.31	61.15	51.80	46.38	44.36	46.09
25	45.71	45.71	45.83	44.82	43.33	40.84	43.11	61.76	51.50	46.25	44.39	46.09
26	45.64	45.77	45.89	44.74	43.45	40.94	42.94	62.14	51.20	46.11	44.35	46.03
27	45.62	45.73	45.87	44.65	43.38	40.90	42.79	62.26	50.84	45.90	44.37	45.99
28	45.59	45.80	45.86	44.61	43.23	40.82	42.67	62.18	50.56	45.69	44.34	46.00
29	45.58	45.75	45.87	44.53	-	40.68	42.54	61.89	50.39	45.50	44.30	46.01
30	45.63	45.76	45.85	44.48	-	40.59	42.49	61.40	50.27	45.33	44.29	46.00
31	45.75	-	45.80	44.44	-	40.53	-	60.92	-	45.13	44.28	-

Note.--Add 1,700 ft to obtain elevation above mean sea level.

## 3220. Kootenai River at Porthill, Idaho--Continued

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,820	5,950	3,740	3,100	3,540	7,380	8,030	11,800	57,100	22,600	10,200	6,460
2	5,050	5,970	3,680	2,900	3,490	6,830	8,010	14,060	53,400	21,400	10,100	6,600
3	5,260	5,590	3,590	2,780	3,520	6,320	8,070	17,900	50,600	20,700	9,710	6,360
4	5,750	5,360	3,680	2,870	3,290	5,810	8,110	22,300	47,600	20,600	9,590	6,130
5	5,710	5,100	3,640	2,910	3,400	5,470	8,290	26,500	44,300	20,100	9,430	6,160
6	5,730	5,090	3,830	3,000	3,630	5,400	8,680	29,700	41,700	19,500	9,300	6,000
7	6,050	4,760	3,800	2,980	3,620	5,310	9,130	33,400	39,900	19,500	8,830	5,750
8	5,940	4,670	3,810	3,090	3,680	5,220	9,480	38,800	39,800	21,900	8,580	5,610
9	5,920	4,660	3,660	3,160	3,580	4,940	9,730	45,200	40,800	23,700	8,240	5,520
10	5,590	4,690	3,690	3,270	3,500	5,050	9,990	51,700	41,100	22,600	7,920	5,380
11	5,480	4,520	3,680	3,550	3,500	4,920	10,000	56,100	41,500	21,200	8,020	5,290
12	5,210	4,520	3,770	3,640	3,480	4,840	10,000	58,600	43,800	19,500	8,010	5,380
13	5,120	4,510	3,560	3,650	3,800	4,680	10,300	60,100	44,400	18,500	8,000	5,470
14	4,990	4,740	3,580	3,700	3,650	4,680	12,000	60,600	43,000	18,400	7,980	5,680
15	5,140	4,820	3,440	3,660	3,590	4,660	14,000	57,200	39,400	18,800	7,930	5,780
16	5,350	4,660	3,490	3,880	3,550	4,520	16,400	54,700	35,900	18,600	7,740	5,990
17	5,420	4,640	3,480	3,980	3,480	4,580	17,900	56,600	33,100	17,300	7,580	6,220
18	5,560	4,410	3,580	4,030	3,440	4,240	18,800	59,600	30,800	16,000	7,430	6,220
19	5,550	4,270	3,560	4,140	3,730	4,330	18,600	60,900	28,900	15,300	7,310	6,190
20	5,370	4,260	3,790	4,010	3,640	4,280	18,200	61,400	27,800	14,700	7,310	6,410
21	5,150	4,070	3,740	3,810	4,200	4,260	18,500	63,800	27,200	14,100	7,200	7,330
22	5,400	3,980	3,880	3,690	4,320	4,670	18,000	69,000	26,500	13,600	7,190	7,840
23	5,260	3,880	3,760	3,710	5,210	5,140	16,800	74,400	24,700	13,200	7,160	7,750
24	4,920	3,780	3,680	3,670	6,010	5,700	15,400	78,300	23,900	12,900	6,950	7,430
25	4,960	3,780	3,750	3,600	7,300	6,470	14,100	80,900	23,300	12,800	6,980	7,020
26	4,920	3,750	4,040	3,710	8,520	7,460	13,300	81,100	22,400	12,500	6,680	6,960
27	4,830	4,000	4,110	3,610	8,610	7,940	12,400	79,300	21,300	12,000	6,680	6,600
28	4,870	4,040	4,090	3,490	8,170	7,990	11,800	76,300	20,600	11,500	6,720	6,320
29	4,850	4,000	3,870	3,610	-	7,930	11,300	71,400	20,300	11,100	6,790	6,260
30	5,270	3,870	3,770	3,450	-----	7,800	11,200	66,300	21,500	10,900	7,000	6,160
31	5,510	-----	3,400	3,480	-----	8,040	-----	61,600	-----	10,600	6,910	-----
Total	164,930	136,340	115,180	108,130	123,450	176,660	576,520	*1,679.5	*1,056.6	526,100	245,470	188,270
Mean	5,320	4,545	3,715	3,488	4,409	5,699	12,550	54,180	35,220	16,970	7,918	6,276
Cfs/m	0.368	0.332	0.271	0.255	0.321	0.416	0.916	3.95	2.57	1.24	0.578	0.458
In.	0.45	0.37	0.31	0.29	0.34	0.48	1.02	4.56	2.87	1.43	0.67	0.51
Ac-ft	327,100	270,400	228,400	214,500	244,900	350,400	746,800	*3,331	*2,096	*1,044	486,900	373,400
Calendar year 1957: Max	82,300	Min	2,140	Mean	14,640	Cfs/m	1.07	In.	14.50	Ac-ft	10,600,000	
Water year 1957-58: Max	81,100	Min	2,780	Mean	13,420	Cfs/m	0.980	In.	13.30	Ac-ft	9,714,000	

Note.--Stage-fall-discharge relation for station at Copeland affected by ice Nov. 19 to Feb. 5.

\* Expressed in thousands.

## 3225. Kootenay Lake at Kuskonook, British Columbia

(International gaging station)

Location.--Lat 49°18', long 116°40', on east shore of Lake at Kuskonook.Records available.--April 1936 to September 1958.Gage.--Water-stage recorder. Datum of gage is 1,735.20 ft above mean sea level, Geodetic Survey of Canada, datum of Pub. 24, 1951 edition, which is the same at Porthill as datum of 1929, supplementary adjustment of 1947, and 0.03 ft higher than datum in use at station Kootenai River at Porthill. Gage heights have been reduced to elevations above datum in use at station Kootenai River at Porthill. Prior to Apr. 25, 1938, staff gage at same site at datum 3.00 ft higher.Extremes.--Maximum elevation during year, 1,756.74 ft May 30; minimum, 1,739.49 ft Apr. 4. 1936-58: Maximum elevation, 1,762.16 ft June 5, 1956; minimum daily, 1,737.86 ft Apr. 5, 6, 1944.Remarks.--Elevation is subject to partial regulation by Corra Linn Dam below outlet. Diversions for irrigation of about 14,600 acres above Kootenay Lake.Cooperation.--This station is maintained by Canada under agreement with the United States.

Elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45.60	45.53	45.64	-	44.13	42.47	39.66	41.31	56.49	48.73	44.40	43.96
2	45.61	45.54	45.64	-	44.06	42.36	39.61	41.36	56.25	48.50	44.31	44.04
3	45.65	45.56	45.65	-	44.00	42.25	39.60	41.50	55.94	48.24	44.19	44.07
4	45.59	45.57	45.65	45.45	43.92	42.11	39.57	41.75	55.58	48.00	44.12	44.11
5	45.59	45.56	45.65	45.39	43.85	42.00	39.57	42.07	55.21	47.79	44.03	44.18
6	45.63	45.55	45.67	45.33	43.79	41.90	39.57	42.46	54.86	47.60	43.96	44.23
7	45.66	45.55	45.70	45.30	43.71	41.79	39.58	42.95	54.63	47.40	43.97	44.31
8	45.66	45.51	45.73	-	43.65	41.68	39.60	43.56	54.36	47.23	43.97	44.36
9	45.63	45.49	45.76	-	43.59	41.58	39.64	44.29	54.07	47.14	43.94	44.43
10	45.62	45.49	45.70	-	43.55	41.44	39.66	45.13	53.91	47.08	43.95	44.53
11	45.61	45.48	45.67	-	43.48	41.42	39.70	46.04	53.78	46.99	44.00	44.61
12	45.61	45.46	45.68	-	43.42	41.26	39.71	46.99	53.65	46.96	44.04	44.74
13	45.63	45.45	45.68	-	43.38	41.17	39.76	47.76	53.55	46.92	44.02	44.85
14	45.67	45.45	45.68	45.23	43.32	41.08	39.81	48.42	53.41	46.79	44.01	44.97
15	45.69	45.45	45.71	45.22	43.26	40.99	39.93	48.99	53.21	46.68	43.99	45.03
16	45.68	45.47	45.72	45.21	43.19	40.89	40.12	49.50	52.95	46.60	43.99	45.12
17	45.67	45.47	45.69	45.19	43.14	40.81	40.34	49.94	52.63	46.53	43.99	45.23
18	45.66	45.47	45.68	45.07	43.11	40.73	40.55	50.36	52.29	46.43	43.96	45.35
19	45.65	45.49	45.67	44.95	43.06	40.66	40.75	50.80	51.95	46.27	43.94	45.55
20	45.63	45.48	45.65	44.89	43.01	40.61	40.94	51.25	51.61	46.10	43.93	45.65
21	45.61	45.48	45.68	44.81	42.97	40.54	41.10	51.82	51.29	45.92	43.94	45.64
22	45.60	45.48	45.65	44.75	42.92	40.47	41.23	52.46	50.96	45.80	43.95	45.67
23	45.55	45.50	45.64	44.70	42.90	40.41	41.33	53.17	50.67	45.70	43.98	45.74
24	45.56	45.52	45.65	44.67	42.87	40.35	41.40	53.92	50.37	45.57	44.01	45.75
25	45.50	45.55	45.68	44.60	42.82	40.32	41.44	54.65	50.10	45.44	44.06	45.75
26	45.43	45.59	-	44.51	42.77	40.23	41.44	55.29	49.87	45.31	44.05	45.70
27	45.40	45.56	-	44.42	42.68	40.12	41.42	55.83	49.59	45.15	44.05	45.68
28	45.38	45.60	-	44.38	42.59	40.02	41.39	56.29	49.40	45.00	44.03	45.71
29	45.38	45.59	-	44.33	-	39.92	41.36	56.55	49.20	44.84	43.98	45.72
30	45.41	45.60	45.66	44.28	-	39.81	41.32	56.68	48.96	44.69	43.95	45.71
31	45.50	-	45.64	44.21	-	39.71	-	56.62	-	44.53	43.92	-

Note.--Add 1,700 ft to obtain elevation above mean sea level.



## 3230. Columbia River at Birchbank, British Columbia

(International gaging station)

Location.--Lat 49°11', long 117°43', on right bank at Birchbank, British Columbia, 7 miles upstream from Trail, 11 miles downstream from Kootenay River, and 17 miles upstream from international boundary.

Drainage area.--34,000 sq mi, approximately.

Records available.--April 1913 to September 1958. Published as "at Trail, British Columbia" 1913-37.

Gage.--Water-stage recorder. Datum of gage is 1,329.90 ft above mean sea level, 1947 International joint adjustment, published as 1,338.00 ft prior to October 1948. Prior to Oct. 1, 1937, chain or wire-weight gage on highway bridge at site 7 miles downstream at datum 16.27 ft lower.

Average discharge.--45 years, 70,260 cfs (50,870,000 acre-ft per year).

Extremes.--Maximum discharge during year, 290,000 cfs June 1 (gage height, 42.28 ft); minimum, 13,400 cfs Jan. 12 (gage height, 4.61 ft).  
1913-58: Maximum discharge, 370,000 cfs June 11, 1948 (gage height, 50.62 ft); minimum observed, 8,940 cfs Feb. 3, 1937 (gage height, 6.27 ft, site and datum then in use).

Remarks.--Many small diversions above station for irrigation of about 25,000 acres. Fluctuation at low flow caused by powerplant on Kootenay River. Flow affected by internationally controlled storage in Kootenay Lake, as well as by natural and controlled regulation in other lakes.

Cooperation.--This station is maintained by Canada under agreement with the United States.

Revisions (water years).--WSP 982: 1942. WSP 1216: 1949.

Rating table, water year 1957-58 (gage height, in feet,  
and discharge, in cubic feet per second)

5.0	14,900
15.0	62,800
30.0	165,000
43.0	298,000

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	38,800	*29,000	18,900	17,800	20,300	28,100	28,300	42,000	289,000	181,000	103,000	68,900
2	38,900	28,200	19,700	18,800	19,700	28,300	26,800	45,100	288,800	176,000	101,000	88,000
3	43,000	28,200	19,900	17,300	19,800	27,800	26,800	45,300	288,800	170,000	100,000	63,900
4	45,100	28,000	19,900	17,300	*19,800	27,200	27,000	47,300	*281,000	*164,000	98,300	60,700
5	42,100	28,000	19,000	18,700	19,300	27,100	27,400	49,400	274,000	159,000	*94,800	60,500
6	41,400	27,800	18,900	18,000	19,100	*26,200	27,600	*52,500	268,000	155,000	90,500	57,700
7	41,500	27,500	18,300	16,500	19,300	25,400	27,800	56,900	265,000	150,000	87,200	54,600
8	40,700	27,200	17,600	16,800	19,200	25,400	28,100	62,400	262,000	146,000	85,400	53,500
9	40,400	26,600	19,800	*16,200	19,100	25,400	28,400	70,000	260,000	142,000	84,000	51,800
10	39,400	26,000	*21,800	16,100	19,000	24,500	28,800	77,700	261,000	139,000	82,700	49,900
11	37,800	25,700	19,100	15,100	19,100	23,100	29,000	87,400	262,000	136,000	82,500	48,000
12	36,300	27,500	18,700	15,100	19,100	22,700	29,300	99,400	263,000	134,000	82,100	47,700
13	35,500	26,300	18,700	16,600	19,200	22,200	30,000	108,000	*262,000	131,000	81,600	47,400
14	35,700	25,400	18,200	16,900	18,900	21,700	30,800	116,000	259,000	129,000	81,100	47,300
15	35,500	24,800	18,600	17,300	19,100	22,100	31,900	125,000	254,000	127,000	80,900	49,000
16	35,600	24,800	18,900	18,900	18,700	21,800	33,000	135,000	247,000	124,000	80,400	48,600
17	35,800	24,700	19,300	23,000	18,400	21,400	34,100	142,000	240,000	121,000	80,000	48,200
18	35,000	24,200	19,100	24,000	18,700	20,900	35,000	148,000	233,000	120,000	79,600	48,400
19	33,800	23,000	20,400	20,500	19,100	20,400	36,500	154,000	*226,000	119,000	79,600	48,900
20	33,400	22,900	18,700	20,000	19,100	20,900	37,500	161,000	220,000	118,000	79,300	53,400
21	32,500	21,500	18,200	20,100	19,400	21,200	38,600	170,000	214,000	116,000	77,800	55,600
22	31,900	21,100	18,200	19,500	20,200	22,200	39,400	182,000	208,000	114,000	76,000	56,000
23	31,500	19,900	18,800	18,700	21,300	22,400	40,600	195,000	*202,000	113,000	75,100	54,300
24	32,600	19,500	17,200	20,100	24,200	23,400	41,000	211,000	197,000	113,000	73,800	54,700
25	34,500	20,000	18,100	21,300	28,900	26,100	41,300	226,000	194,000	112,000	74,400	54,600
26	31,500	20,500	19,500	20,900	28,600	29,800	41,600	240,000	191,000	111,000	75,900	53,200
27	30,100	20,100	20,100	19,700	29,200	30,900	41,800	255,000	189,000	110,000	76,500	50,400
28	29,200	20,100	18,400	19,500	29,200	30,700	*41,800	265,000	187,000	109,000	75,800	49,700
29	27,900	19,800	18,900	19,100	-	30,600	41,500	275,000	186,000	107,000	76,500	48,900
30	28,100	19,000	18,700	20,200	-----	30,100	41,500	282,000	184,000	106,000	75,600	47,200
31	29,100	-----	17,600	20,500	-----	29,300	-----	285,000	-----	105,000	73,800	-----
Total	*1,104	727,300	586,200	580,500	587,100	778,800	*1,012.5	*4,406.4	*7,151	*4,057	*2,566.2	*1,598.4
Mean	35,600	24,200	18,900	18,700	21,000	25,100	33,800	142,000	238,000	131,000	82,800	53,300
Cfs/m	1.05	0.71	0.56	0.55	0.62	0.74	0.99	4.18	7.00	5.65	2.44	1.57
In.	1.21	0.79	0.65	0.63	0.65	0.85	1.10	4.82	7.81	4.44	2.81	1.75
Ac-ft.	*2,190	*1,443	*1,163	*1,151	*1,164	*1,545	*2,008	*8,740	*14,184	*8,047	*5,090	*3,170
Calendar year 1957: Max	260,000	Min	15,800	Mean	68,500	Cfs/m	2.01	In.	27.38	Ac-ft	49,600,000	
Water year 1957-58: Max	289,000	Min	15,100	Mean	68,900	Cfs/m	2.03	In.	27.51	Ac-ft	49,900,000	

\* Discharge measurement made on this day.

\* Expressed in thousands.

## 3235. German Gulch Creek near Ramsay, Mont.

Location.--Lat 46°00'50", long 112°47'30", in SE1/4NW1/4 sec. 13, T. 3 N., R. 10 W., about half a mile upstream from mouth and 6½ miles west of Ramsay.

Drainage area.--41 sq mi, approximately.

Records available.--April 1955 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 5,200 ft (by barometer). Prior to July 13, 1956, staff gage at site 300 ft upstream from mouth at different datum.

Extremes.--Maximum discharge during year, 185 cfs May 20 (gage height, 3.05 ft); minimum not determined.  
1955-58: Maximum discharge observed, 187 cfs May 28, 1956 (gage height, 2.60 ft, site and datum then in use); minimum observed, 1.4 cfs Oct. 26-30, 1955 (gage height, 0.78 ft, site and datum then in use).

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

Rating table, water year 1957-58 (gage height, in feet,  
and discharge, in cubic feet per second)

1.6	5.0	2.2	46
1.7	8.6	2.5	84
1.8	14	3.0	174
2.0	27		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*6.4		(*)					19	58	40	16	8.2
2	6.4							25	56	38	15	8.2
3	9.1	8		(*)	5.5	5	10	31	60	39	15	8.2
4	11					(*)		37	71	38	15	8.2
5	9.1							41	61	35	14	7.5
6	9.1		6	4.5				55	55	35	14	7.5
7	8.6						9	80	52	34	14	7.2
8	8.2							66	52	34	13	7.2
9	8.2						*7.9	69	53	*33	13	7.2
10	8.6	7.5			5		7.5	86	49	32	12	7.2
11	8.6						7.9	112	46	31	12	7.2
12	8.2						8.6	128	55	29	12	7.2
13	8.6					4.5	10	117	60	26	12	8.2
14	8.2						12	105	55	26	11	7.9
15	7.9						14	105	50	25	11	*7.9
16	7.5		5.5				19	114	49	24	11	7.9
17	7.5						20	126	47	23	11	7.5
18	7.5			5			26	128	46	23	*12	7.2
19	7.5						21	*133	43	22	15	7.2
20	7.5	7			5.5		21	160	43	21	12	7.2
21	7.5						19	124	41	21	12	6.8
22	7.9						18	135	41	20	12	7.2
23	7.5					6	15	133	38	20	11	8.6
24	8.6						13	121	44	19	10	8.6
25	8.6						12	103	57	19	9.7	8.2
26	8.2		5				12	*92	45	18	8.6	7.9
27	9.7				5		15	83	41	18	8.6	7.9
28	9.1	6		5.5			14	74	39	17	8.6	7.5
29	8.6			(*)	-	8	14	66	36	19	9.1	7.5
30	*8.2						14	65	40	19	9.7	7.5
31	8							62		17	8.6	
Total	255.6	215.0	170.0	153.0	147.5	170.5	397.9	2,795	1,483	815	367.9	229.7
Mean	8.25	7.2	5.5	4.9	5.3	5.5	13.3	90.2	49.4	26.3	11.9	7.66
Ac-ft	507	426	337	303	293	338	789	5,540	2,940	1,620	730	456

Calendar year 1957: Max 105 Min - Mean 15.6 Ac-ft 11,330  
Water year 1957-58: Max 160 Min - Mean 19.7 Ac-ft 14,280

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 31 to Apr. 8, Aug. 9-14; discharge estimated on basis of 6 discharge measurements, engineers' notes, weather records, and records for nearby stations.

3240. Racetrack Creek below Granite Creek, near Anaconda, Mont.

Location.--Lat 46°16'40", long 112°55'00", in NW¼NE¼ sec. 13, T. 6 N., R. 11 W., on right bank 30 ft upstream from bridge, about 2 miles downstream from Granite Creek, 9½ miles upstream from mouth, and 10 miles north of Anaconda.

Drainage area.--39.5 sq mi.

Records available.--April 1914 to September 1917 (gage heights only, published as "near Anaconda"), July 1957 to September 1958. Records for July 1911 to November 1912 at site 3 miles upstream, published as "near Anaconda" not equivalent due to inflow.

Gage.--Water-stage recorder. Altitude of gage is 5,420 ft (from topographic map). April 1914 to September 1917, at site about a quarter of a mile downstream at different datum.

Extremes.--1957: Maximum discharge during period July to September, 81 cfs July 30 (gage height, 3.11 ft); minimum, 23 cfs Sept. 30 (gage height, 2.36 ft).  
1957-58: Maximum discharge during water year, 413 cfs June 4 (gage height, 5.27 ft); minimum, 9.3 cfs Jan. 19 (gage height, 2.05 ft).

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

Revisions.--WSP 1316: Drainage area.

Discharge, in cubic feet per second, 1957

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1	-	72	44	9	-	50	36	17	-	48	31	25	70	42	27
2	-	70	42	10	-	46	36	18	-	46	33	26	74	39	26
3	-	68	41	11	-	45	34	19	-	46	33	27	76	35	26
4	-	66	42	12	-	44	35	20	-	44	34	28	76	41	24
5	-	70	41	13	-	54	35	21	-	44	32	29	79	46	24
6	-	62	39	14	-	54	33	22	-	46	34	30	80	46	*23
7	-	56	39	15	-	52	32	23	-	46	31	31	79	46	-
8	-	54	37	16	-	51	*32	24	*66	43	28				
Total.....												-	1,576	1,008	
Mean.....												-	50.8	33.6	
Cubic feet per second per square mile.....												-	1.29	0.851	
Runoff in inches.....												-	1.48	0.95	
Runoff in acre-feet.....												-	3,130	2,000	

\* Discharge measurement made on this day.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23	22	17	14	15	16	17	23	243	117	81	42
2	23	21	17	*16	15	18	16	25	232	114	79	41
3	28	20	16	16	16	19	17	28	248	120	81	40
4	29	17	16	16	16	20	17	32	350	117	84	40
5	28	20	16	16	16	20	17	36	275	106	76	39
6	26	20	16	16	16	20	17	50	260	105	77	39
7	27	20	16	16	16	*18	18	70	270	105	78	39
8	26	18	16	17	16	18	17	65	238	101	78	38
9	26	18	16	18	16	18	17	72	240	*97	78	38
10	28	20	14	16	16	18	16	88	267	105	77	49
11	27	20	13	16	16	17	*16	110	246	93	72	50
12	27	19	16	17	16	17	16	134	236	87	72	51
13	26	19	16	17	16	17	18	113	217	82	69	54
14	26	18	16	16	16	16	21	97	193	78	70	51
15	26	18	16	16	16	17	20	104	180	78	59	*50
16	25	16	16	16	17	16	26	123	165	75	56	49
17	23	14	16	18	18	16	27	158	149	76	54	47
18	23	15	16	16	18	17	31	187	138	82	54	46
19	24	17	16	12	18	17	25	*206	134	76	*52	46
20	23	16	17	14	16	17	28	235	127	91	56	45
21	23	12	17	16	19	17	25	273	118	80	56	44
22	23	16	16	16	19	17	24	284	113	82	56	43
23	23	18	16	15	20	18	22	281	106	90	51	43
24	25	18	16	15	20	18	20	304	203	78	50	44
25	24	18	18	15	20	18	20	323	198	79	49	43
26	23	18	18	15	18	16	21	*323	153	77	47	42
27	24	16	17	14	20	16	20	326	134	76	46	41
28	23	16	16	14	19	17	20	312	125	76	46	39
29	*22	14	17	*15	-	17	20	288	114	78	46	38
30	*22	*16	15	-----	-----	17	21	280	122	86	51	36
31	22	-----	12	16	-----	17	-----	254	-----	82	46	-----
Total	770	530	494	483	483	542	610	5,204	5,794	2,769	1,949	1,307
Mean	24.8	17.7	15.9	15.6	17.2	17.5	20.3	168	193	89.3	62.9	43.6
Cfs/m	0.628	0.448	0.403	0.395	0.435	0.443	0.514	4.25	4.89	2.26	1.59	1.10
In.	0.72	0.50	0.47	0.45	0.45	0.51	0.57	4.80	5.46	2.61	1.84	1.23
Ac-ft	1,530	1,050	980	958	958	1,080	1,210	10,320	11,490	5,490	3,870	2,590

Calendar year 1957: Max - Min - Mean - 57.4 Cfs/m - 1.45 In. - 19.7 Ac-ft - 41,530  
Water year 1957-58: Max 350

\* Discharge measurement made on this day.

3255. Flint Creek near Southern Cross, Mont.

Location.--Lat 46°14'00", long 113°17'40", in SE¼NW¼ sec. 36, T. 6 N., R. 14 W., on left wing of weir half a mile downstream from powerplant, 2 miles downstream from Georgetown Lake, 3 miles northwest of Southern Cross, and 6 miles south of Philipsburg.

Drainage area.--52.6 sq mi.

Records available.--October 1940 to September 1958.

Gage.--Staff gage and Cippoletti weir; gage read once daily. Altitude of gage is 5,630 ft (from topographic map).

Average discharge.--18 years, 30.1 cfs (21,790 acre-ft per year).

Extremes.--Maximum discharge observed during year, 153 cfs June 28 (gage height, 1.93 ft); minimum daily, 3.8 cfs Oct. 25-30, Dec. 2-17.

1940-58: Maximum discharge, 174 cfs June 13, 1942 (gage height, 1.86 ft); probably no flow for part of Aug. 20, 1943, May 23, 1952, Oct. 6, 1954, when generator was shut down.

Remarks.--Records good. Flow regulated by Georgetown Lake (see p. 248). Flow may be augmented by transbasin diversion from Silver Lake to Georgetown Lake or reduced by pumping from Georgetown Lake to Silver Lake.

Cooperation.--Gage-height record furnished by The Montana Power Co., under general supervision of Geological Survey, in connection with a Federal Power Commission project.

Revisions (water years).--WSP 1216: 1942(M). WSP 1246: Drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

0.2	3.8	0.8	26
.3	6.5	1.1	47
.4	10	1.4	76
.5	14	2.0	164

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	4.3	4.1	4.1	4.9	4.6	6.2	5.4	28	116	30	24
2	15	4.3	3.8	4.1	4.9	4.6	6.2	6.0	28	73	30	25
3	15	4.3	3.8	*4.1	4.9	4.6	6.2	5.7	28	73	25	25
4	15	4.6	3.8	4.1	4.9	4.6	6.5	5.7	28	73	25	25
5	15	4.6	3.8	4.1	4.9	*4.6	6.5	6.5	28	73	25	25
6	15	4.3	3.8	4.1	4.9	4.6	6.5	7.6	29	73	25	25
7	15	4.3	3.8	4.1	4.6	4.6	6.5	9.3	32	61	24	25
8	15	4.3	3.8	4.1	4.6	4.6	4.3	9.3	31	76	24	26
9	15	4.3	3.8	4.1	4.6	4.6	4.9	9.3	32	76	26	26
10	15	4.3	3.8	4.3	4.6	9.2	4.9	10	33	*111	26	26
11	15	4.1	3.8	4.3	11	9.2	4.9	10	34	109	26	26
12	15	4.1	3.8	4.3	11	4.9	4.9	10	34	106	55	27
13	15	4.1	3.8	4.3	4.9	4.9	4.9	10	35	97	55	26
14	15	4.1	3.8	4.3	4.9	4.9	4.9	10	35	65	55	26
15	15	4.1	3.8	4.3	4.9	4.9	*4.9	9.0	35	36	34	26
16	15	4.1	3.8	4.3	4.9	4.9	5.2	7.2	35	27	24	*26
17	9.8	4.1	3.8	4.3	4.9	4.9	4.9	6.8	117	27	24	26
18	4.3	4.1	4.1	4.3	4.9	4.9	5.7	6.5	138	27	23	26
19	4.3	4.1	4.1	4.3	4.9	4.9	5.4	*6.0	120	27	*27	26
20	11	4.1	4.1	4.3	4.9	4.9	5.2	6.0	79	27	27	26
21	11	4.1	4.1	4.3	4.9	4.9	5.4	12	61	26	24	27
22	4.3	4.1	4.1	4.3	4.9	4.9	5.4	23	42	28	26	27
23	4.3	4.1	4.1	4.6	4.9	4.9	5.4	28	42	32	26	30
24	4.3	4.1	4.1	4.6	4.9	4.9	5.2	28	138	55	26	21
25	3.8	4.1	4.1	4.6	4.6	4.9	5.2	28	151	55	24	28
26	3.8	4.1	4.1	4.6	4.6	6.2	5.2	28	151	55	24	28
27	3.8	4.1	4.1	4.6	4.6	6.2	5.4	28	151	55	25	28
28	3.8	4.1	4.1	4.9	4.6	6.2	5.2	28	153	42	25	28
29	*3.8	4.1	4.1	*4.3	4.9	6.2	5.2	28	151	40	24	27
30	3.8	*4.1	4.1	4.9	-----	6.2	5.2	28	116	40	23	28
31	4.3	-----	4.1	4.9	-----	6.2	-----	28	-----	39	24	-----
Total	320.4	125.6	122.3	135.4	147.0	165.6	162.4	443.3	2,115	1,820	881	785
Mean	10.3	4.19	3.95	4.37	5.25	5.34	5.41	14.3	70.5	58.7	28.4	26.2
Ac-ft	656	249	243	269	292	328	322	879	4,200	3,610	1,750	1,560
Calendar year 1957: Max 38 Min 3.8 Mean 15.7 Ac-ft 11,370												
water year 1957-58: Max 153 Min 3.8 Mean 19.8 Ac-ft 14,340												

\* Discharge measurement made on this day.

3295. Flint Creek at Maxville, Mont.

Location.--Lat 46°28'00", long 113°14'30", in NW $\frac{1}{4}$  sec. 9, T. 8 N., R. 13 W., on right bank 0.4 mile west of Maxville and 1 mile upstream from Boulder Creek.

Drainage area.--208 sq mi.

Records available.--August 1941 to September 1958. April 1939 to September 1941 at site half a mile upstream (above Maxville siding), records not equivalent owing to diversions.

Gage.--Water-stage recorder. Datum of gage is 4,828.44 ft above mean sea level, datum of 1929.

Average discharge.--17 years, 100 cfs (72,400 acre-ft per year).

Extremes.--Maximum discharge during year, 468 cfs June 25 (gage height, 4.55 ft); minimum daily, 18 cfs Jan. 2, 3, 4.

1941-58: Maximum discharge, 1,680 cfs Mar. 28, 1943 (gage height, 6.79 ft), from rating curve extended above 600 cfs; minimum daily, that of Jan. 2, 3, 4, 1958.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 8,200 acres above station. During irrigation season flow is supplemented by water from East Fork Rock Creek which is diverted in sec. 5, T. 4 N., R. 14 W., 500 ft below Rock Creek Dam, through a canal into Trout Creek, thence into Flint Creek. Some regulation by Georgetown Lake (see p. 248).

Revisions.--WSP 1216: Drainage area.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Feb. 6-28, Mar. 5-11, Mar. 20 to Apr. 21)

1.4	15	3.0	162
1.6	27	3.5	236
2.0	57	4.0	336
2.5	105	4.4	431

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	64	41	19	31	41	60	70	150	275	128	126
2	76	62	40	18	30	40	67	76	161	251	123	128
3	85	60	40	18	30	39	63	77	143	322	124	128
4	92	56	40	18	30	38	58	87	277	277	130	126
5	87	56	40	19	30	*40	55	97	199	239	122	124
6	86	58	39	21	32	40	58	120	175	214	119	124
7	88	58	38	25	34	38	61	194	198	217	127	125
8	91	55	38	28	33	39	67	175	182	234	111	124
9	86	52	38	30	33	38	65	169	226	196	110	108
10	87	54	37	33	34	36	56	177	385	*216	113	99
11	83	54	37	33	35	35	56	192	311	222	115	90
12	80	52	36	35	34	33	56	220	279	212	122	90
13	79	52	36	35	35	31	64	193	271	183	117	99
14	75	52	37	35	35	27	78	144	222	176	119	97
15	74	51	37	33	35	24	*77	127	204	170	113	98
16	71	49	37	37	37	23	97	137	176	144	106	*101
17	73	47	36	35	37	23	98	153	157	127	114	89
18	73	42	35	32	38	25	116	159	137	124	122	85
19	70	40	34	27	40	29	98	165	148	122	*128	95
20	70	38	34	25	41	36	98	*183	158	118	143	90
21	70	36	34	25	47	45	89	190	150	118	147	87
22	70	36	33	33	49	55	79	199	172	113	150	91
23	68	36	32	34	60	68	79	193	147	106	141	104
24	70	37	32	36	63	110	66	192	244	118	129	101
25	76	39	31	35	68	144	63	217	419	112	127	96
26	74	41	30	35	54	97	68	217	331	96	117	95
27	86	42	28	33	46	83	71	204	291	97	115	94
28	77	42	27	*33	43	75	70	189	248	96	112	92
29	*70	42	25	30	68	74	68	157	235	114	109	92
30	65	*41	23	32	-----	69	72	135	255	149	128	92
31	64	-----	*20	31	-----	59	-----	127	-----	134	126	-----
Total	2,391	1,444	1,065	913	1,114	1,549	2,187	4,935	6,649	5,291	3,807	3,090
Mean	77.1	48.1	34.4	29.5	39.8	50.0	72.9	159	222	171	123	103
Ac-ft	4,740	2,860	2,110	1,810	2,210	3,070	4,340	9,790	13,190	10,490	7,550	6,130
Calendar year 1957: Max	368			Min 20		Mean 83.6		Ac-ft 60,510				
Water year 1957-58: Max	419			Min 18		Mean 94.3		Ac-ft 68,290				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 19 to Jan. 8, Jan. 14, 18-20, Feb. 1-5, Mar. 1-4, 12-19.

## 3300. Boulder Creek at Maxville, Mont.

Location.--Lat 46°28'30", long 113°14'00", in SE $\frac{1}{4}$  sec. 4, T. 8 N., R. 13 W., on right bank an eighth of a mile upstream from mouth and three-quarters of a mile north of Maxville.

Drainage area.--71.3 sq mi.

Records available.--April 1939 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 4,750 ft (from topographic map).

Apr. 15, 1939, to July 7, 1941, wire-weight gage at site 75 ft upstream at different datum. July 8-20, 1941, staff gage at site 175 ft upstream at datum 1.03 ft higher.

Average discharge.--19 years, 47.3 cfs (34,240 acre-ft per year).

Extremes.--Maximum discharge during year, 433 cfs May 21-22 (gage height, 3.40 ft); minimum, 8.6 cfs Sept. 22 (gage height, 0.93 ft).

1939-58: Maximum discharge, 764 cfs June 13, 1953; maximum gage height, 4.24 ft June 3, 1948; minimum discharge, 4.2 cfs Sept. 12, 13, 1954 (gage height, 0.74 ft).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 350 acres, all of which lie below station.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1-29)

0.9	8.0	2.3	129
1.0	11	2.8	245
1.4	31	3.5	487
1.9	77		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23	27	20	b13	18	19	18	26	163	89	39	13
2	26	26	20	b13	b18	b19	19	30	152	85	38	12
3	29	23	20	b13	b18	19	19	35	158	104	37	12
4	29	26	20	b13	18	19	20	42	254	104	37	12
5	29	25	20	b14	20	*19	20	50	169	89	36	11
6	24	24	20	b14	18	18	19	60	148	85	34	10
7	23	24	20	b14	18	18	19	72	152	94	32	10
8	23	23	20	b15	18	18	20	75	137	84	30	10
9	23	23	20	b16	18	18	20	80	184	76	28	9.8
10	24	23	20	b17	18	18	20	93	266	*75	27	9.8
11	25	23	b20	b17	18	b17	20	115	220	72	27	10
12	26	23	b19	b18	18	b16	20	145	217	65	26	10
13	27	23	19	18	18	b16	22	135	185	57	25	15
14	25	23	19	18	18	b15	26	120	163	55	23	12
15	26	23	19	18	18	b14	*25	125	154	55	22	11
16	24	22	18	18	19	b13	28	150	137	53	20	*10
17	22	b21	19	18	19	b13	32	180	119	52	19	9.8
18	22	b20	18	18	19	b14	35	240	110	52	18	9.5
19	22	b19	18	b18	19	b16	35	300	104	51	*17	8.9
20	20	b18	18	b17	20	18	33	*342	100	49	16	9.5
21	20	b17	19	b17	20	19	31	385	94	48	15	8.9
22	22	b17	19	b17	20	19	28	367	92	47	15	8.6
23	24	b19	b18	18	20	18	26	342	82	45	14	10
24	23	21	b17	18	20	19	24	331	118	43	13	13
25	24	22	b17	18	20	19	23	335	123	42	13	21
26	24	22	b17	18	20	18	22	302	99	41	12	22
27	26	21	b16	18	19	18	22	281	89	40	11	22
28	24	21	b16	*18	19	18	22	245	85	40	12	22
29	*24	b21	b15	18	-	18	23	214	77	40	13	21
30	25	*b21	b14	18	-----	19	24	187	80	40	16	20
31	28	-----	*b14	18	-----	19	-----	167	-----	39	15	-----
Total	756	661	569	516	526	541	715	5,571	4,229	1,901	700	383.8
Mean	24.4	22.0	18.4	16.6	18.8	17.5	23.8	180	141	61.3	22.6	12.8
Ac-ft	1,500	1,310	1,130	1,020	1,040	1,070	1,420	11,050	8,390	3,770	1,390	761

Calendar year 1957: Max 352 Min - Mean 45.8 Ac-ft 33,120  
Water year 1957-58: Max 385 Min 8.6 Mean 46.8 Ac-ft 33,850

Peak discharge (base, 150 cfs).--May 21, 22 (11 p.m. to 1 a.m.) 433 cfs (3.40 ft); June 4 (2 to 3 a.m.) 328 cfs (3.11 ft); June 10 (1 a.m.) 293 cfs (3.00 ft); June 24 (7 to 8 p.m.) 161 cfs (2.50 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Apr. 16 to May 19, July 22 to Aug. 18; discharge estimated on basis of 3 discharge measurements and records for nearby stations.

3320. Middle Fork Rock Creek near Philipsburg, Mont.

Location.--Lat 46°11', long 113°30', in NE $\frac{1}{4}$  sec. 17, T. 5 N., R. 15 W., on right bank a quarter of a mile upstream from East Fork, 2 $\frac{1}{2}$  miles upstream from West Fork, and 15 miles southwest of Philipsburg.

Drainage area.--123 sq mi.

Records available.--September 1937 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 5,450 ft (from topographic map). Sept. 21 1937, to May 10, 1942, wire-weight gage at site 600 ft upstream at different datum. May 11, 1942, to May 11, 1954, staff or wire-weight gages at site 400 ft downstream at different datum. May 12, 1954, to Sept. 30, 1955, at site 300 ft upstream at datum 5.7 ft higher.

Average discharge.--21 years, 121 cfs (87,600 acre-ft per year).

Extremes.--Maximum discharge during year, 1,220 cfs May 25 (gage height, 4.89 ft); minimum daily, 18 cfs Mar. 15, 16.

1937-58: Maximum discharge, 1,430 cfs June 13, 1953 (gage height, 3.92 ft, site and datum then in use); minimum observed, 4.5 cfs Dec. 9, 10, 23, 24, 1944 (gage height, 0.02 ft, site and datum then in use).

Remarks.--Records good except those for periods of ice effect, which are poor. A few small diversions for irrigation above station.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.7	23	3.5	445
2.0	54	4.0	670
2.5	135	4.7	1,090
3.0	265		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	39	26	25	26	31	28	57	620	224	97	50
2	34	37	29	25	26	27	28	64	538	229	94	48
3	42	34	32	*25	25	29	28	74	515	244	94	48
4	53	33	34	25	25	38	28	91	*590	227	99	48
5	47	34	34	25	25	*41	28	108	493	207	91	47
6	46	36	34	25	25	40	28	153	477	202	86	46
7	43	33	31	25	25	33	28	202	505	197	82	44
8	43	30	31	25	25	29	29	204	461	197	79	43
9	42	31	31	25	25	26	29	218	445	190	82	42
10	44	34	30	26	26	25	28	262	421	*187	79	44
11	44	31	26	26	26	23	28	316	397	175	78	46
12	43	31	25	26	26	22	28	397	401	163	82	47
13	43	31	26	26	25	21	32	373	377	156	76	52
14	42	31	25	26	25	20	38	337	348	149	73	50
15	41	30	26	26	25	18	*41	348	330	144	70	53
16	40	29	29	28	26	18	52	389	316	137	67	*50
17	39	27	30	28	28	19	59	481	298	135	63	47
18	40	27	30	27	29	20	74	556	295	140	62	46
19	39	30	29	25	30	22	63	610	292	137	*70	44
20	38	27	29	20	31	25	67	*769	286	135	63	46
21	38	24	29	20	31	27	66	900	271	131	59	44
22	40	25	28	22	31	28	62	918	256	123	59	42
23	40	33	27	24	32	28	57	942	244	117	58	47
24	40	32	26	26	31	28	50	960	323	111	55	49
25	41	28	26	28	32	29	50	*1,090	334	108	54	48
26	40	28	27	28	31	29	53	1,010	283	106	53	49
27	47	29	27	28	30	28	49	924	256	101	52	48
28	44	28	27	27	31	28	49	816	241	99	50	47
29	*41	26	27	*26	~	28	47	736	224	101	50	46
30	40	**23	26	26	-----	28	50	686	232	108	55	44
31	40	-----	26	26	-----	28	-----	635	-----	102	53	-----
Total	1,288	911	882	788	773	836	1,297	15,626	11,067	4,782	2,185	1,405
Mean	41.5	30.4	28.5	25.4	27.6	27.0	43.2	504	369	154	70.5	46.8
Cfsm	0.337	0.247	0.232	0.207	0.224	0.220	0.351	4.10	3.00	1.25	0.573	0.380
In.	0.39	0.28	0.27	0.24	0.23	0.25	0.39	4.72	3.35	1.45	0.66	0.42
Ac-ft	2,550	1,810	1,750	1,560	1,530	1,660	2,570	30,990	21,950	9,480	4,330	2,790

Calendar year 1957: Max 906 Min 13 Mean 111 Cfsm 0.902 In. 12.22 Ac-ft 80,010  
 Water year 1957-58: Max 1,090 Min 18 Mean 115 Cfsm 0.935 In. 12.65 Ac-ft 82,970

Peak discharge (base, 450 cfs).--May 25 (8 a.m.) 1,220 cfs (4.89 ft); June 4 (3:30 to 5 a.m.) 650 cfs (3.96 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4, 5, 16-21, Nov. 28 to Feb. 21, Mar. 2-21.

3355. Nevada Creek above reservoir, near Finn, Mont.

Location--Lat 46°46'30", long 112°45'20", near south line of sec. 20, T. 12 N., R. 9 W., on right bank a quarter of a mile downstream from Gallagher Creek, 2 miles upstream from Buffalo Creek, and 3 miles west of Finn.

Drainage area--116 sq mi.

Records available--April 1939 to September 1958.

Gage--Water-stage recorder. Altitude of gage is 4,660 ft (from river-profile survey). Prior to Apr. 30, 1942, wire-weight gage at site seven-eighths of a mile downstream at different datum. Apr. 30, 1942, to July 26, 1953, water-stage recorder at site 1 mile downstream at different datum.

Average discharge--19 years, 35.7 cfs (25,850 acre-ft per year).

Extremes--Maximum discharge during year, 477 cfs June 10 (gage height, 4.21 ft); maximum gage height, 4.51 ft Mar. 24 (backwater from ice); minimum daily discharge, 3 cfs Jan. 2-6.

1939-58: Maximum discharge, 1,800 cfs June 2, 1953 (gage height, 6.00 ft, site and datum then in use), from rating curve extended above 400 cfs on basis of inflow-outflow study of Nevada Creek Reservoir; maximum gage height, 7.40 ft May 29, 1953, site and datum then in use (backwater from diversion dam); minimum discharge, probably less than 2 cfs at times in 1944, 1957.

Remarks--Records good except those for periods of ice effect or backwater from beaver dam, which are poor. Diversions for irrigation of about 2,500 acres above station.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.3	11	6.5	4	5	11	39	24	69	26	11	7.0
2	6.3	11	6.8	4	5	9	55	25	49	28	10	7.0
3	6.3	11	6.8	3	5	9	58	55	60	41	12	8.6
4	6.8	9.2	7	3	5	10	71	45	72	31	11	7.5
5	7.2	8	6.8	3	5	11	50	51	51	28	11	6.2
6	7.8	8	6.8	3	5	12	60	68	46	27	13	5.8
7	7.5	8	6.8	4	4	*12	71	*118	111	30	11	6.0
8	8.2	8	7.5	4	4	12	69	153	85	31	10	6.2
9	8.2	8	7.5	4	4	12	62	172	158	29	12	7.0
10	8.2	8	6.8	4	4	11	37	213	398	29	11	5.8
11	7.8	8.9	6	4	4	10	33	248	350	*29	12	7.0
12	7.8	8.9	6	5	5	9	37	292	289	27	15	7.2
13	7.8	8.9	5	6	5	9	50	282	200	24	11	5.2
14	7.8	8.9	5	6	4	9	*63	209	158	26	11	3.8
15	7.5	8.9	5	6	4	9	52	151	144	26	10	4.2
16	7.5	8	6	6	5	9	61	138	116	24	10	4.1
17	8.6	7	6	6	6	9	59	168	93	23	8.9	*4.7
18	8.6	6	7	6	9	10	70	197	79	21	8.2	5.5
19	8.6	5	8	5	12	13	51	197	69	21	10	5.8
20	8.6	5	8	4	15	18	54	197	63	20	*7.5	5.8
21	8.9	5	8	4	17	22	52	208	57	19	8.2	5.2
22	9.6	6.8	8	4	18	26	43	*205	54	17	8.9	5.0
23	8.6	10	7	4	18	35	39	181	44	16	8.2	5.5
24	11	10	6	5	18	40	34	161	71	16	8.2	6.0
25	12	10	6	6	18	48	30	127	57	14	7.5	6.8
26	12	9.2	7	6	18	54	30	109	36	14	7.2	7.5
27	12	8	7	*6	17	56	29	91	33	12	6.8	7.2
28	*12	8	8	*6	16	56	26	73	31	11	7.0	7.2
29	11	*8	8	6	-	54	25	64	28	12	7.5	7.2
30	11	7	*8	5	-----	52	24	57	28	14	12	8.2
31	11	-----	7	5	-----	41	-----	61	-----	13	8.9	-----
Total	272.5	247.7	211.3	146	255	698	1,434	4,320	3,099	701	306.0	186.2
Mean	8.79	8.26	6.82	4.7	9.1	22.5	47.8	139	103	22.6	9.87	6.21
Ac-ft	540	491	419	290	506	1,360	2,840	8,570	6,150	1,390	607	369
Calendar year 1957: Max	311			Min	2		Mean	28.9	Ac-ft	20,930		
Water year 1957-58: Max	398			Min	3		Mean	32.5	Ac-ft	23,550		

Peak discharge (base, 150 cfs)--Mar. 24 (6:30 p.m.) discharge unknown (4.51 ft); May 13 (1 a.m.) 323 cfs (3.93 ft); May 21 (11:30 a.m. to 3 p.m.) 220 cfs (3.45 ft); June 10 (6:30 to 10 a.m.) 477 cfs (4.21 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 5-10, 16-21, 27-30, Dec. 4, Dec. 11 to Mar. 29. Backwater from beaver dams Oct. 1 to Nov. 26, July 19 to Sept. 17.



3385. Blackfoot River near Ovando, Mont.

Location.--Lat 47°01'10", long 113°13'40", in SE 1/4 sec. 34, T. 15 N., R. 13 W., on left bank a quarter of a mile upstream from Monture Creek and 5 miles west of Ovando.

Drainage area.--1,274 sq mi.

Records available.--September 1940 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 3,917.27 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark).

Average discharge.--18 years, 858 cfs (621,200 acre-ft per year).

Extremes.--Maximum discharge during year, 5,290 cfs June 12 (gage height, 5.47 ft); minimum daily, 170 cfs Jan. 8.  
1940-58: Maximum discharge, 14,600 cfs June 4, 1953 (gage height, 8.45 ft); minimum daily, 100 cfs Jan. 20, 1954.  
Floodmarks indicate stage of 10 ft reached in recent years.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 15,000 acres above station (revised on basis of information furnished by Bureau of Reclamation).

Revisions (water years).--WSP 1216: Drainage area. WSP 1246: 1941.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.9	205	3.5	1,340
2.0	235	4.0	2,080
2.5	445	5.0	4,160
3.0	800	5.5	5,360

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1	333	350	321	220	238	277	380	440	3,280	1,200	567	400	
2	333	350	309	180	241	262	420	445	2,940	1,160	554	405	
3	360	345	301	170	253	265	440	506	2,880	1,220	554	395	
4	360	329	285	180	250	*269	462	588	2,880	1,220	554	395	
5	360	329	280	180	244	269	450	719	2,780	1,150	542	390	
6	365	329	280	180	247	269	456	900	2,680	1,120	542	380	
7	365	337	301	180	241	262	512	1,180	2,960	1,110	524	380	
8	350	325	297	190	241	262	524	1,570	3,040	1,100	518	375	
9	345	317	293	190	247	262	536	1,960	3,580	1,080	500	360	
10	345	317	281	180	250	262	478	2,680	4,950	1,030	478	345	
11	345	325	253	180	250	250	435	3,260	5,020	*980	472	341	
12	341	325	301	180	250	253	445	3,900	5,170	950	478	341	
13	345	321	277	190	250	241	467	3,820	4,740	890	478	355	
14	341	329	281	210	232	223	*489	3,320	4,160	880	467	365	
15	341	329	273	240	214	247	478	2,940	3,700	870	456	375	
16	341	325	285	277	244	244	467	3,060	3,280	840	450	365	
17	341	317	281	256	262	241	472	3,420	2,920	800	450	*365	
18	341	305	273	256	265	256	500	3,660	2,560	782	450	355	
19	341	317	273	256	256	247	500	3,820	2,320	773	456	355	
20	341	301	281	247	256	247	500	4,210	2,130	773	*440	350	
21	341	280	281	250	259	253	518	*4,710	1,950	764	430	350	
22	341	280	277	269	259	273	530	4,950	1,800	737	425	350	
23	329	313	259	265	273	273	530	4,930	1,680	702	420	365	
24	350	313	265	250	277	289	518	4,630	1,680	694	415	380	
25	355	317	260	244	281	355	489	4,880	1,630	686	410	385	
26	355	321	273	241	273	410	478	4,780	1,520	682	405	375	
27	360	305	269	*250	277	405	467	*4,450	1,410	646	395	375	
28	*360	305	265	241	277	410	450	4,140	1,350	623	385	365	
29	360	*301	262	241	-	420	450	3,900	1,280	616	385	365	
30	350	297	*265	241	-----	415	440	3,540	1,230	602	395	355	
31	345	-----	244	241	-----	405	-----	3,140	-----	595	400	-----	
Total	10,780	9,554	8,646	6,875	7,107	9,016	14,281	94,628	83,460	27,235	14,395	11,057	
Mean	348	318	279	222	254	291	476	3,053	2,782	879	464	369	
Cfsm	0.275	0.250	0.219	0.174	0.199	0.228	0.374	2.40	2.18	0.890	0.364	0.290	
In.	0.31	0.28	0.25	0.20	0.21	0.26	0.42	2.78	2.44	0.80	0.42	0.32	
Ac-ft	21,580	18,950	17,150	13,640	14,100	17,880	28,330	187,700	165,500	54,020	28,550	21,930	
Calendar year 1957: Max			5,460	Min	130	Mean	802	Cfsm	0.630	In.	8.54	Ac-ft	580,900
Water year 1957-58: Max			5,170	Min	170	Mean	814	Cfsm	0.639	In.	8.67	Ac-ft	589,100

Peak discharge (base, 1,600 cfs).--May 12 (9 to 10 p.m.) 4,090 cfs (4.97 ft); May 23 (5 to 7 a.m.) 5,100 cfs (5.39 ft); June 12 (4 to 5 a.m.) 5,290 cfs (5.47 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 21, 22, Dec. 5, 6, 25, Jan. 1-15.

## 3398. Blackfoot River near Potomac, Mont.

Location.--Lat 46°57'10", long 113°34'00", in NE<sup>1</sup>/<sub>4</sub> Sec. 24, T. 14 N., R. 16 W., on right bank an eighth of a mile upstream from Belmont Creek and 5 miles north of Potomac.

Drainage area.--2,046 sq mi.

Records available.--October 1956 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 3,533.36 ft above mean sea level, datum of 1929 (levels by Bureau of Reclamation).

Extremes.--Maximum discharge during year, 8,560 cfs May 23 (gage height, 7.43 ft); minimum daily, 300 cfs Jan. 4.

1956-58: Maximum discharge, that of May 23, 1958; minimum daily, that of Jan. 4, 1958.

Flood in June 1953 reached a stage of about 12.5 ft, from floodmarks (discharge, about 17,000 cfs).

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 18,000 acres above station.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 14 to July 13)

2.4	330	4.0	2,500
2.5	390	5.0	4,170
2.8	660	6.0	5,870
3.0	940	7.5	8,470

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1	506	506	400	350	366	422	650	1,410	5,750	2,080	842	570	
2	506	487	420	330	330	390	574	1,460	5,360	2,000	814	560	
3	533	497	420	320	372	406	744	1,600	5,140	2,050	814	570	
4	551	479	410	300	372	*430	758	1,810	4,970	2,050	786	560	
5	533	470	400	310	342	422	800	2,070	4,730	1,960	758	551	
6	542	470	420	310	372	430	800	2,560	4,510	1,920	758	542	
7	551	479	462	310	372	414	884	3,000	4,800	1,890	730	533	
8	542	470	462	310	372	422	968	3,660	4,780	1,860	716	515	
9	533	454	430	310	360	422	982	4,170	5,650	1,830	716	506	
10	524	446	422	310	372	422	926	5,040	7,370	1,780	702	497	
11	524	462	470	310	390	414	884	5,920	7,730	1,680	688	488	
12	524	454	450	320	384	398	912	6,770	7,750	1,600	702	488	
13	515	454	384	330	384	384	982	7,200	7,450	1,540	688	506	
14	515	462	384	360	342	378	*1,050	6,620	6,700	1,460	674	497	
15	506	462	406	380	342	398	1,110	5,960	6,070	1,430	660	515	
16	506	462	414	380	378	378	1,180	5,840	5,500	1,380	660	533	
17	506	454	414	370	414	378	1,300	6,240	4,900	1,320	660	*551	
18	506	438	406	360	422	414	1,430	6,570	4,390	1,280	660	551	
19	506	438	406	360	406	414	1,540	6,750	3,970	1,240	650	542	
20	497	422	414	360	406	406	1,650	7,080	3,640	1,240	*650	551	
21	479	430	438	366	414	414	1,750	*7,820	3,300	1,190	630	551	
22	488	438	438	372	414	446	1,830	8,330	3,050	1,160	620	542	
23	488	470	446	372	422	446	1,830	8,400	2,800	1,110	610	560	
24	488	470	440	366	430	470	1,800	8,330	*2,800	1,070	590	570	
25	497	470	440	366	438	551	1,720	8,380	2,790	1,050	570	590	
26	497	470	430	366	430	620	1,650	8,250	2,560	1,010	560	590	
27	506	454	414	348	430	630	1,590	7,790	2,450	982	551	590	
28	*506	462	422	*366	430	640	1,520	7,280	2,340	954	551	580	
29	506	*414	360	-----	-----	660	1,490	6,870	2,230	926	542	570	
30	497	380	360	366	-----	-----	674	1,440	6,400	2,150	898	560	
31	488	-----	*360	378	-----	-----	674	-----	5,780	-----	884	570	
Total	15,866	13,704	12,998	10,716	10,906	14,367	36,844	175,140	137,430	44,824	20,682	16,329	
Mean	512	457	419	346	390	463	1,228	5,850	5,481	1,446	687	544	
Cfs/m	0.250	0.223	0.205	0.169	0.191	0.226	0.600	2.76	2.24	0.707	0.326	0.266	
In.	0.29	0.25	0.24	0.19	0.20	0.26	0.67	3.18	2.50	0.81	0.38	0.30	
Ac-ft	31,470	27,180	25,780	21,250	21,630	28,500	73,080	347,400	272,600	88,910	41,020	32,390	
Calendar year 1957: Max			8,310	Min	340	Mean	1,357	Cfs/m	0.663	In.	9.01	Ac-ft	982,600
Water year 1957-58: Max			8,400	Min	300	Mean	1,397	Cfs/m	0.683	In.	9.27	Ac-ft	1,011,000

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 30, Dec. 1-6, 11, 12, 24, 25, Dec. 31 to Jan. 20.

3400. Blackfoot River near Bonner, Mont.

Location.--Lat 46°53'50", long 113°45'20", near center sec. 9, T. 13 N., R. 17 W., on right bank 5 miles northeast of Bonner, 5 miles downstream from Union Creek, and 7 miles upstream from mouth.

Drainage area.--2,290 sq mi.

Records available.--July 1898 to September 1901, May 1903 to October 1905, October 1939 to September 1958. Published as Blackfoot River at Bonner 1898-99 and as Big Blackfoot River near Bonner 1903-5.

Gage.--Water-stage recorder. Datum of gage is 3,344.76 ft above mean sea level, datum of 1929, supplementary adjustment of 1947. July 7, 1898, to June 30, 1901, and May 15, 1903, to Oct. 31, 1905, chain gage at site 7 miles downstream at different datum. Oct. 4, 1939, to Sept. 30, 1955, staff gage at site 1.3 miles downstream at datum 21.82 ft lower.

Average discharge.--22 years (1899-1901, 1903-4, 1939-58), 1,576 cfs (1,141,000 acre-ft per year).

Extremes.--Maximum discharge during year, 9,110 cfs May 23 (gage height, 7.79 ft); minimum daily, 370 cfs Jan. 7, 8.  
1898-1901, 1903-5, 1939-58: Maximum discharge, 18,300 cfs June 4, 1953 (gage height, 11.65 ft, from graph based on gage readings, site and datum then in use); minimum daily determined, 200 cfs Jan. 4, 5, 1950.

Remarks.--Records good except those for period of ice effect, which are poor. Diversions for irrigation of about 20,000 acres above station. Records of water temperatures for the water year 1958 are given in WSP 1574.

Revisions.--WSP 1216: Drainage area.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1-6, Mar. 25, 26, May 6 to July 10)

1.9	420	4.0	2,230
2.0	460	6.0	5,480
2.5	720	8.0	10,100
3.0	1,120		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	590	590	550	420	440	535	862	1,450	5,800	2,090	926	648
2	590	590	565	400	430	515	894	1,505	5,370	2,005	902	656
3	618	590	555	390	420	515	942	1,690	5,150	2,050	902	642
4	654	580	540	385	410	530	950	1,970	4,950	2,060	886	642
5	656	565	505	380	410	525	974	2,300	4,700	1,930	862	636
6	642	565	535	375	420	530	982	2,740	4,430	1,890	854	630
7	642	570	570	370	430	520	1,050	3,350	4,520	1,860	830	618
8	642	570	575	370	440	520	1,120	4,030	4,750	1,850	806	612
9	624	555	550	375	450	520	1,160	4,840	5,770	1,800	790	606
10	618	550	565	380	460	515	1,140	5,520	7,820	1,720	769	595
11	612	555	535	390	465	505	1,060	6,460	8,300	1,640	755	595
12	612	560	570	395	465	496	1,070	7,480	8,230	1,560	755	606
13	606	565	606	405	465	488	1,150	*7,920	7,700	1,480	741	630
14	600	575	630	415	472	476	1,280	7,080	6,900	1,430	734	630
15	600	570	570	425	460	476	1,380	6,300	6,260	1,400	714	642
16	590	565	560	430	480	484	1,590	6,180	5,640	1,370	702	642
17	595	560	565	430	510	488	1,620	6,580	5,040	1,310	690	642
18	595	550	555	435	515	510	1,780	6,940	*4,540	1,280	696	636
19	590	550	*555	430	515	510	1,870	7,100	4,110	1,230	702	636
20	585	540	555	425	515	505	2,100	7,440	3,840	1,250	696	630
21	575	520	570	420	530	510	2,200	*8,230	3,550	1,220	*678	624
22	585	545	505	410	535	555	2,70	8,850	3,300	1,180	872	618
23	585	560	510	*410	535	575	2,190	8,920	3,070	1,130	666	636
24	580	550	515	420	550	606	2,060	8,770	3,020	1,090	654	654
25	590	545	535	430	555	708	1,920	8,770	3,010	*1,070	648	666
26	595	*550	550	430	*555	*822	1,830	8,610	2,760	1,050	654	672
27	600	545	520	435	550	846	1,720	*8,060	2,550	1,020	642	672
28	595	550	520	440	545	862	1,630	7,480	2,410	998	636	666
29	595	525	515	445	-	876	*1,530	7,080	2,270	982	636	660
30	*590	505	500	445	-----	910	1,480	6,560	2,160	966	654	648
31	585	-----	444	440	-----	894	-----	5,860	-----	950	654	-----
Total	18,716	16,710	16,955	12,750	13,527	18,329	43,804	185,860	141,900	44,856	22,906	19,070
Mean	604	557	547	411	483	591	1,480	5,995	4,730	1,447	739	636
Cfs/m	0.264	0.243	0.239	0.179	0.211	0.258	0.638	2.62	2.07	0.632	0.323	0.278
In.	0.30	0.27	0.28	0.21	0.22	0.30	0.71	3.02	2.30	0.73	0.37	0.31
Ac-ft	37,120	33,140	33,630	25,290	26,830	36,360	86,880	368,600	281,500	88,970	45,430	37,820

Calendar year 1957: Max 9,960 Min 390 Mean 1,560 Cfs/m 0.681 In. 9.24 Ac-ft 1,129,000  
Water year 1957-58: Max 8,920 Min 370 Mean 1,522 Cfs/m 0.665 In. 9.02 Ac-ft 1,102,000

Peak discharge (base, 2,500 cfs).--May 13 (6 to 7 a.m.), 8,110 cfs (7.44 ft); May 23 (12 m. to 1 p.m.) 9,110 cfs (7.79 ft); June 10 (9:30 p.m.) 8,690 cfs (7.60 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Jan. 2 to Feb. 13.

3405. Clark Fork above Missoula, Mont.

Location.--Lat 46°52'40", long 113°55'40", in NW $\frac{1}{4}$  sec. 19, T. 13 N., R. 18 W., on right bank 3 miles downstream from Blackfoot River and 3 miles east of Missoula.

Drainage area.--5,999 sq mi.

Records available.--March 1929 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 3,230 ft (from topographic map). Prior to May 27, 1929, staff gage at same site and datum.

Average discharge.--29 years, 2,783 cfs (2,015,000 acre-ft per year).

Extremes.--Maximum discharge during year, 16,800 cfs May 22 (gage height, 9.00 ft); minimum daily, 700 cfs Jan. 2, 3.

1929-58: Maximum discharge, 31,500 cfs May 23, 1948 (gage height, 13.07 ft); minimum, 115 cfs Oct. 25, 1943 (gage height, 0.64 ft, powerplant shutdown); minimum daily, 340 cfs Sept. 27, 1937.

Remarks.--Records good except those for period of ice effect, which are poor. Diurnal fluctuation caused by powerplant at Bonner. Diversions for irrigation of about 120,000 acres above station.

Revisions (water years).--WSP 1042: 1936. WSP 1152: 1942. WSP 1246: 1929-30, 1935, drainage area. WSP 1316: 1932-33.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used June 11 to July 20)

2.0	740	4.0	3,530
2.5	1,240	6.0	8,060
3.0	1,860	9.0	16,800

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,340	1,610	1,340	b1,000	1,230	1,410	1,990	2,880	9,700	4,750	1,920	1,350
2	1,320	1,630	1,520	b700	1,180	1,370	1,970	2,970	9,140	4,540	1,820	1,300
3	1,380	1,590	1,440	b700	1,100	1,280	2,060	3,230	8,620	4,750	1,800	1,350
4	1,500	1,530	1,280	b750	1,180	1,370	2,040	3,840	8,780	5,040	1,780	1,320
5	1,600	1,480	1,380	b850	1,260	1,370	2,070	4,330	8,980	4,710	1,850	1,310
6	1,680	1,480	1,350	b900	1,220	1,380	2,080	4,970	8,310	4,410	1,720	1,300
7	1,720	1,490	1,400	b850	1,220	1,350	2,140	6,450	8,260	4,220	1,660	1,300
8	1,840	1,500	1,410	b1,000	1,230	1,360	2,240	7,760	8,650	4,310	1,560	1,300
9	1,680	1,470	1,380	1,170	1,220	1,320	2,390	8,410	9,670	4,250	1,540	1,300
10	1,610	1,410	1,360	1,320	1,210	1,370	2,320	9,510	12,600	3,760	1,540	1,310
11	1,590	1,530	1,240	1,280	1,250	1,280	2,220	11,000	13,900	3,420	1,490	1,300
12	1,600	1,470	1,150	1,350	1,250	1,240	2,160	*12,800	13,600	3,680	1,410	1,300
13	1,550	1,500	1,220	1,340	1,230	1,280	2,220	14,000	13,100	3,450	1,440	1,350
14	1,580	1,470	1,310	1,350	1,230	1,160	2,450	12,700	12,000	3,230	1,410	1,400
15	1,550	1,540	1,360	1,300	1,180	1,220	2,770	11,400	10,800	3,100	1,380	1,480
16	1,540	1,430	1,300	1,370	1,210	1,180	2,950	11,000	9,940	2,990	1,300	1,480
17	1,530	1,490	1,370	1,340	1,290	1,180	3,320	11,600	*8,880	2,810	1,280	1,540
18	1,540	1,440	*1,400	1,340	1,300	1,240	3,660	12,200	*8,140	2,720	1,280	1,500
19	1,530	1,380	1,370	1,300	1,320	1,290	3,840	12,700	7,360	2,690	1,280	1,440
20	1,530	1,420	1,370	1,380	1,290	1,280	3,920	13,500	6,830	2,640	*1,280	1,520
21	1,480	1,350	1,430	1,050	1,410	1,290	4,180	*14,600	6,370	2,720	1,260	1,530
22	1,550	1,280	1,470	1,200	1,420	1,590	4,100	15,800	5,900	2,600	1,260	1,520
23	1,550	1,460	1,310	*1,230	1,440	1,720	3,960	15,700	5,440	2,620	1,240	1,540
24	1,520	1,480	1,180	1,320	1,630	1,850	3,700	15,300	5,240	*2,450	1,220	1,610
25	1,550	*1,520	1,240	1,300	1,540	2,110	3,400	15,100	6,250	2,340	1,250	1,630
26	1,640	1,520	1,380	1,260	*1,800	*2,350	3,320	15,000	6,450	2,260	1,250	1,660
27	1,650	1,480	1,360	1,210	1,500	2,230	3,230	*14,000	5,740	2,180	1,250	1,640
28	1,650	1,470	1,340	1,210	1,500	2,100	*3,130	13,000	5,210	2,110	1,230	1,640
29	1,680	1,350	1,340	1,220	-	2,070	3,060	11,900	4,840	1,960	1,230	1,610
30	*1,640	1,280	1,320	1,230	-----	2,040	2,920	11,100	*4,820	1,960	1,310	1,530
31	1,560	-----	1,210	1,230	-----	2,060	-----	10,100	-----	1,960	1,340	-----
Total	48,480	44,050	41,530	36,050	36,840	47,340	85,790	328,650	253,500	100,630	44,580	43,560
Mean	1,563	1,468	1,340	1,163	1,316	1,527	2,860	10,600	8,450	3,246	1,438	1,445
Ac-ft	96,120	87,370	82,370	71,500	73,070	93,900	170,200	651,900	502,800	199,600	88,420	86,000

Calendar year 1957: Max 16,500 Min 600 Mean 2,895 Ac-ft 2,096,000  
Water year 1957-58: Max 15,800 Min 700 Mean 3,043 Ac-ft 2,203,000

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

3410. Rattlesnake Creek at Missoula, Mont.

Location.--Lat 46°52'20", long 113°59'00", in SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 22, T. 13 N., R. 19 W., on upstream side of Vine Street Bridge in Missoula, half a mile upstream from mouth.

Drainage area.--79.7 sq mi.

Records available.--June to December 1899, January to November 1900 (gage heights and discharge measurements only), April to September 1958.

Gage.--Wire-weight gage. Altitude of gage is 3,220 ft (from topographic map). June 1899 to November 1900 at or near present site at different datum.

Extremes.--1958: Maximum discharge during period April to September, 1,770 cfs May 13 (gage height, 10.10 ft, from graph based on gage readings); minimum observed, 3.2 cfs Aug. 30 (gage height, 6.73 ft).  
1899, 1958: Maximum discharge observed, 2,050 cfs June 18, 1899 (gage height, 6.25 ft, site and datum then in use); minimum observed, that of Aug. 30, 1958.

Remarks.--Records fair except those for period May 26 to June 30, which are poor. Many small diversions for irrigation; also, diversion for municipal supply of Missoula above station.

Rating table, Apr. 24 to Sept. 30, 1958 (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 28 to June 13)

6.7	3.0	7.1	17	8.5	380
6.8	4.0	7.3	37	9.0	680
6.9	6.0	7.6	83	9.5	1,100
7.0	10	7.9	153	10.0	1,650

Discharge, in cubic feet per second, April to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							-	69	840	92	9.2	4.4
2							-	131	528	52	5.2	4.2
3							-	294	314	66	14	3.9
4							-	430	255	58	14	4.0
5							*38	475	230	73	14	4.0
6							-	445	213	76	10	3.9
7							-	589	169	63	8.7	5.0
8							-	659	330	50	8.7	4.4
9							-	784	540	52	8.2	4.0
10							-	775	465	55	9.6	4.0
11							-	752	*528	46	*8.2	4.4
12							-	864	480	97	6.0	4.4
13							-	1,430	330	71	6.0	4.6
14							-	554	298	71	6.0	5.0
15							-	528	255	*41	5.6	*6.4
16							-	*589	238	35	5.4	7.8
17							-	712	185	32	4.6	9.2
18							-	680	169	30	4.6	6.9
19							-	1,410	153	29	4.2	8.2
20							-	856	139	26	3.5	8.2
21							-	824	113	27	3.7	6.9
22							-	920	101	23	4.0	7.8
23							-	*1,090	92	23	3.8	14
24							*103	1,160	83	23	4.8	9.2
25							96	938	74	26	4.8	7.8
26							83	720	66	26	4.0	14
27							71	666	50	15	4.2	12
28							69	*760	103	19	3.6	10
29							66	800	96	17	3.4	10
30							50	800	61	18	3.2	13
31							-----	784	-----	18	4.4	-----
Total							-	22,489	7,498	1,350	199.6	211.6
Mean							-	725	250	43.5	6.44	7.05
Ac-ft							-	44,610	14,870	2,680	396	420

Calendar year : Max Min Mean Ac-ft  
Water year : Max Min Mean Ac-ft

\* Discharge measurement made on this day.

## 3425. West Fork Bitterroot River near Conner, Mont.

Location.--Lat 45°44', long 114°17', in NE¼NW¼ sec. 26, T. 1 S., R. 22 W., on right bank half a mile downstream from West Fork Dam, 6 miles upstream from Nez Perce Creek, and 16 miles southwest of Conner.

Drainage area.--317 sq mi.

Records available.--April 1941 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 4,560 ft (by barometer).

Average discharge.--17 years, 293 cfs (212,100 acre-ft per year).

Extremes.--Maximum discharge during year, 2,440 cfs May 22 (gage height, 4.93 ft); minimum daily, 25 cfs Dec. 30 to Jan. 5.  
1941-58: Maximum discharge, 4,060 cfs May 9, 1947 (gage height, 6.18 ft); minimum, 0.2 cfs Nov. 25, 1942; minimum daily, 0.6 cfs May 3-7, 1954.

Remarks.--Records excellent. Flow regulated by West Fork Bitterroot River Reservoir (see p. 248). Diversions for irrigation of about 200 acres above station.

Revisions.--WSP 1246: Drainage area.

Rating table, water year 1957-58 (gage height, in feet,  
and discharge, in cubic feet per second)

0.8	20	1.6	165	5.0	790
1.0	43	2.0	295	4.0	1,560
1.3	93	2.5	525	5.0	2,570

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	79	198	31	*25	128	116	91	101	1,190	284	131	201
2	79	307	31	25	128	116	91	101	1,060	288	126	201
3	79	307	31	25	128	116	91	101	973	319	128	201
4	79	307	31	25	128	116	91	104	980	303	141	201
5	79	303	30	25	128	116	91	104	886	278	133	201
6	79	303	*29	86	128	116	91	*306	826	267	154	132
7	79	228	29	131	128	116	91	460	808	260	*165	80
8	79	104	29	131	126	116	91	241	768	257	162	77
9	79	104	29	131	126	116	93	110	740	247	201	*77
10	79	104	28	131	124	116	93	1,120	708	240	205	77
11	79	104	28	131	124	102	93	1,770	652	*230	205	77
12	79	104	28	131	124	91	93	1,810	658	217	205	77
13	106	104	28	131	124	91	93	*1,820	630	205	205	77
14	160	104	28	131	124	91	93	1,760	600	195	205	75
15	177	104	28	131	121	91	93	1,110	565	192	205	75
16	205	104	28	131	121	91	95	542	525	186	205	75
17	205	104	27	131	121	91	95	1,490	495	183	205	75
18	205	104	27	131	121	91	95	1,750	465	180	205	75
19	205	104	27	131	121	91	97	1,920	445	186	205	75
20	205	104	27	131	121	91	97	2,160	*416	189	205	75
21	240	104	27	131	121	91	99	2,340	394	183	205	75
22	267	104	27	131	119	91	99	2,390	366	177	205	75
23	270	104	27	131	119	91	101	2,360	340	168	205	75
24	281	92	26	131	119	91	101	*2,320	371	162	205	75
25	288	77	26	131	*119	91	101	2,260	412	157	205	73
26	331	77	26	131	119	91	101	2,120	362	152	205	73
27	353	77	26	131	119	91	101	1,990	327	152	201	73
28	353	77	26	*131	119	91	101	1,800	299	152	201	73
29	300	77	26	131	-	*91	101	1,630	284	96	201	73
30	*211	59	25	131	-----	91	101	1,480	284	73	201	73
31	182	-----	25	131	-----	91	-----	1,330	-----	125	201	-----
Total	5,492	4,153	861	3,486	3,448	3,082	2,864	40,900	17,829	6,304	5,831	2,942
Mean	177	138	27.8	112	123	99.4	95.5	1,319	594	203	188	98.1
Ac-ft	10,890	8,240	1,710	6,910	6,840	6,110	5,680	81,120	35,360	12,500	11,570	5,840
Calendar year 1957: Max	2,430			Min	16	Mean	262	Ac-ft	189,700			
Water year 1957-58: Max	2,390			Min	25	Mean	266	Ac-ft	192,800			

\* Discharge measurement made on this day.

3434. East Fork Bitterroot River near Conner, Mont.

Location.--Lat 45°53'00", long 114°03'50", in NE $\frac{1}{4}$  sec. 34, T. 2 N., R. 20 W., on right bank 10 ft below private bridge  $4\frac{1}{2}$  miles southeast of Conner, and 5 miles upstream from confluence with West Fork.

Drainage area.--381 sq mi.

Records available.--April 1956 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 4,191.81 ft above mean sea level, datum of 1929, Pacific Northwest supplementary adjustment of 1947.

Extremes.--Maximum discharge during year, 2,560 cfs May 25 (gage height, 6.16 ft); minimum daily, 50 cfs Jan. 1.  
1956-58: Maximum discharge, 3,000 cfs May 25, 1956 (gage height, 6.44 ft); minimum daily, that of Jan. 1, 1958.

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

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.6	56	4.0	500	5.5	1,700
2.8	84	4.5	815	6.0	2,320
3.0	124	5.0	1,220	6.5	3,100
3.5	280				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	84	102	106	50	70	80	89	183	1,310	396	160	98
2	88	95	100	60	65	71	95	215	1,180	401	152	93
3	97	73	86	65	65	88	97	285	1,120	432	155	91
4	120	73	77	70	70	88	95	320	1,270	396	174	89
5	109	80	66	75	a75	89	93	392	1,070	356	157	88
6	102	81	*84	80	a80	86	93	550	1,050	347	144	88
7	102	88	86	85	a75	81	97	773	1,050	342	*134	86
8	104	73	84	85	a80	84	97	724	954	342	129	84
9	104	69	74	85	a80	80	98	759	982	316	134	*84
10	106	76	60	85	a80	78	93	875	922	312	129	86
11	106	89	55	90	a80	71	93	1,050	868	*280	129	86
12	106	86	60	90	77	74	95	1,260	890	257	144	88
13	104	86	65	85	76	76	104	*1,150	845	242	126	106
14	102	83	75	85	76	77	132	1,000	766	235	117	109
15	100	81	80	85	76	71	142	978	703	228	113	111
16	98	70	90	85	78	78	171	1,090	649	215	108	106
17	97	71	100	85	80	74	202	1,260	598	215	104	98
18	98	63	95	90	88	80	253	1,400	568	215	104	93
19	97	84	90	85	95	78	218	1,550	535	196	126	89
20	95	73	90	85	100	77	265	1,810	*515	205	115	89
21	95	66	97	a85	102	84	276	2,050	473	205	109	88
22	98	89	88	a85	109	84	242	2,080	457	186	115	85
23	104	97	73	a85	111	86	215	2,100	414	177	109	88
24	109	97	93	a85	104	89	189	*2,140	525	171	100	93
25	109	91	136	a85	*120	97	180	2,360	592	169	98	89
26	104	93	106	a80	109	98	169	2,210	473	166	95	93
27	124	80	98	a80	98	91	174	2,030	428	160	93	91
28	117	86	98	*80	91	*95	169	1,820	406	152	93	89
29	106	63	93	80	-	95	*157	1,670	389	157	95	88
30	*104	76	80	75	---	95	166	1,560	396	202	102	86
31	104	---	64	75	---	93	---	1,400	---	177	102	---
Total	3,193	2,434	2,669	2,500	2,410	2,588	4,559	39,004	22,317	7,850	3,763	2,748
Mean	103	81.1	86.1	80.6	86.1	85.5	152	1,258	744	253	121	91.6
Cfsm	0.270	0.213	0.226	0.212	0.226	0.219	0.399	3.30	1.95	0.684	0.318	0.240
In.	0.31	0.24	0.26	0.24	0.24	0.25	0.45	3.81	2.18	0.77	0.37	0.27
Ac-ft	6,330	4,850	5,290	4,960	4,780	5,130	9,040	77,560	44,270	15,570	7,460	5,450

Calendar year 1957: Max 1,860 Min 55 Mean 273 Cfsm 0.717 In. 9.70 Ac-ft 197,400  
Water year 1957-58: Max 2,360 Min 50 Mean 263 Cfsm 0.690 In. 9.39 Ac-ft 190,500

Peak discharge (base, 700 cfs).--May 12 (5 to 6 p.m.), 1,320 cfs (5.11 ft); May 25 (9 to 10 a.m.), 2,560 cfs (6.16 ft).

\* Discharge measurement made on this day.

No gage-height record (stage-discharge relation probably affected by ice during most of periods); discharge estimated on basis of weather records and records for Bitterroot River near Conner.

Note.--Stage-discharge relation affected by ice Dec. 10-20, Jan. 1-20, Jan. 28 to Feb. 4.

## 3440. Bitterroot River near Darby, Mont.

Location.--Lat 45°58'20", long 114°08'20", in E½ sec. 36, T. 3 N., R. 21 W., on left bank 25 ft downstream from bridge on U. S. Highway 93, a quarter of a mile downstream from Chaffin Creek, and 4 miles southeast of Darby.

Drainage area.--1,049 sq mi.

Records available.--April 1937 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 3,943.14 ft above mean sea level, datum of 1929, supplementary adjustment of 1947. Prior to Aug. 2, 1939, wire-weight gage at highway bridge 25 ft upstream at same datum.

Average discharge.--21 years, 898 cfs (650,100 acre-ft per year).

Extremes.--Maximum discharge during year, 7,870 cfs May 23 (gage height, 6.92 ft); minimum observed, 92 cfs Jan. 1; minimum gage height, 0.96 ft Dec. 11.  
1937-58: Maximum discharge, 11,500 cfs May 9, 1947 (gage height, 8.18 ft); minimum observed, about 71 cfs Feb. 9, 1939; minimum gage height, that of Dec. 11, 1957.

Remarks.--Records good except those for period of ice effect, which are poor. Some regulation by West Fork Bitterroot River Reservoir (see p. 248). Diversions for irrigation of about 5,000 acres above station. Ditch bypassing station irrigates about 500 acres below.

Revisions.--WSP 1346: Drainage area.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 18 to June 6)

Oct. 1 to May 12

May 13 to Sept. 30

1.0	105	3.0	1,340	1.1	205	3.0	1,400
1.4	230	4.0	2,640	1.5	315	4.0	2,660
2.0	525	6.0	6,300	2.0	575	5.0	4,260
2.5	880			2.5	930	7.0	8,560

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	195	325	216	*b135	258	315	335	644	3,850	1,150	420	338
2	202	459	208	142	246	279	340	776	3,560	1,150	405	333
3	226	454	184	154	246	310	355	1,010	3,340	1,270	400	328
4	266	448	167	160	258	302	355	1,310	3,500	1,190	440	320
5	262	454	164	178	258	306	345	1,540	3,120	1,100	410	312
6	250	459	*178	181	262	292	340	2,220	3,160	1,030	380	290
7	246	464	192	b205	254	284	350	3,000	3,290	1,020	*410	228
8	246	262	188	b250	258	292	365	2,700	2,880	1,020	385	215
9	246	230	157	b280	254	279	375	2,670	2,860	939	425	*221
10	246	238	128	b285	258	274	365	3,540	2,760	898	430	221
11	246	266	115	b290	254	254	360	5,140	2,560	*834	435	223
12	246	258	128	292	250	234	360	5,820	2,590	770	460	223
13	246	262	148	292	254	238	395	*4,900	2,510	735	430	235
14	306	258	164	292	250	238	514	4,190	2,320	694	410	250
15	320	254	174	292	250	230	573	3,850	2,200	661	395	268
16	360	226	198	292	262	238	699	3,120	2,100	629	380	266
17	360	230	216	288	270	238	840	4,560	1,990	611	375	259
18	360	212	198	292	279	242	960	5,230	1,900	642	395	247
19	350	250	188	279	306	242	856	5,730	1,800	599	410	245
20	350	242	195	279	330	234	1,020	6,590	1,730	599	385	245
21	360	206	208	284	345	250	1,120	7,250	1,630	599	375	242
22	432	206	195	284	370	266	959	7,270	1,580	551	370	238
23	442	259	159	284	400	262	816	7,160	1,480	527	365	245
24	464	254	145	284	405	274	720	*6,980	1,930	504	351	256
25	470	234	206	279	*420	310	657	7,250	2,040	471	342	259
26	503	242	209	274	405	335	630	6,870	1,560	460	338	262
27	592	212	181	274	370	325	624	6,450	1,410	450	328	259
28	579	230	168	*279	340	*330	585	5,820	1,310	430	328	245
29	549	181	178	274		335	*561	5,480	1,200	435	358	*245
30	*410	174	160	270	-----	345	579	4,900	1,190	420	360	242
31	395	-----	130	262	-----	345	-----	4,210	-----	435	351	-----
Total	10,725	8,444	5,444	7,906	8,312	8,698	17,363	136,180	69,340	22,823	12,026	7,762
Mean	346	281	176	255	297	281	579	4,457	2,311	736	388	259
Ac-ft	21,270	16,750	10,800	15,680	16,490	17,250	34,440	274,100	137,500	45,270	23,850	15,400
Calendar year 1957: Max	5,690			Min	115		Mean	870	Ac-ft	629,800		
Water year 1957-58: Max	7,270			Min	115		Mean	869	Ac-ft	628,800		

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.



3450. Rock Creek near Darby, Mont.

Location.--Lat 46°04'10", long 114°13'20", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 29, T. 4 N., R. 21 W., on left bank 0.6 mile downstream from Como Lake, 0.7 mile upstream from Rock Creek Canal, and 4 miles northwest of Darby.

Drainage area.--55.4 sq mi.

Records available.--April 1946 to September 1948 (fragmentary), December 1948 to September 1953, August 1957 to September 1958. Records for earlier years collected by Bitterroot Irrigation District.

Gage.--Water-stage recorder. Altitude of gage is 4,070 ft (from topographic map). Prior to Dec. 2, 1948, staff gage 0.6 mile downstream at different datum.

Average discharge.--5 years (1949-53, 1957-58), 144 cfs (104,300 acre-ft per year).

Extremes.--1957: Maximum discharge during period August to September, 292 cfs Aug. 30 to Sept. 1 (gage height, 3.15 ft); minimum, 109 cfs Sept. 30 (gage height, 2.42 ft). 1957-58: Maximum discharge during water year, 1,180 cfs May 27 (gage height, 4.69 ft); no flow Nov. 21 to Apr. 20.

1948, 1948-53, 1957-58: Maximum discharge, 1,580 cfs June 17, 1950 (gage height, 5.19 ft), from rating curve extended above 580 cfs; no flow Apr. 6, 18, 19, May 27-30, 1946, Nov. 6, 1952, to Apr. 6, 1953, Nov. 21, 1957, to Apr. 20, 1958.

Remarks.--Records poor. Flow regulated to limit of capacity of Como Lake (see p. 248). Small diversion above station for irrigation. Greater part of flow diverted by Rock Creek Canal, 0.7 mile below station.

Revisions.--WSP 1246: Drainage area.

Rating tables, Aug. 30, 1957, to Sept. 30, 1958 (gage height, in feet, and discharge, in cubic feet per second)

Aug. 30, 1957, to Apr. 20, 1958						Apr. 21 to Sept. 30, 1958			
0.6	0	1.3	8.5	2.3	89	1.7	24	3.5	370
.8	.8	1.5	15	2.7	168	2.0	47	4.0	700
.9	1.0	1.7	24	3.0	245	2.5	114	4.7	1,190
1.0	2.0	2.0	49			3.0	220		

Note.--Same as preceding table below 1.7 ft.

Discharge, in cubic feet per second, 1957

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1	-	191	7	-	131	13	-	125	19	-	121
2	-	138	8	-	131	14	-	125	20	-	119
3	-	136	9	-	129	15	-	127	21	-	118
4	-	136	10	-	127	16	-	125	22	-	116
5	-	134	11	-	129	17	-	127	23	-	114
6	-	134	12	-	127	18	-	125	24	-	114
											292
											292

Total.....	-	-	-	-	-	-	-	-	-	-	3,783
Mean.....	-	-	-	-	-	-	-	-	-	-	128
Runoff in acre-feet.....	-	-	-	-	-	-	-	-	-	-	7,500

\* Discharge measurement made on this day.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	110	0.5		(*)			0	13	610	220	182	241
2	107	.5					0	83	604	220	184	241
3	97	.5					0	128	646	204	184	235
4	88	.5					0	135	646	194	192	232
5	84	.4					0	143	616	194	197	226
6	78	.4		(*)			0	166	556	197	207	155
7	74	.4					0	177	742	202	293	114
8	70	.4					0	177	763	202	334	111
9	65	.3					0	177	658	189	343	*114
10	60	.3					0	184	646	180	343	112
11	54	.3					0	192	616	*182	352	111
12	46	.3					0	161	*580	182	352	112
13	37	.2					0	150	526	182	352	110
14	30	.2					0	*157	504	241	348	108
15	27	.2					0	159	450	313	348	105
16	28	.2					0	161	397	313	352	99
17	28	.1					0	166	317	317	352	96
18	25	.1					0	168	305	325	348	91
19	30	.1					0	172	354	330	348	86
20	28	.1					0	177	348	350	348	86
21	27	0					3.5	187	343	330	348	85
22	30	0					10	192	317	354	348	85
23	32	0					9.7	217	330	338	348	82
24	31	0					23	622	402	352	338	74
25	33	0				(*)	71	*966	562	356	313	67
26	33	0					117	1,040	455	352	293	66
27	38	0					92	1,150	352	352	293	55
28	17	0			(*)		93	1,060	313	352	293	47
29	.8	0			-	(*)	*80	1,050	282	352	274	*46
30	*.6	0			-----		11	1,030	241	352	254	47
31	.6	-----			-----		-----	868	-----	187	247	-----
Total	1,409.0	6.0	0	0	0	0	0	510.2	11,428	14,461	8,374	9,308
Mean	45.5	0.20	0	0	0	0	0	17.0	369	482	270	300
Ac-ft	2,790	12	0	0	0	0	0	1,010	22,670	28,660	16,610	18,460

Calendar year 1957: Max - Min - Mean - Ac-ft -  
 Water year 1957-58: Max 1,150 Min 0 Mean 134 Ac-ft 97,050

\*Discharge measurement or observation of no flow made on this day. \*\* Field estimate made on this day. Note.--No gage-height record Oct. 29 to Nov. 20; discharge interpolated.

## 3465. Skalkaho Creek near Hamilton, Mont.

Location.--Lat 46°09'50", long 113°56'20", in SW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub> sec. 26, T. 5 N., R. 19 W., on right bank 2 miles downstream from Dally Creek and 12 miles southeast of Hamilton.

Drainage area.--87.8 sq mi.

Records available.--December 1948 to September 1953, August 1957 to September 1958.

April 1920 to September 1924 at site 3 miles downstream; records not equivalent owing to inflow.

Gage.--Water-stage recorder. Altitude of gage is 4,510 ft (from topographic map).

Average discharge.--5 years (1949-53, 1957-58), 97.1 cfs (70,300 acre-ft per year).

Extremes.--1957: Maximum discharge during period August to September, 80 cfs Aug. 31

(gage height, 2.24 ft); minimum, 34 cfs Sept. 27-30 (gage height, 1.75 ft).

1957-58: Maximum discharge during water year, 705 cfs May 25 (gage height,

4.17 ft); minimum, 11 cfs Mar. 1 (gage height, 1.32 ft).

1948-53, 1957-58: Maximum discharge, 812 cfs June 21, 1950 (gage height, 4.40 ft);

maximum gage height recorded, 4.95 ft Feb. 1, 1951 (backwater from ice); minimum discharge recorded, 10 cfs Apr. 2, 1953 (gage height, 1.26 ft, backwater from ice).

Flood of June 15, 1922, reached a discharge of 1,110 cfs at gaging station site

3 miles downstream; flood of May 1948 reached a discharge of 1,130 cfs, by slope-area

measurement of peak flow at a point 5 miles downstream.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. During irrigation season flow is supplemented by releases from Kent Lake and Dam Creek Lake (combined capacity, 200 acre-ft).

Discharge, in cubic feet per second, 1957

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1	-	54	7	-	42	13	-	42	19	-	42	25	-	*37
2	-	49	8	-	42	14	-	40	20	-	42	26	-	36
3	-	47	9	-	42	15	-	40	21	-	43	27	-	35
4	-	45	10	-	42	16	-	39	22	-	42	28	-	34
5	-	44	11	-	42	17	-	38	23	-	41	29	-	34
6	-	43	12	-	42	18	-	43	24	-	39	30	52	34
												31	65	-

Total	-	1,235
Mean	-	41.2
Cubic feet per second per square mile	-	0.469
Runoff in inches	-	0.52
Runoff in acre-feet	-	2,450

\* Discharge measurement made on this day.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	34	b29	b26	21	b18	21	42	486	151	68	47
2	35	33	b30	*b28	21	b18	22	49	484	151	67	45
3	38	30	30	b26	20	b19	22	58	482	158	74	43
4	42	b30	29	b26	20	b19	22	76	477	155	79	42
5	39	b31	29	26	19	b19	21	91	442	142	67	40
6	39	b31	*29	25	20	b19	21	148	447	136	66	39
7	37	b30	29	24	19	b19	22	199	438	140	65	38
8	37	b30	29	25	19	*b12	23	395	336	136	61	*37
9	37	b31	28	25	19	19	23	182	434	128	*61	36
10	39	b31	27	24	19	19	23	228	400	124	58	36
11	39	b31	b27	24	19	b18	23	281	379	118	59	36
12	39	31	b28	24	19	b18	23	338	379	112	61	37
13	38	31	b30	24	19	b17	27	*256	374	*109	56	42
14	37	30	b29	25	19	b17	31	212	342	105	55	41
15	36	30	29	25	19	b17	29	228	315	103	54	47
16	34	29	30	23	20	b18	39	292	288	99	52	42
17	34	29	29	21	20	b19	44	366	266	98	51	38
18	34	b29	29	19	20	21	58	404	259	98	56	37
19	34	b29	28	19	20	20	*45	447	*235	95	67	36
20	34	b28	29	19	21	19	57	517	215	95	54	36
21	33	b28	30	19	21	20	49	570	206	91	51	36
22	36	b30	28	20	21	20	45	596	193	88	50	35
23	35	b33	b28	20	21	20	40	610	184	85	49	37
24	37	35	b28	21	21	21	38	619	245	82	47	36
25	36	33	b28	21	*22	22	37	*660	209	81	47	36
26	35	32	29	21	20	21	36	628	182	79	46	37
27	41	30	27	20	20	21	38	614	178	78	45	36
28	36	30	29	*21	20	21	34	583	162	75	50	35
29	*34	b29	28	*21	-	21	32	570	155	78	52	34
30	34	b29	b27	21	-----	*23	34	539	158	81	54	33
31	36	-----	b26	21	-----	21	-----	508	-----	72	50	-----
Total	1,129	917	888	701	559	602	979	11,083	9,383	5,343	1,770	1,150
Mean	36.4	30.5	28.6	22.6	20.0	19.4	32.6	313	313	108	57.1	38.3
Cfs/m	0.415	0.349	0.326	0.257	0.228	0.221	0.371	4.08	3.56	1.23	0.650	0.436
In.	0.48	0.39	0.38	0.30	0.24	0.25	0.41	4.69	3.97	1.42	0.75	0.49
Ac-ft	2,240	1,820	1,760	1,390	1,110	1,190	1,940	21,980	18,610	6,630	3,510	2,280

Calendar year 1957: Max - Min - Mean - Cfs/m - In. - Ac-ft -  
 Water year 1957-58: Max 660 Min 17 Mean 89.1 Cfs/m 1.01 In. 13.77 Ac-ft 64,460

Peak discharge (base, 400 cfs).--May 25 (2 a.m.) 705 cfs (4.17 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Jan. 5-27 (stage-discharge relation probably affected by ice during most of period); discharge estimated on basis of weather records.

3475. Blodgett Creek near Corvallis, Mont.

Location.--Lat 46°16'10", long 114°14'10", in NW $\frac{1}{4}$  sec. 21, T. 6 N., R. 21 W., on right bank  $\frac{1}{2}$  miles upstream from mouth and 7 miles southwest of Corvallis.

Drainage area.--26.4 sq mi.

Records available.--December 1946 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 4,050 ft (from topographic map).

Average discharge.--11 years (1947-58), 72.0 cfs (52,130 acre-ft per year).

Extremes.--Maximum discharge during year, 678 cfs May 21 (gage height, 5.75 ft); minimum, 3.1 Oct. 1 (gage height, 2.06 ft).  
1946-58: Maximum discharge, 836 cfs May 16, 1949 (gage height, 6.42 ft); minimum, 1.2 cfs Nov. 9, 10, 23, 25, 1952; minimum gage height, 1.93 ft Nov. 9, 10, 1952.

Remarks.--Records good except those for period of ice effect, which are poor. Some regulation for irrigation at low flow by Blodgett Lake (capacity, 160 acre-ft).

Revisions.--WSP 1216: Drainage area.

Rating tables, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 31

Jan. 1 to Sept. 30

2.0	2.2	2.1	2.8	3.5	142
2.2	6.0	2.3	8.8	4.0	242
2.4	14	2.5	18	5.0	490
		2.8	39	5.5	615
		3.2	90		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.1	10	5.6	b6	5.4	16	*18	55	274	108	17	5.4
2	3.3	8.1	5.4	*b6.5	5.4	16	18	74	251	93	16	4.9
3	3.8	7.0	5.2	b6.5	5.4	16	18	110	274	95	15	4.9
4	5.4	6.7	5.0	b6.5	5.4	14	18	160	260	90	16	4.9
5	6.0	6.4	5.2	b7	5.4	14	18	192	242	82	14	4.6
6	6.7	6.7	5.0	b7	5.4	14	18	290	269	75	13	4.4
7	6.7	6.4	*5.0	b6.5	5.4	14	18	378	316	84	11	4.1
8	6.4	5.4	5.2	b6.5	5.4	14	20	330	280	98	11	*3.6
9	5.8	5.0	5.6	b7	5.4	13	20	390	328	101	*11	3.6
10	6.0	5.6	5.0	b7	5.4	13	20	455	287	81	11	4.9
11	6.7	5.6	4.8	b7	5.4	12	19	478	233	81	10	5.4
12	6.7	5.4	5.4	7.1	5.4	12	20	520	224	*108	9.6	5.4
13	7.0	5.6	5.0	7.1	5.7	11	23	309	224	98	9.2	4.9
14	6.7	5.4	5.2	6.8	5.7	11	32	*233	196	92	8.8	6.4
15	12	5.4	5.2	6.8	5.7	11	35	267	194	84	8.1	14
16	8.8	5.2	5.2	6.8	6.4	10	56	348	182	78	7.8	14
17	7.8	4.8	5.8	7.1	6.8	10	65	418	*175	72	7.8	11
18	7.4	4.8	5.6	6.8	7.8	10	117	424	166	67	8.1	9.6
19	6.7	5.2	5.6	6.4	8.8	10	82	442	156	62	12	8.8
20	6.0	4.8	5.8	6.4	11	10	131	558	146	55	9.6	15
21	5.6	3.8	6.0	6.4	13	10	113	575	126	49	7.8	12
22	6.7	5.4	6.0	6.1	14	11	93	532	119	42	7.1	10
23	6.7	5.0	5.6	6.1	17	11	78	*482	119	37	6.8	10
24	7.0	5.0	7.0	6.1	18	13	68	500	228	33	6.1	10
25	9.2	5.4	6.7	5.7	*19	14	61	490	190	30	5.7	12
26	8.4	6.0	6.7	5.4	18	15	57	480	128	26	5.4	20
27	12	5.4	6.7	5.4	18	15	55	452	117	23	5.1	18
28	12	5.4	6.7	5.4	17	16	51	395	106	21	4.9	18
29	*10	4.6	6.7	*5.4	--	17	48	*400	88	20	4.9	16
30	9.2	5.6	6.4	5.4	--	18	48	328	100	23	6.4	14
31	11	--	5.8	5.4	-----	18	-----	276	-----	20	6.4	-----
Total	226.8	171.1	176.1	197.6	256.7	409	1,438	11,341	5,999	2,026	292.6	279.8
Mean	7.32	5.70	5.68	6.37	9.17	13.2	47.9	366	200	65.4	9.44	93.3
Cfsm	0.277	0.216	0.215	0.241	0.347	0.500	1.81	13.9	7.58	2.48	0.358	0.353
In.	0.32	0.24	0.25	0.28	0.36	0.58	2.03	15.98	8.45	2.85	0.41	0.39
Ac-ft	450	359	349	392	509	811	2,850	22,490	11,900	4,020	580	555

Calendar year 1957: Max 466 Min 3.1 Mean 62.6 Cfsm 2.37 In. 32.23 Ac-ft 45,360  
Water year 1957-58: Max 575 Min 3.1 Mean 62.5 Cfsm 2.37 In. 32.14 Ac-ft 45,240

Peak discharge (base, 450 cfs).--May 12 (12 m.) 562 cfs (5.29 ft); May 21 (1:45 a.m.) 678 cfs (5.75 ft).

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

## 3485. Willow Creek near Corvallis, Mont.

Location.--Lat 46°17'40", long 113°59'40", in SW¼NE¼ sec. 8, T. 6 N., R. 19 W., on right bank 800 ft downstream from Butterfly ranger station, half a mile downstream from Horn ditch, and 6 miles southeast of Corvallis.

Drainage area.--22.4 sq mi.

Records available.--May 1920 to April 1924 (no winter records), September 1957 to September 1958.

Gage.--Wire-weight gage read once daily. Altitude of gage is 4,130 ft (from topographic map). May 1920 to April 1924, staff gage at site 200 ft downstream at different datum.

Extremes.--1957-58: Maximum discharge observed during water year, 103 cfs May 28 (gage height, 2.70 ft); minimum observed, 2.5 cfs Mar. 1 (gage height, 1.30 ft). 1920-24, 1957-58: Maximum discharge, 130 cfs June 15, 1922 (gage height, 2.20 ft, site and datum then in use); minimum observed, that of Mar. 1, 1958.

Remarks.--Records good except those for periods of ice effect, which are poor. One small diversion for irrigation above station. During irrigation season natural flow is supplemented by releases from Gleason Lake (capacity, 160 acre-ft).

Rating table, Sept. 8, 1957, to Sept. 30, 1958, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.3	2.5	2.0	35
1.4	4.9	2.3	61
1.6	12	2.7	103
1.8	21		

Discharge, in cubic feet per second, 1957

Day	Discharge	Day	Discharge	Day	Discharge	Day	Discharge
Sept. 1.....	-	Sept. 9.....	8.3	Sept. 17.....	8.3	Sept. 25.....	*9.0
2.....	-	10.....	8.3	18.....	9.0	26.....	9.0
3.....	-	11.....	8.3	19.....	8.3	27.....	8.3
4.....	-	12.....	8.3	20.....	8.3	28.....	8.3
5.....	-	13.....	8.3	21.....	8.3	29.....	8.3
6.....	-	14.....	8.3	22.....	9.0	30.....	7.5
7.....	-	15.....	8.3	23.....	9.0		
8.....	8.3	16.....	8.3	24.....	9.0		
Total.....							-
Mean.....							-
Runoff in acre-feet.....							-

\* Discharge measurement made on this day.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.5	8.3	6.8	b5.0	6.2	2.5	4.0	11	63	34	17	11
2	8.3	7.5	6.8	b4.5	6.2	b3.8	4.0	12	63	34	19	11
3	8.3	4.9	6.8	*b5.0	5.5	b3.7	4.0	12	63	32	18	11
4	9.0	4.9	6.8	b5.5	5.2	3.8	4.6	13	71	32	18	11
5	9.0	5.5	*6.2	b5.5	5.2	4.3	4.3	13	67	31	18	11
6	9.0	6.2	6.2	b5.5	5.2	4.3	4.9	34	63	31	*17	9.8
7	9.0	6.8	6.2	b5.5	5.2	3.5	4.3	24	63	29	16	9.8
8	9.0	7.2	6.2	b5.0	4.9	4.0	4.9	*24	69	29	16	9.8
9	8.3	5.8	6.2	b5.5	4.9	3.5	5.2	24	75	28	16	9.4
10	8.3	5.8	6.2	b6.0	4.9	3.1	4.6	34	59	*27	16	9.4
11	8.3	6.5	5.8	b6.0	5.5	3.1	4.6	37	65	25	16	*10
12	8.3	7.2	6.5	6.2	4.9	b3.0	3.5	69	71	25	16	10
13	8.3	7.2	6.5	6.2	5.2	b3.0	6.8	43	69	24	16	9.4
14	8.3	7.2	6.5	6.2	5.2	b3.0	8.3	43	59	24	15	10
15	8.3	6.5	6.5	6.2	5.2	b3.1	7.5	40	59	22	15	11
16	8.3	6.5	6.5	6.8	5.2	3.1	9.4	47	56	21	15	11
17	7.5	3.5	6.5	6.2	4.9	b3.6	9.4	48	*54	19	14	9.4
18	7.5	6.5	6.5	6.2	4.9	4.0	12	48	50	20	14	9.4
19	7.5	6.5	6.5	6.2	4.9	3.5	*10	65	47	21	14	9.8
20	7.5	6.5	6.5	b6.0	5.5	3.5	13	90	41	20	14	9.0
21	7.5	3.1	7.2	b6.2	5.2	3.5	11	88	38	20	14	9.0
22	8.3	b5.0	6.5	6.2	4.6	3.5	10	81	40	20	14	8.3
23	8.3	5.8	3.8	6.2	5.2	3.5	9.4	81	35	17	13	8.3
24	8.3	5.8	6.8	6.3	5.2	3.8	10	99	67	14	12	9.0
25	8.3	6.5	6.8	6.5	5.5	3.8	10	*99	50	15	12	8.3
26	8.3	6.5	6.8	6.5	*4.6	4.3	9.4	99	45	15	12	8.3
27	9.0	6.8	6.2	6.5	4.3	3.8	9.4	99	41	15	12	8.3
28	8.3	6.8	6.2	6.5	4.3	3.8	8.7	103	35	14	12	8.3
29	*8.3	4.3	6.2	*6.5	-	3.8	9.4	90	34	20	12	8.3
30	8.3	6.2	6.2	6.5	-	*4.3	10	75	38	17	12	7.5
31	8.3	-	b5.5	6.2	-	3.8	-	67	-	17	12	-
Total	256.7	183.8	196.9	182.4	143.7	111.1	227.0	1,712	1,650	712	458	285.8
Mean	8.28	6.13	6.35	5.88	5.13	3.58	7.57	55.2	55.0	23.0	14.8	9.53
Ac-ft	509	365	391	362	285	220	450	3,400	3,270	1,410	908	567

Calendar year 1957: Max -

Min -

Mean -

Ac-ft -

Water year 1957-58: Max 103

Min 2.5

Mean 16.8

Ac-ft 12,140

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

3500. Bear Creek near Victor, Mont.

Location.--Lat 46°23', long 114°13', in NE $\frac{1}{4}$  sec. 9, T. 7 N., R. 21 W., on left bank 4 miles upstream from mouth and 5 miles southwest of Victor.

Drainage area.--26.8 sq mi.

Records available.--April 1938 to December 1954, August 1957 to September 1958.

Gage.--Water-stage recorder and timber control. Altitude of gage is 3,770 ft (from topographic map). April 1938 to Aug. 27, 1941, staff gage and Aug. 27, 1941, to Sept. 30, 1952, water stage recorder, at same site at datum 1.00 ft higher.

Average discharge.--17 years 65.1 cfs (47,130 acre-ft per year).

Extremes.--1957: Maximum discharge during period August to September, 11 cfs Aug. 30 (gage height, 0.94 ft); minimum, 1.8 cfs Sept. 17 (gage height, 0.36 ft).

1957-58: Maximum discharge during water year, 754 cfs May 21 (gage height, 4.20 ft); minimum, 2.6 cfs Oct. 1 (gage height, 0.50 ft).

1938-54, 1957-58: Maximum discharge, 1,340 cfs June 16, 1950 (gage height, 5.04 ft, present datum), from rating curve extended above 710 cfs; minimum, 0.6 cfs Dec. 1, 1952; minimum gage height, that of Sept. 17, 1957.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station. Natural flow is supplemented by stored water from Bear Lake (capacity, 375 acre-ft) during irrigation season.

Revisions (water years).--WSP 982: 1942. WSP 1216: Drainage area.

Rating table, Aug. 27, 1957, to Sept. 30, 1958, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Aug. 29 to Oct. 9, May 9, July 7-9)

0.5	1.8	1.1	11	2.5	153
.6	2.2	1.3	20	3.0	251
.7	2.9	1.5	34	3.5	418
.8	3.9	1.7	51	4.0	648
.9	5.4	2.0	84		

Discharge, in cubic feet per second, 1957

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1	-	8.5	7	-	2.7	13	-	2.5	19	-	5.4	25	-	3.6
2	-	8.6	8	-	2.5	14	-	2.3	20	-	5.9	26	-	*3.2
3	-	4.8	9	-	2.4	15	-	2.2	21	-	5.9	27	-	2.8
4	-	3.9	10	-	2.6	16	-	2.0	22	-	5.1	28	-	2.6
5	-	3.4	11	-	2.4	17	-	1.9	23	-	4.6	29	9.4	2.7
6	-	3.0	12	-	2.4	18	-	4.4	24	-	4.0	30	9.4	2.7
												31	9.8	-
Total												28.6		109.0
Mean														3.65
Cubic feet per second per square mile														0.135
Runoff in inches														0.15
Runoff in acre-feet														216

\* Discharge measurement made on this day.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.1	7.8	b6.5	b4.5	5.4	b15	*17	60	283	71	12	5.2
2	3.6	7.8	6.4	*b4	5.4	b14	18	70	251	62	11	4.8
3	7.8	6.8	6.1	b4	5.4	b14	18	90	256	61	12	4.5
4	8.8	6.1	6.1	b4.5	5.4	13	18	140	298	63	15	4.4
5	9.1	b6	b6	b5	5.4	13	18	200	251	54	12	3.9
6	8.5	b6	5.6	b5	5.2	12	18	240	277	50	*11	3.7
7	7.8	6.4	*5.6	b4.5	5.4	b12	18	350	331	57	10	3.5
8	6.8	5.9	b5.8	b4.5	5.4	12	19	400	264	*61	9.8	3.4
9	7.1	b5.5	b6	b4.5	5.4	12	20	*443	334	56	10	3.1
10	7.6	b5.7	b5.5	b5	5.6	12	19	460	295	62	9.4	3.3
11	7.6	5.9	b5.5	b5.5	5.6	12	19	469	226	50	9.4	3.2
12	7.8	5.9	b5.7	b5.5	5.6	b11	19	447	211	44	8.8	*3.0
13	8.1	5.9	b5.5	5.4	5.9	b11	23	474	191	39	8.5	3.3
14	10	6.1	b5.8	5.1	6.1	b11	36	*211	189	34	7.8	7.1
15	9.1	5.9	b5.8	5.0	6.4	b11	38	237	187	31	7.3	17
16	7.8	5.6	5.9	5.2	6.6	b10	50	324	167	26	7.1	14
17	7.8	5.1	6.6	5.2	6.6	b10	70	406	159	25	6.4	10
18	7.6	b5.5	6.1	5.2	7.3	b10	110	406	153	25	6.1	9.1
19	7.3	5.9	5.9	5.0	7.8	10	80	443	142	27	9.8	10
20	7.1	b5.5	b6.2	5.0	9.4	9.8	120	550	128	24	8.1	14
21	6.6	b5	b6.5	5.1	12	10	110	608	110	22	6.8	11
22	7.3	b6	b6.5	5.0	12	11	90	560	105	19	6.4	9.8
23	6.8	6.8	b7	5.0	16	11	80	518	105	18	6.1	10
24	7.8	6.1	b8	5.0	17	12	70	574	161	17	5.4	11
25	9.1	6.6	7.6	5.0	18	14	65	536	144	16	5.0	16
26	8.5	7.3	7.1	5.0	*18	15	60	*518	102	15	4.6	18
27	9.8	b7	6.8	4.8	17	15	55	491	95	14	4.5	18
28	9.8	6.6	6.6	4.8	16	15	55	443	90	14	4.2	18
29	8.5	b5.5	b6	*5.0	---	16	50	452	71	13	4.4	17
30	7.8	b6	b5.5	5.2	---	17	50	367	73	14	6.8	15
31	*7.8	---	b5	5.2	---	18	---	292	---	12	6.8	---
Total	240.2	184.2	191.2	152.7	247.3	388.8	1,433	11,579	5,649	1,096	252.5	274.3
Mean	7.75	6.14	6.17	4.93	8.83	12.5	47.8	374	188	35.4	8.15	9.14
Cfs/m	0.289	0.229	0.230	0.184	0.329	0.466	1.78	14.0	7.01	1.32	0.304	0.341
In.	0.33	0.26	0.27	0.21	0.34	0.54	1.99	16.07	7.84	1.52	0.35	0.38
Ac-ft	476	365	379	303	491	771	2,840	22,970	11,200	2,170	501	544

Calendar year 1957: Max - Min - Mean - Cfs/m - In. - Ac-ft -  
Water year 1957-58: Max 608 Min 3.0 Mean 59.4 Cfs/m 2.22 In. 30.10 Ac-ft 43,010

Peak discharge (base, 400 cfs).--May 10 (10:30 p.m.) 550 cfs (3.71 ft); May 21 (10 p.m.) 754 cfs (4.20 ft); May 24 (10 p.m.) 669 cfs (4.04 ft); June 7 (2:30 a.m.) 473 cfs (3.63 ft); June 9 (10 p.m.) 426 cfs (3.52 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Apr. 16 to May 8; discharge estimated on basis of records for Blodgett Creek near Corvallis, Mont.



## 3510. Burnt Fork Creek near Stevensville, Mont.

Location.--Lat 46°27'50", long 113°56'40", in NW¼SW¼ sec. 11, T. 8 N., R. 19 W., on right bank 150 ft upstream from county road bridge and 8 miles southeast of Stevensville.

Drainage area.--74.0 sq mi.

Records available.--May to November 1920, April 1922 to August 1924 (no winter records), April to June 1938, October 1938 to September 1958. Monthly discharge only for some periods, published in WSP 1316. Records for December 1922, published in WSP 522, have been found to be unreliable and should not be used.

Gage.--Staff gage read once daily except Sundays and holidays. Altitude of gage is 4,270 ft (from topographic map). May 8, 1920, to Aug. 23, 1924, staff gage at site 150 ft downstream at different datum. April 1938 to Mar. 18, 1953, staff gage and Mar. 19, 1953, to Mar. 15, 1955, wire-weight gage, at site 150 ft downstream at datum 2.00 ft lower.

Average discharge.--20 years (1938-58), 49.4 cfs (35,760 acre-ft per year).

Extremes.--Maximum discharge observed during year, 371 cfs May 21, 22 (gage height, 3.48 ft); maximum gage height observed, 3.60 ft Jan. 9 (backwater from ice); minimum daily discharge, 9 cfs Jan. 1. 1920, 1922-24, 1938-58: Maximum discharge observed, 641 cfs May 28, 1938 (gage height, 2.92 ft, site and datum then in use); maximum gage height observed, 4.74 ft Feb. 1, 1956 (backwater from ice); minimum daily discharge, 2 cfs Mar. 11, 1948.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Diversion above station for irrigation of about 2,000 acres below station. During irrigation season natural flow of stream is augmented by release from Burnt Fork Lake (capacity, 510 acre-ft).

Revisions.--See Records available.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 20

May 21 to Sept. 30

1.4	12	2.5	110	1.5	17	2.5	129
1.5	15	3.0	199	1.8	37	3.0	243
1.7	27	3.5	331	2.2	77	3.5	377
2.0	53						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	19	22	a9	b16	b17	*18	24	a200	83	42	a22
2	18	18	23	b10	a15	a17	18	32	179	72	41	21
3	18	a18	21	b11	b15	b18	18	39	170	70	a41	21
4	18	18	24	b11	16	18	18	a48	184	a62	41	21
5	16	18	*25	a11	17	18	18	58	157	55	*39	21
6	a16	20	21	b12	16	18	a18	89	153	a60	37	21
7	17	22	21	b14	15	b17	18	161	149	*66	37	a20
8	16	20	a21	b17	16	16	19	116	a170	65	35	20
9	16	20	21	b19	a16	a16	19	116	203	61	35	20
10	17	a21	21	b17	16	b16	18	141	188	59	a34	20
11	17	a22	b20	b19	16	b16	18	a160	170	53	32	*21
12	17	23	18	a19	15	b15	18	*250	170	50	31	21
13	a17	23	21	b19	16	b15	a21	169	*168	a49	31	21
14	17	23	23	b18	15	b15	26	138	162	48	29	a21
15	17	23	a22	18	15	b15	25	134	a150	46	28	21
16	16	20	21	18	a16	a14	33	159	137	44	26	21
17	16	a18	21	18	16	b14	34	199	153	42	a27	20
18	16	17	21	b18	16	b14	53	a220	118	41	28	20
19	16	23	21	a17	16	b14	17	247	110	41	29	20
20	a15	21	21	b16	17	b14	a38	290	89	a40	25	20
21	15	b18	22	b17	18	14	39	371	80	39	25	a20
22	20	b20	a22	18	a18	14	33	371	a76	39	24	19
23	18	b22	b20	17	a18	a16	28	327	72	37	22	21
24	20	a23	b21	16	*18	17	26	327	133	42	a22	20
25	20	24	a22	16	20	18	24	a320	129	42	22	19
26	20	22	b22	a16	18	18	22	*311	99	41	21	20
27	a20	21	b21	16	17	18	a21	*303	89	a40	21	19
28	20	a20	20	16	17	18	20	243	83	39	21	a19
29	*18	b19	a16	*16	17	18	20	269	a68	39	21	19
30	18	b20	b12	16	18	a18	21	a240	92	48	25	18
31	18	-----	*b9.5	16	-----	18	-----	218	-----	46	a23	-----
Total	555	616	636.5	491	460	504	739	6,090	4,101	1,559	915	607
Mean	17.3	20.5	20.5	15.8	16.4	16.3	24.6	196	137	50.3	29.5	20.2
Ac-ft	1,060	1,220	1,260	974	912	1,000	1,470	12,080	8,130	3,090	1,810	1,200
Calendar year 1957:	Max	320		Min	9.5	Mean	47.1	Ac-ft	34,120			
Water year 1957-58:	Max	371		Min	9	Mean	47.3	Ac-ft	34,210			

\* Discharge measurement made on this day.

a No gage-height record; discharge interpolated or estimated on basis of weather records and records for nearby stations.

b Stage-discharge relation affected by ice.

## 3512. Bitterroot River near Florence, Mont.

Location.--Lat 46°38'00", long 114°03'00", on south line of SE $\frac{1}{4}$  sec. 12, T. 10 N., R. 20 W., on downstream side of bridge on east side highway 1.3 miles east of Florence.

Drainage area.--2,354 sq mi.

Records available.--September 1957 to September 1958.

Gage.--Wire-weight gage read once daily. Altitude of gage is 3,200 ft (from topographic map).

Extremes.--1957-58: Maximum discharge observed during water year, 16,700 cfs May 26 (gage height, 9.93 ft); minimum observed, 440 cfs Jan. 2 (gage height, 2.60 ft).

Remarks.--Records good. Some regulation by West Fork Bitterroot River Reservoir (see p. 248). Diversions for irrigation of about 105,000 acres above station.

Rating table, Sept. 8, 1957, to Sept. 30, 1958 (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 6 to July 29)

2.6	440	5.0	2,980
3.0	700	6.0	4,740
3.5	1,110	8.0	9,900
4.0	1,640	10.0	17,000

Discharge, in cubic feet per second, 1957

Day	Discharge	Day	Discharge	Day	Discharge	Day	Discharge
Sept. 1.....	-	Sept. 9.....	548	Sept. 17.....	452	Sept. 25.....	872
2.....	-	10.....	542	18.....	476	26.....	*685
3.....	-	11.....	518	19.....	560	27.....	651
4.....	-	12.....	500	20.....	672	28.....	630
5.....	-	13.....	476	21.....	686	29.....	637
6.....	-	14.....	464	22.....	693	30.....	623
7.....	-	15.....	458	23.....	700		
8.....	548	16.....	458	24.....	693		

\* Discharge measurement made on this day.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	616	975	658	470	679	892	783	1,440	10,200	3,170	721	616
2	816	930	637	440	658	834	763	1,380	8,830	2,780	700	609
3	637	975	637	458	644	786	*728	1,790	8,570	2,800	714	623
4	770	1,010	637	452	658	810	756	2,320	8,880	2,720	707	630
5	850	966	623	470	658	802	763	2,980	8,320	2,620	*728	623
6	898	966	637	506	651	786	749	3,530	7,700	2,490	728	616
7	890	984	*679	488	651	770	735	6,630	8,710	2,310	714	616
8	898	975	679	524	651	763	756	7,570	18,000	2,430	714	595
9	882	882	651	574	658	778	756	7,100	17,500	*2,240	707	554
10	866	770	651	658	658	728	778	8,260	18,000	2,150	756	548
11	842	770	602	672	679	721	770	9,450	17,600	2,030	735	516
12	834	778	580	679	679	693	756	*11,700	17,400	1,770	714	512
13	834	770	580	679	686	658	756	12,800	*7,200	1,600	700	*524
14	810	770	560	672	700	651	802	9,540	16,500	1,330	693	536
15	810	770	574	658	686	651	906	8,520	6,100	1,110	672	560
16	842	756	581	679	686	651	1,100	8,520	5,720	1,020	644	595
17	866	735	609	672	700	644	1,460	8,660	5,360	898	637	616
18	898	721	637	672	735	651	1,740	10,000	4,740	858	616	637
19	914	700	644	665	756	644	1,990	10,800	4,540	866	623	637
20	930	700	665	630	786	530	2,130	12,200	4,270	850	616	658
21	906	714	749	623	826	630	2,900	14,000	3,910	834	630	693
22	906	679	794	644	842	630	*2,650	15,600	13,600	802	630	707
23	993	672	742	637	874	644	2,430	15,700	*3,350	770	644	721
24	1,020	714	651	679	*914	644	1,970	15,600	13,100	721	651	749
25	1,050	735	658	665	966	658	1,870	15,600	13,000	693	630	770
26	1,060	721	700	651	1,010	700	1,730	16,600	13,800	658	574	794
27	1,120	721	721	*644	966	728	1,735	*15,900	14,000	685	587	858
28	1,220	707	679	644	830	728	1,700	15,100	13,300	651	574	874
29	1,200	665	679	658	-	735	1,600	13,100	3,120	616	574	834
30	1,140	637	658	735	-	742	1,480	12,200	2,950	679	644	794
31	*1,010	-----	*574	721	-----	763	-----	11,700	-----	686	623	-----
Total	28,128	23,668	20,086	19,019	20,987	22,113	40,039	306,460	178,070	45,817	20,580	19,617
Mean	907	796	721	614	700	713	1,335	15,936	14,778	1,478	664	656
Ac-ft	55,790	47,340	39,840	37,720	41,630	43,660	79,420	607,900	353,200	90,880	40,820	39,910

Calendar year 1957: Max - Min - Mean - Ac-ft -  
Water year 1957-58: Max 16,600 Min 440 Mean 2,041 Ac-ft 1,477,000

\* Discharge measurement made on this day.

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



## 3514. Eightmile Creek near Florence, Mont.

Location--Lat 46°39'10", long 113°57'30", in SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 2, T. 10 N., R. 19 W., on right bank 0.6 mile upstream from Granite Creek, 5 miles upstream from mouth, and 6 miles east of Florence.

Drainage area--20.6 sq mi.

Records available--September 1957 to September 1958.

Gage--Water-stage recorder. Altitude of gage is 3,800 ft (from topographic map).

Extremes--1957-58: Maximum discharge during water year, 62 cfs May 12 or 13 (gage height, 2.72 ft, from high-water mark on outside staff gage); minimum daily, 1.5 cfs Jan. 2.

Remarks--Records good except those for periods of ice effect, no gage-height record, and those for period June 23 to Aug. 3, which are poor. No known diversion or regulation above station.

Rating table, Sept. 11, 1957, to Sept. 30, 1958, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.9	1.2	2.0	24
1.1	3.0	2.3	37
1.3	5.9	2.7	60
1.6	12		

## Discharge, in cubic feet per second, 1957

Day	Discharge	Day	Discharge	Day	Discharge	Day	Discharge
Sept. 1.....	-	Sept. 9.....	-	Sept. 17.....	3.1	Sept. 25.....	3.3
2.....	-	10.....	-	18.....	3.8	26.....	*3.1
3.....	-	11.....	3.1	19.....	3.7	27.....	3.0
4.....	-	12.....	3.2	20.....	3.8	28.....	3.0
5.....	-	13.....	3.3	21.....	3.7	29.....	3.0
6.....	-	14.....	3.2	22.....	3.6	30.....	3.0
7.....	-	15.....	3.1	23.....	3.5		
8.....	-	16.....	3.1	24.....	3.3		
Total.....							-
Mean.....							-
Runoff in acre-feet.....							-

\* Discharge measurement made on this day.

## Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.0	3.6	b3.6	b2.0	3.7	3.3	4.5	*7.8	20	7.4	4.5	3.1
2	3.2	3.5	3.7	b1.5	3.7	b3.2	4.7	9.6	20	7.2	4.5	3.1
3	3.7	3.6	3.5	b1.7	3.5	b3.2	*4.7	12	20	7.4	4.5	3.1
4	3.7	b3.5	3.5	b1.8	3.6	b3.3	4.7	15	21	7.4	*4.4	3.0
5	3.5	b3.4	3.0	b1.9	3.7	3.3	4.7	16	20	7.2	4.2	3.0
6	3.6	3.1	3.1	b1.9	3.7	3.3	4.5	24	19	7.2	4.1	2.9
7	3.6	3.3	*3.2	b1.8	3.6	b3.3	4.7	39	21	*6.0	4.0	2.9
8	3.5	b3.4	3.2	b1.8	3.5	3.2	5.0	39	20	7.4	4.0	2.9
9	3.3	b3.4	b3.2	b2.8	3.6	3.2	5.0	45	18	7.2	4.1	3.0
10	3.5	b3.3	b3.0	b3.4	3.8	b3.2	4.9	50	19	7.0	3.8	3.1
11	3.5	3.6	b3.0	b3.6	3.8	b3.2	4.9	55	19	6.8	4.0	3.2
12	3.3	3.5	b3.2	4.0	3.7	b3.2	5.0	60	18	6.5	4.0	*3.2
13	3.2	3.7	b3.2	3.8	3.7	b3.1	6.1	50	*17	6.3	3.8	4.2
14	3.3	3.6	b3.2	3.8	3.7	b3.0	8.0	40	16	6.3	3.7	3.3
15	3.3	3.3	b3.0	3.8	3.7	b3.0	7.8	*33	15	6.3	3.6	3.3
16	3.2	3.2	3.3	4.1	3.7	b3.1	9.0	35	14	6.1	3.6	3.2
17	3.3	3.1	3.8	3.8	3.8	b3.2	10	38	13	5.6	3.6	3.2
18	3.3	b3.0	3.5	3.7	3.8	3.2	10	38	12	6.7	3.7	3.2
19	3.2	b3.0	3.3	b3.5	3.9	3.2	10	41	11	7.0	4.0	3.2
20	3.2	b2.8	3.6	b3.4	4.0	3.2	11	44	10	5.7	3.7	3.2
21	3.2	2.4	4.7	3.8	4.0	3.6	10	46	9.5	5.0	3.6	3.1
22	3.5	b2.8	3.8	3.8	4.0	3.8	*9.8	44	9.0	4.9	3.5	3.2
23	3.5	b3.4	b3.4	3.8	4.0	4.0	8.8	42	*8.6	4.7	3.3	3.7
24	3.6	3.7	b3.4	3.8	3.9	4.5	8.0	*39	10	4.9	3.0	3.5
25	3.8	4.1	3.5	3.8	3.8	5.6	7.6	37	9.4	4.5	3.0	3.3
26	3.6	4.1	3.3	3.8	*3.7	4.9	7.2	34	8.2	4.9	3.0	3.6
27	4.4	3.8	3.2	*3.7	3.7	4.5	7.2	30	8.0	4.9	3.0	3.5
28	3.7	*3.7	3.2	3.7	3.6	4.7	6.8	27	7.6	5.0	3.1	3.5
29	3.5	2.6	b3.1	3.7	-	4.9	6.5	25	7.4	5.0	3.5	3.2
30	3.5	b3.0	b2.8	3.7	-----	5.0	6.7	23	7.8	5.0	3.8	*3.3
31	3.5	-----	*b2.3	3.7	-----	4.7	-----	21	-----	4.9	3.3	-----
Total	107.4	100.5	102.8	99.6	104.9	114.1	208.8	1,059.4	428.5	190.4	115.9	97.2
Mean	3.46	3.35	3.32	3.21	3.75	3.68	6.96	34.3	14.3	6.14	3.74	3.24
Ac-ft	213	199	204	198	208	226	414	2,100	850	378	230	193

Calendar year 1957: Max - Min - Mean - Ac-ft -  
 Water year 1957-58: Max 60 Min 1.5 Mean 7.48 Ac-ft 5,410

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 5, 6, Feb. 3-25, May 9-14, 22, 23, May 30 to June 22, Sept. 9-11; discharge estimated on basis of 1 discharge measurement, weather records, and records for nearby stations.

3520. Lolo Creek above Sleeman Creek, near Lolo, Mont.

Location.--Lat 46°45', long 114°09', in NW<sup>1</sup> sec. 5, T. 11 N., R. 20 W., on left bank 3 miles west of Lolo and 4 miles upstream from mouth.

Drainage area.--250 sq mi.

Records available.--November 1950 to September 1958. Prior to October 1954, published as Lolo Creek near Lolo, April 1911 to September 1915 at site 3½ miles upstream, published as "near Lolo"; records not equivalent owing to diversion and tributary inflow.

Gage.--Water-stage recorder. Altitude of gage is 3,290 ft (from topographic map).

Average discharge.--7 years (1951-58), 210 cfs (152,000 acre-ft per year).

Extremes.--Maximum discharge during year, 1,620 cfs May 24 (gage height, 5.04 ft); minimum daily, 10 cfs Sept. 5-13, 1950-58: Maximum discharge, 2,430 cfs May 24, 1956 (gage height, 6.24 ft); minimum, 6.3 cfs Nov. 9, 1952 (gage height, 1.01 ft).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Numerous small diversions mainly for irrigation of hay meadows above station.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.2	8.0	2.2	164	3.5	620
1.5	34	2.5	236	4.0	915
1.8	81	3.0	400	5.0	1,590

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	*74	42	32	50	83	98	220	615	210	50	14
2	27	58	42	30	46	74	100	252	538	191	27	12
3	44	51	33	45	70	104	311	494	193	50	11	11
4	44	43	40	*36	48	69	104	380	507	193	*32	11
5	42	40	38	38	49	67	102	424	444	171	30	10
6	50	38	48	40	47	64	100	552	436	166	27	10
7	50	38	55	40	49	60	108	747	507	160	24	10
8	49	36	*57	39	49	58	118	729	464	196	22	10
9	44	32	43	41	47	54	122	795	585	171	23	10
10	43	34	35	45	47	50	118	*891	653	166	21	10
11	43	37	34	47	50	44	112	963	512	149	20	10
12	43	37	32	47	49	42	116	1,060	480	135	19	10
13	43	37	36	48	50	42	135	813	*428	130	18	10
14	42	38	35	50	47	41	177	670	364	*112	17	*11
15	42	37	34	52	47	40	191	642	376	100	16	20
16	42	36	37	51	49	43	280	723	349	90	15	31
17	42	32	40	49	50	45	318	831	314	80	17	29
18	42	32	39	48	53	47	420	873	292	85	19	27
19	40	34	38	46	57	48	346	915	283	90	20	20
20	38	34	43	48	70	50	476	1,030	269	75	16	30
21	35	32	44	50	83	55	472	1,120	247	65	14	27
22	44	36	42	50	89	65	420	1,100	228	55	14	25
23	44	42	42	50	100	72	356	1,060	213	50	14	44
24	52	47	45	50	106	79	305	*1,400	338	45	13	55
25	65	49	46	50	127	102	275	1,220	360	42	13	46
26	67	50	46	50	142	104	252	1,090	266	39	13	65
27	89	45	45	49	116	96	236	*982	244	37	12	47
28	89	42	44	49	*102	96	223	915	233	35	13	40
29	79	38	43	50	-	100	203	837	213	33	15	38
30	74	42	40	51	-----	106	205	723	208	37	18	*37
31	74	-----	35	*52	-----	102	-----	658	-----	32	15	-----
Total	1,515	1,242	1,281	1,413	1,862	2,068	6,592	24,926	11,480	3,323	597	750
Mean	48.9	41.4	41.2	45.5	66.5	66.7	200	383	107	19.3	24.3	24.3
Ac-ft	3,000	2,460	2,540	2,800	3,690	4,100	13,080	49,440	22,770	6,580	1,180	1,450

Calendar year 1957: Max 1,260 Min 14 Mean 191 Ac-ft 138,500  
Water year 1957-58: Max 1,400 Min 10 Mean 156 Ac-ft 113,100

Peak discharge (base, 1,000 cfs).--May 12 (2 to 3 p.m.) 1,120 cfs (4.33 ft); May 24 (8 to 10 a.m.) 1,620 cfs (5.04 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 5 to Dec. 3, Dec. 11 to Jan. 14, Feb. 3, 4, Mar. 3-19. No gage-height record Jan. 15-30, July 15 to Aug. 3, Aug. 5 to Sept. 13, Sept. 15; discharge estimated on basis of weather records and records for nearby stations.

3530. Clark Fork below Missoula, Mont.

Location.--Lat 46°52'10", long 114°07'30", in NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 21, T. 13 N., R. 20 W., on right bank 2 miles downstream from Bitterroot River and 5 miles west of Missoula.

Drainage area.--9,003 sq mi.

Records available.--October 1929 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 3,090 ft (from topographic map).

Average discharge.--29 years, 5,109 cfs (3,700,000 acre-ft per year).

Extremes.--Maximum discharge during year, 32,900 cfs May 23 (gage height, 9.34 ft); minimum recorded, 1,270 cfs Jan. 3 (gage height, 0.43 ft).  
1929-58: Maximum discharge, 52,800 cfs May 23, 1948 (gage height, 12.08 ft); minimum, 388 cfs Jan. 18, 1933; minimum gage height, 0.40 ft Aug. 31, 1957.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Some diurnal fluctuation at low flows caused by powerplant at Bonner. Diversions for irrigation of about 235,000 acres above station.

Revisions (water years).--WSP 1042: 1931. WSP 1246: Drainage area. WSP 1316: 1932(M), 1935(M), 1946(M).

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 22)

Oct. 1 to May 22

May 23 to Sept. 30

0.5	1,330	4.0	8,750	0.9	1,670	6.0	15,400
1.0	1,850	6.0	16,700	2.0	3,230	8.0	25,000
2.0	3,510	9.0	32,200	3.0	5,350	10.0	37,200
3.0	5,760			4.0	8,100		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,930	2,810	2,070	1,580	2,040	2,450	3,020	4,760	20,600	8,430	2,630	1,860
2	1,950	2,810	2,330	1,400	1,990	2,400	2,980	4,930	18,900	7,960	2,480	1,840
3	1,990	2,780	2,300	1,400	1,900	2,350	3,070	5,480	17,600	7,960	2,420	1,810
4	2,190	2,740	2,220	1,500	1,980	2,400	3,070	6,570	17,900	8,310	2,430	1,870
5	2,390	2,690	2,070	1,600	2,030	2,450	3,130	7,910	18,000	7,930	2,500	1,840
6	2,560	2,580	2,100	1,650	2,000	2,450	3,080	9,450	*16,800	7,460	2,400	1,820
7	2,670	2,670	2,180	1,600	1,890	2,450	3,150	13,400	17,500	7,040	2,320	1,820
8	2,650	2,670	2,220	1,700	1,990	2,450	3,240	15,500	18,100	7,210	2,250	1,820
9	2,630	2,580	2,190	1,800	1,990	2,450	3,420	17,400	18,700	6,990	2,200	1,780
10	2,580	2,390	2,130	1,910	1,970	2,450	3,420	19,700	22,500	6,490	2,210	1,750
11	2,550	2,430	2,020	1,990	2,040	2,400	3,320	22,000	22,500	5,900	2,200	1,720
12	2,550	2,440	1,840	2,070	2,040	2,350	3,220	*25,600	21,400	5,840	2,120	1,740
13	2,430	2,430	1,910	2,120	2,030	2,350	3,260	27,700	20,900	5,320	2,080	1,760
14	2,460	2,480	1,960	2,120	2,030	2,300	3,490	24,300	19,200	4,960	2,050	1,840
15	*2,430	2,460	2,060	2,090	2,000	2,250	3,940	21,200	17,700	4,650	2,000	1,890
16	2,500	2,390	2,020	2,140	2,020	2,250	4,330	20,700	16,500	4,410	1,930	1,970
17	2,550	2,350	2,090	2,160	2,160	2,200	5,050	21,500	*14,900	4,050	1,860	2,000
18	2,600	2,310	2,140	2,130	2,180	2,250	5,890	23,700	13,400	3,870	1,860	2,020
19	2,600	2,250	*2,130	2,100	2,220	2,350	6,540	24,800	12,400	3,770	1,850	2,010
20	2,620	2,250	2,140	1,930	2,200	2,350	6,680	26,700	11,600	3,620	*1,860	2,010
21	2,560	2,180	2,330	1,810	2,380	2,400	7,500	*29,600	10,800	3,680	1,860	2,090
22	2,650	2,060	2,410	1,920	2,440	2,600	7,470	32,200	9,950	3,540	1,860	2,170
23	2,710	2,200	2,250	*2,000	2,510	2,800	6,980	32,600	9,220	3,450	1,840	2,240
24	2,710	2,310	2,000	2,100	2,760	3,000	6,350	32,100	9,130	*3,230	1,800	2,360
25	2,780	*2,410	1,990	2,120	2,740	3,200	5,810	32,300	12,700	3,090	1,800	2,380
26	2,870	2,390	2,190	2,060	*3,110	*3,360	5,530	32,400	12,000	2,980	1,780	2,460
27	2,960	2,380	2,200	1,990	2,750	3,260	5,380	*31,100	10,500	2,870	1,740	2,490
28	3,050	2,350	2,140	1,990	2,600	3,110	*5,250	29,100	9,320	2,770	1,700	2,540
29	3,130	2,280	2,140	2,020	-	3,070	5,080	26,800	8,560	2,580	1,710	2,440
30	3,020	2,070	2,100	2,060	-	3,070	4,860	25,200	*8,280	2,580	1,760	2,360
31	2,850	-----	1,880	2,090	-----	3,110	-----	22,500	-----	2,630	1,850	-----
Total	80,120	73,140	65,750	59,150	62,070	80,330	137,520	669,700	457,160	155,550	63,350	60,700
Mean	2,565	2,438	2,121	1,908	2,217	2,591	4,584	21,600	15,240	5,018	2,044	2,023
Ac-ft	158,900	145,100	130,400	117,300	123,100	159,300	272,600	*1,328	906,800	308,500	125,700	120,400
Calendar year 1957: Max			29,900	Min	1,100	Mean	5,340	Ac-ft	3,866,000			
Water year 1957-58: Max			32,600	Min	1,400	Mean	5,382	Ac-ft	3,896,000			

Peak discharge (base, 12,000 cfs).--May 13 (10 a.m. to 2 p.m.) 28,100 cfs (8.30 ft); May 23 (4 a.m.) 32,900 cfs (9.34 ft); June 10 (6 p.m.) 23,700 cfs (7.74 ft); June 25 (1:30 to 4 p.m.) 13,300 cfs (5.49 ft).

\* Discharge measurement made on this day.

† Expressed in thousands.

Note.--No gage-height record Jan. 3-9, Feb. 27 to Mar. 25; discharge estimated on basis of weather records and records for station above Missoula.

3545. Clark Fork at St. Regis, Mont.

Location.--Lat 47°18'05", long 115°05'15", in center of SW $\frac{1}{4}$  sec. 19, T. 18 N., R. 27 W., on left bank at St. Regis, half a mile downstream from St. Regis River.

Drainage area.--10,709 sq mi.

Records available.--October 1910 to September 1958. Monthly discharge only for some periods, published in WSP 1316.

Gage.--Water-stage recorder. Altitude of gage is 2,600 ft (by barometer). Prior to Nov. 29, 1933, staff gage at same site and datum.

Average discharge.--48 years, 7,348 cfs (5,320,000 acre-ft per year).

Extremes.--Maximum discharge during year, 44,800 cfs May 24 (gage height, 16.30 ft); minimum, 1,830 cfs Jan. 3, 4 (gage height, 4.35 ft).  
1910-58: Maximum discharge observed, 68,900 cfs May 24, 1948 (gage height, 19.96 ft); minimum, 1,000 cfs Dec. 17, 1940 (gage height, 3.36 ft), but may have been less during period of ice effect Feb. 19-22, 1929.

Remarks.--Records excellent. Some diurnal fluctuation at low flow caused by powerplant at Bonner. Diversions for irrigation of about 244,000 acres above station.

Revisions (water years).--WSP 1246: Drainage area. WSP 1316: 1916-17, 1920, 1929-31(M), 1933(M).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

4.4	1,880	10.0	15,300
5.0	2,670	12.0	23,300
6.0	4,400	14.0	32,700
8.0	9,100	17.0	48,900

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,720	3,560	2,660	2,380	2,610	3,610	4,240	7,390	28,100	10,600	3,590	2,520
2	2,780	3,520	2,670	2,140	2,580	3,440	4,180	7,730	26,100	10,500	3,560	2,520
3	2,850	3,490	2,880	2,030	2,520	3,320	4,180	8,530	24,000	10,000	3,440	2,520
4	2,970	3,420	2,860	1,890	2,440	3,180	4,300	9,640	23,200	10,200	3,370	2,490
5	3,090	3,370	2,700	2,060	2,480	3,200	4,360	11,100	23,500	10,200	3,340	2,540
6	3,270	3,300	2,690	2,150	2,580	3,220	4,420	12,800	22,600	9,780	3,370	2,510
7	3,400	3,270	2,720	2,180	2,540	3,150	4,420	15,700	22,200	9,290	3,270	2,480
8	3,490	3,320	2,770	2,200	2,550	3,120	4,540	20,900	23,100	9,050	3,180	2,460
9	3,470	3,300	2,800	2,230	2,550	3,040	4,680	23,600	23,100	9,100	3,120	2,450
10	3,440	3,220	2,750	2,240	2,540	3,020	4,800	25,700	26,000	8,740	3,040	2,420
11	3,370	3,070	2,670	2,460	2,540	3,050	4,760	28,300	28,200	8,060	3,020	2,380
12	3,370	3,120	2,580	2,550	2,600	2,910	4,680	32,400	28,900	7,680	3,020	2,350
13	3,350	3,130	2,450	2,640	2,660	2,830	4,720	34,400	26,100	7,410	2,930	2,320
14	3,250	3,150	2,460	2,660	2,620	2,810	5,160	*33,100	24,700	6,960	2,880	2,350
15	3,250	3,130	2,520	2,660	2,610	2,730	5,820	29,000	22,900	6,480	2,830	2,450
16	3,200	3,130	2,600	2,640	2,600	2,690	6,760	27,800	21,700	6,140	2,770	2,520
17	3,220	3,060	2,620	2,700	2,610	2,690	7,680	28,800	*20,000	5,820	2,670	2,580
18	3,240	3,020	*2,700	2,720	2,720	2,660	8,890	30,800	18,200	5,500	2,600	2,610
19	3,250	2,970	2,730	2,690	2,770	2,700	9,400	32,900	16,800	5,270	*2,640	2,670
20	3,270	2,910	2,780	2,640	2,850	2,750	10,600	35,000	15,700	5,030	2,620	2,720
21	*3,250	2,880	2,890	2,490	2,910	2,730	11,300	38,200	14,500	4,900	2,620	2,730
22	3,320	2,810	3,020	*2,380	3,070	2,800	11,500	41,300	13,500	4,900	2,620	2,850
23	3,370	2,720	3,040	2,460	3,220	3,050	10,700	*43,000	12,600	4,720	2,610	3,010
24	3,370	2,850	2,860	2,550	3,370	3,350	9,910	43,900	12,200	4,580	2,560	3,070
25	3,370	2,950	2,670	2,620	*3,730	*3,640	9,130	43,100	13,600	4,360	2,540	3,170
26	3,460	*3,020	2,670	2,640	3,880	4,060	8,480	42,300	15,800	4,180	2,510	3,240
27	3,590	2,970	2,830	2,580	4,070	4,360	8,100	41,500	14,200	4,040	2,480	3,270
28	3,640	2,960	2,850	2,540	3,800	4,320	7,860	39,400	12,500	3,910	2,450	3,270
29	3,710	2,950	2,800	2,540	-----	4,220	*7,600	36,600	11,500	*3,800	2,440	3,290
30	3,730	2,770	2,710	2,560	-----	4,220	7,410	33,700	10,700	3,660	2,450	3,220
31	3,680	-----	2,670	2,610	-----	4,220	-----	31,500	-----	3,610	2,480	-----
Total	102,740	93,290	84,680	75,850	80,000	101,080	204,580	889,690	594,200	208,470	89,020	80,980
Mean	3,314	3,110	2,732	2,447	2,657	3,261	6,819	28,700	19,810	6,725	2,872	2,699
Ac-ft	203,800	185,000	168,000	150,400	158,700	200,500	405,800	*1,765	*1,179	413,500	176,600	160,600
Calendar year 1957: Max	37,600				Min 1,600	Mean 7,276	Ac-ft 5,267,000					
Water year 1957-58: Max	43,900				Min 1,890	Mean 7,136	Ac-ft 5,167,000					

\* Discharge measurement made on this day.  
\* Expressed in thousands.

## 3550. Flathead River at Flathead, British Columbia

(International gaging station)

Location.--Lat 49°00', long 114°29', on left bank 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, Montana.

Drainage area.--450 sq mi, approximately.

Records available.--March 1929 to September 1958 (no winter records prior to 1952). Prior to October 1934, published as "near Trail Creek, Mont."

Gage.--Water-stage recorder. Altitude of gage is 3,980 ft (from topographic map). Prior to Sept. 1, 1949, staff gage at same site and datum.

Average discharge.--7 years (1951-58), 972 cfs (703,700 acre-ft per year).

Extremes.--Maximum discharge during year, 7,420 cfs May 13 (gage height, 5.32 ft); minimum daily, 119 cfs Jan. 2.

1929-58: Maximum discharge, 14,600 cfs May 23, 1948 (gage height, 9.1 ft, from floodmark), from rating curve extended above 8,000 cfs; minimum observed, 65 cfs Apr. 9, 1929, buy may have been less during periods of no record in winter.

Remarks.--Records good except those for periods of ice effect, which are poor. No regulation or diversion above station.

Cooperation.--This station is maintained by Canada under agreement with the United States.

Revisions (water years).--WSP 1092: 1933 (maximum gage height only).

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 14-18)

Oct. 1 to Jan. 31		Feb. 1 to May 13		May 14 to Sept. 30	
0.5	158	0.5	180	2.5	1,650
.7	185	.7	218	3.0	2,300
1.0	305	1.0	355	4.0	3,990
1.3	450	1.3	510	5.0	6,470
		1.6	730	6.0	9,600
		2.0	1,100		

Note.--Same as preceding table below 2.0 ft.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	168	360	173	123	156	191	201	838	3,580	847	365	215
2	*173	305	183	119	147	179	201	1,340	3,100	802	350	215
3	182	256	175	126	140	*166	201	1,980	2,700	766	340	218
4	185	238	165	134	153	158	201	2,570	2,570	730	330	215
5	182	234	165	147	158	152	202	2,840	2,490	714	325	213
6	182	225	165	152	157	151	210	*3,060	2,350	757	315	210
7	178	213	175	152	151	149	215	3,750	2,340	955	305	208
8	176	207	173	146	144	142	240	4,330	2,200	874	295	205
9	175	207	164	*142	138	139	265	4,840	2,130	847	295	*202
10	175	191	*164	146	152	137	*270	5,560	2,440	784	290	200
11	175	194	148	148	158	135	290	5,990	2,250	722	285	197
12	175	194	155	149	158	133	325	6,250	2,080	666	280	195
13	175	194	173	150	150	138	390	6,750	1,830	658	280	200
14	176	191	161	155	135	137	622	4,770	1,710	636	270	208
15	183	185	163	160	127	140	811	4,340	1,640	615	265	208
16	185	182	182	167	130	139	856	5,000	1,540	580	255	202
17	182	178	171	175	137	142	802	5,570	1,440	559	251	205
18	182	176	161	180	147	148	865	5,200	*1,360	545	248	200
19	207	175	166	175	153	159	*739	4,920	1,360	*348	248	
20	197	167	176	163	156	158	730	5,260	1,390	*517	244	295
21	191	160	168	153	159	157	*739	6,350	1,270	494	236	280
22	185	180	160	152	162	158	690	6,870	1,160	466	225	265
23	197	178	162	162	167	162	615	6,970	1,100	504	225	244
24	183	171	171	169	187	167	566	6,800	1,050	482	225	236
25	178	170	166	168	219	172	531	6,350	1,000	455	218	248
26	180	170	162	163	239	179	504	5,860	955	440	213	240
27	182	170	158	158	228	186	494	5,420	937	430	215	238
28	182	176	155	157	204	190	494	5,010	1,060	415	225	236
29	180	171	150	162	-	196	494	4,890	982	405	225	236
30	204	155	143	163	-----	199	587	4,360	910	390	229	236
31	375	-----	133	163	-----	200	-----	3,670	-----	380	222	-----
Total	5,850	5,973	5,086	4,779	4,510	4,956	14,350	147,908	52,924	18,973	8,294	6,708
Mean	189	199	164	154	161	160	478	4,770	1,760	612	268	224
Cfsm	0.42	0.44	0.36	0.34	0.36	0.36	1.06	10.60	3.91	1.36	0.60	0.50
In.	0.48	0.49	0.42	0.39	0.42	0.42	1.18	12.22	4.36	1.57	0.69	0.56
Ac-ft	11,600	11,850	10,090	9,480	8,950	9,830	28,460	293,400	105,000	37,630	16,450	13,310

Calendar year 1957: Max 7,940 Min 84 Mean 812 Cfsm 1.80 In. 24.51 Ac-ft 588,300  
Water year 1957-58: Max 6,900 Min 119 Mean 768 Cfsm 1.71 In. 23.15 Ac-ft 556,000

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 20-23, Nov. 30 to Dec. 3, Dec. 11, 12, Dec. 25 to Apr. 4.

## 3555. Flathead River near Columbia Falls, Mont.

Location.--Lat 48°28'20", long 114°05'20", in NE<sup>1</sup>/<sub>4</sub> sec. 12, T. 31 N., R. 20 W., on right bank 1 mile upstream from Middle Fork and 8 miles northeast of Columbia Falls.

Drainage area.--1,553 sq mi.

Records available.--September 1910 to September 1917, April 1929 to September 1958. Published as North Fork Flathead River near Columbia Falls September 1910 to September 1914.

Gage.--Water-stage recorder. Datum of gage is 3,109.70 ft above mean sea level, datum of 1929 (levels by Bureau of Reclamation), September 1910 to September 1917 staff gage at site 1,000 ft downstream at different datum.

Average discharge.--27 years (1910-12, 1913-15, 1935-58), 2,862 cfs (2,072,000 acre-ft per year).

Extremes.--Maximum discharge during year, 20,400 cfs May 13 (gage height, 10.20 ft); minimum daily, 320 cfs Jan. 2.

1910-17, 1929-58: Maximum discharge, 31,500 cfs May 21, 1954 (gage height, 12.25 ft); minimum, 198 cfs Jan. 8, 1953 (gage height, 0.86 ft).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. A few small diversions from tributaries for irrigation of hay meadows above station. No regulation.

Revisions (water years).--WSP 1216: Drainage area. WSP 1246: 1911, 1912(M), 1915-17(M), 1929(M), 1938-39(M), 1946(M).

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 12

May 13 to Sept. 30

1.6	420	5.0	4,050	2.0	775	5.0	4,220
2.0	630	7.0	8,700	2.5	1,090	7.0	8,720
2.5	945	8.0	11,600	3.0	1,500	9.0	15,300
3.0	1,350	10.0	19,400	4.0	2,610	11.0	24,300
4.0	2,540						

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	641	1,150	646	360	505	931	1,060	2,540	11,400	3,040	1,440	932
2	703	1,110	674	320	460	849	1,070	3,340	10,400	2,860	1,390	896
3	784	1,020	646	*b330	440	810	1,090	4,620	9,120	2,720	1,360	908
4	850	958	619	b360	500	830	1,160	6,240	8,300	2,580	*1,350	890
5	823	951	602	b400	526	842	1,350	7,280	8,040	2,480	1,300	866
6	810	903	608	b430	505	823	1,480	8,060	7,750	2,480	1,270	848
7	784	882	597	b430	490	752	1,570	9,620	7,720	*2,570	1,230	830
8	*771	849	614	b420	445	771	1,630	11,500	7,580	2,570	1,200	814
9	770	797	619	b420	411	758	1,720	13,200	7,410	2,620	1,180	*808
10	760	790	602	b430	490	727	1,730	14,800	8,510	2,510	1,170	808
11	760	816	505	b450	520	703	1,700	16,300	8,360	2,400	1,120	797
12	760	810	542	b450	*510	646	1,770	*17,900	7,770	2,310	1,170	797
13	760	823	608	b460	480	592	2,040	19,800	6,960	2,250	1,150	824
14	780	816	580	b480	416	602	2,650	16,200	6,280	2,230	1,120	872
15	780	790	564	b500	398	614	3,280	13,500	5,930	2,160	1,100	884
16	780	784	542	b530	470	608	3,850	13,600	5,550	2,060	1,090	872
17	790	739	580	b560	526	624	*4,000	15,300	5,240	1,970	1,060	872
18	810	721	602	586	520	636	4,370	15,200	4,980	1,890	1,040	884
19	790	709	592	558	553	652	3,900	14,400	4,880	1,880	1,030	914
20	770	668	586	526	580	641	4,160	14,800	4,900	1,840	1,020	1,030
21	780	614	597	b490	602	*646	4,190	16,600	4,580	1,790	1,010	1,100
22	790	658	597	b480	614	685	3,800	17,900	4,280	1,730	978	1,090
23	800	703	580	490	636	715	3,360	18,200	4,040	1,740	964	1,120
24	790	697	575	553	591	764	3,000	18,100	3,970	1,760	957	1,160
25	780	*668	580	553	968	836	2,750	18,000	3,820	1,680	944	1,150
26	780	652	646	548	1,150	896	2,530	17,300	*3,630	1,640	926	1,130
27	800	641	624	520	1,110	952	2,340	16,400	3,470	1,580	908	1,080
28	816	652	608	515	1,040	1,010	2,220	*15,400	3,620	1,540	871	1,060
29	804	580	597	551	-	1,040	2,140	14,900	3,550	1,520	891	1,060
30	823	551	586	526	-----	1,060	2,200	13,500	3,280	1,540	985	1,050
31	968	-----	430	522	-----	1,080	-----	11,800	-----	1,490	964	-----
Total	24,387	23,422	18,315	14,726	16,556	24,075	74,110	416,400	185,310	65,430	34,369	28,346
Mean	787	781	591	475	591	777	2,470	13,430	6,177	2,111	1,109	945
Cfsm	0.507	0.503	0.381	0.308	0.381	0.500	1.59	8.65	3.98	1.36	0.714	0.608
In.	0.58	0.56	0.44	0.35	0.40	0.58	1.77	9.97	4.44	1.57	0.82	0.68
Ac-ft	48,370	46,460	36,350	29,200	32,840	47,750	147,000	825,900	367,600	129,800	68,170	56,220

Calendar year 1957: Max 22,800 Min 350 Mean 2,805 Cfsm 1.81 In. 24.53 Ac-ft 2,031,000  
 Water year 1957-58: Max 19,800 Min 320 Mean 2,535 Cfsm 1.63 In. 22.16 Ac-ft 1,836,000

Peak discharge (base, 11,000 cfs).--May 13 (7:30 a.m.) 20,400 cfs (10.20 ft); May 24 (11 p.m.) 18,400 cfs (9.76 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 9-27, Jan. 1, 2; discharge estimated on basis of records for other Flathead River basin stations.

## 3557. Middle Fork Flathead River near Essex, Mont.

Location.--Lat 48°10'20", long 113°32'40", near center of sec. 19, T. 28 N., R. 15 W., on right bank a quarter of a mile downstream from Spruce Park cabin, 1 mile downstream from Charlie Creek, and 7½ miles southeast of Essex.

Drainage area.--408 sq mi.

Records available.--April 1957 to September 1958.

Gage.--Water-stage recorder with pressure recording bubbler system. Altitude of gage is 4,070 ft (from topographic map).

Extremes.--Maximum discharge during year, 6,330 cfs May 12 (gage height, 9.93 ft); minimum daily, 85 cfs Jan. 1.

1957-58: Maximum discharge, 7,730 cfs May 5, 1957 (gage height, 10.9 ft, from floodmarks); minimum daily, that of Jan. 1, 1958.

Remarks.--Records excellent except those for periods of ice effect or no gage-height record, which are fair.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 21				May 22 to Sept. 30			
2.7	88	4.5	730	2.9	134	4.5	770
3.0	147	5.0	1,060	3.2	206	5.0	1,100
3.5	279	6.0	1,840	3.5	295	6.0	1,940
4.0	470	8.0	3,860	4.0	505	8.0	4,100
		10.0	6,430			10.0	6,700

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1	138	154	115	85	105	160	160	495	3,490	704	280	170	
2	140	152	120	90	105	160	160	836	2,930	671	270	170	
3	145	132	120	95	105	160	160	1,410	*2,490	688	260	170	
4	152	129	115	100	100	150	160	1,940	2,360	682	250	170	
5	149	129	110	105	*95	150	160	2,120	2,220	627	245	162	
6	147	127	110	105	90	150	165	*2,500	2,170	610	240	160	
7	143	*132	110	105	90	150	175	3,110	2,260	610	*236	155	
8	140	117	115	105	95	140	*185	3,740	2,130	580	228	*155	
9	*138	120	115	105	100	135	211	5,810	2,200	575	228	150	
10	138	129	105	105	100	135	220	5,500	3,520	540	222	150	
11	138	134	90	105	100	*132	230	5,460	3,050	510	217	155	
12	138	134	100	110	95	127	250	5,750	2,560	482	217	160	
13	138	129	105	110	95	120	280	5,270	2,140	463	206	175	
14	138	129	115	*110	90	115	350	3,330	1,850	454	206	190	
15	138	127	115	115	90	110	450	2,930	1,730	449	201	190	
16	138	125	115	120	95	105	600	3,500	1,570	418	198	180	
17	136	119	115	115	100	110	700	4,500	1,430	401	193	175	
18	136	119	115	115	100	115	740	4,500	1,350	389	188	175	
19	136	*119	115	110	105	120	730	*4,500	1,320	401	200	180	
20	134	115	115	109	110	120	720	5,000	1,330	389	200	190	
21	134	105	115	115	110	125	714	5,500	1,250	375	195	195	
22	134	110	115	117	115	130	660	*6,010	1,120	*360	188	200	
23	125	120	110	115	130	130	580	5,830	1,070	344	183	210	
24	132	125	105	115	160	135	*480	5,740	*1,050	340	185	230	
25	132	130	110	110	180	140	443	5,660	981	330	183	*248	
26	132	130	115	110	200	145	408	5,580	902	330	178	278	
27	132	125	115	105	190	150	379	5,070	882	330	172	256	
28	132	120	110	105	180	155	364	4,640	914	320	180	269	
29	134	110	110	105	-	160	345	4,640	806	310	190	295	
30	143	110	100	105	-----	160	364	3,980	742	310	185	302	
31	156	-----	90	105	-----	160	-----	3,370	-----	300	180	-----	
Total	4,286	3,756	3,430	3,326	3,230	4,254	11,543	126,321	53,817	14,292	6,504	5,865	
Mean	138	125	111	107	115	137	385	4,075	1,794	461	210	196	
Cfsm	0.338	0.306	0.272	0.262	0.282	0.336	0.944	9.99	4.40	1.13	0.515	0.480	
In.	0.39	0.34	0.31	0.30	0.29	0.39	1.05	11.51	4.91	1.30	0.59	0.53	
Ac-ft	8,500	7,450	6,800	6,600	6,410	8,440	22,900	250,600	106,700	28,350	12,900	11,630	
Calendar year 1957: Max	-	-	-	Min	-	Mean	-	Cfsm	-	In.	-	Ac-ft	-
Water year 1957-58: Max	6,010	Min	85	Mean	659	Cfsm	1.62	In.	21.91	Ac-ft	477,300		

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 9, Jan. 13-19, Feb. 5. No gage-height record Nov. 21 to Jan. 12, Jan. 23 to Feb. 4, Feb. 6 to Mar. 10, Mar. 13 to Apr. 7, Apr. 10-20, 22, 23, May 16-21, July 21, July 24 to Aug. 6, Aug. 19-21, Aug. 28 to Sept. 3, Sept. 8-24 (stage-discharge relation affected by ice during most of period December to March); discharge estimated on basis of 10 discharge measurements, weather records, and records for station at Essex.

## 3570. Middle Fork Flathead River at Essex, Mont.

Location.--Lat 48°16'30", long 113°36'10", in NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> sec. 14, T. 29 N., R. 16 W., on right bank 0.6 mile upstream from Ole Creek, 0.7 mile southeast of Essex, and 14 miles downstream from Bear Creek.

Drainage area.--510 sq mi.

Records available.--October 1939 to September 1953, June 1956 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 3,730 ft (from river-profile map).

Average discharge.--16 years, 1,024 cfs (741,300 acre-ft per year).

Extremes.--Maximum discharge during year, 8,970 cfs May 12 (gage height, 9.04 ft); minimum, 97 cfs Dec. 11 (gage height, 1.63 ft), but may have been lower during periods of ice effect.

1939-53, 1956-58: Maximum discharge, 14,500 cfs May 22, 1948 (gage height, 10.95 ft, from partly estimated gage height record); minimum daily, 30 cfs Jan. 22, 1940.

Flood in May 1954 reached a stage of 12.7 ft (discharge, 18,000 cfs, from rating curve extended above 12,000 cfs). Flood of May 21 or 22, 1956, reached a stage of 11.7 ft, from floodmark (discharge, 15,400 cfs, from rating curve extended above 12,000 cfs).

Remarks.--Records good except those for periods of ice effect, which are poor.

Revisions (water years).--WSP 1216: Drainage area. WSP 1246: 1940, 1941(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1-10, Apr. 26 to May 11)

1.7	105	4.0	1,140	7.0	4,950
2.0	156	5.0	2,070	8.0	6,810
2.5	290	6.0	3,350	9.0	9,080
3.0	500				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	179	186	139	105	127	193	228	672	4,040	785	308	186
2	184	177	146	110	116	188	231	1,130	3,400	746	294	184
3	191	160	145	120	130	188	234	1,950	*2,930	772	290	184
4	198	135	137	130	*120	191	237	2,600	2,820	766	283	182
5	188	154	*135	130	115	191	252	2,830	2,660	702	272	177
6	186	156	139	130	110	184	252	*3,190	2,640	702	266	173
7	184	*154	139	125	115	169	258	3,990	2,760	690	258	171
8	182	143	143	125	120	160	*280	4,860	2,610	648	249	*169
9	*182	135	145	125	125	155	308	6,020	2,610	642	246	166
10	182	146	139	125	130	150	314	7,460	3,830	600	243	164
11	177	154	110	127	120	140	314	7,390	3,360	595	237	164
12	177	152	132	129	115	*135	349	9,000	2,910	545	237	169
13	177	152	141	130	110	130	465	7,140	2,500	525	231	188
14	175	154	145	*135	115	125	766	4,900	2,190	520	220	210
15	175	148	137	132	115	125	864	4,450	2,080	505	218	208
16	173	146	134	152	120	120	976	5,380	1,930	475	212	193
17	173	145	141	145	125	162	1,020	6,240	1,760	450	210	191
18	175	141	139	139	130	156	1,130	5,940	1,660	436	205	188
19	173	141	134	130	135	152	1,020	5,720	1,600	446	222	200
20	169	139	135	125	140	148	1,020	*6,560	1,590	441	225	212
21	166	123	137	141	146	150	1,020	7,690	1,450	432	212	208
22	171	134	137	134	150	154	934	7,740	1,330	*405	202	210
23	156	141	128	134	182	160	811	7,500	1,270	385	205	249
24	184	152	122	141	212	179	696	7,310	*1,240	381	208	280
25	169	150	128	135	243	195	618	7,160	1,130	365	200	*290
26	166	150	143	130	272	202	565	7,040	1,040	365	195	318
27	166	143	134	122	252	208	520	6,220	998	357	191	300
28	166	141	135	123	225	218	495	5,590	1,060	341	198	308
29	158	132	137	130	-	225	455	5,510	927	337	205	337
30	169	137	130	130	-----	234	495	4,680	844	341	205	345
31	188	-----	105	128	-----	231	-----	5,950	-----	325	198	-----
Total	5,439	4,421	4,191	4,017	4,115	5,318	17,127	166,792	63,159	16,025	7,145	6,526
Mean	175	147	135	130	147	172	571	5,380	2,105	517	230	218
Cfsm	0.343	0.288	0.265	0.255	0.288	0.337	1.12	10.5	4.13	1.01	0.451	0.427
In.	0.40	0.32	0.31	0.29	0.30	0.39	1.25	12.16	4.61	1.17	0.52	0.48
Ac-ft	10,790	8,770	8,310	7,970	8,160	10,550	33,970	330,800	125,300	31,790	14,170	12,940

Calendar year 1957: Max 10,200 Min 105 Mean 1,080 Cfsm 2.12 In. 29.77 Ac-ft 782,200  
Water year 1957-58: Max 8,000 Min 105 Mean 834 Cfsm 1.64 In. 22.20 Ac-ft 603,500

Peak discharge (base, 4,400 cfs).--May 12 (10 p.m.) 8,970 cfs (9.04 ft); May 22 (5 a.m.) 8,160 cfs (8.61 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 31 to Jan. 13, Feb. 4-20, Mar. 8-16.



3585. Middle Fork Flathead River near West Glacier, Mont.

Location.--Lat 48°29'50", long 114°00'30", in SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> sec. 34, T. 32 N., R. 19 W., on left bank three-quarters of a mile downstream from McDonald Creek, 1<sup>1</sup>/<sub>2</sub> miles west of West Glacier (formerly Belton), and 3<sup>1</sup>/<sub>2</sub> miles upstream from mouth.

Drainage area.--1,128 sq mi.

Records available.--October 1939 to September 1958. Prior to October 1947, published as "near Belton."

Gage.--Water-stage recorder. Altitude of gage is 3,130 ft (from river-profile map). Prior to Nov. 22, 1950, staff gage at same site and datum.

Average discharge.--19 years, 2,813 cfs (2,037,000 acre-ft per year).

Extremes.--Maximum discharge during year, 19400 cfs May 13 (gage height, 8.50 ft); minimum daily, 245 cfs Jan. 2.  
1939-58: Maximum discharge, 34,500 cfs May 20, 1954 (gage height, 13.01 ft); minimum, less than 173 cfs Nov. 27, 1952 (stage below intake pipe).

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

Revisions.--WSP 1216: Drainage area.

Rating table, water year 1957-58 (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 28 to June 2)

0.7	215	3.0	2,600
1.0	365	4.0	4,630
1.5	715	6.0	10,300
2.0	1,200	9.0	20,300

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	438	490	354	a255	321	732	863	2,290	11,200	2,580	1,100	628
2	464	490	371	a245	295	683	881	3,070	9,790	2,400	1,070	605
3	539	470	385	a260	270	651	910	4,700	8,590	2,330	1,050	598
4	525	444	360	a290	295	651	940	6,120	8,290	2,310	1,000	575
5	490	432	348	a305	305	659	1,060	6,970	8,020	2,200	970	546
6	484	432	343	a305	300	659	1,100	7,640	7,750	2,120	930	532
7	*464	438	348	a305	280	620	1,140	9,670	7,900	2,120	900	518
8	444	432	350	a300	260	605	1,210	11,500	7,580	2,040	881	525
9	438	407	365	a300	265	598	1,290	13,200	7,440	2,060	872	525
10	425	401	*348	a300	270	582	1,330	16,300	9,240	2,020	872	525
11	419	419	305	a305	300	546	1,350	16,700	8,470	1,960	872	532
12	419	*425	300	a305	280	525	1,380	*17,500	7,580	1,910	872	575
13	419	432	326	a315	260	490	1,540	17,800	6,800	1,870	854	875
14	425	438	332	a320	256	470	2,160	13,600	5,860	1,810	827	854
15	425	432	332	a330	256	458	2,920	12,000	5,530	*1,680	*800	854
16	425	419	316	*360	270	451	3,440	13,100	5,300	1,560	783	783
17	432	407	332	377	280	438	3,690	14,700	5,000	1,500	758	783
18	464	401	348	389	295	470	3,860	14,300	4,840	1,500	758	*792
19	451	389	343	365	310	458	3,730	13,800	4,720	1,500	766	818
20	438	383	343	*338	*321	444	3,830	14,600	*4,540	1,470	792	990
21	432	365	360	316	348	*444	3,810	16,700	4,220	1,450	774	940
22	438	348	360	316	371	484	3,580	17,200	3,920	1,390	740	920
23	425	360	338	332	413	504	*3,260	17,000	3,810	1,360	724	990
24	407	371	321	348	497	553	2,980	16,900	3,810	1,320	724	1,100
25	407	371	326	354	675	628	2,730	16,700	3,620	1,260	707	1,120
26	413	377	365	343	827	691	2,530	16,800	3,320	1,230	699	1,160
27	413	377	332	316	867	740	2,210	12,800	3,210	1,200	675	1,130
28	413	383	365	321	792	774	2,230	*14,500	3,600	1,170	766	1,160
29	419	360	365	321	-	809	2,130	14,300	3,170	1,140	792	1,260
30	425	321	332	326	-----	854	2,100	12,900	2,820	1,140	749	1,290
31	458	-----	316	326	-----	863	-----	11,200	-----	1,120	683	-----
Total	13,678	12,214	10,658	9,904	10,438	18,534	66,314	599,360	179,760	52,740	25,760	24,312
Mean	441	407	344	319	373	598	2,210	12,860	5,992	1,701	831	810
Cfsm	0.391	0.361	0.305	0.283	0.331	0.530	1.96	11.4	5.31	1.51	0.737	0.718
In.	0.45	0.40	0.35	0.33	0.34	0.61	2.19	13.17	5.93	1.74	0.85	0.80
Ac-ft	27,130	24,230	21,140	19,640	20,710	36,780	131,500	792,100	356,500	104,600	51,090	48,220

Calendar year 1957: Max 23,100 Min 300 Mean 2,673 Cfsm 2.37 In. 32.16 Ac-ft 1,935,000  
Water year 1957-58: Max 17,800 Min 245 Mean 2,257 Cfsm 2.00 In. 27.16 Ac-ft 1,634,000

Peak discharge (base, 8,700 cfs)--May 13 (3 to 4 a.m.) 19,400 cfs (8.50 ft); May 22 (9 to 10 a.m.) 17,700 cfs (8.05 ft); June 10 (2:30 p.m.) 9,860 cfs (5.82 ft).

\* Stage measurement made on this day.  
a No gage-height record; discharge estimated on basis of weather records and records for other Flathead River stations.

## 3620. Hungry Horse Reservoir near Hungry Horse, Mont.

Location.--Lat 48°20'30", long 114°00'50", in NE 1/4 sec. 27, T. 30 N., R. 19 W., in block 14 of Hungry Horse Dam, 3 miles southeast of Hungry Horse.

Drainage area.--1,654 sq mi.

Records available.--September 1951 to September 1958.

Gage.--Water-stage recorder equipped with remote indicator in powerhouse. Datum of gage is at mean sea level (levels by Bureau of Reclamation). During construction and prior to May 1, 1953, various types of nonrecording gages were used.

Extremes.--Maximum contents observed during year, 3,448,000 acre-ft Sept. 20, 23-25 (elevation, 3,559.99 ft); minimum observed, 2,049,000 acre-ft Jan. 13, 14 (elevation, 3,491.95 ft).

1951-58: Maximum contents observed, 3,461,000 acre-ft July 3, 4, 1955, Aug. 6, 1956; maximum elevation observed, 3,561.40 ft July 3, 4, 1955; minimum contents observed since normal low operating level reached in May 1952, 607,700 acre-ft Jan. 13, 1953 (elevation, 3,362.50 ft).

Remarks.--Reservoir formed by concrete dam; construction of dam began in 1948, completed in 1952. Storage began Sept. 21, 1951. Capacity, 3,428,000 acre-ft between 3,560 (controlled spillway elevation) and 3,196 ft. Dead storage, 40,140 acre-ft. Normal (operating low level, 3,336 ft for on-site power generation (contents, 445,900 acre-ft exclusive of dead storage). Figures given herein represent usable contents above elevation 3,196 ft. Water is used for power production, flood control, and irrigation.

Cooperation.--Daily elevations furnished by Bureau of Reclamation.

Capacity table, water year 1957-58 (elevation, in feet, and usable contents, in acre-feet)

3,490	2,017,000
3,510	2,368,000
3,530	2,762,000
3,550	3,196,000
3,560	3,428,000

Elevation, in feet, at 11:59 p.m., water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	547.37	535.23	510.38	494.18	492.70	494.35	496.02	505.40	544.54	559.81	559.88	559.87
2	547.05	534.43	509.41	493.51	492.72	494.42	496.16	505.75	545.56	559.81	559.88	559.86
3	546.96	533.58	508.43	492.91	492.74	494.50	496.29	506.36	546.50	559.85	559.86	559.84
4	546.96	532.77	507.40	492.96	492.76	494.57	496.45	507.16	547.35	559.87	559.83	559.85
5	546.96	531.92	506.40	492.98	492.79	494.67	496.62	507.84	548.13	559.87	559.82	559.86
6	546.98	531.06	505.37	492.56	492.82	494.76	496.80	508.33	548.86	559.89	559.84	559.86
7	546.69	530.23	504.65	492.35	492.84	494.81	496.99	508.46	549.79	559.91	559.86	559.86
8	546.42	529.37	504.35	492.17	492.87	494.86	497.19	508.70	550.64	559.88	559.84	559.87
9	546.44	528.51	503.60	491.96	492.92	494.92	497.40	509.18	551.62	559.88	559.84	559.88
10	546.43	527.63	502.80	491.96	492.98	494.97	497.58	510.03	552.94	559.88	559.83	559.87
11	546.45	526.82	502.18	492.00	493.02	495.03	497.76	510.94	554.09	559.88	559.83	559.86
12	546.47	525.96	501.54	492.02	493.03	495.07	497.96	512.52	555.13	559.86	559.84	559.87
13	546.49	525.50	500.82	491.95	493.06	495.11	498.12	514.16	556.05	559.80	559.84	559.95
14	546.51	525.52	500.65	491.95	493.11	495.13	498.56	515.17	556.77	559.87	559.83	559.98
15	546.53	524.90	500.56	492.00	492.15	494.78	499.10	516.17	557.50	559.89	559.82	559.93
16	546.55	524.00	499.69	492.06	493.21	494.52	499.75	517.46	558.00	559.87	559.84	559.90
17	546.57	523.13	499.06	492.10	493.25	494.57	500.41	518.98	558.51	559.83	559.86	559.90
18	546.18	522.22	498.40	492.16	493.30	494.63	501.00	520.49	559.06	559.84	559.87	559.91
19	545.38	521.33	497.91	492.18	493.33	494.68	501.56	522.04	559.45	559.82	559.87	559.97
20	544.63	520.57	497.41	492.20	493.39	494.74	502.15	523.80	559.80	559.82	559.88	559.99
21	543.86	519.68	496.96	492.22	493.44	494.78	502.70	525.87	559.82	559.82	559.88	559.97
22	543.09	518.81	496.61	492.24	493.49	494.85	503.27	528.02	559.82	559.81	559.88	559.96
23	542.26	517.88	496.10	492.33	493.54	494.94	503.45	530.05	559.77	559.81	559.88	559.99
24	541.51	516.95	495.89	492.40	493.65	495.03	503.53	532.13	559.77	559.77	559.88	559.99
25	540.74	516.03	496.00	492.44	493.89	495.13	503.83	534.23	559.85	559.77	559.88	559.99
26	539.94	515.14	496.00	492.47	494.06	495.24	504.08	536.21	559.87	559.82	559.86	559.95
27	539.17	514.20	495.80	492.50	494.18	495.37	504.36	537.95	559.88	559.83	559.82	559.91
28	538.38	513.25	495.61	492.55	494.27	495.50	504.60	539.57	559.88	559.85	559.85	559.89
29	537.60	512.30	495.60	492.60	494.30	495.63	504.83	541.08	559.88	559.83	559.87	559.88
30	536.81	511.33	495.15	492.64	494.33	495.75	505.06	542.34	559.85	559.85	559.87	559.91
31	536.01	510.33	494.45	492.67	494.33	495.89	505.06	543.46	559.88	559.88	559.86	559.91
(†)	2,888	2,393	2,091	2,061	2,088	2,115	2,276	3,049	3,425	3,425	3,425	3,426
(‡)	-255,000	-485,000	-302,000	-30,000	+27,000	+161,000	+773,000	+773,000	+773,000	+773,000	+773,000	+773,000

Calendar year 1957..... † -447,000

Water year 1957-58..... ‡ +283,000

† Usable contents, in thousands of acre-feet, at end of month.

‡ Change in contents, in acre-feet.

Note.--Add 5.000 ft to obtain elevation above mean sea level.

## 3625. South Fork Flathead River near Columbia Falls, Mont.

Location.--Lat 48°21'30", long 114°02'15", in SW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> sec. 16, T. 30 N., R. 19 W., on right bank 1½ miles downstream from Hungry Horse Dam, 3½ miles upstream from mouth, and 7 miles east of Columbia Falls.

Drainage area.--1,663 sq mi.

Records available.--September 1910 to January 1911 (discharge measurements only), February 1911 to April 1928 (fragmentary or incomplete), May 1928 to September 1958. Monthly discharge only for some periods, published in WSP 1316.

Gage.--Water-stage recorder. Datum of gage is 3,040.0 ft above mean sea level (levels by Bureau of Reclamation). September 1910 to September 1916 chain gage and Apr. 23, 1923, to Sept. 30, 1928, water-stage recorder, at site 8 miles downstream at different datum. Oct. 1, 1928, to Sept. 30, 1952, water-stage recorder at site 1½ miles downstream at several different datums.

Average discharge.--30 years (1928-58), 3,370 cfs (2,440,000 acre-ft per year), adjusted for storage.

Extremes.--Maximum discharge during year, 12,100 cfs May 8 (gage height, 11.05 ft); minimum, 135 cfs Mar. 27 (gage height, 2.45 ft); minimum daily, 153 cfs June 18, 1910-16, 1923-58. Maximum discharge observed, 46,200 cfs June 19, 1916 (gage height, 16.6 ft, site and datum then in use), from rating curve extended above 20,000 cfs; minimum observed, 7.3 cfs Sept. 24, 1951 (gage height, 0.52 ft, site and datum then in use); minimum daily, 7.3 cfs Sept. 24, 1951.

Remarks.--Records excellent. Flow regulated since Sept. 21, 1951, by Hungry Horse Reservoir (see preceding page).

Revisions (water years).--WSP 1216: Drainage area. WSP 1316: 1923-24(M), 1926-27(M), 1932(M), 1935-36(M).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

2.5	146	5.0	1,570
3.0	227	7.0	4,020
3.5	480	9.0	7,420
4.0	755	11.0	12,000

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,180	9,480	9,960	2,700	207	173	170	168	3,100	3,210	1,070	186
2	4,270	9,480	10,100	5,880	210	168	173	1,000	1,280	2,800	1,070	646
3	1,560	9,480	10,000	5,660	210	175	180	170	173	2,890	1,090	504
4	551	9,530	10,000	224	204	175	188	160	165	2,710	1,080	400
5	290	9,570	10,100	216	210	168	165	2,240	158	2,790	1,010	409
6	224	9,550	10,100	3,800	199	175	168	5,560	1,020	2,600	634	416
7	*3,620	9,550	7,300	2,000	216	173	173	11,200	464	2,680	557	404
8	3,650	9,570	3,480	2,350	218	168	173	12,000	694	2,930	1,030	488
9	224	9,570	7,400	2,080	218	170	178	12,000	238	2,810	799	400
10	481	9,570	*8,020	512	207	170	173	12,000	165	2,540	851	513
11	233	9,570	5,810	213	216	180	175	12,000	*597	2,470	948	560
12	235	*9,690	6,540	216	210	168	165	8,430	580	2,480	698	921
13	230	9,790	6,950	1,200	213	173	995	*5,060	165	2,260	692	193
14	233	380	2,810	438	216	183	170	5,040	869	1,400	787	188
15	251	6,900	2,820	207	210	3,690	175	3,680	173	*1,670	*650	1,520
16	224	9,780	6,420	*207	202	168	165	2,920	2,140	2,030	378	919
17	218	9,780	6,580	204	169	168	*168	2,960	1,520	2,270	404	*730
18	5,110	9,780	8,660	202	204	165	170	2,820	153	1,650	536	754
19	9,310	9,800	5,160	199	218	168	168	2,910	2,090	1,980	602	202
20	9,310	9,900	4,880	219	*207	168	158	3,030	2,210	1,860	596	204
21	9,350	8,910	4,980	210	210	180	168	3,300	5,280	2,010	541	1,480
22	9,370	9,780	3,740	204	196	175	702	2,710	5,210	1,540	688	1,210
23	9,400	9,850	4,920	213	202	170	183	3,060	5,180	1,330	538	1,180
24	9,370	9,830	2,100	213	204	*170	2,390	2,900	5,080	1,780	524	1,460
25	9,370	9,900	362	216	210	168	165	2,580	3,990	1,120	563	1,480
26	9,370	9,550	362	207	202	175	160	3,140	4,020	800	967	2,030
27	9,400	9,990	2,560	202	199	173	160	3,010	4,160	859	897	1,360
28	9,510	9,990	706	199	202	168	163	3,120	4,860	1,240	188	1,200
29	9,460	9,960	338	218	-	170	163	3,060	3,010	1,330	465	1,150
30	9,460	9,960	5,980	218	-----	191	165	3,160	3,960	1,080	720	816
31	9,490	-----	6,590	218	-----	175	-----	3,040	-----	713	643	-----
Total	147,942	272,770	173,628	31,045	5,819	11,143	8,669	138,508	62,704	61,832	22,016	23,933
Mean	4,772	9,092	5,601	1,001	208	359	289	4,468	2,090	1,995	710	798
Ac-ft	293,400	541,000	344,400	61,580	11,540	22,100	17,190	274,700	124,400	122,600	43,670	47,470
(†)	-255,000	-495,000	-302,000	-30,000	+27,000	+27,000	+161,000	+376,000	+376,000	0	0	+1,000

Adjusted for change in contents in Hungry Horse Reservoir

Mean	625	773	690	514	694	799	2,995	17,040	8,409	1,995	710	815
Cfsm	0.376	0.465	0.415	0.309	0.417	0.480	1.80	10.25	5.06	1.20	0.427	0.490
In.	0.43	0.52	0.48	0.36	0.43	0.55	2.01	11.81	5.64	1.38	0.49	0.55
Ac-ft	19,360	46,000	42,400	31,580	38,540	49,100	178,200	1,048	500,400	122,600	43,670	48,470

Observed

Calendar year 1957: Max	10,700	Min	175	Mean	3,732	Ac-ft	2,702,000
Water year 1957-58: Max	12,000	Min	153	Mean	2,630	Ac-ft	1,904,000

Adjusted

Calendar year 1957: Mean	3,114	Cfsm	1.87	In.	25.43	Ac-ft	1,137,000
Water year 1957-58: Mean	3,021	Cfsm	1.82	In.	24.85	Ac-ft	1,105,000

\* Discharge measurement made on this day.

† Change in contents, in acre-feet, in Hungry Horse Reservoir; furnished by Bureau of Reclamation.

‡ Expressed in thousands.

## 3630. Flathead River at Columbia Falls, Mont.

Location.--Lat 48°21'50", long 114°11'10", in NW¼SE¼ sec. 17, T. 30 N., R. 20 W., on right bank 200 ft downstream from county bridge at Columbia Falls and 5 miles downstream from South Fork.

Drainage area.--4,464 sq mi.

Records available.--May 1922 to September 1923 (fragmentary), June 1928 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 2,978.00 ft above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Nov. 12, 1928, wire-weight gage on bridge 200 ft upstream at datum 0.19 ft higher.

Average discharge.--30 years (1928-58), 9,350 cfs (6,769,000 acre-ft per year), adjusted for storage.

Extremes.--Maximum discharge during year, 44,600 cfs May 11 (gage height, 12.44 ft); minimum, 1,040 cfs Feb. 3 (gage height, 0.28 ft).

1922-23, 1928-58: Maximum discharge, 102,000 cfs May 23, 1948 (gage height, 19.08 ft); minimum, 798 cfs Dec. 8, 1929 (gage height, -0.08 ft).

Maximum stage known, 22.7 ft in June 1894, from floodmarks (discharge, 135,000 cfs, from rating curve extended above 85,000 cfs by logarithmic plotting).

Remarks.--Records excellent. South Fork Flathead River which contributes about one-third of flow completely regulated by Hungry Horse Dam since Sept. 21, 1951 (see p. 228).

Revisions (water years).--WSP 1092: 1923. WSP 1216: Drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

0.3	1,050	4.0	6,700	10.0	29,800
1.0	1,650	6.0	12,200	12.0	41,700
2.0	2,900	8.0	20,000	12.5	45,000

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6,000	11,000	10,900	4,020	1,160	1,980	2,280	5,050	26,100	8,940	3,680	1,870
2	5,130	11,000	11,000	5,820	1,110	1,850	2,340	7,000	22,800	8,300	3,530	2,240
3	3,710	10,900	11,000	6,820	1,050	1,730	2,360	9,140	18,600	8,030	3,600	2,120
4	2,230	10,900	11,000	1,540	1,100	1,750	2,470	12,100	17,000	7,730	3,660	1,980
5	1,800	10,900	11,000	1,260	1,140	1,760	2,770	15,800	16,500	7,550	3,450	*1,900
6	1,690	10,900	11,000	4,320	1,130	1,780	3,000	20,000	16,500	7,310	3,070	1,900
7	4,560	10,900	8,920	5,200	1,110	1,640	3,170	29,000	16,300	7,450	2,840	1,810
8	5,300	10,900	4,760	5,260	1,060	1,610	3,260	33,900	15,700	7,660	3,280	1,880
9	1,890	10,800	8,080	2,940	1,130	1,610	3,460	37,200	15,100	7,550	3,000	1,800
10	1,820	10,800	8,720	1,600	1,090	1,550	3,510	41,800	17,400	7,210	3,000	1,860
11	1,530	10,800	*6,780	1,240	1,130	1,480	3,510	44,000	*17,600	6,950	3,160	1,960
12	1,520	10,900	7,400	1,240	1,130	1,430	3,580	43,400	16,500	6,750	2,870	2,280
13	1,520	*8,150	7,960	2,210	1,170	1,350	4,660	*43,100	14,100	6,480	2,800	1,750
14	1,530	1,990	4,560	1,520	1,160	1,370	5,010	35,600	13,100	5,500	2,900	1,920
15	1,560	7,130	3,960	1,240	1,130	4,490	6,560	29,400	12,100	5,710	2,620	3,060
16	1,550	10,800	6,780	1,250	1,100	4,100	7,730	29,500	12,800	*5,750	2,330	2,830
17	1,560	10,800	7,480	1,280	1,120	1,340	8,340	32,600	12,400	5,770	2,340	2,450
18	5,320	10,800	7,880	1,290	1,150	1,350	8,810	32,500	10,200	5,100	2,430	2,490
19	10,500	10,900	6,560	1,250	1,180	1,360	8,790	31,200	11,600	5,470	2,490	2,080
20	10,500	9,300	5,870	1,210	1,210	1,360	8,470	31,900	11,500	5,310	2,540	2,260
21	10,500	9,810	5,710	1,180	*1,250	1,360	8,630	36,000	13,700	5,400	2,460	3,280
22	10,600	10,600	5,550	1,160	1,260	1,430	8,500	38,000	13,500	4,900	2,480	3,360
23	10,500	10,900	5,840	1,160	1,300	1,470	*7,280	38,400	13,000	4,320	2,350	3,660
24	10,400	10,900	3,440	1,210	1,430	*1,550	*5,580	38,200	12,900	5,160	2,330	3,800
25	10,500	10,900	1,720	1,240	1,830	1,730	6,030	37,800	11,500	4,220	*2,330	3,700
26	10,500	10,500	1,480	1,230	2,280	1,860	5,560	37,800	11,000	3,820	2,720	4,420
27	10,500	10,900	3,180	1,190	2,300	1,980	5,190	35,300	10,900	3,800	2,400	3,820
28	10,600	11,000	2,220	*1,170	2,170	2,090	4,930	33,000	11,800	3,970	1,970	3,520
29	10,600	10,900	1,450	1,180	-	2,170	4,730	32,300	10,200	4,010	2,550	3,640
30	10,600	10,800	5,720	1,180	-----	2,260	4,640	30,300	10,100	4,140	2,530	3,340
31	10,800	-----	7,360	1,180	-----	2,310	-----	26,600	-----	3,520	2,430	-----
Total	187,320	307,840	205,290	61,590	36,380	57,060	157,750	947,890	432,300	183,760	85,990	78,990
Mean	6,043	10,260	6,622	1,987	1,299	1,841	5,258	30,580	14,410	5,928	2,774	2,633
Ac-ft	371,500	610,600	407,200	122,200	72,160	113,200	312,900	*1,880	857,500	364,500	170,600	156,700
(†)	-25,000	-495,000	-302,000	-30,000	+27,000	+27,000	+161,000	+773,000	+576,000	0	+0	+1,000

Adjusted for change in contents in Hungry Horse Reservoir

	Mean	1,943	1,711	1,499	1,785	2,280	7,964	43,150	20,730	5,928	2,774	2,650
Cfs/m	0.425	0.435	0.383	0.336	0.400	0.511	1.78	9.67	4.64	1.33	0.621	0.594
In.	0.49	0.49	0.44	0.39	0.42	0.59	1.99	11.14	5.18	1.53	0.72	0.66
Ac-ft	116,500	115,600	105,200	92,200	99,160	140,200	473,900	*2,653	*1,234	364,500	170,600	157,700

## Observed

Calendar year 1957: Max	47,500	Min	1,300	Mean	9,507	Ac-ft	6,883,000
Water year 1957-58: Max	44,000	Min	1,050	Mean	7,513	Ac-ft	5,439,000

## Adjusted

Calendar year 1957: Mean	8,890	Cfs/m	1.99	In.	27.03	Ac-ft	6,436,000
Water year 1957-58: Mean	7,904	Cfs/m	1.77	In.	24.04	Ac-ft	5,772,000

\* Discharge measurement made on this day.

† Change in contents, in acre-feet, in Hungry horse Reservoir, furnished by Bureau of Reclamation.

‡ Expressed in thousands.

3700. Swan River near Bigfork, Mont.

Location.--Lat 48°01'30", long 113°58'40", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 11, T. 26 N., R. 19 W., on left bank at outlet of Swan Lake, about 1,000 ft downstream from Johnson Creek and 5 miles southeast of Bigfork.

Drainage area.--671 sq mi.

Records available.--October 1910 to May 1911 (gage heights only), April 1922 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 3,062.6 ft above mean sea level (river-profile survey). Oct. 10, 1910, to May 22, 1911, staff gage at site 10 miles upstream at different datum. Apr. 28, 1922, to Oct. 14, 1930, staff gage at site 800 ft upstream at datum 1.9 ft higher.

Average discharge.--36 years, 1,095 cfs (792,700 acre-ft per year).

Extremes.--Maximum discharge during year, 5,920 cfs May 27 (gage height, 6.05 ft); minimum, 260 cfs Oct. 1 (gage height, 2.00 ft).  
1922-58: Maximum discharge, 8,400 cfs May 24, 1948 (gage height, 7.12 ft, from graph based on gage readings); minimum observed, 193 cfs Jan. 26-29, 1930 (gage height, 0.04 ft, site and datum then in use).

Remarks.--Records excellent. Diversions for irrigation of about 360 acres above station.

Revisions (water years).--WSP 1216: Drainage area. WSP 1246: 1923-24(M), 1930.

Rating table, water year 1957-58 (gage height, in feet,  
and discharge, in cubic feet per second)

2.1	310
2.5	560
3.0	1,020
4.0	2,290
5.0	3,920
6.5	6,970

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	332	401	389	360	360	490	712	980	4,780	1,550	667	419
2	343	407	389	338	354	484	739	960	4,480	1,460	540	407
3	*354	401	395	332	343	470	765	1,000	4,180	1,380	632	407
4	360	395	401	332	343	464	766	1,090	3,780	1,320	608	401
5	371	383	389	338	348	470	811	1,230	3,380	1,260	600	401
6	377	371	383	338	354	470	860	1,380	3,120	1,210	592	389
7	365	365	389	338	348	470	880	1,610	3,020	1,160	568	389
8	365	365	395	332	354	451	920	1,860	3,100	1,150	553	383
9	360	360	389	326	348	444	960	2,130	3,150	1,140	546	377
10	360	354	389	332	354	444	980	2,500	3,280	1,110	539	383
11	360	354	371	332	360	432	970	2,910	3,520	1,100	532	371
12	360	360	*360	332	365	425	980	3,350	*3,550	1,050	518	371
13	365	371	380	338	365	407	990	*3,850	3,380	990	504	383
14	360	*389	365	338	365	401	1,020	4,060	3,210	970	497	389
15	360	419	365	343	365	389	1,130	3,810	3,010	940	484	395
16	365	425	360	343	377	383	*1,300	3,450	2,810	*910	477	413
17	360	432	377	343	383	383	1,490	3,350	2,650	880	470	413
18	360	432	389	354	377	377	1,640	3,420	2,500	840	458	419
19	360	419	401	354	371	377	1,770	3,550	2,410	811	458	432
20	360	413	389	348	363	383	1,820	3,670	2,340	811	458	432
21	360	407	407	338	*389	383	1,870	3,960	2,260	793	*451	451
22	365	401	413	338	395	401	1,850	4,440	2,140	775	432	458
23	348	389	419	343	395	425	1,780	4,920	2,000	739	425	490
24	348	377	407	354	413	458	1,650	5,120	1,940	730	425	546
25	354	395	407	354	432	*490	1,500	5,420	1,930	712	413	560
26	360	389	407	354	470	532	1,380	5,840	1,860	694	401	576
27	371	395	401	354	484	576	1,260	5,820	1,900	685	389	576
28	383	407	401	*354	490	608	1,170	*5,650	1,730	667	395	568
29	407	407	395	360	-----	640	1,100	5,480	1,690	658	407	553
30	389	407	395	365	-----	676	1,030	5,300	1,610	658	413	546
31	395	-----	395	360	-----	694	-----	5,080	-----	676	413	-----
Total	11,259	11,790	12,092	10,665	10,685	14,497	36,094	107,270	84,590	29,829	15,365	13,298
Mean	363	393	390	344	382	468	1,203	3,460	2,820	962	496	443
Cfs/m	0.541	0.586	0.581	0.513	0.569	0.697	1.79	5.16	4.20	1.43	0.739	0.660
In.	0.63	0.45	0.67	0.59	0.59	0.90	2.00	5.95	1.59	1.85	0.95	0.74
Ac-ft	22,330	23,390	23,980	21,150	21,190	28,750	71,590	212,800	167,800	59,160	30,480	26,380
Calendar year 1957: Max	4,900	Min	332	Mean	995	Cfs/m	1.48	In.	20.11	Ac-ft	720,000	
water year 1957-58: Max	5,840	Min	326	Mean	979	Cfs/m	1.46	In.	19.80	Ac-ft	709,000	

\* Discharge measurement made on this day.

## 3710. Flathead Lake at Somers, Mont.

Location.--Lat 48°04'30", long 114°13'30", in SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 26, T. 27 N., R. 21 W., at steamboat dock at Somers.

Drainage area.--7,086 sq mi.

Records available.--April 1922 to September 1958.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (Somers datum). July 1 to Dec. 12, 1923, staff gage at same site and datum.

Extremes.--Maximum contents during year, 1,824,000 acre-ft Oct. 1 (elevation, 2,893.26 ft); minimum, 571,100 acre-ft Apr. 4 (elevation, 2,882.99 ft).  
1922-58: Maximum contents, 2,208,000 acre-ft June 19, 1933 (elevation, 2,896.26 ft); minimum, 347,000 acre-ft Dec. 5, 1936 (elevation, 2,881.07 ft).

Remarks.--Since April 1938 The Montana Power Co. has stored water in Flathead Lake by regulation at Kerr Dam, 4 miles below lake outlet. Water is used for power development. Figures given herein are usable contents above natural outlet of lake (elevation, 2,878 ft).

Capacity table, water year 1957-58 (elevation, in feet,  
and usable contents, in acre-feet)

2,883	572,300
2,885	810,100
2,887	1,051,000
2,889	1,294,000
2,891	1,541,000
2,893	1,791,000
2,894	1,917,000

Elevation, in feet, at 12 p.m., water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	93.00	91.83	90.99	88.76	86.78	85.46	83.04	84.46	92.66	92.93	92.69	92.86
2	92.95	91.80	90.93	88.71	86.78	85.40	83.03	84.45	92.60	92.86	92.71	92.82
3	92.90	91.76	90.88	88.70	86.77	85.31	83.00	84.57	92.62	92.84	92.76	92.70
4	92.83	91.76	90.90	88.62	86.72	85.24	83.06	84.79	92.63	92.88	92.81	92.65
5	92.78	91.72	90.84	88.52	86.67	85.12	83.04	84.95	92.70	92.95	92.81	92.56
6	92.73	91.70	90.82	88.46	86.66	85.00	83.03	85.13	92.85	92.90	92.86	92.50
7	92.62	91.69	90.77	88.36	86.61	84.88	83.05	85.44	92.96	92.90	92.88	92.47
8	92.60	91.64	90.64	88.23	86.59	84.76	83.06	85.77	93.06	92.92	92.91	92.43
9	92.52	91.62	90.48	88.19	86.58	84.66	83.07	86.17	93.17	92.88	92.91	92.32
10	92.43	91.61	90.45	88.10	86.54	84.53	83.07	86.59	92.97	92.86	92.92	92.23
11	92.35	91.61	90.37	88.01	86.47	84.33	83.07	87.16	92.89	92.85	92.93	92.15
12	92.25	91.62	90.29	87.96	86.48	84.16	83.07	87.76	92.83	92.92	92.93	92.15
13	92.21	91.62	90.20	87.90	86.45	84.02	83.09	88.14	92.87	92.89	92.92	92.09
14	92.10	91.51	90.09	87.79	86.42	83.88	83.11	88.49	92.99	92.80	92.89	91.96
15	91.99	91.42	89.91	87.72	86.35	83.78	83.12	88.70	92.98	92.77	92.88	91.90
16	91.90	91.38	89.83	87.60	86.35	83.80	83.23	88.86	92.96	92.68	92.88	91.87
17	91.80	91.36	89.72	87.52	86.26	83.74	83.40	89.10	92.92	92.66	92.88	91.83
18	91.70	91.34	89.70	87.48	86.16	83.64	83.43	89.55	92.83	92.61	92.92	91.79
19	91.71	91.34	89.62	87.46	86.06	83.57	83.53	90.02	92.84	92.58	92.85	91.73
20	91.77	91.29	89.61	87.35	85.99	83.50	83.65	90.50	92.84	92.61	92.84	91.66
21	91.73	91.23	89.43	87.30	85.90	83.46	83.72	91.01	92.91	92.64	92.88	91.67
22	91.73	91.20	89.40	87.19	85.88	83.39	83.75	91.59	92.92	92.66	92.83	91.63
23	91.78	91.17	89.37	87.15	85.90	83.36	83.85	91.99	92.87	92.60	92.85	91.63
24	91.79	91.11	89.30	87.07	85.81	83.33	83.95	92.05	92.89	92.65	92.86	91.64
25	91.79	91.11	89.29	87.04	85.75	83.29	84.00	92.05	92.87	92.66	92.88	91.59
26	91.80	91.06	89.10	87.03	85.65	83.24	84.03	92.06	92.86	92.65	92.85	91.55
27	91.81	91.03	89.02	86.97	85.60	83.19	84.15	92.08	92.88	92.67	92.79	91.55
28	91.84	91.01	88.95	86.91	85.52	83.17	84.23	92.11	92.93	92.64	92.82	91.55
29	91.78	90.94	88.85	86.90	-	83.13	84.22	92.42	92.89	92.70	92.85	91.52
30	91.83	90.98	88.80	86.85	-	84.10	84.26	92.53	92.90	92.70	92.87	91.49
31	91.82	-	88.78	86.84	-	83.09	-	92.62	-	92.68	92.87	-
(†)	+1,643	+1,539	+1,267	+1,032	872,600	583,000	721,700	+1,743	+1,778	+1,751	+1,775	+1,602
(‡)	-136,000	-104,000	-72,000	-25,000	-159,400	-289,600	-138,700	-102,300	+35,000	-27,000	+24,000	-173,000

Calendar year 1957..... ‡ +141,000

Water year 1957-58..... ‡ -179,000

† Contents, in acre-feet, at end of month, above 2,878 ft.

‡ Change in contents, in acre-feet.

†† Expressed in thousands.

Note.--Add 2,800 ft to obtain elevation above mean sea level.

3720. Flathead River near Polson, Mont.

Location.--Lat 47°40'50", long 114°15'10", in NW<sup>1</sup>SE<sup>1</sup> sec. 11, T. 22 N., R. 21 W., on left bank half a mile downstream from Kerr Dam, 4 miles west of Polson, and 5 miles downstream from Flathead Lake.

Drainage area.--7,096 sq mi.

Records available.--July 1907 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 2,693.70 ft above mean sea level (levels by The Montana Power Co.). Prior to Oct. 1, 1941, staff and chain gages or water-stage recorder at several sites near highway bridge at old site of Michell's ferry 6 miles downstream from present site, all at datum 2,629.20 ft above mean sea level (river-profile survey).

Average discharge.--51 years, 11,450 cfs (8,289,000 acre-ft per year), adjusted since Oct. 1, 1952, for change in contents in Hungry Horse Reservoir and Flathead Lake.

Extremes.--Maximum discharge during year, 61,600 cfs May 26 (gage height, 17.45 ft); minimum observed, 82 cfs Aug. 30 (gage height, -1.64 ft), result of discharge measurement. 1907-58: Maximum discharge, 82,800 cfs May 29, 1928 (gage height, 17.2 ft, site and datum then in use); minimum, probably less than 5 cfs Apr. 13, 1938; minimum daily, 32 cfs Apr. 12, 1938.

Remarks.--Records excellent. Diversion above station for irrigation of about 10,000 acres. Flathead project pumps can divert up to 12,000 acre-ft per month when required for irrigation of lands downstream from station. Flow regulated by Flathead Lake (Kerr Dam) since April 1938 (see p. 232) and Hungry Horse Reservoir since September 1951 (see p. 228).

Revisions (water years).--WSP 652: 1926. WSP 752: 1932. WSP 1182: 1948. WSP 1216: Drainage area. WSP 1246: 1928(M).

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6,650	11,900	12,900	5,000	2,880	6,670	5,510	6,320	30,700	9,160	2,700	1,960
2	6,130	13,400	12,700	9,690	2,150	4,880	5,190	6,610	34,400	13,800	1,620	2,010
3	7,310	13,200	13,600	10,000	3,500	9,960	5,040	4,220	24,400	12,900	1,290	5,000
4	8,120	12,200	13,800	8,760	4,240	9,760	5,210	2,660	21,300	7,610	2,070	7,280
5	6,280	13,100	14,000	7,080	4,880	10,100	5,480	*7,550	16,900	6,040	1,530	7,130
6	5,100	13,300	14,000	9,250	3,540	10,200	3,020	6,510	16,300	9,380	1,550	4,770
7	7,920	13,600	14,000	8,180	4,540	10,300	6,300	9,300	14,500	11,300	1,430	4,800
8	8,140	13,500	14,000	9,220	5,420	10,800	5,220	14,000	15,200	11,100	1,960	6,460
9	8,250	13,000	13,800	9,260	3,280	5,910	5,120	15,300	*19,100	11,100	1,820	7,800
10	8,600	13,100	14,100	8,870	4,600	10,700	5,190	17,400	32,300	10,600	1,760	6,840
11	8,370	11,200	14,000	8,820	4,450	9,820	5,300	18,500	26,100	*9,990	3,110	6,750
12	7,380	11,900	14,100	5,060	4,240	9,450	5,480	21,100	24,800	5,200	3,780	6,970
13	6,280	12,000	14,000	9,040	4,640	8,550	5,400	23,000	18,300	4,930	3,660	5,470
14	8,640	10,700	14,100	8,910	4,270	8,370	5,160	24,800	16,100	12,100	3,800	5,500
15	8,440	11,700	14,100	8,660	6,170	8,020	5,130	25,800	16,100	10,400	3,560	5,890
16	8,320	13,200	*13,700	8,880	3,440	4,180	5,220	24,900	17,400	11,200	2,960	6,180
17	9,440	12,900	13,500	8,530	8,520	8,780	5,960	22,000	20,800	9,400	2,040	5,700
18	9,900	*12,100	13,500	5,040	8,060	7,380	6,000	11,000	18,100	10,100	*2,760	5,480
19	8,410	12,600	13,600	2,600	8,660	7,060	5,160	8,550	17,000	9,180	2,520	5,700
20	7,380	13,400	13,600	9,220	7,660	6,960	2,530	8,300	14,800	2,900	2,490	4,240
21	9,980	13,800	12,700	*6,980	7,500	6,360	7,360	8,480	13,100	5,700	2,460	3,420
22	11,300	13,300	5,440	6,810	3,080	5,980	7,620	9,330	15,800	5,350	3,160	6,540
23	11,700	13,900	8,980	7,000	1,530	4,340	7,860	23,100	17,500	4,900	2,120	7,820
24	*10,900	14,100	9,740	6,740	*8,510	7,150	7,420	41,900	16,500	4,580	1,890	5,950
25	11,300	14,000	6,250	3,060	9,060	6,020	7,380	46,100	16,500	5,030	3,370	4,860
26	11,400	13,900	10,900	1,860	9,460	5,930	4,070	45,100	14,400	4,800	3,500	5,000
27	11,200	13,500	9,420	6,710	9,380	6,040	2,560	47,700	12,800	2,900	2,490	4,580
28	10,700	13,500	8,840	6,640	8,280	5,800	7,270	36,200	12,600	5,020	2,210	2,100
29	11,200	13,000	5,820	5,430	-	5,690	5,940	20,900	12,400	5,450	1,980	7,000
30	11,000	12,600	8,830	3,150	-----	5,440	5,920	29,800	11,800	5,680	*82	6,900
31	11,400	-----	9,240	3,720	-----	5,080	-----	51,600	-----	4,750	653	-----
Total	277,120	387,600	371,240	218,550	156,040	231,470	166,020	618,050	558,000	242,410	72,425	168,900
Mean	8,939	12,920	11,980	7,044	5,573	7,467	5,534	19,940	18,600	7,820	2,336	5,630
Ac-ft	549,700	768,800	736,300	433,100	309,500	459,100	329,300	*1,226	*1,107	480,800	143,700	335,000
(+)	-393,000	-599,000	-574,000	-265,000	-132,400	-262,600	+299,700	*41,794.3	+411,000	-27,000	+24,000	-172,000

Adjusted for change in contents in Hungry Horse Reservoir and Flathead Lake

Mean	2,548	2,854	2,640	2,734	3,189	3,196	10,570	49,120	25,510	7,380	2,727	2,739
Cfs/m	0.359	0.402	0.372	0.585	0.449	0.450	1.49	6.92	3.59	1.04	0.384	0.386
In.	0.41	0.45	0.43	0.46	0.47	0.52	1.66	7.98	4.01	1.20	0.44	0.43
Ac-ft	156,700	169,800	162,300	168,100	177,100	196,500	629,000	*3,020	*1,518	453,800	167,700	163,000

Observed

Calendar year 1957: Max	42,800	Min	2,100	Mean	10,930	Ac-ft	7,917,000
Water year 1957-58: Max	47,700	Min	82	Mean	9,500	Ac-ft	6,878,000

Adjusted

Calendar year 1957: Mean	10,510	Cfs/m	1.48	In.	20.11	Ac-ft	3,837,000
Water year 1957-58: Mean	9,845	Cfs/m	1.36	In.	18.44	Ac-ft	3,520,000

\* Discharge measurement made on this day.

† Change in contents, in acre-feet, in Hungry Horse Reservoir (furnished by Bureau of Reclamation) and in Flathead Lake (furnished by The Montana Power Co.).

\* Expressed in thousands.

3890. Clark Fork near Plains, Mont.

Location.--Lat 47°25'50", long 114°51'20", in SW $\frac{1}{4}$  sec. 1, T. 19 N., R. 26 W., on right bank 2 miles southeast of Plains and 6 miles downstream from Flathead River.

Drainage area.--19,958 sq mi.

Records available.--October 1910 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 2,449.34 ft above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Nov. 28, 1911, wire-weight gage at site 50 ft upstream at same datum.

Average discharge.--48 years, 19,350 cfs (14,010,000 acre-ft per year).

Extremes.--Maximum discharge during year, 95,200 cfs May 26 (gage height, 14.95 ft); minimum, 3,400 cfs Sept. 2 (gage height, 2.70 ft, from partly estimated gage-height record). 1910-58: Maximum discharge, 134,000 cfs June 5, 1948 (gage height, 19.17 ft); minimum, 3,200 cfs Feb. 8, 1936, Dec. 10, 1940; minimum gage height, that of Sept. 2, 1958.

Remarks.--Records excellent. Flow partly regulated by Flathead Lake (see p. 232) and by Hungry Horse Reservoir (see p. 228). Diversions for irrigation of about 335,000 acres above station.

Revisions.--WSP 1246: Drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

					2.8	3,600	8.0	28,500				
					3.5	5,760	11.0	53,300				
					5.0	12,100	15.0	95,700				
Discharge, in cubic feet per second, water year October 1957 to September 1958												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11,900	15,600	16,200	12,000	7,000	12,800	10,200	13,800	62,100	25,600	9,560	*3,650
2	10,600	16,500	16,000	8,260	6,440	11,100	10,400	14,500	63,600	24,400	7,720	4,000
3	9,820	17,200	16,500	11,700	5,530	9,060	10,100	15,400	58,800	28,500	6,360	4,880
4	11,200	16,800	17,000	12,500	6,280	13,300	10,200	14,400	48,000	26,400	5,920	9,700
5	12,000	16,400	17,100	11,000	7,250	13,500	10,400	14,400	45,000	21,800	5,880	10,300
6	10,400	17,100	17,200	9,860	8,140	14,000	10,600	19,700	41,400	19,700	6,040	9,900
7	9,350	17,100	17,200	11,800	7,090	14,000	8,600	21,700	39,000	22,900	5,760	7,760
8	11,800	17,300	17,200	11,900	7,720	14,300	11,200	30,400	39,000	24,500	5,420	7,420
9	12,400	17,000	17,200	12,100	8,770	14,500	10,700	58,300	40,000	24,200	5,800	9,060
10	12,400	17,100	17,200	12,100	7,300	10,300	10,700	42,500	52,200	23,600	5,840	10,600
11	12,600	16,000	17,200	11,900	7,420	13,900	10,700	47,100	63,700	22,700	5,650	9,820
12	12,600	15,200	17,000	11,200	7,670	13,400	10,700	52,700	53,900	21,100	6,400	9,480
13	11,700	15,700	17,000	8,720	7,760	13,000	10,700	59,000	53,900	16,600	7,460	9,860
14	10,400	15,400	17,000	11,800	8,050	12,300	11,200	*60,200	45,500	15,500	7,510	8,430
15	12,200	15,000	17,000	12,000	7,760	11,800	11,400	67,200	41,000	21,900	7,510	8,300
16	12,500	16,200	17,100	12,000	9,520	11,400	12,200	55,700	40,600	20,500	7,460	9,020
17	12,400	17,100	16,800	11,900	7,340	8,350	13,200	54,700	40,000	20,200	6,720	9,140
18	13,400	16,200	16,700	12,100	11,400	11,500	15,000	51,800	*41,900	18,500	6,040	8,770
19	13,800	16,000	16,800	8,770	11,700	10,800	15,700	44,900	39,400	19,300	6,000	8,770
20	12,400	16,400	*16,900	6,400	12,200	10,600	16,100	45,100	39,000	18,400	6,240	8,810
21	11,500	17,100	17,000	11,500	11,700	10,400	15,000	48,200	34,200	12,200	5,840	7,340
22	*14,100	17,200	15,300	10,300	11,400	10,100	16,600	52,300	32,200	12,900	5,960	6,720
23	15,600	16,700	9,520	10,000	7,590	9,480	19,000	55,700	34,400	13,400	6,400	9,770
24	15,200	17,300	12,200	10,200	6,400	8,560	15,600	79,800	34,700	12,700	6,040	11,300
25	15,000	17,500	13,300	10,100	12,000	11,000	17,400	92,200	34,400	12,200	5,340	9,650
26	15,400	17,600	9,900	6,920	13,800	10,700	16,800	94,200	37,400	12,200	6,160	8,680
27	15,600	*17,200	13,700	5,680	*14,000	*11,000	13,200	*33,000	35,400	12,200	6,720	8,640
28	15,200	17,100	12,900	9,140	14,000	10,900	11,600	92,800	33,300	10,200	6,040	8,260
29	15,200	16,900	12,200	9,770	-	10,800	*15,200	68,700	28,600	11,700	5,530	6,360
30	15,700	16,400	9,690	8,810	-----	10,700	14,100	61,400	27,900	*10,600	*5,570	9,750
31	15,300	-----	11,800	6,600	-----	10,500	-----	66,700	-----	10,300	4,680	-----
Total	399,670	498,300	475,910	319,030	253,230	358,050	389,500	*1,558.3	*1,275.5	566,700	195,570	254,120
Mean	12,890	16,610	16,350	10,290	9,044	11,550	12,980	50,270	42,520	18,280	6,309	8,471
Ac-ft	792,700	988,400	944,000	632,800	502,300	710,200	772,600	*35,091	*2,530	*1,124	387,900	504,000
Calendar year 1957: Max 85,800 Min 5,080 Mean 19,300 Ac-ft 13,970,000												
Water year 1957-58: Max 94,200 Min 3,650 Mean 17,930 Ac-ft 12,980,000												

\* Discharge measurement made on this day.

† Expressed in thousands.



3895. Thompson River near Thompson Falls, Mont.

Location.--Lat 47°35'35", long 115°13'40", in NE $\frac{1}{4}$  sec. 7, T. 21 N., R. 28 W., on right bank 1 mile upstream from mouth and 6 miles east of Thompson Falls.

Drainage area.--642 sq mi.

Records available.--October 1911 to September 1916 (occasional gage heights, discharges, and discharge measurements), April 1956 to September 1958. Records for January and February 1911, published in WSP 916, have been found to be in error and should not be used.

Gage.--Water-stage recorder. Altitude of gage is 2,410 ft (from topographic map). October 1911 to September 1916, staff gage at site a quarter of a mile upstream at different datum.

Extremes.--Maximum discharge during year, 2,090 cfs May 13 (gage height, 4.72 ft); minimum, 89 cfs Jan. 1 (gage height, 1.30 ft).  
1956-58: Maximum discharge, 4,960 cfs May 21, 1956 (gage height, 7.77 ft); minimum, that of Jan. 1, 1958; minimum gage height recorded, 1.29 ft Jan. 17, 1957.  
Flood in May-June 1948 reached a discharge of 6,190 cfs, by slope-area measurement at site a quarter of a mile downstream.

Remarks.--Records good.

Cooperation.--Water-stage-recorder graph and 1 discharge measurement furnished by Washington Water Power Co.

Revisions.--See Records available.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.4	95	3.0	800
1.6	135	4.0	1,470
2.0	275	5.0	2,320

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	165	210	176	b100	156	235	293	460	920	324	207	*156
2	168	200	176	b125	153	224	298	515	824	*320	200	150
3	190	190	168	165	153	221	302	620	776	342	204	150
4	200	179	168	156	156	218	311	728	716	329	196	147
5	190	179	165	150	150	214	320	788	658	311	196	147
6	186	186	168	153	147	204	316	890	630	306	190	144
7	182	182	165	147	150	193	329	1,020	614	306	190	144
8	182	176	168	138	153	196	334	1,170	603	302	186	141
9	176	172	165	156	150	193	338	1,400	614	329	186	138
10	172	172	165	153	150	182	329	1,620	630	320	182	138
11	172	179	128	153	150	179	316	1,720	598	298	182	141
12	168	176	176	156	153	168	311	1,870	586	275	179	139
13	168	166	165	159	156	162	329	1,890	559	267	176	141
14	168	190	165	156	156	162	410	1,570	521	253	172	144
15	165	182	159	156	150	168	485	*1,580	521	259	168	144
16	162	182	162	172	156	165	542	1,430	500	255	165	141
17	172	176	168	172	159	156	581	1,570	470	247	162	141
18	176	172	176	172	159	162	598	1,620	*445	247	162	144
19	172	176	172	168	168	159	576	1,620	430	251	159	156
20	165	168	*182	165	176	159	652	1,730	420	243	156	150
21	165	144	193	162	196	165	728	1,850	400	235	156	153
22	*186	162	186	162	214	176	710	1,850	385	232	156	147
23	176	168	168	159	235	193	652	1,770	365	224	156	156
24	168	172	168	*172	255	210	603	*1,710	400	221	153	159
25	179	176	176	168	275	275	559	1,600	415	221	153	159
26	196	179	193	162	298	311	542	1,490	380	218	150	156
27	207	*176	186	159	*275	*305	510	1,400	356	218	150	153
28	210	172	182	165	259	298	480	1,380	352	214	150	150
29	204	153	182	165	-	288	*455	1,230	342	214	159	144
30	200	150	176	165	-----	293	445	1,080	329	*224	165	147
31	214	-----	114	162	-----	298	-----	966	-----	214	159	-----
Total	5,604	5,285	5,261	4,873	5,108	6,533	13,654	42,037	15,759	8,219	5,325	4,419
Mean	181	176	170	157	182	211	455	1,356	525	265	172	147
Cfs/m	0.282	0.274	0.265	0.245	0.283	0.329	0.709	2.11	0.818	0.413	0.268	0.229
In.	0.32	0.31	0.30	0.28	0.30	0.38	0.79	2.44	0.91	0.48	0.31	0.26
Ac-ft	11,120	10,480	10,440	9,670	10,130	12,960	27,080	83,580	31,260	16,300	10,560	8,760

Calendar year 1957: Max 2,930 Min 110 Mean 475 Cfs/m 0.740 In. 10.03 Ac-ft 343,700  
Water year 1957-58: Max 1,970 Min 100 Mean 334 Cfs/m 0.520 In. 7.08 Ac-ft 242,100

Peak discharge (base, 2,000 cfs).--May 13 (12:30 a.m.), 2,090 cfs (4.72 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

## 3907. Prospect Creek at Thompson Falls, Mont.

Location.--Lat 47°35'15" long 115°21'20", in lot 12, SE<sup>1</sup>SE<sup>1</sup>SE<sup>1</sup> sec. 7, T. 21 N., R. 29 W., on right bank 500 ft downstream from Dry Creek, half a mile upstream from mouth, and half a mile south of Thompson Falls.

Drainage area.--182 sq mi.

Records available.--April 1956 to September 1958. October 1911 to September 1916 (fragmentary) at site 500 ft upstream, records not equivalent owing to inflow.

Gage.--Water-stage recorder. Altitude of gage is 2,400 ft (from topographic map).

Extremes.--Maximum discharge during year, 1,530 cfs May 10 (gage height, 5.65 ft); minimum, 36 cfs Jan. 1 (gage height, 0.69 ft).

1956-58: Maximum discharge, 2,860 cfs May 21, 1956 (gage height, 7.60 ft); minimum, that of Jan. 1, 1958.

Flood in May-June 1948 reached a discharge of 2,800 cfs, from contracted opening measurement of peak flow at site above Dry Creek 500 ft upstream.

Remarks.--Records good.

Cooperation.--Water-stage-recorder graph furnished by Washington Water Power Co.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

0.7	37	3.0	380
1.0	59	4.0	690
1.5	112	5.0	1,160
2.0	177	6.0	1,760

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	48	43	43	48	243	202	326	517	161	92	*63
2	57	48	43	43	48	225	205	415	472	159	91	82
3	59	48	42	43	48	205	207	550	450	164	89	62
4	57	48	42	43	49	191	210	644	398	154	87	61
5	56	47	41	43	49	183	210	680	370	149	86	60
6	55	47	43	43	50	171	210	718	352	146	85	59
7	55	47	43	43	50	162	217	855	352	142	82	58
8	54	46	43	43	50	155	221	985	352	146	82	57
9	53	46	42	43	50	148	224	1,250	338	143	81	57
10	53	45	40	43	52	143	219	1,430	310	136	80	57
11	52	45	40	43	52	138	212	1,370	289	132	78	56
12	52	45	40	43	53	134	210	1,420	306	130	77	55
13	52	46	40	44	54	129	226	1,090	277	126	76	55
14	52	46	42	43	55	125	302	819	259	125	75	55
15	51	45	41	44	55	123	400	*745	245	123	74	54
16	50	45	41	45	55	119	463	860	232	119	73	53
17	53	45	44	45	56	117	544	1,020	223	117	72	53
18	51	44	45	45	57	113	630	1,070	*212	118	72	53
19	50	44	44	45	58	112	596	1,090	202	116	71	55
20	50	43	*45	45	60	111	652	1,210	195	112	70	53
21	50	43	49	44	64	111	686	1,300	185	110	70	53
22	*57	43	47	44	65	113	634	1,330	177	106	69	52
23	52	43	45	45	75	114	535	1,280	170	105	69	53
24	50	43	45	*47	113	120	460	*1,220	217	104	68	51
25	50	43	45	47	148	129	408	1,160	207	101	67	53
26	53	44	50	46	217	136	375	1,060	188	99	66	50
27	51	*43	47	45	*285	*174	342	965	180	98	66	50
28	50	43	46	46	265	196	319	866	177	96	66	49
29	48	42	46	48	-	198	300	778	171	101	67	48
30	49	42	45	48	-----	203	*295	669	166	*98	66	48
31	50	-----	43	48	-----	203	-----	578	-----	94	54	-----
Total	1,628	1,347	1,352	1,380	2,281	4,742	10,712	29,768	8,149	3,830	2,331	1,645
Mean	52.5	44.9	43.6	44.5	81.5	153	357	960	272	124	75.2	54.8
Cfsm	0.298	0.247	0.240	0.245	0.448	0.841	1.96	5.27	1.49	0.681	0.413	0.301
In.	0.33	0.28	0.28	0.28	0.47	0.97	2.19	6.08	1.67	0.78	0.48	0.34
Ac-ft	3,230	2,670	2,680	2,740	4,520	9,410	21,250	59,040	16,160	7,600	4,620	3,260

Calendar year 1957: Max 1,830 Min 40 Mean 248 Cfsm 1.36 In. 18.47 Ac-ft 179,200  
 Water year 1957-58: Max 1,430 Min 40 Mean 189 Cfsm 1.04 In. 14.15 Ac-ft 137,200

Peak discharge (base, 1,000 cfs).--May 10 (7:30 a.m.) 1,530 cfs (5.65 ft); May 22 (6 a.m.) 1,390 cfs (5.42 ft).

\* Discharge measurement made on this day.

3910. Clark Fork at Thompson Falls, Mont.

Location.--Lat 47°35'50", long 115°21'50", in SE<sup>1</sup>/<sub>4</sub> sec. 7, T. 21 N., R. 29 W., on right bank a quarter of a mile downstream from The Montana Power Co. dam, a quarter of a mile downstream from Prospect Creek, and half a mile west of Thompson Falls.

Drainage area.--21,113 sq mi.

Records available.--October 1951 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 2,340 ft (from topographic map).

Average discharge.--7 years, 21,080 cfs (15,260,000 acre-ft per year).

Extremes.--Maximum discharge during year, 95,400 cfs May 25 (gage height, 51.39 ft); minimum, 495 cfs Sept. 1, 2 (gage height, 29.03 ft, by levels, stage below intake pipe).

1951-58: Maximum discharge, 109,000 cfs May 26, 1956 (gage height, 53.21 ft); minimum, that of Sept. 1, 2, 1958.

Flood of May 31, 1948, reached a stage of 58.4 ft, from floodmarks (from The Montana Power Co. records).

Remarks.--Records excellent except those for periods of no gage-height record, which are fair. Flow regulated by Flathead Lake (see p. 232), Hungry Horse Reservoir (see p. 228), and Thompson Falls powerplant (reservoir capacity, 15,000 acre-ft). Diversions for irrigation of about 340,000 acres above station.

Rating table, water year 1957-58 (gage height, in feet, and discharge in cubic feet per second)

29.2	590	32.0	4,900	44.0	46,900
29.8	1,200	34.0	8,800	48.0	71,000
30.2	1,820	37.0	16,700	52.0	100,000
31.0	3,160	40.0	26,900		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9,280	15,600	16,100	11,700	6,830	13,400	10,800	14,700	64,000	25,400	10,100	*610
2	11,800	16,100	16,200	10,100	6,670	12,300	10,700	15,100	61,700	*20,600	8,560	4,000
3	10,100	17,300	15,900	10,600	6,590	10,200	10,900	16,100	62,000	25,100	7,370	5,220
4	10,600	17,200	17,100	12,000	5,820	11,700	10,500	16,300	51,300	25,300	6,600	8,980
5	11,600	16,100	17,200	11,600	6,800	13,600	10,700	16,100	47,600	21,200	6,080	9,600
6	11,200	17,000	17,200	10,600	7,790	14,000	11,000	20,000	43,500	15,000	6,520	10,500
7	10,600	17,000	17,300	10,500	a8,200	14,300	10,900	23,400	41,700	19,400	6,030	9,260
8	10,200	17,500	17,300	11,900	a7,500	14,400	9,930	30,400	40,300	22,600	4,250	8,580
9	11,700	17,400	17,300	11,800	a8,000	14,500	11,400	40,500	41,700	21,800	3,320	8,920
10	12,100	16,700	17,300	12,300	a8,500	12,500	11,200	45,100	47,600	21,700	5,170	9,840
11	12,300	16,900	17,200	12,000	6,950	12,200	11,300	49,300	62,700	21,100	5,930	10,300
12	12,700	15,100	17,200	11,600	7,690	13,700	11,200	54,500	57,100	19,400	5,390	10,200
13	12,000	15,600	17,100	10,900	7,570	13,100	11,200	60,700	53,800	15,600	6,890	9,740
14	11,700	15,800	17,100	10,200	7,770	12,700	11,400	61,900	48,000	13,300	7,870	9,240
15	11,200	14,800	17,100	11,400	8,060	12,100	12,000	59,600	43,500	18,200	7,290	8,480
16	12,000	15,400	17,100	12,000	8,430	11,700	12,600	57,800	41,800	18,700	6,980	8,920
17	12,500	16,900	17,100	11,900	9,010	10,600	14,700	57,400	41,400	18,200	7,750	9,330
18	13,300	16,700	17,000	12,200	9,520	15,600	15,600	56,100	42,700	16,500	6,560	8,500
19	14,000	15,800	16,600	10,500	11,700	10,700	16,700	49,300	38,800	16,600	6,190	9,130
20	12,800	16,100	16,900	7,390	12,300	10,600	17,200	48,400	36,100	16,500	6,550	8,800
21	12,000	16,900	17,100	9,100	11,700	10,500	17,600	51,000	33,600	12,200	6,270	8,480
22	13,100	17,200	17,000	11,200	11,500	10,400	19,800	54,800	30,400	10,000	6,280	8,040
23	15,100	16,800	12,100	10,500	10,100	10,200	22,200	57,700	31,600	11,900	6,090	8,070
24	15,500	a17,200	10,900	10,200	7,490	9,810	21,200	71,800	33,200	10,900	6,200	11,200
25	15,000	a17,500	12,800	*10,100	8,820	9,690	19,200	90,800	32,100	10,600	6,590	10,700
26	15,400	a17,500	11,900	7,690	14,300	11,200	18,200	94,100	34,500	10,200	5,580	9,690
27	15,700	*17,500	11,700	6,790	14,200	*11,100	15,200	*92,100	32,500	10,600	7,200	9,260
28	15,500	17,100	13,000	7,730	14,600	11,400	13,500	93,000	28,900	9,170	8,330	9,380
29	15,200	17,100	12,400	9,260	-----	11,200	14,600	76,600	26,900	8,200	7,340	7,460
30	15,600	16,700	11,900	9,740	-----	11,400	15,300	61,500	25,700	9,330	7,170	8,100
31	15,500	-----	10,300	7,630	-----	11,100	-----	65,700	-----	10,800	5,140	-----
Total	397,280	498,500	480,400	323,130	253,390	365,820	418,730	*1601.8	*1276.7	508,420	203,800	258,870
Mean	12,820	16,620	15,500	10,420	9,050	11,800	13,960	51,670	42,560	16,400	6,574	8,629
Ac-ft	788,000	988,800	952,900	640,900	502,600	725,600	850,500	*3,177	*2,532	*1,008	404,200	513,500

Calendar year 1957: Max 86,500 Min 5,150 Mean 19,880 Ac-ft 14,390,000  
 Water year 1957-58: Max 94,100 Min 610 Mean 18,050 Ac-ft 13,060,000

\* Discharge measurement made on this day.

\* Expressed in thousands.

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

## 3920. Clark Fork at Whitehorse Rapids, near Cabinet, Idaho

Location.--Lat 48°05'25", long 116°03'50", in NE 1/4 sec. 27, T. 55 N., R. 3 E., on left bank at Cabinet, 0.4 mile downstream from Cabinet Gorge Dam, 1.7 miles downstream from Blue Creek, and 6.5 miles southeast of Clark Fork. Measuring cableway 0.4 mile downstream. Discharge computed at Whitehorse Rapids, 2.7 miles downstream.

Drainage area.--22,067 sq mi, based on revised area of 22,006 sq mi for site near Heron. Records available.--September 1928 to September 1958. Prior to October 1952, published as Clark Fork near Heron, Mont.

Gage.--Water-stage recorder. Datum of gage is 2,000.00 ft above mean sea level, datum of 1929, supplementary adjustment of 1947, levels by Washington Water Power Co. Prior to Oct. 30, 1928, staff gage and Oct. 30, 1928, to Apr. 8, 1952, water-stage recorder, at site near Heron, 4 miles upstream at datum 88.00 ft higher prior to Jan. 2, 1931, and 78.00 ft higher thereafter. Apr. 9 to Sept. 30, 1952, staff gage just upstream from present site at approximately same datum.

Average discharge.--30 years, 21,000 cfs (15,207,000 acre-ft per year).

Extremes.--Maximum discharge during year, 102,000 cfs May 26 (gage height, 85.60 ft); minimum, 830 cfs Aug. 11 (gage height, 63.84 ft); minimum daily, 2,110 cfs Sept. 1.

1928-58: Maximum discharge, 153,000 cfs May 29 to June 1, 1948; maximum gage height, 50.97 ft May 31, 1948, site and datum then in use; minimum discharge observed, 270 cfs Aug. 12, 1952 (discharge measurement), at present site during filling of Cabinet Gorge reservoir; minimum daily discharge since reservoir filled, 969 cfs Sept. 1, 1957.

Maximum discharge known, 195,000 cfs June 1894 (elevation at point an eighth of a mile below "near Heron" site, 2,137.1 ft, from floodmark).

Remarks.--Records excellent. Flow regulated by Hungry Horse Reservoir (see p. 228) and Flathead Lake (see p. 232). Extreme diurnal fluctuation caused by powerplant at Cabinet Gorge Dam. Diversions above station for irrigation of about 354,000 acres. Discharge measurements show that there is approximately 1,000 cfs ground-water inflow between Cabinet Gorge Dam and Whitehorse Rapids, and it has been observed that approximately 600 cfs of this inflow occurs in the reach (2.3 miles) from the measuring cableway to Whitehorse Rapids. Published records give flow at Whitehorse Rapids, computed by adding 600 cfs to observed flows at the measuring cableway, and are considered to be comparable to records at former site near Heron, except for surface flow from additional drainage area. To determine flow through the turbines and over the spillway at Cabinet Gorge Dam, 1,000 cfs should be deducted from flows published herein.

Cooperation.--Gage-height record furnished by Washington Water Power Co. and five discharge measurements made by employees of that company.

Revisions (water years).--WSP 1182: 1936.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

65.0	1,820	69.0	11,000	79.0	57,900
66.0	3,240	71.0	18,600	83.0	83,600
67.0	5,260	75.0	37,000	86.0	105,000
68.0	7,900				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11,100	20,400	14,100	2,640	7,980	15,000	12,700	19,800	70,700	26,900	19,000	2,110
2	11,500	15,700	16,000	16,500	6,820	12,900	12,800	18,900	63,800	26,700	9,820	8,740
3	11,600	15,200	17,000	17,300	7,790	16,000	14,900	15,400	68,200	24,000	2,640	7,480
4	11,300	16,900	17,300	11,000	6,030	17,400	13,200	13,100	58,000	23,300	6,980	7,670
5	13,200	16,700	17,000	3,320	7,780	*16,100	18,600	25,800	52,000	25,100	7,780	7,900
6	10,600	18,600	19,100	11,300	7,690	15,200	3,920	25,400	48,000	22,300	6,590	11,800
7	11,600	17,000	19,200	10,200	8,940	15,800	11,800	25,300	45,600	26,900	6,540	7,340
8	10,900	18,700	16,300	14,700	7,790	14,200	12,000	27,100	43,900	24,300	5,800	10,000
9	12,000	20,000	18,700	17,300	9,160	9,700	13,100	42,600	44,400	24,000	5,450	10,400
10	13,000	15,800	19,000	17,600	*10,500	15,700	*12,800	49,800	46,200	24,700	5,200	10,400
11	16,100	18,500	19,100	11,600	*6,470	14,000	14,600	53,800	61,500	24,700	6,260	10,200
12	14,000	16,900	19,700	4,040	8,220	14,900	17,600	*59,100	62,000	24,100	6,600	13,300
13	9,580	16,900	18,800	8,330	15,800	15,800	7,060	64,900	56,300	14,500	7,380	11,800
14	13,100	19,600	17,500	11,600	8,900	15,100	13,100	66,400	52,900	16,600	8,000	7,690
15	12,400	20,800	12,400	12,400	10,300	13,900	16,500	65,400	48,200	18,900	8,180	8,980
16	12,300	17,400	18,200	16,000	8,590	9,720	18,800	62,600	43,800	21,400	7,800	8,000
17	13,700	8,610	17,900	16,900	9,340	12,000	21,600	63,100	43,900	22,100	9,380	9,920
18	15,900	15,000	20,200	13,500	10,700	11,700	23,100	62,900	43,600	20,200	7,180	*10,300
19	14,500	17,700	19,500	4,300	11,700	11,600	20,800	56,800	43,200	17,500	7,800	10,700
20	11,900	18,800	*19,900	9,060	14,400	12,200	14,900	54,400	38,600	12,600	*6,940	9,700
21	12,500	20,100	18,100	10,300	15,800	18,600	22,500	55,600	37,900	*15,300	7,200	8,780
22	16,200	20,400	12,200	*10,700	14,000	13,800	23,300	60,300	35,200	12,000	7,040	10,200
23	16,800	15,600	20,500	11,400	5,800	3,460	23,600	63,300	33,500	12,600	10,700	11,300
24	17,800	13,500	14,800	16,300	11,300	10,900	24,900	71,400	33,400	12,800	3,210	10,400
25	16,800	19,700	*4,440	11,700	*11,400	10,700	25,100	93,200	35,200	12,700	6,050	9,350
26	15,800	21,000	18,000	3,420	17,700	13,400	22,600	98,700	34,100	11,300	8,350	12,100
27	12,400	18,600	17,500	8,960	17,400	16,900	14,100	98,600	36,000	11,200	7,280	10,500
28	16,200	14,100	10,500	9,190	16,600	19,000	25,200	99,600	34,600	10,600	7,650	8,380
29	16,300	17,300	6,750	8,880	-----	13,800	20,400	*92,200	29,600	10,800	8,660	9,060
30	17,900	16,500	18,700	10,200	-----	5,540	19,600	69,400	30,600	10,100	9,560	8,800
31	*16,800	-----	16,700	8,600	-----	11,100	-----	68,800	-----	13,500	5,710	-----
Total	425,280	525,010	514,690	341,910	287,430	415,920	514,680	*1,743.7	*1,374.9	573,000	232,530	283,500
Mean	13,720	17,500	16,600	11,030	10,270	13,420	17,160	56,250	45,830	18,480	7,501	9,450
Ac-ft	843,500	*1,041	*1,021	678,200	570,100	825,000	*1,021	*3,459	*2,727	*1,137	461,200	562,300
Calendar year 1957: Max	95,200				Min	969	Mean	21,940	Ac-ft	15,880,000		
Water year 1957-58: Max	99,600				Min	2,110	Mean	19,820	Ac-ft	14,350,000		

\* Discharge measurement made on this day.

† Expressed in thousands.

## 3925. Pend Oreille Lake at Hope, Idaho

Location.--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.

Drainage area.--22,900 sq mi, approximately.

Records available.--March 1914 to September 1958. Published as "at Sandpoint" 1914-22. Records published for both sites September 1921 to September 1922.

Gage.--Water-stage recorder. Datum of gage is 2,000.00 ft above mean sea level, datum of 1929, supplementary adjustment of 1947; gage readings have been reduced to elevations above mean sea level. Mar. 18, 1914, to Sept. 30, 1922, staff gage 11 miles west across lake at Sandpoint at datum 42.18 ft higher. Sept. 17, 1921, to Oct. 7, 1929, staff gage at present site at datum 45.47 ft higher than present datum. Oct. 8, 1929, to Sept. 30, 1950, water-stage recorder at present site at datum 0.20 ft lower than present datum.

Extremes.--Maximum elevation during year, 2,062.43 ft Aug. 31 (contents, 1,555,000 acre-ft); minimum, 2,050.78 ft Jan. 3 (contents, 499,500 acre-ft).  
1921-58: Maximum elevation, 2,071.62 ft (present datum) June 9, 1948 (contents, 2,462,000 acre-ft); minimum, 2,046.27 ft (present datum) Feb. 17, 1936 (contents, 117,700 acre-ft).  
Maximum elevation known, 2,075.88 ft (present datum) June 1894 (contents, 2,905,000 acre-ft).

Remarks.--Regulation at Albeni Falls dam beginning June 4, 1952. Contents shown is that above elevation 2,044.8 ft.

Revisions (water years).--WSP 1122: 1946.

Capacity table, water year 1957-58 (elevation, in feet, and contents, in acre-feet)

2,050.00	432,000	2,058.00	1,143,000
2,052.00	605,800	2,060.00	1,327,000
2,054.00	782,500	2,062.00	1,514,000
2,056.00	961,500	2,065.00	1,801,000

Elevation, in feet, at 12 p.m., water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	59.55	57.40	52.54	50.94	51.11	53.72	51.01	52.50	61.90	62.20	62.36	62.34
2	59.56	57.39	52.29	50.92	51.08	53.87	51.01	52.49	61.84	62.21	62.36	62.31
3	59.61	57.37	52.10	51.02	51.08	54.00	50.99	52.43	61.96	62.19	62.26	62.27
4	59.58	57.39	51.88	51.12	51.06	54.09	50.95	52.30	61.99	62.13	62.14	62.26
5	59.62	57.31	51.69	51.05	51.06	54.10	51.16	52.46	62.07	62.13	62.10	62.25
6	59.58	57.09	51.70	51.05	51.06	53.99	51.01	52.63	62.23	62.08	62.10	62.30
7	59.54	56.86	51.67	51.01	51.13	53.80	50.97	52.82	62.29	62.17	62.07	62.27
8	59.47	56.66	51.59	51.02	51.15	53.64	51.01	53.10	62.28	62.22	62.06	62.29
9	59.40	56.48	51.54	51.00	51.21	53.38	51.01	53.73	62.32	62.22	62.08	62.28
10	59.35	56.26	51.49	51.05	51.26	53.21	51.03	54.54	62.22	62.24	62.09	62.28
11	59.34	56.11	51.50	51.09	51.16	53.06	51.06	55.46	62.30	62.26	62.08	62.25
12	59.32	55.92	51.50	51.04	51.15	52.93	51.17	56.52	62.26	62.36	62.10	62.28
13	59.20	55.84	51.47	51.08	51.14	52.82	51.14	57.39	62.23	62.15	62.10	62.32
14	59.14	55.99	51.43	51.08	51.11	52.71	51.12	58.00	62.24	62.08	62.14	62.28
15	59.02	56.17	51.28	51.02	51.10	52.60	51.24	58.47	62.18	62.10	62.16	62.29
16	58.91	56.11	51.28	51.06	51.09	52.42	51.36	58.80	62.16	62.12	62.21	62.24
17	58.85	55.69	51.27	51.19	51.05	52.23	51.55	58.90	62.22	62.19	62.30	62.23
18	58.81	55.44	51.30	51.17	51.10	52.09	51.71	58.98	62.24	62.26	62.30	62.20
19	58.77	55.21	51.36	50.98	51.21	51.92	51.87	58.95	62.23	62.30	62.32	62.27
20	58.68	54.99	51.36	50.92	51.39	51.79	51.86	58.94	62.21	62.27	62.31	62.20
21	58.58	54.81	51.34	50.92	51.61	51.81	52.00	58.98	62.24	62.25	62.33	62.25
22	58.42	54.65	51.23	50.92	51.79	51.71	52.12	59.06	62.21	62.24	62.31	62.24
23	58.34	54.38	51.25	51.01	51.82	51.41	52.25	59.18	62.23	62.17	62.37	62.25
24	58.34	54.05	51.24	51.22	52.05	51.25	52.38	59.47	62.29	62.21	62.30	62.28
25	58.29	53.91	51.15	51.24	52.38	51.15	52.49	60.15	62.22	62.26	62.30	62.24
26	58.17	53.72	51.20	51.09	52.84	51.16	52.56	60.80	62.17	62.27	62.34	62.28
27	57.98	53.52	51.25	51.09	53.20	51.21	52.43	61.31	62.19	62.31	62.32	62.34
28	57.77	53.24	51.10	51.11	53.49	51.24	52.54	61.77	62.18	62.29	62.35	62.33
29	57.60	52.96	50.90	51.09	-	51.24	52.53	61.99	62.15	62.34	62.37	62.30
30	57.46	52.74	50.94	51.13	-	51.12	52.51	61.79	62.21	62.28	62.38	62.27
31	57.37	-	51.03	51.16	-	51.04	-	61.84	-	62.28	62.42	-
(+)	1,086,000	670,900	521,200	532,500	737,100	522,100	650,700	1,499,000	1,534,000	1,540,000	1,554,000	1,539,000
(+)	-206,000	-415,100	-149,700	+11,300	+204,600	-215,000	+128,600	+848,300	+35,000	+6,000	+14,000	-15,000

Calendar year 1957..... + -474,500

Water year 1957-58..... + -247,000

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

\* Change in contents, in acre-feet.

Note.--Add 2,000 ft to obtain elevation above mean sea level.

## 3930. Priest Lake at outlet, near Coolin, Idaho

Location.--Lat 48°29'30", long 116°53'00", in SE $\frac{1}{4}$  sec. 5, T. 59 N., R. 4 W., half a mile east of outlet and  $1\frac{1}{2}$  miles northwest of Coolin.

Drainage area.--572 sq mi.

Records available.--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), April 1928 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 2,434.64 ft above mean sea level, datum of 1929, supplementary adjustment of 1947. June 18, 1911, to Sept. 30, 1913, staff gages at Coolin at different datums. Apr. 21, 1928, to Oct. 18, 1939, staff gage at site 400 ft from lake outlet at present datum.

Extremes.--Maximum gage height during year, 4.87 ft May 26, 27 (contents, 163,900 acre-ft); minimum, -0.18 ft Dec. 16 (contents, 44,080 acre-ft).  
1928-58: Maximum gage height, 6.46 ft May 29, 30, 1948 (contents, 202,000 acre-ft); minimum, -0.19 ft Feb. 7, 21, 22, 1957 (contents, 43,840 ft).

Remarks.--Flow from Priest Lake is regulated to hold lake at heights desirable for recreation interests during summer months and storage is released for power use downstream during winter months. Storage began Aug. 9, 1950. Prior to Aug. 9, 1950, some regulation resulted from logging operations in the outlet channel. Contents shown is that above gage height of about -2 ft. Capacity table is based on area measured from Priest Lake quadrangle (scale 1:250,000) and reconnaissance survey of marginal areas and is only approximate.

Capacity table, water year 1957-58 (gage height, in feet, and contents, in acre-feet)

-0.2	43,610	3.0	119,300
0.0	48,310	4.0	143,100
1.0	71,680	5.0	167,000
2.0	95,530		

Gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.07	0.49	-0.03	-0.02	-0.02	0.92	1.09	1.97	4.33	3.03	3.02	2.96
2	2.97	.46	-.03	-.04	-.03	.93	1.13	2.03	4.18	3.01	3.02	2.98
3	2.85	.42	-.05	-.04	-.04	.93	1.17	2.13	4.00	2.99	2.99	2.97
4	2.70	.39	-.06	-.07	-.05	.94	1.21	2.24	3.85	2.99	3.01	2.96
5	2.55	.36	-.08	-.09	-.06	.98	1.23	2.35	3.70	3.00	3.02	2.96
6	2.41	.33	-.06	-.11	-.06	.97	1.28	2.47	3.61	3.01	3.01	2.97
7	2.32	.30	-.05	-.13	-.04	.96	1.29	2.65	3.53	3.01	3.01	2.97
8	2.20	.27	-.07	-.14	-.04	.94	1.32	2.91	3.40	3.01	3.01	2.97
9	2.08	.23	-.08	-.15	.00	.92	1.33	3.14	3.29	3.02	3.02	2.98
10	1.93	.23	-.09	-.15	.02	.90	1.35	3.38	3.28	3.03	3.03	2.99
11	1.81	.22	-.11	-.15	.02	.88	1.37	3.61	3.22	3.04	3.04	2.99
12	1.68	.22	-.12	-.14	.02	.85	1.38	3.81	3.14	3.02	3.03	2.94
13	1.60	.25	-.13	-.15	.02	.80	1.39	3.90	3.05	3.03	3.02	2.99
14	1.51	.23	-.15	-.14	.02	.78	1.47	3.92	3.05	3.02	3.01	2.99
15	1.40	.22	-.16	-.12	.01	.76	1.57	3.96	3.05	3.02	3.03	2.99
16	1.31	.20	-.15	-.11	.03	.72	1.67	4.03	3.04	3.03	3.02	2.99
17	1.23	.19	-.14	-.07	.06	.70	1.80	4.10	3.03	3.02	3.01	3.01
18	1.14	.16	-.13	-.07	.07	.68	1.88	4.16	3.04	3.02	3.02	3.03
19	1.05	.15	-.13	-.09	.10	.66	1.99	4.22	3.04	3.03	3.01	3.06
20	.95	.12	-.12	-.10	.14	.65	2.04	4.32	3.02	3.02	3.01	3.06
21	.92	.09	-.11	-.07	.17	.68	2.08	4.46	3.02	3.01	3.01	3.07
22	.85	.07	-.10	-.07	.20	.69	2.10	4.59	3.01	3.01	3.01	3.08
23	.77	.04	-.10	-.03	.26	.70	2.10	4.68	3.00	3.00	3.00	3.10
24	.72	.03	-.08	-.02	.43	.73	2.09	4.80	3.03	2.99	3.00	3.11
25	.68	.00	.00	-.02	.67	.78	2.08	4.85	3.03	2.99	2.99	3.13
26	.63	.00	.00	-.01	.78	.84	2.05	4.87	3.03	2.99	3.00	3.14
27	.59	.01	.03	-.03	.84	.88	2.03	4.85	3.03	3.00	3.00	3.14
28	.54	-.01	.04	.00	.89	.91	2.00	4.80	3.04	3.01	2.99	3.15
29	.52	-.03	.04	.00	-	.95	1.97	4.72	3.04	3.02	3.01	3.14
30	.54	-.05	.03	.00	-----	1.00	1.96	4.59	3.03	3.01	2.99	3.14
31	.52	-----	.00	.00	-----	1.07	-----	4.46	-----	3.02	2.97	-----
(†)	60,550	47,140	48,310	48,310	69,280	73,530	94,580	154,100	120,000	119,700	118,600	122,600
(‡)	-60,350	-13,410	+1,170	0	+20,970	+4,250	+21,050	+59,520	-34,100	-300	-1,100	+4,000

Calendar year 1957..... † -1,650

Water year 1957-58..... ‡ +1,700

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

‡ Change in contents, in acre-feet.

## 3940. Priest River near Coolin, Idaho

Location.--Lat 48°26'50", long 116°53'50", in SE $\frac{1}{4}$  sec. 19, T. 59 N., R. 4 W., on left bank 190 ft downstream from Dickensheet Bridge, 2 $\frac{1}{2}$  miles downstream from Binarch Creek, 3 miles southwest of Coolin, and 5 miles downstream from outlet of Priest Lake.

Drainage area.--611 sq mi.

Records available.--October 1948 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 2,338.24 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Average discharge.--10 years, 1,345 cfs (973,700 acre-ft per year).

Extremes.--Maximum discharge during year, 5,860 cfs May 28 (gage height, 6.92 ft); minimum observed, 26 cfs Sept. 25 (gage height, 1.16 ft).

1948-58: Maximum discharge, 8,130 cfs May 27, 1956 (gage height, 8.15 ft); minimum observed, that of Sept. 25, 1958, but may have been less Sept. 11, 1953, Sept. 24, 1958, when stage was below intake.

Remarks.--Records excellent except those for period of no gage-height record, which are fair. No diversion above station. Flow partly regulated by Priest Lake (see preceding page).

Rating table, water year 1957-58 (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 2-8)

1.4	48	3.5	925
1.6	74	4.0	1,410
1.8	106	5.0	2,670
2.0	150	6.0	4,240
2.5	319	7.0	6,000
3.0	575		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	450	756	420	435	425	1,130	1,370	2,060	5,140	853	114	84
2	1,350	728	420	425	415	1,150	1,410	2,090	4,960	845	114	a70
3	2,320	707	415	415	410	1,150	1,480	2,170	4,750	850	112	a69
4	2,180	687	415	405	410	1,140	1,500	2,280	4,510	749	112	a68
5	2,020	668	401	401	405	1,170	1,510	2,420	4,270	674	112	a67
6	1,850	648	405	391	401	1,170	*1,520	2,560	4,090	680	110	a66
7	1,790	629	410	382	405	1,160	1,540	2,730	4,020	680	108	a65
8	1,700	605	410	377	410	*1,150	1,560	3,020	3,890	599	110	a65
9	1,590	587	401	372	440	1,120	1,580	*3,720	3,720	527	110	a65
10	1,730	569	391	363	455	1,100	1,590	3,690	3,670	527	110	a65
11	1,850	569	386	363	455	1,080	1,600	4,040	3,530	*527	112	a65
12	1,710	563	377	363	455	1,080	1,590	4,310	3,090	515	110	a65
13	1,610	581	377	368	455	1,050	1,610	4,500	2,790	455	110	a68
14	1,530	581	368	363	460	1,020	1,710	4,550	2,150	391	110	a70
15	1,450	575	359	372	460	1,000	1,740	4,560	1,700	391	*110	a67
16	1,370	557	*363	372	466	993	1,860	4,630	1,650	391	110	a67
17	1,290	539	377	396	471	968	1,980	4,730	1,430	391	110	a67
18	1,190	527	382	401	488	959	2,090	4,800	1,140	391	110	*67
19	1,150	515	391	391	504	942	2,160	4,850	1,150	386	110	67
20	1,080	498	391	386	533	942	2,250	4,970	1,140	386	104	66
21	1,040	488	401	*382	551	959	2,290	5,170	1,010	386	96	64
22	1,020	482	401	377	569	1,000	2,320	5,320	942	377	94	64
23	950	466	391	366	599	1,010	2,320	5,500	934	377	89	64
24	901	455	405	415	674	1,030	2,290	5,660	942	319	89	49
25	869	445	420	415	917	1,100	2,260	5,750	909	208	88	*50
26	845	435	455	415	1,050	1,150	2,240	5,800	861	150	86	124
27	815	430	406	415	1,080	1,180	2,200	5,800	845	145	86	125
28	785	440	476	420	1,100	1,190	2,150	5,750	853	120	86	131
29	756	430	466	425	1,240	2,110	5,660	869	118	86	138	
30	763	415	460	430	1,290	2,070	*5,530	861	118	86	148	
31	*763	-----	450	430	-----	2,330	-----	5,330	-----	114	84	-----
Total	40,717	16,575	12,650	12,251	15,463	33,953	55,900	133,600	71,816	13,620	3,178	2,313
Mean	1,313	532	408	395	552	1,095	1,863	4,310	2,394	439	102	77.1
Ac-ft	80,760	32,870	25,090	24,300	30,670	67,550	110,900	265,000	142,400	27,010	6,300	4,590
Calendar year 1957:	Max	6,170		Min	82		Mean	1,132	Ac-ft	819,800		
Water year 1957-58:	Max	5,800		Min	49		Mean	1,129	Ac-ft	817,200		

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for station near Priest River.

## 3950. Priest River near Priest River, Idaho

Location.--Lat 48°13', long 116°55', in NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec. 11, T. 56 N., R. 5 W., on right bank 500 ft downstream from Saddle Creek, a quarter of a mile downstream from Lower West Branch, 2 $\frac{1}{2}$  miles north of Priest River, and 3 $\frac{1}{2}$  miles upstream from mouth.

Drainage area.--902 sq mi.

Records available.--June 1903 to April 1905, November 1910 to April 1911, May to December 1923, February 1929 to September 1958. Prior to October 1930, published as "at Priest River."

Gage.--Water-stage recorder. Altitude of gage is 2,090 ft (from river-profile map). Prior to June 4, 1929, and Sept. 18, 1929, to Apr. 28, 1930, staff gages at site 3 miles downstream at altitude about 40 ft lower. June 4 to Sept. 17, 1929, Apr. 29 to Sept. 11, 1930, staff gages at or near present site at present datum.

Average discharge.--30 years (1903-4, 1929-58), 1,625 cfs (1,176,000 acre-ft per year).

Extremes.--Maximum discharge during year, 6,680 cfs May 26 (gage height, 6.89 ft); minimum, 165 cfs Sept. 26 (gage height, 0.46 ft). 1903-5, 1910-11, 1923, 1929-58: Maximum discharge, 10,500 cfs May 29, 30, 1948; maximum gage height, 8.97 ft May 29, 1948; minimum discharge, that of Sept. 26, 1958.

Remarks.--Records excellent. No diversion above station. Some regulation on tributary and, since Aug. 9, 1950, by low buttress and stoplog dam on Priest River three-quarters of a mile downstream from lake outlet.

Revisions (water years).--WSP 572: 1903-5.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 7, 8, June 17)

Oct. 1 to May 8, June 18 to Sept. 30				May 9 to June 17	
0.5	175	3.0	1,910	3.0	1,820
.7	240	4.0	3,000	4.0	2,820
1.0	375	6.0	5,640	5.0	4,030
1.5	680	8.0	8,670	6.0	5,400
2.0	1,040				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	366	980	596	640	736	2,450	2,410	2,950	5,740	1,120	260	208
2	628	950	608	635	708	2,280	2,450	2,390	5,470	1,120	256	202
3	2,530	912	589	634	694	2,130	2,850	3,080	5,200	1,120	256	199
4	2,530	863	589	628	674	2,030	2,680	3,220	4,970	1,080	248	199
5	2,400	862	576	608	660	2,070	*2,640	3,350	4,710	935	248	196
6	2,250	834	576	589	654	2,000	2,570	3,480	4,530	935	248	193
7	2,130	813	570	576	694	1,880	2,540	3,680	4,480	935	240	193
8	2,020	792	576	570	750	*1,840	2,540	3,940	4,260	928	236	185
9	1,890	711	582	563	848	1,730	2,540	*4,370	4,090	785	236	190
10	1,820	750	563	556	1,120	1,670	2,530	4,770	4,070	757	236	190
11	2,140	785	538	550	1,060	1,650	2,520	5,110	3,910	*750	236	190
12	2,010	799	544	556	1,020	1,580	2,480	5,440	3,620	729	240	190
13	1,890	928	532	576	988	1,520	2,510	5,580	3,150	708	233	199
14	1,810	942	538	570	942	1,480	2,800	5,580	2,900	608	233	205
15	1,720	862	*520	602	912	1,460	2,820	5,540	2,200	576	*233	199
16	1,630	820	526	641	950	1,430	3,230	5,550	2,130	576	233	196
17	1,530	785	570	771	965	1,400	3,490	5,640	1,950	570	233	196
18	1,450	757	628	771	1,080	1,400	3,970	5,720	1,600	570	230	*199
19	1,360	729	608	715	1,120	1,370	3,820	5,790	1,480	602	230	212
20	1,300	687	634	*687	1,410	1,360	4,130	5,920	1,480	563	230	216
21	*1,240	674	667	660	1,500	1,510	3,950	6,090	1,430	550	219	208
22	1,260	667	654	634	1,480	1,800	3,840	6,270	1,250	544	212	199
23	1,200	648	608	641	1,660	1,790	3,690	6,400	1,230	538	205	193
24	1,120	641	615	792	2,060	1,840	3,530	6,570	1,250	526	205	193
25	1,090	634	634	806	4,180	2,090	3,420	6,640	1,280	442	202	190
26	1,080	622	958	778	4,390	2,210	3,340	6,640	1,160	345	199	*175
27	1,050	596	869	743	3,480	2,220	3,250	6,600	1,150	312	193	248
28	1,010	615	834	743	2,800	2,160	3,130	6,510	1,150	294	212	252
29	972	576	792	757	-	2,150	3,040	6,360	1,150	276	219	252
30	1,000	576	750	778	-	2,310	2,980	*6,170	1,140	289	219	256
31	1,020	-----	694	771	-----	2,420	-----	5,950	-----	276	216	-----
Total	47,446	22,890	19,538	20,541	39,515	57,250	91,290	161,900	84,120	20,359	7,120	6,131
Mean	1,531	763	630	663	1,411	1,847	3,043	5,223	2,804	657	229	204
Ac-ft	94,110	45,400	38,750	40,740	78,580	113,600	181,100	321,100	166,800	40,380	14,090	12,160
Calendar year 1957: Max	8,400				Min 202		Mean 1,539		Ac-ft 1,114,000			
Water year 1957-58: Max	6,640				Min 175		Mean 1,584		Ac-ft 1,147,000			

\* Discharge measurement made on this day.



## 3955. Pend Oreille River at Newport, Wash.

Location.--Lat 48°11', long 117°02', in SE<sup>1</sup>/<sub>4</sub> sec. 24, T. 56 N., R. 6 W., on left bank at Newport, 0.2 mile upstream from bridge on U. S. Highway 2, a quarter of a mile east of Idaho-Washington State line, and 1.6 miles downstream from Albeni Falls Dam.

Drainage area.--24,200 sq mi, approximately.

Records available.--June 1903 to September 1941, October 1952 to September 1958. Prior to October 1921, published as Clark Fork at Newport, Wash., October 1921 to September 1937, as Clark Fork at Priest River, Idaho, and October 1937 to September 1941, as Pend Oreille River at Priest River, Idaho.

Gage.--Water-stage recorder. Datum of gage is 2,000.00 ft above mean sea level, datum of 1929, supplementary adjustment of 1947. Prior to Sept. 22, 1928, staff or wire-weight gages at Priest River, Newport, or Metaline Falls at various datums (see description, WSP 532, p. 92). Sept. 22, 1928, to Sept. 30, 1935, water-stage recorder at Priest River at datum 2,040.14 ft above mean sea level, and Oct. 1, 1935, to Sept. 30, 1941, at datum 2,000 ft above mean sea level, datum of 1929. Since December 1952, auxiliary water-stage recorder 2.74 miles downstream from base gage.

Average discharge.--44 years (1903-41, 1952-58), 25,100 cfs (18,160,000 acre-ft per year).

Extremes.--Maximum discharge during year, 94,100 cfs May 30 (gage height, 46.23 ft); minimum, 3,500 cfs Sept. 1; minimum gage height, 28.81 ft Aug. 31, Sept. 1.

1903-41, 1952-58: Maximum discharge, 136,000 cfs June 15, 1913, June 21, 1933; minimum, 2,200 cfs Dec. 12, 1919.

Maximum elevation known, about 2,064 ft in June 1894, present site and datum, from water-surface profiles (discharge, about 200,000 cfs).

Remarks.--Records excellent except those for period of no gage-height record, which are good. Flow regulated at Albeni Falls Dam and affected by storage in Pend Oreille Lake (see p. 239), Flathead Lake (see p. 232), Hungry Horse Reservoir (see p. 228), and several smaller reservoirs (see p. 248). Diversions above station for irrigation of about 337,600 acres (1946 determination).

Revisions (water years).--WSP 532: 1903-11.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15,700	18,100	28,100	8,400	10,200	10,600	18,200	26,100	77,100	29,200	13,700	4,840
2	13,600	17,200	27,300	18,000	10,500	10,300	18,100	25,800	75,200	27,300	10,500	8,080
3	12,100	17,300	27,300	11,600	9,460	13,500	20,500	25,400	70,300	27,100	9,300	9,540
4	14,300	16,000	26,400	7,800	8,680	17,400	20,700	25,700	64,600	26,900	9,300	7,640
5	15,800	21,900	24,400	8,000	11,200	22,000	*13,500	25,900	55,200	26,000	8,840	8,120
6	15,700	28,300	21,800	11,200	9,320	23,200	16,900	25,900	49,000	24,200	8,000	9,040
7	15,700	28,600	21,300	13,000	9,050	26,600	17,000	25,900	49,700	22,600	7,370	8,240
8	15,600	28,200	21,300	15,000	9,610	25,800	15,900	25,600	49,500	23,000	6,500	8,840
9	16,600	28,500	20,900	17,500	10,800	*25,100	16,600	25,500	51,400	24,000	4,640	9,140
10	18,000	28,800	20,900	16,500	13,200	25,500	17,000	*25,700	56,100	24,800	4,450	10,200
11	18,000	28,600	20,800	11,000	13,300	23,800	16,900	25,500	61,900	*23,500	6,160	10,900
12	17,900	28,800	20,200	8,600	11,700	23,600	16,800	25,400	69,800	21,500	6,010	11,800
13	18,000	25,300	20,100	10,500	12,200	23,500	16,900	34,200	62,800	21,900	6,060	8,940
14	18,000	14,600	20,200	14,000	13,000	22,300	18,800	46,700	57,200	20,200	*6,140	7,920
15	18,000	13,800	*19,900	16,500	12,900	21,700	19,700	53,000	54,200	18,400	6,020	8,480
16	18,100	21,000	20,000	15,500	13,300	21,000	21,800	57,800	45,300	20,300	5,060	10,500
17	17,900	24,700	19,600	14,500	13,900	21,900	23,700	70,500	45,100	19,000	4,990	*11,000
18	17,900	28,200	19,600	16,000	12,100	21,200	24,700	72,000	45,600	17,900	5,270	10,900
19	18,200	28,300	19,700	14,000	9,810	21,100	24,600	71,900	45,400	15,500	5,790	10,700
20	18,000	28,500	19,500	*13,000	10,500	21,200	25,100	70,100	40,900	15,700	6,500	10,500
21	*19,700	28,000	19,400	11,600	10,000	21,600	25,300	71,000	39,200	15,900	6,090	8,700
22	23,100	27,800	19,500	11,400	10,300	22,500	25,100	71,900	37,700	14,700	8,360	9,290
23	21,200	27,500	19,400	11,000	10,400	22,400	25,400	71,900	33,800	12,900	7,360	10,500
24	18,100	28,500	16,900	11,200	10,500	22,500	25,600	73,700	34,800	11,500	6,750	10,400
25	21,400	28,500	13,200	13,600	9,720	21,000	26,100	75,600	38,700	10,200	6,690	*10,500
26	23,200	28,500	16,700	12,500	9,480	17,400	26,000	81,900	36,700	10,000	5,820	8,720
27	23,200	28,800	19,200	11,000	9,850	19,700	26,300	87,800	36,900	10,100	6,540	8,340
28	25,400	28,900	19,800	12,200	10,500	22,700	25,800	90,800	35,000	10,600	7,190	9,370
29	25,400	29,300	17,800	12,900	-	18,800	26,000	93,400	31,200	10,300	7,820	10,500
30	25,300	28,500	16,400	11,000	-----	17,200	26,000	*89,300	28,900	12,200	6,950	10,700
31	23,500	-----	12,100	10,400	-----	18,600	-----	75,500	-----	12,700	3,780	-----
Total	582,500	759,200	631,700	389,400	305,580	645,100	641,400	*1,667,2	*1,479,2	580,100	213,950	283,320
Mean	18,790	25,310	20,380	12,560	10,910	20,810	21,380	53,780	49,310	18,710	6,902	9,444
Ac-ft	*1,155	*1,506	*1,253	772,440	606,100	*1,280	*1,272	*3,307	*2,934	*1,151	424,400	562,000
Calendar year 1957: Max			97,400		Min 3,860	Mean 25,790	Ac-ft 18,670,000					
Water year 1957-58: Max			95,400		Min 3,780	Mean 22,410	Ac-ft 16,220,000					

\* Discharge measurement made on this day.

† Expressed in thousands.

Note.--No gage-height record at base gage Dec. 21 to Jan. 20; discharge estimated on basis of flow through Albeni Falls Dam and powerplant as furnished by Corps of Engineers.

3960. Calispell Creek near Dalkena, Wash.

Location--Lat 48°14'40", long 117°20'30", in SW $\frac{1}{4}$  sec. 26, T. 32 N., R. 43 E., on left bank 2 miles upstream from Calispell Lake, 4.8 miles west of Dalkena, and 9 miles upstream from mouth.

Drainage area--67.8 sq mi.

Records available--August 1950 to September 1958.

Gage--Water-stage recorder. Altitude of gage is 2,070 ft (from topographic map).

Average discharge--8 years, 76.5 cfs (55,380 acre-ft per year).

Extremes--Maximum discharge during year, 1,070 cfs Feb. 25 (gage height, 6.74 ft); minimum, 3.5 cfs Oct. 19 (gage height, 2.18 ft); minimum daily, 3.8 cfs Oct. 12, 13, 20, 1950-58; Maximum discharge, that of Feb. 25, 1958; minimum, 3.5 cfs Sept. 1, Oct. 19, 1957.

Remarks--Records good. No diversion above station. Regulation at low flow by Power Lake (capacity, 1,000 acre-ft) since September 1956.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	23	6.0	28	13	270	209	184	74	40	11.5	6.0
2	31	3.9	14	33	10	224	229	198	70	37	5.0	10.5
3	31	3.9	20	33	33	194	290	238	65	34	4.5	11.5
4	30	22	20	14	33	172	414	268	64	11	4.5	11
5	5.4	30	21	10.5	34	164	418	275	60	11	5.0	9.2
6	5.4	*31	16.5	28	34	148	367	265	*55	11.5	5.0	5.5
7	18.5	30	6.6	33	34	132	326	*268	55	29	5.0	5.5
8	28	30	6.4	33	13.5	121	298	298	55	42	5.5	10.5
9	*24	10.5	15	*32	12	108	*285	320	57	*38	5.5	12.5
10	23	10	12.5	30	43	106	250	318	53	29	6.0	12.5
11	16	15	12	8.2	52	*94	231	318	50	20	13.5	11
12	3.8	11.5	12.5	9.1	60	74	211	315	52	8.5	18	10
13	3.8	19.5	11.5	28	*67	69	215	272	50	8.5	17	5.5
14	4.0	16	6.8	31	61	67	260	231	45	27	15.5	5.5
15	15.5	16.5	6.6	30	49	60	296	196	47	38	14.5	11
16	25	19.5	8.8	30	54	58	368	184	50	35	5.5	14.5
17	27	14.5	14.5	32	66	60	480	176	47	32	5.5	*17
18	24	26	20	16	75	53	*624	172	47	29	14.5	17
19	3.9	36	19	8.5	105	50	544	166	45	6.0	18	18
20	3.8	37	15.5	28	151	50	620	161	42	6.0	*17	*6.0
21	18.5	*37	7.6	23	181	65	544	151	15.5	24	14.5	5.0
22	24	28	9.1	20	164	82	474	146	17	34	11.5	15
23	28	6.2	23	30	188	92	404	142	38	32	5.5	15.5
24	26	5.8	28	33	282	137	340	137	45	24	5.5	21
25	23	15	22	13.5	848	176	288	121	43	15	10.5	29
26	5.0	20	31	9.8	753	196	268	108	40	5.5	12.5	24
27	4.4	20	33	32	474	190	246	98	37	5.0	12.5	5.5
28	4.8	6.6	17.5	36	346	174	220	92	11.5	16.5	12.5	5.5
29	26	18.5	17	38	-	172	192	79	11.5	18	11.5	11
30	28	6.4	38	36	-	234	182	72	30	13.5	6.0	15.5
31	27	-	39	35	-	231	-	69	-	14.5	6.6	-
Total	567.8	569.3	530.4	809.6	4,235.5	4,023	10,093	6,038	1,371.5	694.5	305.6	357.2
Mean	18.3	19.0	17.1	26.1	151	130	336	195	45.7	22.4	9.86	11.9
Ac-ft	1,130	1,130	1,050	1,610	8,400	7,980	20,020	11,980	2,720	1,360	606	708
Calendar year 1957: Max 450 Min 3.5 Mean 49.9 Ac-ft 36,170												
Water year 1957-58: Max 848 Min 3.8 Mean 81.1 Ac-ft 58,710												

\* Discharge measurement made on this day.

3965. Pend Oreille River below Box Canyon, near Ione, Wash.

Location.--Lat 48°46'50", long 117°24'40", in SE¼ sec. 19, T. 38 N., R. 43 E., on left bank 1,000 ft downstream from Box Canyon Dam and 4 miles north of Ione.

Drainage area.--25,000 sq mi, approximately.

Records available.--October 1952 to September 1958.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929, supplementary adjustment of 1947. Prior to Mar. 29, 1954, staff gage at site 300 ft upstream at same datum. Mar. 29 to Aug. 25, 1954, staff gage at present site and datum.

Extremes.--Maximum discharge during year, 97,100 cfs May 29 (elevation, 2,005.85 ft); minimum, 3,190 cfs Aug. 17, 18, 20 (elevation, 1,980.5 ft, from hourly tail-water readings at Box Canyon Dam).

1952-58: Maximum discharge, 125,700 cfs June 6, 1956 (elevation, 2,011.74 ft); minimum, that of Aug. 17, 18, 20, 1958.

Flood in June 1948 reached elevation of 2,018.0 ft, from floodmarks (discharge, 167,000 cfs).

Remarks.--Records excellent. In 1946 there were diversions for irrigation of about 340,000 acres, and there probably has not been any appreciable change since that time. Flow regulated at Box Canyon Dam and Albeni Falls Dam and affected by storage in Pend Oreille Lake (see p. 239), Flathead Lake (see p. 232), Hungry Horse Reservoir (see p. 228), and by smaller reservoirs in Montana (see p. 248).

Rating table, water year 1957-58 (elevation, in feet,  
and discharge, in cubic feet per second)

1,981.0	3,970
1,983.0	7,970
1,986.0	17,400
1,990.0	29,300
1,995.0	48,300
2,000.0	70,800
2,006.0	97,800

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16,000	22,500	29,300	8,280	9,920	16,500	15,400	27,900	82,000	30,600	14,200	4,180
2	16,000	18,700	29,700	14,300	9,750	13,900	19,800	28,200	79,800	29,500	11,400	7,180
3	12,100	18,200	*29,100	15,200	11,400	10,900	22,600	28,000	67,800	28,500	9,040	8,760
4	12,100	17,100	28,800	7,660	9,560	*15,500	21,200	28,100	72,500	28,000	9,160	10,000
5	16,400	*19,700	28,000	6,980	9,080	22,200	20,100	28,000	67,100	28,000	6,980	7,800
6	16,500	25,200	25,500	10,400	9,610	22,400	20,900	28,200	58,400	27,800	8,310	9,060
7	16,500	28,100	23,100	12,600	9,550	23,100	20,200	28,300	53,200	24,900	6,150	9,000
8	16,200	28,300	22,800	13,200	9,570	26,500	19,600	28,500	52,100	23,600	5,760	8,560
9	*16,600	28,500	22,300	17,500	9,380	26,800	19,400	28,800	52,100	24,700	4,890	9,390
10	19,000	28,500	21,900	18,600	13,700	26,000	20,600	28,900	54,300	25,000	4,440	9,840
11	18,700	28,500	21,800	13,600	14,200	22,800	19,500	28,800	58,500	23,200	5,420	10,900
12	18,800	28,700	22,200	10,700	14,700	23,700	19,400	31,300	64,700	25,000	6,020	11,900
13	18,800	28,600	21,700	9,480	14,000	25,200	19,200	35,200	69,300	23,500	5,660	10,700
14	19,200	23,000	22,200	8,810	13,500	25,200	20,400	38,300	57,600	22,200	6,210	8,690
15	19,000	16,500	21,600	15,700	13,800	24,300	22,700	52,100	58,600	19,000	5,740	7,870
16	18,900	15,000	21,100	17,800	14,000	23,500	24,000	54,200	53,900	20,100	5,040	10,700
17	19,000	24,900	20,700	17,800	13,800	23,300	26,400	53,400	47,500	22,200	4,820	10,500
18	19,100	27,600	20,900	15,900	14,300	22,800	27,000	70,000	46,500	18,100	5,270	10,900
19	18,900	28,300	21,000	15,800	12,600	23,000	27,000	72,200	46,300	13,300	6,790	10,700
20	18,900	28,500	20,900	*13,400	11,100	23,100	25,700	71,900	44,000	10,800	6,150	11,300
21	18,900	28,600	20,800	14,800	11,700	23,100	25,700	69,800	40,800	19,300	6,060	9,650
22	21,200	28,600	21,400	12,000	17,600	23,700	*25,200	71,400	39,200	16,400	7,230	7,070
23	23,700	29,900	21,500	10,700	14,700	24,400	28,000	73,200	38,100	16,800	6,440	9,780
24	29,600	29,100	21,100	12,000	9,070	25,000	29,200	74,500	35,200	*12,500	6,170	10,400
25	20,000	29,100	16,600	14,400	10,600	25,200	28,200	76,100	36,100	7,500	6,080	10,100
26	24,300	29,000	15,600	12,200	13,800	22,900	27,800	80,400	39,200	7,950	*6,130	9,940
27	24,900	29,000	26,800	12,000	15,500	23,800	28,000	*87,400	36,900	10,500	6,230	8,440
28	25,000	29,200	20,600	11,600	14,900	28,300	27,900	90,100	36,600	10,900	7,230	7,900
29	26,000	29,100	19,400	12,500	-----	25,500	27,800	92,400	35,000	9,230	8,310	7,160
30	26,100	29,200	18,600	12,500	-----	22,300	28,000	95,200	31,300	10,600	6,570	11,800
31	28,300	-----	15,600	10,600	-----	15,200	-----	88,300	-----	13,700	4,680	-----
Total	603,700	774,200	682,100	399,010	344,390	700,100	705,900	*1,699.1	*1,563.6	602,980	208,580	280,180
Mean	19,470	25,810	22,000	12,870	12,300	22,580	23,530	54,810	52,120	19,450	6,728	9,339
Ac-ft	*1,197	*1,536	*1,353	791,400	683,100	*1,389	*1,400	*3,370	*3,101	*1,196	413,700	555,700
Calendar year 1957: Max	96,600	Min	4,070	Mean	26,940	Ac-ft	19,510,000					
Water year 1957-58: Max	95,200	Min	4,180	Mean	23,460	Ac-ft	16,390,000					

\* Discharge measurement made on this day.

\* Expressed in thousands.

## 3980. Sullivan Creek at Metaline Falls, Wash.

Location.--Lat 48°51'40", long 117°21'50" in SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> sec. 22, T. 39 N., R. 43 E., on right bank 100 ft downstream from State highway bridge, half a mile upstream from mouth, and half a mile east of Metaline Falls.

Drainage area.--142 sq mi.

Records available.--October 1953 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 2,050 ft (from topographic map). Prior to Aug. 24, 1956, staff gage at site 120 ft upstream at datum 3.70 ft higher.

Average discharge.--5 years, 238 cfs (172,300 acre-ft per year).

Extremes.--Maximum discharge during year, 1,550 cfs May 20; maximum gage height, 4.89 ft May 21; minimum discharge, 7.3 cfs Jan. 1 (result of freezeup); minimum daily, 27 cfs Jan. 1.  
1953-58: Maximum discharge observed, 3,550 cfs June 12, 1955 (gage height, 3.90 ft, site and datum then in use); minimum and minimum daily discharge, that of Jan. 1, 1958.

Remarks.--Records fair. Some regulation by storage in Sullivan Lake. Small diversions above station for municipal and mine water supply.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	407	134	53	27	45	146	152	165	451	259	74	54
2	404	121	53	b29	44	142	154	174	373	224	75	53
3	396	115	52	b51	44	138	161	248	334	158	74	54
4	393	110	*50	b32	43	138	163	291	318	156	72	53
5	414	105	49	b32	42	*140	163	330	306	156	70	53
6	404	*100	50	b31	43	138	163	382	300	156	64	53
7	400	96	49	b31	44	134	163	463	348	152	66	52
8	379	90	49	b32	46	130	163	595	300	150	66	50
9	362	88	48	b35	52	123	171	800	288	167	64	50
10	*344	87	46	40	54	121	161	884	300	152	63	50
11	334	87	43	42	53	119	156	950	285	148	63	49
12	318	86	45	40	53	114	158	999	285	140	61	50
13	300	88	44	40	54	110	167	695	282	132	61	53
14	288	84	43	40	52	107	185	600	273	126	61	56
15	273	84	41	41	50	107	197	620	273	123	61	54
16	259	79	41	43	52	104	206	758	270	117	60	54
17	245	75	45	53	54	100	216	971	259	114	58	55
18	232	73	46	49	63	100	229	1,080	267	110	57	54
19	221	70	44	45	74	99	234	1,150	303	105	57	70
20	211	63	42	44	87	97	239	1,380	264	100	56	70
21	199	56	42	*45	90	102	245	1,370	273	97	55	58
22	192	60	40	43	87	114	248	1,270	267	*94	54	55
23	183	58	38	45	100	112	*250	1,230	270	88	54	56
24	178	60	40	49	124	115	245	1,090	267	87	54	58
25	171	58	41	47	180	134	242	1,130	239	84	53	58
26	165	57	54	46	174	138	237	*1,020	219	81	*54	58
27	156	53	44	45	163	140	214	932	221	80	56	56
28	148	55	43	47	154	140	152	788	232	80	58	55
29	142	49	41	47	-	144	146	640	226	86	57	54
30	150	50	38	47	-----	148	148	585	259	83	57	53
31	146	-----	30	47	-----	150	-----	533	-----	78	56	-----
Total	8,414	2,394	1,384	1,265	2,121	3,844	5,728	24,143	8,558	3,883	1,891	1,648
Mean	271	79.8	44.6	40.8	75.8	124	179	779	285	125	61.0	54.9
Ac-ft	16,690	4,750	2,750	2,510	4,210	7,620	11,360	47,890	16,970	7,700	3,750	3,270
Calendar year 1957: Max 1,400				Min 30	Mean 226		Ac-ft 163,500					
Water year 1957-58: Max 1,380				Min 27	Mean 179		Ac-ft 129,500					

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

3985. Pend Oreille River below Z Canyon, near Metaline Falls, Wash.

(International gaging station)

Location.--Lat 48°58'50", long 117°20'40", in lot 2, sec. 11, T. 40 N., R. 43 E., on right bank three-quarters of a mile downstream from Z Canyon, 1½ miles south of international boundary, 5 miles downstream from Slate Creek, and 10 miles downstream from town of Metaline Falls.

Drainage area.--25,200 sq mi, approximately.

Records available.--November 1908 to September 1910 (gage heights only), October 1912 to September 1958. Prior to October 1928, published as Clark Fork at Metaline Falls and October 1928 to September 1937 as Clark Fork below Z Canyon, near Metaline Falls.

Gage.--Water-stage recorder. Datum of gage is 1,721.18 ft above mean sea level, datum of 1929, supplementary adjustment of 1947 (levels by Corps of Engineers). Prior to Dec. 19, 1928, staff gages at Metaline Falls 10 miles upstream at datum approximately 262.2 ft higher.

Average discharge.--46 years (1912-58), 26,530 cfs (19,210,000 acre-ft per year).

Extremes.--Maximum discharge during year, 99,300 cfs May 29 (gage height, 40.94 ft); minimum, 4,880 cfs Sept. 30 (gage height, 9.68 ft); minimum daily, 5,530 cfs Sept. 1, 1912-58; Maximum discharge, 171,300 cfs June 13, 1948 (gage height, 60.25 ft); minimum, 2,500 cfs Dec. 12, 1919 (gage height, -2.4 ft, site and datum then in use). Maximum stage known, 69.0 ft in June 1894, from floodmarks.

Remarks.--Records excellent. In 1946 there were diversions for irrigation of about 340,000 acres, and there probably has not been any appreciable change since that time. Flow regulated at Albeni Falls and Box Canyon Dams and affected by storage in Pend Oreille Lake, Flathead Lake, Hungry Horse Reservoir, and by smaller reservoirs in Pend Oreille River basin in Montana (see following page).

Cooperation.--This station is maintained by the United States under agreement with Canada.

Revisions (water years).--WSP 442: 1913.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

10.0	5,420	19.0	32,400
12.0	9,500	25.0	50,600
15.0	18,800	41.0	99,400

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16,700	24,000	30,100	10,600	11,500	18,600	17,400	29,800	83,600	31,700	15,900	5,530
2	16,800	19,500	30,000	*14,000	11,400	16,700	21,000	30,100	80,900	31,000	14,200	7,020
3	14,200	18,800	29,900	16,900	12,200	14,600	24,200	*29,900	78,200	30,100	11,800	9,500
4	13,000	*17,900	*29,700	10,300	11,000	19,000	25,700	30,000	73,900	29,400	11,100	11,900
5	15,500	18,900	29,100	8,360	10,400	*23,800	20,900	30,000	68,600	29,400	9,400	9,820
6	17,100	25,400	26,900	9,950	10,800	24,800	23,000	30,000	59,800	29,400	9,780	9,850
7	17,100	29,100	24,100	13,000	10,800	25,500	22,200	30,400	54,200	27,300	8,790	10,700
8	16,800	29,200	23,400	13,700	10,900	28,200	21,700	30,600	52,800	25,500	7,870	10,100
9	16,900	*29,600	23,100	16,900	11,300	28,700	21,300	31,300	52,600	26,200	6,860	10,500
10	*19,200	29,500	22,500	18,600	14,000	28,400	22,500	31,500	54,400	26,900	6,180	11,300
11	19,100	29,600	22,500	15,400	15,500	24,700	21,500	31,500	58,600	25,000	6,050	12,200
12	19,200	29,800	22,700	12,400	15,800	25,200	21,500	32,800	61,500	26,500	7,880	13,300
13	19,400	29,900	22,300	10,700	15,100	26,600	21,300	27,300	70,400	24,700	7,480	13,500
14	19,700	25,200	22,300	10,100	14,600	27,000	21,900	38,100	59,800	23,400	7,890	11,000
15	19,600	17,800	22,400	15,000	15,000	26,000	24,500	52,100	58,600	20,200	7,850	9,430
16	19,500	15,300	21,200	18,000	15,500	25,400	25,800	54,500	55,200	20,300	7,120	11,300
17	19,500	24,900	20,700	17,800	15,300	24,800	28,300	62,900	48,400	23,200	6,630	12,700
18	19,500	28,400	21,000	16,100	16,100	24,500	28,900	70,100	47,500	20,700	6,480	12,500
19	19,400	29,200	21,200	16,400	14,200	24,600	28,800	72,500	47,300	15,800	7,800	12,300
20	19,300	29,500	21,100	15,000	13,300	24,700	27,900	72,600	45,600	13,000	8,540	13,200
21	19,300	29,700	20,900	15,800	13,100	24,600	28,100	70,100	42,200	19,200	7,890	11,300
22	20,700	29,600	21,300	13,400	18,900	25,300	27,200	71,400	40,500	19,900	8,540	9,020
23	23,900	30,900	21,500	12,200	15,500	26,000	29,700	73,500	38,500	*17,800	9,560	10,600
24	22,200	29,900	21,500	12,800	12,200	26,600	30,300	74,500	36,700	15,700	8,080	11,400
25	19,600	29,900	17,800	14,500	12,500	27,000	30,200	76,300	36,700	11,400	8,020	11,600
26	24,300	29,900	16,200	14,300	15,500	25,400	29,900	80,000	40,100	8,840	7,850	10,800
27	25,600	29,800	17,000	13,000	17,100	24,800	30,000	87,600	38,600	11,500	7,930	9,880
28	25,400	29,900	20,500	12,400	16,700	30,100	29,900	*91,200	37,900	12,500	8,160	8,680
29	27,000	30,000	21,500	13,300	17,800	27,800	29,800	93,400	36,800	12,500	9,950	8,970
30	26,900	30,100	16,500	13,300	-----	24,500	29,800	97,700	33,300	11,800	9,720	11,300
31	27,300	-----	17,900	12,200	-----	18,900	-----	91,000	-----	14,600	7,260	-----
Total	620,700	800,400	699,800	426,410	387,300	762,800	765,200	*1,734,7	*1,597	654,440	267,160	321,200
Mean	20,020	26,680	22,570	13,760	13,830	24,610	25,510	55,980	53,230	21,110	8,618	10,710
Ac-ft	*1,231	*1,588	*1,388	845,600	768,200	*1,513	*1,518	*3,441	*3,168	*1,298	529,900	637,100
Calendar year 1957: Max	98,000	Min	4,940				27,550	Ac-ft	19,940,000			
Water year 1957-58: Max	97,700	Min	5,530				24,760	Ac-ft	17,930,000			

\* Discharge measurement made on this day.

† Expressed in thousands.

## Smaller Reservoirs in Pend Oreille River basin, in Montana

Georgetown Lake on Flint Creek, 2 miles west of Southern Cross. Storage began about 1905 for pumpage into Warm Springs Creek for use of reclamation works of Anaconda Copper Mining Co. at Anaconda, or for release through Flint Creek for power development. Usable capacity, 31,000 acre-ft. Records furnished by The Montana Power Co.

East Fork Rock Creek Reservoir on East Fork Rock Creek, 14 miles southwest of Philipsburg. Storage began in 1936 for irrigation in Flint Creek Valley; usable capacity, 16,000 acre-ft. Records furnished by Montana Water Conservation Board.

Nevada Creek Reservoir on Nevada Creek, 7 miles west of Finn. Storage began in 1939 for irrigation; usable capacity, 12,600 acre-ft. Records furnished by Montana State Water Conservation Board.

West Fork Bitterroot River Reservoir on West Fork Bitterroot River, 7 miles upstream from Nez Perce Creek and 23 miles south of Darby. Storage began in 1940 for irrigation; usable capacity, 31,700 acre-ft. Records furnished by Montana State Water Conservation Board.

Como Lake on Rock Creek, 4 miles northwest of Darby. Storage began in 1909 for irrigation; usable capacity, 34,800 acre-ft. Records furnished by Bitterroot Irrigation District.

Camas Reservoirs comprise a group of four reservoirs in Little Bitterroot River basin, which are operated for irrigation. Records furnished by Office of Indian Affairs. Little Bitterroot Lake on Little Bitterroot River, 2 miles southwest of Marion; storage began in 1918; usable capacity, 24,000 acre-ft. Hubbard Reservoir on Little Bitterroot River, 9 miles northwest of Niarada; storage began in 1924; usable capacity, 12,100 acre-ft. Upper Dry Fork Reservoir on Dry Fork Creek, 4 miles northwest of Lonepine; storage began in 1940; usable capacity, 2,700 acre-ft. Dry Fork Reservoir on Dry Fork Creek, 1 mile west of Lonepine; storage began in 1921; usable capacity, 4,000 acre-ft.

Mission Valley Reservoirs comprise a group of eight reservoirs in the area east of and tributary to Flathead River between Flathead Lake and Jocko River, which are operated for irrigation. Records furnished by Office of Indian Affairs. Twin Reservoir, fed entirely by canals, 4 miles southeast of Polson; storage began in 1932; usable capacity, 1,210 acre-ft. Pablo Reservoir, fed entirely by canals, 3 miles south of Polson; storage began in 1914; usable capacity, 25,000 acre-ft. Lower Crow Reservoir on Crow Creek, 6 miles west of Ronan; storage began in 1933; usable capacity, 10,350 acre-ft. Kicking Horse Reservoir, fed entirely by canals, 5 miles south of Ronan; storage began in 1930; usable capacity, 8,350 acre-ft. Ninepipe Reservoir, fed entirely by canals, 2 miles northeast of Charlo; storage began in 1911; usable capacity, 14,870 acre-ft. McDonald Reservoir on Post Creek, 9 miles east of Charlo; storage began in 1919; usable capacity, 8,220 acre-ft. Mission Reservoir on Mission Creek, 4 miles east of St. Ignatius; storage began in 1935; usable capacity, 7,250 acre-ft. Tabor Reservoir on Dry Creek, 8 miles southeast of St. Ignatius; storage began in 1919; usable capacity, 23,000 acre-ft.

Lower Jocko Lake on Middle Fork Jocko River, 15 miles east of Arlee. Storage began in 1937; usable capacity, 7,600 acre-ft. Records furnished by Office of Indian Affairs.

Thompson Falls Reservoir on Clark Fork, at Thompson Falls, for power development; usable capacity, 15,000 acre-ft. Records furnished by The Montana Power Co.

Other Reservoirs of small capacity, principally on tributaries of Bitterroot River, are operated for irrigation.

Month-end contents, in acre-feet, water year October 1957 to September 1958

Date	Georgetown Lake	East Fork Rock Creek Reservoir	Nevada Creek Reservoir	West Fork Bitterroot River Reservoir	Como Lake	Camas Reservoirs	Mission Valley Reservoirs	Lower Jocko Lake	Thompson Falls Reservoir
Sept. 30....	22,270	1,690	-	e28,000	1,660	25,300	6,290	0	11,260
Oct. 31....	23,160	-	-	-	513	25,020	9,440	0	14,680
Nov. 30....	24,380	-	-	-	1,640	25,750	12,760	-	14,680
Dec. 31....	25,160	-	-	-	2,720	25,540	16,310	-	12,930
Jan. 31....	21,470	-	-	-	5,740	25,390	18,080	-	10,150
Feb. 28....	19,920	-	-	-	7,570	25,960	19,660	-	15,960
Mar. 31....	19,670	-	-	-	8,500	32,200	22,660	-	15,520
Apr. 30....	21,550	-	-	-	12,110	36,950	24,130	245	1,760
May 31....	26,130	c14,100	12,640	b32,800	35,970	40,910	77,920	6,150	7,360
June 30....	29,230	15,040	a11,800	f32,250	36,510	40,390	98,750	4,760	2,560
July 31....	29,560	a15,630	a10,660	-	24,480	35,160	58,350	695	0
Aug. 31....	29,110	a10,860	7,880	-	6,530	30,120	19,190	0	2,280
Sept. 30....	28,780	5,100	d4,590	-	673	24,740	8,370	60	12,840

a Interpolated on basis of readings made weekly or less frequently.

b Figure of contents for first day of following month.

c Contents on June 3, 1958.

d Contents on Sept. 29, 1958.

e Approximate.

f Contents June 29, 1958.

## 3995. Columbia River at international boundary

(International gaging station)

Location.--Lat 49°00'03", long 117°37'40", in SE $\frac{1}{4}$  sec. 4, T. 40 N., R. 41 E., on left bank at international boundary, half a mile downstream from Pend Oreille River.

Drainage area.--59,700 sq mi, approximately.

Records available.--October 1937 to September 1958. Prior to March 1938 monthly discharge only, published in WSP 1316.

Gage.--Water-stage recorder. 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. Since May 31, 1942, auxiliary water-stage recorder 2.2 miles downstream from base gage. Jan. 1 to May 30, 1942, auxiliary staff gage at same site.

Average discharge.--21 years, 96,830 cfs (70,100,000 acre-ft per year).

Extremes.--Maximum discharge during year, 370,500 cfs May 30 (elevation, 1,326.75 ft); minimum, 20,800 cfs Jan. 14 (elevation, 1,290.06 ft).

1937-58: Maximum discharge, 550,100 cfs June 12, 1948 (elevation, 1,338.13 ft); minimum, 18,000 cfs Feb. 7, 1954 (elevation, 1,289.38 ft).

Flood of June 1894 reached a stage of 1,346 ft, from information by Bureau of Reclamation (discharge, 680,000 cfs).

Flow of about 12,900 cfs occurred Jan. 30 or 31, 1937, based on information from other gaging stations (elevation, 1,287.9 ft), from rating curve extended below 1,291.6 ft; may have been as low sometime in January 1930.

Remarks.--Records excellent except those for period of no auxiliary gage-height record, which are good. Many diversions above station for irrigation. It was estimated that 346,700 acres were under irrigation in the United States in 1946. Water is diverted for the irrigation of an additional 25,000 acres in Canada. The flow is affected by internationally controlled storage in Kootenay Lake as well as by natural and controlled regulation in other lakes and reservoirs in Kootenay and Pend Oreille River basins. Records of chemical analyses and water temperatures for the water year 1958 are given in WSP 1574.

Cooperation.--This station is maintained by the United States under agreement with Canada.

Revisions (water years).--WSP 932: 1937(m), 1938(M), 1939(m).

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56,700	51,800	47,400	25,900	30,200	45,400	44,400	70,200	362,100	208,100	114,500	72,700
2	54,800	46,800	48,100	29,300	29,700	43,700	48,000	72,600	359,700	203,600	110,800	70,200
3	55,700	46,100	47,300	33,600	29,500	38,000	49,800	74,600	354,700	197,500	108,100	70,100
4	55,300	44,800	47,800	26,200	29,200	42,500	51,100	77,200	345,200	191,700	105,800	69,900
5	57,600	46,900	46,700	25,300	29,100	47,700	46,500	79,000	328,100	188,700	100,100	67,600
6	57,800	48,100	44,900	26,300	27,000	48,200	49,800	81,800	315,100	182,600	96,900	65,100
7	57,400	45,300	41,000	28,100	28,400	48,300	49,000	77,600	309,800	175,000	92,700	63,000
8	56,600	45,500	39,200	29,100	28,300	51,000	49,900	95,900	303,300	168,500	89,300	60,700
9	57,800	55,200	40,400	31,900	28,700	51,800	48,700	102,800	301,100	165,800	87,900	59,600
10	56,100	54,600	43,300	33,200	30,600	51,300	49,900	110,300	303,400	162,700	86,100	58,600
11	56,100	54,100	40,000	29,700	32,900	45,700	49,300	120,800	307,000	157,500	85,900	57,900
12	54,600	55,100	39,800	26,300	33,100	45,500	49,800	134,300	312,800	157,300	84,300	58,200
13	53,700	55,100	39,500	25,100	32,400	46,600	50,300	146,800	317,900	153,700	85,700	58,000
14	54,400	49,300	39,100	25,400	31,700	46,700	52,000	155,600	305,000	150,100	85,500	55,400
15	55,100	41,600	39,700	30,100	32,200	45,900	55,700	175,500	298,700	144,400	84,900	55,200
16	54,700	38,200	38,800	35,200	32,700	45,100	57,900	187,200	291,200	141,600	83,800	57,500
17	51,900	45,800	39,100	38,500	32,300	44,200	61,700	199,800	277,400	142,100	83,300	57,900
18	53,900	51,400	38,800	39,300	32,800	43,200	63,400	212,300	270,600	138,200	82,700	57,800
19	52,200	50,700	40,800	36,100	31,900	42,900	63,800	220,900	263,400	132,300	83,700	57,500
20	51,900	51,400	38,600	34,300	31,100	43,100	63,900	229,500	257,500	128,600	84,400	63,900
21	51,200	50,100	38,100	34,800	31,200	43,400	64,700	236,300	249,900	133,000	82,600	64,800
22	51,800	50,000	38,500	31,300	37,400	45,800	65,000	246,800	242,400	130,800	81,600	85,100
23	54,800	48,900	39,300	29,600	37,400	46,600	68,400	260,900	236,300	127,900	80,600	82,600
24	52,000	48,400	37,400	30,800	34,500	48,200	68,400	275,200	230,800	125,400	79,200	61,900
25	53,000	48,700	35,300	34,400	40,200	51,800	69,500	291,400	226,800	119,700	78,900	63,800
26	56,300	49,300	33,500	34,400	43,900	54,300	69,200	306,200	227,700	116,100	80,400	82,700
27	54,800	44,700	36,000	30,900	48,600	53,200	69,900	323,600	222,700	118,500	81,300	58,900
28	53,600	48,800	37,100	30,600	44,800	59,700	69,200	343,500	222,800	117,700	81,000	57,100
29	53,600	48,500	38,400	30,800	-	57,500	68,800	357,800	220,300	115,600	83,100	57,600
30	53,900	47,400	35,800	31,900	-----	53,500	69,100	368,400	213,700	113,700	82,000	56,100
31	54,800	-----	34,500	31,400	-----	47,600	-----	385,800	-----	115,100	78,300	-----
Total	14,933.6	14,486.4	12,444.2	989,900	931,500	1,478.4	1,735.6	86,006.1	84,478.4	4,623.7	2,255.2	1,047.6
Mean	54,630	49,580	40,140	30,860	33,270	47,680	57,780	187,600	149,200	87,910	61,590	61,590
Ac-ft	3,359	2,948	2,468	1,904	1,848	2,932	3,439	11,910	16,820	8,171	4,405	3,665
Calendar year 1957: Max	355,800	Min	30,900	Mean	94,970	Ac-ft	68,750,000					
Water year 1957-58: Max	386,400	Min	25,100	Mean	90,980	Ac-ft	65,870,000					

\* Discharge measurement made on this day.

\* Expressed in thousands.

a No auxiliary gage-height record; discharge computed on basis of base gage-height record.

4015. Kettle River near Ferry, Wash.

(International gaging station)

Location.--Lat 48°58'40", long 118°46'10", in lot 7, sec. 10, T. 40 N., R. 32 E., on right bank 1 1/2 miles south of international boundary and Ferry and 3 miles upstream from Toroda Creek.

Drainage area.--2,220 sq mi, approximately.

Records available.--August 1928 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,836.8 ft above mean sea level, international joint adjustment of 1947. Prior to Nov. 23, 1928, staff gage at present site and datum.

Average discharge.--30 years, 1,474 cfs (1,067,000 acre-ft per year).

Extremes.--Maximum discharge during year, 12,400 cfs May 23 (gage height, 17.73 ft); minimum, 52 cfs Dec. 31 (gage height, 9.12 ft).  
1928-58: Maximum discharge, 21,200 cfs May 29, 1948 (gage height, 21.15 ft); minimum, 14 cfs (discharge measurement) Jan. 23, 1930, but may have been less during period of ice effect Jan. 18-23, 1930.

Remarks.--Records good except those for period of no gage-height record, which are fair. Several small diversions above station for irrigation. No regulation.

Cooperation.--This station is maintained by the United States under agreement with Canada.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 23

Jan. 24 to Sept. 30

9.3	90	9.4	116	12.0	1,860
9.6	168	9.7	200	13.0	3,100
10.0	300	10.0	306	15.0	6,400
10.5	540	10.5	560	18.0	13,000
		11.0	905		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	180	427	157	90	197	672	1,320	3,280	6,670	1,570	380	137
2	211	422	146	119	185	626	1,320	4,020	6,690	1,570	357	142
3	254	371	180	143	191	596	1,360	4,940	5,700	1,490	327	148
4	244	366	233	171	188	578	1,530	5,670	5,060	1,390	306	142
5	275	304	257	189	188	584	1,720	5,980	4,670	1,310	295	142
6	264	*304	257	195	191	566	1,780	6,610	4,340	1,540	279	145
7	250	300	220	*201	194	530	1,860	7,580	4,400	1,620	276	145
8	237	293	201	*201	200	518	1,920	*8,650	4,980	1,470	254	132
9	224	271	233	195	210	489	2,010	9,970	4,180	1,470	246	132
10	224	254	254	195	226	456	2,020	9,950	3,940	1,520	243	126
11	217	247	244	195	229	456	2,070	10,000	4,810	1,390	229	126
12	220	271	224	198	229	450	2,130	10,400	6,780	1,280	222	134
13	220	304	220	201	229	435	2,450	9,420	5,780	1,170	219	150
14	230	320	227	198	226	414	3,000	8,140	4,980	1,100	210	153
15	257	316	227	201	219	414	3,320	8,100	4,360	1,010	210	156
16	332	304	220	201	219	420	3,280	9,010	3,740	929	206	197
17	308	293	*201	224	222	414	3,250	9,910	3,280	*880	197	206
18	286	282	211	208	229	409	3,160	9,780	*2,980	785	182	213
19	268	271	217	177	250	404	2,980	9,840	2,680	755	179	216
20	261	264	183	214	268	414	3,000	10,700	2,310	699	176	236
21	250	214	198	204	287	430	2,920	11,600	2,100	646	167	287
22	250	230	195	151	*310	506	2,870	*11,900	1,900	608	162	323
23	244	211	171	a160	362	590	*2,850	12,000	1,740	554	162	323
24	244	214	208	a170	445	672	2,810	11,600	1,580	506	156	*310
25	237	237	189	a180	785	*872	2,720	11,000	1,440	484	*148	302
26	244	261	211	a180	961	1,140	2,590	10,200	1,350	450	137	279
27	254	264	177	a190	852	1,250	2,490	9,450	1,310	425	139	268
28	257	268	224	a200	741	1,290	2,450	8,680	1,630	409	145	268
29	271	211	137	*210	-	1,270	2,460	8,960	1,780	404	145	268
30	282	189	127	206	-----	1,300	2,710	7,450	1,560	404	137	272
31	296	-----	92	203	-----	1,340	-----	6,140	-----	404	137	-----
Total	7,791	8,483	6,241	5,770	9,036	20,505	72,350	270,930	108,400	30,192	6,628	6,078
Mean	251	283	201	186	323	661	2,412	8,740	3,613	974	214	203
Ac-ft	15,450	16,830	12,380	11,440	17,920	40,670	143,500	537,400	215,000	59,880	13,150	12,060

Calendar year 1957: Max 15,600 Min 92 Mean 1,480 Ac-ft 1,072,000  
Water year 1957-58: Max 12,000 Min 90 Mean 1,513 Ac-ft 1,096,000

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of recorded range in stage, weather records, and records for station near Laurier.



4045. Kettle River near Laurier, Wash.

(International gaging station)

Location.--Lat 48°59'10", long 118°13'00", in NW¼ sec. 11, T. 40 N., R. 36 E., on right bank 500 ft downstream from Deep Creek, 1½ miles southeast of Laurier, and 12 miles upstream from Boulder Creek.

Drainage area.--3,800 sq mi, approximately.

Records available.--September 1929 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,425.5 ft above mean sea level, international joint adjustment of 1947. Prior to Jan. 3, 1930, staff gage at same site and datum.

Average discharge.--29 years, 2,857 cfs (2,068,000 acre-ft per year).

Extremes.--Maximum discharge during year, 22,000 cfs May 23 (gage height, 13.52 ft); minimum, 222 cfs Jan. 1 (gage height, 2.59 ft), but may have been less during period of ice effect Dec. 30 to Jan. 2.  
1929-58: Maximum discharge, 35,000 cfs May 29, 1948 (gage height, 17.25 ft); minimum, 88 cfs Dec. 1, 1936 (gage height, 2.20 ft), but was probably less during winter of 1929-30.

Maximum stage known, about 22 ft in May or June 1894, from information by local residents.

Remarks.--Records good prior to Mar. 1, excellent thereafter, except those for periods of ice effect, which are poor. North Fork regulated by reservoir at Grand Forks, British Columbia. Numerous diversions for irrigation of about 720 acres in the United States (for 1946 from United States reports) and 2,090 acres in Canada from the Canada Year Book for 1940. Some diversion for domestic use.

Cooperation.--This station is maintained by the United States under agreement with Canada.

Revisions (water years).--WSP 737: 1930-31. WSP 862: 1937. WSP 882: 1938.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 13				May 14 to Sept. 30			
2.7	280	6.0	3,370	2.7	265	6.0	3,180
3.0	395	8.0	6,370	3.0	390	8.0	6,650
3.5	700	11.0	14,400	3.5	660	11.0	14,000
4.0	1,060	14.0	23,900	4.0	1,010	14.0	23,600
5.0	2,050			5.0	1,930		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	314	558	b300	b250	444	2,330	3,850	6,360	12,000	2,890	748	289
2	370	654	b290	b280	428	2,130	3,800	7,830	12,500	2,870	702	281
3	400	654	380	296	422	2,030	3,850	9,440	10,800	2,770	654	281
4	439	596	417	355	422	1,920	4,090	11,000	9,690	2,600	612	285
5	450	546	474	375	417	1,900	4,440	11,400	9,030	2,500	576	285
6	456	*528	474	395	417	1,850	4,840	12,300	8,480	2,650	552	285
7	456	516	412	385	422	1,760	4,820	*13,600	8,660	2,890	525	281
8	428	504	428	*585	444	1,710	4,910	15,600	9,300	2,770	500	277
9	406	480	434	370	468	1,630	5,090	*18,000	8,160	2,670	480	277
10	395	450	462	370	498	1,550	5,070	18,700	7,790	2,680	460	269
11	385	450	450	375	528	1,500	5,060	18,000	8,030	2,510	440	269
12	380	456	412	390	534	1,470	5,160	19,700	10,400	2,320	425	265
13	375	498	406	390	540	1,420	5,620	19,100	9,330	2,150	420	273
14	365	540	422	395	540	1,370	6,720	15,300	8,770	2,030	390	289
15	395	564	417	395	528	1,340	7,460	14,600	7,850	1,910	381	293
16	444	540	412	400	528	1,330	7,390	15,700	6,910	1,790	372	309
17	516	510	*406	450	540	1,320	7,390	17,400	*6,090	*1,680	372	325
18	510	492	417	468	552	1,300	7,240	17,600	5,480	1,550	363	354
19	480	474	434	428	570	1,290	7,780	17,100	4,940	1,480	358	358
20	456	456	422	400	635	1,230	8,640	18,300	4,440	1,360	350	363
21	439	428	385	417	735	1,330	6,460	*20,300	4,040	1,270	341	395
22	450	365	385	406	*819	1,460	6,300	21,500	3,650	1,190	333	435
23	434	375	400	390	992	1,780	*6,120	21,700	3,350	1,120	325	*505
24	428	360	390	395	1,370	2,160	5,900	21,100	3,100	1,050	317	510
25	422	400	400	439	2,420	*3,110	5,710	20,100	2,900	978	*505	500
26	417	434	406	450	3,360	3,960	5,690	18,900	2,730	923	297	480
27	422	444	422	428	2,980	4,040	5,330	17,600	2,600	874	293	465
28	444	434	395	434	2,600	3,990	5,160	16,100	2,900	825	333	445
29	450	385	b350	*439	-	3,850	5,160	16,100	3,250	797	321	440
30	*480	b350	b300	450	-----	3,850	5,450	14,300	2,980	783	301	440
31	504	-----	b270	456	-----	3,940	-----	11,800	-----	769	297	-----
Total	13,500	14,461	12,372	12,246	25,153	65,940	167,300	496,530	200,150	56,609	13,143	10,523
Mean	430	462	399	395	898	2,127	5,577	16,020	6,672	1,826	424	351
Ac-ft	26,440	28,680	24,540	24,290	49,890	130,800	331,800	984,900	397,000	112,300	26,070	20,870
Calendar year 1957: Max	24,900				Min	270	Mean	2,666	Ac-ft	1,930,000		
Water year 1957-58: Max	21,700				Min	250	Mean	2,980	Ac-ft	2,158,000		

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

4060. Deer Lake near Loon Lake, Wash.

Location.--Lat 48°06'25", long 117°36'10", on line between secs. 11 and 14, T. 30 N., R. 41 E., an eighth of a mile upstream from outlet and about 3 miles northeast of town of Loon Lake.

Drainage area.--17.8 sq mi.

Records available.--November 1952 to September 1958 (fragmentary).

Gage.--Staff gage. Altitude of gage is 2,480 ft (from topographic map). Prior to Oct. 1, 1953, staff gage at same site at datum 4.00 ft higher.

Extremes.--Maximum gage height observed during year, 7.70 ft Apr. 25-28; minimum observed, 3.05 ft Jan. 8.  
1952-58: Maximum gage height observed, 9.30 ft Apr. 25, 26, 1956; minimum observed, that of Jan. 8, 1958.

Remarks.--Intermediate stages of lake controlled for recreational purposes by flashboards.  
No diversion.

Gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	3.44	-		-	6.29	6.58	7.67	6.90	6.10	5.36	4.56
2	-	3.44	-		3.71	6.30	6.60	7.66	6.80	6.10	5.34	4.54
3	-	3.42	-		3.78	6.35	6.60	7.64	6.78	6.10	5.29	4.52
4	-	3.35	3.37		3.86	6.39	6.63	7.60	6.82	6.10	5.25	4.49
5	3.68	-	3.39		3.97	6.40	6.74	7.58	6.70	6.10	5.21	4.48
6	3.66	-	-		4.09	6.40	6.70	7.58	6.70	6.00	5.19	4.40
7	3.64	-	-		4.19	6.40	6.80	7.56	6.70	5.98	5.15	4.40
8	3.60	-	-	3.05	4.34	6.40	6.90	7.53	6.70	5.96	5.10	4.40
9	3.58	3.35	-		-	6.40	7.00	7.52	6.60	5.93	5.09	4.35
10	3.58	3.40	-		-	6.40	7.11	7.48	6.60	5.90	5.08	4.30
11	3.56	3.43	-		-	6.40	7.25	7.48	6.58	5.87	5.07	4.30
12	3.53	3.44	-		4.36	6.37	7.40	7.50	6.57	5.86	5.06	4.30
13	3.52	3.46	-		4.43	6.37	7.50	7.50	6.55	5.83	5.04	4.30
14	3.54	3.46	-		4.46	6.34	7.50	7.48	6.54	5.80	5.00	4.30
15	3.54	3.49	-		4.49	6.30	7.50	7.40	6.52	5.79	4.97	4.30
16	3.54	3.48	-		4.52	6.38	7.50	7.40	6.50	5.76	4.92	4.30
17	3.53	3.48	-		4.59	6.36	7.50	7.39	6.48	5.73	4.80	4.25
18	3.50	3.47	-		4.66	6.34	7.55	7.30	6.44	5.70	4.86	4.20
19	3.52	3.46	-		4.70	6.31	7.60	7.20	6.40	5.67	4.85	4.20
20	3.48	3.45	-		4.85	6.28	7.60	7.20	6.39	5.63	4.82	4.20
21	3.46	3.42	-		4.90	6.30	7.63	7.20	6.38	5.61	4.80	4.18
22	3.49	3.39	-		4.97	6.30	7.64	7.20	6.35	5.59	4.78	4.16
23	3.47	3.38	-		5.05	6.31	7.68	7.15	6.32	5.56	4.76	4.14
24	3.46	3.36	-		5.25	6.35	7.68	7.10	6.30	5.56	4.76	4.12
25	3.45	3.36	-		5.55	6.40	7.69	7.10	6.20	5.53	4.74	4.12
26	3.46	-	-		5.90	6.41	7.70	7.10	6.20	5.51	4.72	4.10
27	3.46	-	-		6.15	6.43	7.70	7.00	6.20	5.49	4.70	4.08
28	3.46	-	-		6.23	6.46	7.70	7.00	6.20	5.46	4.67	4.00
29	3.44	-	-		-	6.46	7.68	6.95	6.10	5.44	4.63	3.99
30	3.48	-	-		-	6.52	7.68	6.90	6.10	5.42	4.60	3.98
31	3.46	-	-		-	6.56	-	6.90	-	5.38	4.58	-

4065. Loon Lake near Loon Lake, Wash.

Location.--Lat 48°01'45", long 117°36'15", in NW¼ sec. 11, T. 29 N., R. 41 E., at south end of Loon Lake, 2.7 miles southeast of town of Loon Lake.

Drainage area.--33.4 sq mi.

Records available.--April 1950 to September 1958.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, unadjusted. Prior to Sept. 29, 1951, at site 0.2 mile north at present datum.

Extremes.--Maximum elevation during year, 2,381.87 ft Apr. 20; minimum, 2,379.85 ft Sept. 30.

1950-58: Maximum elevation, 2,382.71 ft May 3, 1950, but may have been higher sometime in 1951 water year while water-stage recorder was not operating; minimum recorded, that of Sept. 30, 1958.

Remarks.--Elevation controlled by dam at lake outlet. Some small diversions for irrigation of lawns and gardens.

Revisions (water years).--WSP 1216: 1950.

Mean elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	80.11	80.08	80.10	80.33	80.77	81.51	81.54	81.77	81.50	81.23	80.79	80.15
2	80.13	80.07	80.11	80.33	80.77	81.53	81.53	81.75	81.48	81.21	80.76	80.13
3	80.12	80.06	80.11	80.33	80.78	81.57	81.59	81.75	81.47	81.21	80.74	80.11
4	80.11	80.05	80.11	80.33	80.79	81.59	81.69	81.73	81.46	81.21	80.70	80.10
5	80.11	80.05	80.11	80.34	80.80	81.57	81.72	81.73	81.44	81.20	80.69	80.09
6	80.12	80.04	80.12	80.34	80.81	81.53	81.73	81.71	81.42	81.20	80.66	80.07
7	80.12	80.03	80.13	80.33	80.84	81.49	81.74	81.70	81.41	81.18	80.64	80.07
8	80.12	80.03	80.14	80.34	80.86	81.47	81.74	81.70	81.40	81.18	80.62	80.05
9	80.11	80.02	80.13	80.33	80.91	81.48	81.74	81.69	81.39	81.18	80.59	80.05
10	80.10	80.01	80.13	80.33	81.00	81.49	81.75	81.68	81.40	81.17	80.58	80.04
11	80.09	80.02	80.13	80.35	81.02	81.47	81.76	81.68	81.40	81.16	80.57	80.03
12	80.09	80.04	80.12	80.37	81.04	81.44	81.76	81.69	81.40	81.14	80.55	80.02
13	80.09	80.09	80.12	80.42	81.07	81.41	81.75	81.67	81.40	81.11	80.53	80.03
14	80.11	80.11	80.13	80.43	81.07	81.36	81.75	81.65	81.40	81.08	80.51	80.02
15	80.10	80.12	80.13	80.48	81.07	81.36	81.76	81.66	81.39	81.06	80.49	80.01
16	80.09	80.12	80.12	80.49	81.09	81.34	81.80	81.65	81.38	81.06	80.48	80.00
17	80.08	80.12	80.14	80.53	81.10	81.32	81.83	81.64	81.37	81.05	80.46	79.99
18	80.08	80.12	80.14	80.55	81.11	81.31	81.84	81.62	81.36	81.04	80.45	79.99
19	80.07	80.12	80.15	80.58	81.12	81.29	81.85	81.60	81.35	81.03	80.42	79.98
20	80.06	80.11	80.18	80.56	81.16	81.28	81.86	81.60	81.33	81.01	80.40	79.96
21	80.05	80.10	80.18	80.56	81.17	81.32	81.85	81.59	81.33	80.98	80.39	79.94
22	80.05	80.10	80.19	80.57	81.19	81.37	81.85	81.59	81.31	80.96	80.37	79.93
23	80.04	80.10	80.20	80.59	81.21	81.38	81.85	81.57	81.30	80.95	80.35	79.92
24	80.05	80.10	80.21	80.64	81.27	81.40	81.84	81.56	81.33	80.92	80.35	79.91
25	80.05	80.10	80.24	80.65	81.46	81.43	81.83	81.55	81.33	80.90	80.32	79.90
26	80.06	80.09	80.27	80.66	81.51	81.44	81.83	81.54	81.32	80.88	80.29	79.89
27	80.06	80.09	80.31	80.67	81.51	81.45	81.81	81.53	81.31	80.87	80.28	79.88
28	80.06	80.09	80.32	80.71	81.51	81.46	81.80	81.52	81.28	80.85	80.26	79.88
29	80.05	80.08	80.33	80.74	-	81.47	81.80	81.50	81.26	80.82	80.24	79.87
30	80.09	80.08	80.33	80.78	-	81.51	81.78	81.48	81.24	80.83	80.20	79.85
31	80.08	-	80.34	80.76	-	81.53	-	81.49	-	80.81	80.19	-

Note.--Add 2,300 ft to obtain elevation above mean sea level.

4070. Sheep Creek at Loon Lake, Wash.

Location.--Lat 48°03'35", long 117°39'10", in NE<sup>1</sup>/<sub>4</sub> sec. 32, T. 30 N., R. 41 E., on right bank 0.7 mile downstream from outlet of Loon Lake and 1 mile west of town of Loon Lake.

Drainage area.--36.2 sq mi.

Records available.--April to September 1950, October 1951 to September 1958.

Gage.--Water-stage recorder and wooden control. Altitude of gage is 2,370 ft (from topographic map). April to September 1950 water-stage recorder at site a quarter of a mile upstream at different datum.

Average discharge.--7 years (1951-58), 2.30 cfs (1,670 acre-ft per year).

Extremes.--Maximum discharge during year, 41 cfs Mar. 4; maximum gage height recorded, 3.27 ft Feb. 11 (backwater from ice); no flow for long periods.  
1950, 1951-58: Maximum discharge, 43 cfs Apr. 23, 1956 (gage height, 2.84 ft); maximum gage height, 3.43 ft Feb. 4, 1954 (ice jam); no flow at times each year.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Flow regulated by dam at outlet of Loon Lake. Some small diversions for irrigation.

Revisions (water years).--WSP 1396: 1954.

Rating table, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.72	0	2.1	4.7
1.8	.4	2.2	8.2
1.9	1.1	2.4	17.5
2.0	2.4	2.8	41

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					0	16	2.0	9.0	1.4			
2					0	1.5	2.6	9.0	1.3			
3					0	2.0	3.2	8.2	1.2			
4					0	21	6.2	7.8	*1.1			
5					0	40	7.8	7.4	.8			
6					0	40	7.8	7.4	.5			
7					0	40	7.8	7.0	.4			
8				(*)	0	16	*7.4	*6.6	.1	(*)		
9					0	3.0	7.0	6.4	.1			
10					0	15	8.2	6.0	.2			
11					*b8.0	17	9.8	6.0	.2			
12					*10.5	14.5	9.8	5.8	0			
13					10.5	14.5	10	5.6	.1			
14					10	*14.5	9.8	5.4	.2			
15					10	14.5	9.8	5.2	0			
16					10	14.5	11	5.0	0			
17					10	14.5	12	4.8	0			(*)
18					9.8	14.5	12	4.5	0			
19					9.8	14	12	4.2	0		(*)	
20					11	4.7	12.5	3.9	0			
21					12	0	12	3.6	0			
22	(*)				12.5	0	11.5	3.3	0			
23					12.5	.2	12	3.0	0			
24					13	.5	11	2.7	0			
25					20	.8	11	2.4	0			
26					30	.8	14.5	2.2	0			
27		(*)			30	.8	10	2.0	0			
28					30	.9	9.4	1.9	0			
29					-	1.2	9.4	1.7	0			
30					-----	1.6	9.4	1.6	0			
31					-----	1.9	-----	1.5	-----			
Total	0	0	0	0	259.6	340.4	278.9	151.1	7.6	0	0	0
Mean	0	0	0	0	9.27	11.0	9.30	4.87	0.25	0	0	0
Ac-ft	0	0	0	0	515	675	553	300	15	0	0	0
Calendar year 1957: Max	10.5			Min	0	Mean	0.55	Ac-ft	398			
Water year 1957-58: Max	40			Min	0	Mean	2.84	Ac-ft	2,060			

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

b Stage-discharge relation affected by ice.

Note.--No gage-height record Feb. 19 to Mar. 13, May 9 to June 3; discharge estimated on basis of gage tender's notes, recorded range in stage, and records for station at Springdale.

## 4075. Sheep Creek at Springdale, Wash.

Location.--Lat 48°03'30", long 117°45'00", in SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 34, T. 30 N., R. 40 E., on right bank 15 ft upstream from bridge on State Highway 3, half a mile west of Springdale, and 4 $\frac{1}{2}$  miles upstream from mouth.

Drainage area.--46.9 sq mi.

Records available.--January 1953 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,980 ft (from topographic map).

Average discharge.--5 years, 13.5 cfs (977 acre-ft per year).

Extremes.--Maximum discharge during year, 78 cfs Feb. 26 (gage height, 2.30 ft); minimum, 7.6 cfs Dec. 31.

1953-58: Maximum discharge, that of Feb. 26, 1958; maximum gage height recorded, 5.22 ft Jan. 30 to Feb. 7, 1956 (backwater from ice); minimum discharge, 1.6 cfs Jan. 21, 1955.

Remarks.--Records good except those for periods of ice effect, which are fair. Some small diversions for domestic use. Flow partly regulated by dam at outlet of Loon Lake.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.14	8.3	1.7	32
1.2	10.5	2.0	54
1.4	18.5	2.3	78

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.7	8.7	9.5	b9	10.5	60	17	24	16	12.5	12.5	11
2	9.1	8.7	9.9	b8.5	9.9	30	18.5	24	15	13	12	11
3	9.5	8.7	9.5	b8.5	9.9	26	19.5	23	15	13	12	11
4	9.1	8.7	9.1	8.7	9.5	27	27	22	*14.5	13	11.5	11
5	8.7	8.7	9.1	8.3	9.5	63	28	22	14.5	13.5	11.5	11
6	9.1	8.7	9.1	8.3	9.9	61	28	22	14	13	12.5	11
7	9.1	9.1	9.9	8.3	10.5	60	27	21	14	12.5	11.5	11
8	9.1	9.1	9.1	*8.3	11	51	*26	*21	14.5	*13.5	11.5	11
9	9.1	9.1	9.1	8.3	14.5	21	25	20	14	12.5	11.5	11
10	8.7	9.1	9.1	8.3	17.5	24	25	20	15	12.5	11	11
11	8.7	9.1	8.7	8.7	16	40	25	20	15.5	12.5	11.5	11
12	8.7	9.1	8.7	9.1	*23	*33	24	21	14.5	12.5	11.5	11
13	9.1	10.5	8.7	9.5	27	31	24	20	14.5	11.5	11.5	12
14	9.5	10.5	8.7	9.1	*26	31	24	19.5	14.5	12	11	11.5
15	9.1	9.9	8.7	9.5	26	31	24	19.5	14.5	12	11	11.5
16	9.1	9.9	9.1	9.1	27	31	25	18.5	14	12	11	11.5
17	9.1	9.5	9.1	11	27	30	28	18.5	14	12.5	11	11.5
18	9.1	9.5	9.5	10.5	28	30	29	18.5	13.5	13	11	*11.5
19	8.7	9.5	9.5	9.9	28	30	29	18.5	13.5	12.5	*11	11.5
20	8.7	9.5	9.5	9.1	30	27	30	18	13.5	13	11	11.5
21	8.7	b9.5	9.5	8.7	30	18.5	28	17.5	12.5	12.5	11	11.5
22	*8.7	9.5	9.9	8.7	30	18.5	28	17.5	12.5	13	11	11.5
23	8.3	9.5	9.1	9.1	30	17	28	17	12.5	12.5	10.5	11.5
24	8.3	9.5	9.5	10.5	*35	18	28	17	13.5	12.5	11	12
25	8.7	9.5	9.5	10.5	62	16.5	27	17	13	12.5	11	12
26	8.7	9.1	11.5	10.5	73	16	29	16	13	12.5	11	12
27	8.7	*9.1	10.5	9.9	87	16	28	16	13.5	12.5	11.5	12
28	8.7	9.5	9.9	10.5	61	15.5	25	15	12.5	12.5	12	12
29	8.7	b9.5	9.5	11	---	16	24	15.5	12.5	12.5	11.5	*11.5
30	9.1	b9.5	9.5	11	---	17.5	25	15.5	13.5	12.5	12.5	11.5
31	9.1	---	9.1	10.5	---	17	---	15.5	---	12.5	11.5	---
Total	275.7	279.8	291.1	290.9	758.7	921.5	773.0	590.5	417.5	390.5	352.5	342.0
Mean	8.89	9.33	9.39	9.36	27.1	29.7	25.8	19.0	13.9	12.6	11.4	11.4
Cfs/m	0.190	0.199	0.200	0.200	0.578	0.633	0.550	0.405	0.296	0.269	0.243	0.243
In.	0.22	0.22	0.23	0.23	0.60	0.73	0.61	0.47	0.33	0.31	0.28	0.27
Ac-ft	547	555	577	577	1,500	1,830	1,530	1,170	828	775	699	678
Calendar year 1957: Max	51			Min 8.3	Mean 11.8		Cfs/m 0.252	In. 3.41	Ac-ft 8,550			
Water year 1957-58: Max	73			Min 8.3	Mean 15.6		Cfs/m 0.333	In. 4.50	Ac-ft 11,270			

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

## 4077. Chewelah Creek at Chewelah, Wash.

Location.--Lat 48°17'00", long 117°43'00", on line between SE $\frac{1}{4}$  sec. 11 and SW $\frac{1}{4}$  sec. 12, in T. 32 N., R. 40 E., on left bank of stream below small road bridge to highway north of the city park, in northern part of Chewelah and 2 miles upstream from mouth.

Drainage area.--94 sq mi.

Records available.--March 1957 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,660 ft (from topographic map).

Extremes.--Maximum discharge during year, 259 cfs Feb. 25 (gage height, 3.17 ft); minimum, 4.6 cfs Aug. 20 (gage height, 1.32 ft).  
1957-58: Maximum discharge, that of Feb. 25, 1958; minimum, 4.1 cfs Aug. 23, 1957 (gage height, 1.11 ft).

Remarks.--Records good except those for period of no gage-height record, which are fair. No regulation. Most of flow in South Fork used for irrigation during summer months.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 17		Apr. 18 to Sept. 30	
1.3	7.2	1.3	3.9
1.4	13.5	1.4	7.9
1.6	30	1.5	13.5
1.9	61	1.8	39
2.4	129	2.2	90
3.0	228	2.7	170

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	18.5	17	9.6	18.5	87	85	98	56	23	9.9	6.2
2	15.5	17.5	17	12	18.5	91	94	98	51	22	8.9	6.2
3	16	17.5	17	17	17.5	74	108	98	48	23	8.4	6.6
4	16	17.5	16	18.5	17	72	144	99	46	23	7.9	6.6
5	15.5	17	16	17	16	72	144	100	*42	24	7.9	6.6
6	14	17.5	16	13.5	17	67	129	*104	42	23	7.9	6.6
7	14.5	17	16	13.5	19.5	62	122	105	42	28	7.9	6.6
8	14	15.5	17	*12.5	22	63	*115	110	39	40	7.9	6.6
9	13.5	16	17	16	27	56	114	116	38	29	7.4	6.6
10	12.5	17.5	16	17	36	55	113	119	41	*27	7.0	6.6
11	12	18.5	14	17	33	56	113	127	41	25	6.6	6.6
12	12	20	17	18.5	*29	*54	107	137	39	24	5.8	7.0
13	12.5	27	16	20	28	54	108	129	42	22	5.8	9.9
14	14	27	16	18.5	26	53	108	123	41	22	6.2	10.5
15	14.5	26	15.5	19.5	26	53	110	113	39	19.5	6.2	9.9
16	14.5	22	17	20	29	51	118	110	35	16	5.8	9.9
17	14.5	19.5	19.5	32	29	49	134	104	33	15.5	5.8	9.9
18	14.5	18.5	23	26	33	48	143	98	32	16	5.8	10.5
19	14.5	17.5	20	22	40	48	134	94	29	14.5	5.8	9.9
20	14	14.5	20	20	53	48	156	93	25	14	5.8	10.5
21	16	12	20	19.5	51	a52	143	92	23	13.5	*5.8	9.9
22	16	16	18.5	17	51	a56	140	89	22	13	5.8	*10.5
23	17	15.5	17.5	19.5	60	a60	134	84	20	10.5	5.8	11
24	17	17	18.5	29	81	71	126	83	22	8.4	5.8	14
25	15.5	17	20	26	192	81	121	76	26	7.9	6.2	15.5
26	18.5	16	41	21	174	80	121	75	23	7.4	6.2	14
27	17.5	*15.5	28	18.5	126	77	115	69	23	7.9	6.6	13.5
28	16	16	25	21	100	73	110	65	23	8.4	7.4	13.5
29	*15.5	12	22	22	-	76	105	62	23	9.4	7.0	13
30	22	13.5	17.5	23	-----	89	102	56	22	11.5	6.6	12
31	21	-----	15.5	21	-----	87	-----	57	-----	10.5	6.2	-----
Total	471.5	532.5	586.5	597.6	1,370.0	2,005	3,617	2,983	1,028	558.9	210.1	286.7
Mean	15.2	17.8	18.9	19.3	48.9	64.7	121	96.2	34.3	18.0	6.78	9.56
Cfsm	0.162	0.189	0.201	0.205	0.520	0.688	1.29	1.02	0.365	0.191	0.072	0.102
In.	0.19	0.21	0.23	0.24	0.54	0.79	1.43	1.18	0.41	0.22	0.08	0.11
Ac-ft	935	1,060	1,160	1,190	2,720	3,980	7,170	5,920	2,040	1,110	417	569

Calendar year 1957: Max - Min - Mean - Cfsm - In. - Ac-ft -  
Water year 1957-58: Max 192 Min 5.8 Mean 39.0 Cfsm 0.415 In. 5.63 Ac-ft 28,270

Peak discharge (base, 100 cfs).--Feb. 25 (4:30 p.m.) 259 cfs (3.17 ft); Apr. 5 (1 a.m.) 160 cfs (2.60 ft); Apr. 20 (5 a.m.) 163 cfs (2.66 ft); May 12 (8 to 10 a.m.) 140 cfs (2.52 ft).

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for Colville River at Kettle Falls.

4083. Little Pend Oreille River near Colville, Wash.

Location.--Lat 48°27'50", long 117°44'40", in NE $\frac{1}{4}$  sec. 10, T. 34 N., R. 40 E., on right bank 400 ft upstream from abandoned railroad bridge, half a mile downstream from Bear Creek, 6 miles east of Arden, and 9 miles southeast of Colville.

Drainage area.--133 sq mi.

Records available.--December 1957 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 2,010 ft (from topographic map).

Extremes.--Maximum discharge during period, 512 cfs Apr. 20 (gage height, 2.95 ft); minimum, 7.0 cfs Jan. 6 (gage height, 0.14 ft).

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

Rating table, Dec. 27, 1957, to Sept. 30, 1958, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.3	12	2.0	230
.6	27	2.5	365
1.0	61	3.0	530
1.5	130		

Discharge, in cubic feet per second, December 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				b18	24	188	214	262	74	33	18.5	15.5
2				b20	24	174	230	260	67	30	17.5	16
3				24	24	164	268	255	62	30	16.5	15
4				23	23	158	311	248	*66	39	16	15.5
5				21	23	160	288	240	59	46	16	15.5
6				15	23	150	275	232	54	40	16	15
7				16.5	23	146	262	226	54	34	15.5	15
8				15.5	25	134	248	222	54	39	15.5	14.5
9				19.5	33	115	250	220	51	33	15.5	14.5
10				19	46	118	248	210	67	31	15	15
11				19.5	42	109	258	202	72	29	15	14.5
12				20	40	96	255	206	65	27	15	15.5
13				20	40	97	260	184	61	25	15	18.5
14				20	38	97	275	168	59	23	14.5	16.5
15				22	36	96	280	158	55	23	13.5	16
16				23	39	91	341	144	51	22	13.5	17
17				30	39	90	371	134	47	22	13.5	18
18				28	44	88	419	124	44	22	13.5	19
19				25	51	88	407	120	41	22	13.5	20
20				24	67	90	491	114	38	20	13.5	20
21				24	71	104	453	106	36	19.5	*13.5	18.5
22				24	74	115	413	97	34	*19	13.5	18
23				27	92	118	386	81	31	18.5	13.5	*18
24				32	114	142	341	90	33	18	13	19
25				28	233	170	320	84	36	17.5	13.5	20
26				26	265	*186	302	80	*34	17.5	13	20
27				37	25	222	192	298	74	34	17.5	13.5
28				33	26	202	190	280	74	39	17.5	15
29				29	28	-	190	268	75	37	18.5	15.5
30				27	27	---	206	262	72	34	20	17
31				18	26	---	216	---	71	20	16.5	---
Total				716.0	1,977	4,278	9,264	4,843	1,489	793.5	480.0	508.0
Mean				23.1	70.6	138	309	156	49.8	25.6	14.8	16.9
Cfs/m				0.174	0.531	1.04	2.32	1.17	0.373	0.192	0.111	0.127
In.				0.20	0.55	1.20	2.59	1.35	0.42	0.22	0.13	0.14
Ac-ft				1,420	3,980	8,490	18,370	9,610	2,950	1,570	912	1,020

Calendar year : Max Min Mean Cfs/m In. Ac-ft  
Water year : Max Min Mean Cfs/m In. Ac-ft

Peak discharge (base, 100 cfs).--Feb. 25 (3 p.m.) 305 cfs (2.30 ft); Apr. 4 (10 p.m.) 347 cfs (2.44 ft); Apr. 20 (11:30 a.m.) 512 cfs (2.95 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Jan. 22-28, Aug. 15-20; discharge estimated on basis of recorded range in stage, weather records, and records for nearby stations. Doubtful gage-height record Feb. 11 to June 3; discharge computed from 2 discharge measurements, gage heights, weather records, and records for nearby stations.

## 4085. Mill Creek near Colville, Wash.

Location--Lat 48°34'45", long 117°51'50", in SW<sup>1</sup>/<sub>4</sub> sec. 35, T. 36 N., R. 39 E., on right bank 3 miles northeast of Colville and 5 miles downstream from North Fork.

Drainage area--82 sq mi, approximately.

Records available--October 1939 to September 1958. Prior to February 1940 monthly discharge only, published in WSP 1316.

Gage--Staff gage and crest-stage indicator; gage read twice daily. Altitude of gage is 1,950 ft (from topographic map). Prior to Nov. 2, 1952, water-stage recorder (now used as supplementary gage) at site half a mile upstream at different datum.

Average discharge--19 years, 49.6 cfs (35,910 acre-ft per year).

Extremes--Maximum discharge during year, 460 cfs Feb. 25 (gage height, 6.24 ft); minimum observed, 7.8 cfs Aug. 24-28; minimum gage height observed, 3.90 ft Oct. 1. 1939-58: Maximum discharge, 609 cfs Apr. 22, 1956 (gage height, 7.16 ft); minimum, 3.6 cfs Aug. 28, 31, Sept. 1, 1940, but may have been less during period of no gage-height record Feb. 1-4, 1940.

Remarks--Records good except those for period of no gage-height record, which are fair. Diversions for irrigation of about 50 acres above station. No regulation.

Revisions (water years)--WSP 1042: 1940, 1942.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to June 11		June 12 to Sept. 30	
3.9	10	4.0	7.8
4.1	23	4.1	15
4.3	40	4.3	36
4.6	76	4.5	63
5.0	150		
6.0	400		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	15.5	12.5	16	20	146	218	198	76	37	13.5	10.5
2	14	15	12.5	13.5	20	150	225	200	71	36	13	10
3	15	14	12.5	13.5	19	136	250	215	64	34	13	10
4	15	13.5	13	14	17.5	124	272	225	63	34	13	9.2
5	15.5	13	12.5	13.5	17.5	120	265	225	57	31	12	9.2
6	15	13.5	13.5	13	16.5	115	245	230	52	31	12	9.2
7	16	12.5	13.5	12.5	17.5	100	225	228	51	30	12	9.2
8	15	12.5	13.5	13.5	20	98	240	225	51	29	11.5	9.2
9	13.5	13	12.5	14	32	89	245	225	55	28	10.5	9.2
10	13.5	13.5	12.5	13.5	42	82	*235	222	58	26	10.5	9.2
11	13	13.5	12.5	15	44	76	240	225	61	26	10.5	10
12	12.5	14	12.5	15	44	73	260	220	63	24	10	10
13	13.5	19.5	12.5	19	40	73	258	205	62	24	10	10
14	12.5	23	12.5	16	36	73	265	198	59	22	10	10
15	13	23	12.5	15	39	73	278	190	54	22	9.2	10
16	12.5	22	12.5	19	42	64	280	160	*52	*22	9.2	11.5
17	13	20	13.5	26	43	66	308	150	49	21	9.2	11.5
18	12.5	18	*15	23	48	66	342	148	46	*20	9.2	13
19	13.5	16	15	21	53	66	340	140	44	19	9.2	13
20	13.5	15	15	19	67	63	350	*130	41	19	9.2	13
21	13	a14.5	15	17.5	*81	73	335	122	39	17	9.2	13
22	13.5	a14	15	16	92	90	*300	117	39	17	8.5	13
23	13.5	a14	15	18	113	111	270	115	36	16	8.5	*13
24	13.5	13.5	15.5	22	144	*150	250	111	40	15	7.8	13
25	15	13.5	17.5	23	375	200	245	105	44	15	7.8	13
26	15.5	13.5	19.5	22	330	200	248	100	42	15	*7.8	12
27	15	13	20	20	242	195	225	89	44	14.5	7.8	13
28	15	13	22	20	195	200	200	73	46	14.5	7.8	13
29	15	12.5	20	20	-	195	190	64	44	14.5	9.2	13
30	*15.5	12.5	19.5	*19.5	-----	205	190	71	41	14.5	10.5	13
31	15.5	-----	17.5	20	-----	210	-----	73	-----	13.5	10.5	-----
Total	433.0	454.0	458.5	543.0	2,250.0	3,682	7,794	4,999	1,544	701.5	312.1	335.9
Mean	14.0	15.1	14.8	17.5	80.4	119	260	161	51.5	22.6	10.1	11.2
Cfsm	0.171	0.184	0.180	0.213	0.980	1.45	3.17	1.96	0.628	0.276	0.123	0.137
In.	0.20	0.21	0.21	0.25	1.02	1.67	3.53	2.27	0.70	0.32	0.14	0.15
Ac-ft	859	900	909	1,080	4,460	7,300	15,460	9,920	3,060	1,390	619	666

Calendar year 1957: Max 444 Min 8.1 Mean 39.4 Cfsm 0.480 In. 6.54 Ac-ft 28,540  
 Water year 1957-58: Max 375 Min 7.8 Mean 64.4 Cfsm 0.785 In. 10.67 Ac-ft 46,620

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.



## 4090. Colville River at Kettle Falls, Wash.

Location.--Lat 48°35'40", long 118°03'30", in sec. 29, T. 36 N., R. 38 E., on right bank 800 ft downstream from Washington Water Power Co.'s plant at foot of Meyers Falls, half a mile south of town of Kettle Falls, and 2 miles upstream from Franklin D. Roosevelt Lake.

Drainage area.--1,050 sq mi, approximately.

Records available.--October 1922 to September 1958. Published as "at Meyers Falls" 1922-38.

Gage.--Water-stage recorder. Altitude of gage is 1,500 ft (from topographic map). Prior to Oct. 21, 1932, staff gage at site 500 ft upstream at different datum. Oct. 21, 1932, to Sept. 19, 1938, staff gages at site 200 ft upstream at different datum. Sept. 20, 1938, to Mar. 20, 1949, staff gage at present site and datum.

Average discharge.--36 years, 291 cfs (210,700 acre-ft per year).

Extremes.--Maximum discharge during year, 1,750 cfs Mar. 2 (gage height, 7.88 ft); minimum, 26 cfs Aug. 2 (gage height, 4.53 ft); minimum daily, 66 cfs Aug. 22. 1922-58: Maximum discharge, 3,230 cfs Apr. 23, 1956 (gage height, 10.17 ft); minimum observed, 0.5 cfs Aug. 15, 1930.

Remarks.--Records good except those for period of no gage-height record, which are fair. Several ditches above station divert water for irrigation. Slight regulation for power by small reservoir above falls.

Revisions (water years).--WSP 1316: 1938(M), 1941(M), 1948(M).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

4.9	64	5.8	420
5.1	109	7.0	1,220
5.4	210	8.0	1,820

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	112	170	115	151	310	1,650	1,040	1,150	469	224	115	83
2	115	157	164	118	280	1,700	1,060	1,140	462	214	115	a82
3	129	148	160	157	270	1,600	1,130	1,120	441	210	104	a80
4	144	126	148	194	255	1,410	1,260	1,120	427	210	101	a76
5	141	141	151	186	242	1,240	1,460	1,100	408	224	104	a74
6	141	138	151	167	242	1,110	1,630	1,090	372	219	91	a76
7	144	157	151	167	246	992	1,620	1,080	366	219	93	a78
8	138	138	151	157	285	932	1,580	1,080	349	232	91	a80
9	138	132	157	154	338	878	1,560	1,090	338	250	88	a82
10	132	132	154	167	402	811	*1,520	1,080	366	228	80	a84
11	129	138	151	167	476	769	1,480	1,050	402	210	81	a86
12	126	148	138	170	532	712	1,420	1,060	402	171	86	a88
13	124	154	151	190	546	672	1,380	1,060	378	194	86	a92
14	132	178	151	202	539	648	1,380	1,000	372	182	83	a98
15	132	210	151	206	525	624	1,380	956	354	170	79	a104
16	132	202	144	219	511	600	1,350	896	*327	*160	79	104
17	132	190	160	270	504	576	1,380	853	305	154	75	106
18	132	178	*167	510	518	560	1,490	804	280	148	81	*115
19	132	170	190	295	553	553	1,540	769	270	144	81	118
20	129	164	186	255	576	546	1,570	*727	250	141	79	115
21	126	138	186	224	*640	553	1,650	704	242	132	70	112
22	129	135	186	214	680	608	*1,630	664	228	129	66	115
23	132	141	186	206	720	656	1,590	616	214	121	75	115
24	148	148	178	237	811	704	1,520	592	214	118	72	115
25	148	141	182	300	1,120	*618	1,470	568	228	118	74	118
26	151	144	242	310	1,640	956	1,410	546	237	106	*72	121
27	157	151	310	285	1,670	986	1,380	518	228	109	77	121
28	160	144	275	270	1,600	968	1,310	504	237	106	75	118
29	151	126	242	295	-	944	1,240	462	237	106	86	115
30	*148	115	238	*338	-	856	1,180	462	228	124	86	115
31	164	-----	206	338	-----	1,020	-----	455	-----	132	91	-----
Total	4,248	4,554	5,512	6,919	17,031	27,752	42,630	26,316	9,641	5,205	2,638	2,986
Mean	137	152	178	223	608	895	1,421	849	321	168	85.1	99.5
Ac-ft	8,430	9,030	10,930	13,720	33,780	55,050	84,560	52,200	19,120	10,320	5,230	5,920
Calendar year 1957: Max	1,530				Min 78		Mean 272		Ac-ft 197,000			
Water year 1957-58: Max	1,700				Min 66		Mean 426		Ac-ft 308,300			

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of recorded range in stage, weather records, and records for Mill Creek near Colville.

4107. Harvey Creek near Cedonia, Wash.

Location.--Lat 48°10'25", long 118°06'55", in SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> sec. 23, T. 31 N., R. 37 E., on right bank on downstream side of farm bridge, 400 ft downstream from confluence of North and South Forks, 3 miles northeast of Cedonia, and 3½ miles upstream from mouth.

Drainage area.--29.9 sq mi.

Records available.--July to October 1958 (discontinued).

Gage.--Staff gage read twice daily. Altitude of gage is 2,100 ft (from topographic map).

Extremes.--Maximum discharge observed during period July to October, 5.2 cfs Oct. 19 (gage height, 0.74 ft); minimum observed, 0.5 cfs Aug. 17 (gage height, 0.36 ft).

Remarks.--Records good. No known regulation. A substantial percentage of the flow is diverted for irrigation above the station during the summer months.

Rating table, July 17 to Oct. 23, 1958 (gage height, in feet,  
and discharge, in cubic feet per second)

0.36	0.5
.4	.7
.5	1.5
.6	2.9
.7	5.2

Discharge, in cubic feet per second, 1958

Day	July	Aug.	Sept.	Oct.	Day	July	Aug.	Sept.	Oct.	Day	July	Aug.	Sept.	Oct.
1	-	1.7	0.9	1.5	11	-	1.3	0.6	1.8	21	2.1	0.9	1.1	2.3
2	-	1.5	1.0	1.6	12	-	1.3	1.0	1.9	22	1.6	.8	*1.2	2.3
3	-	1.4	1.0	1.5	13	-	1.2	1.8	2.1	23	1.5	1.0	1.2	*2.3
4	-	1.4	1.0	1.5	14	-	1.2	1.2	1.8	24	1.7	1.1	1.5	-
5	-	1.6	1.1	1.6	15	-	1.3	1.1	1.8	25	1.5	.7	1.8	-
6	-	1.4	.7	1.7	16	-	.9	1.1	1.9	26	1.7	.6	1.4	-
7	-	1.1	1.0	1.7	17	*2.4	.7	1.2	2.2	27	1.6	.6	1.8	-
8	-	1.4	.6	1.4	18	-	*.8	1.0	2.3	28	1.5	.7	1.7	-
9	-	1.0	.7	1.3	19	-	1.6	.7	3.1	29	1.9	.9	1.6	-
10	-	1.0	.6	1.8	20	1.8	1.0	1.4	2.6	30	1.9	.6	1.6	-
										31	1.9	.9	-	-
Total.....											-	32.7	34.6	-
Mean.....											-	1.05	1.15	-
Runoff in acre-feet.....											-	65	69	-

\* Discharge measurement made on this day.

4110. Coeur d'Alene River above Shoshone Creek, near Prichard, Idaho

Location.--Lat 47°42', long 115°59', in NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 5, T. 50 N., R. 4 E., on left bank at Shoshone Creek ranger station, 0.2 mile downstream from Uranus Creek, 0.4 mile upstream from Shoshone Creek, and 3 $\frac{1}{2}$  miles north of Prichard.

Drainage area.--335 sq mi.

Records available.--December 1950 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 2,485 ft (from river-profile map).

Average discharge.--7 years (1951-58), 760 cfs (550,200 acre-ft per year).

Extremes.--Maximum discharge during year, 6,220 cfs Apr. 18 (gage height, 6.01 ft); minimum, 68 cfs Dec. 11 (gage height, 0.83 ft).  
1950-58: Maximum discharge, 9,610 cfs Feb. 11, 1951 (gage height, 7.17 ft), from rating curve extended above 5,500 cfs by logarithmic plotting; maximum gage height, 9.09 ft Feb. 26, 1957 (backwater from ice); minimum discharge, 34 cfs Dec. 26, 1952.

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

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.8	57	1.6	331	4.0	2,670
.9	76	2.0	576	5.0	4,290
1.1	126	3.0	1,400	6.0	6,200
1.3	193				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	85	118	85	150	275	1,190	1,380	2,010	556	209	112	88
2	107	107	105	145	252	1,020	1,360	2,730	510	201	110	83
3	157	97	105	185	248	898	1,400	3,260	478	222	104	85
4	151	94	100	195	239	799	1,510	3,290	441	214	102	85
5	132	90	*97	170	218	761	1,520	3,100	405	193	99	81
6	115	88	100	145	214	681	1,530	3,180	387	193	97	78
7	112	86	98	120	209	610	1,630	3,350	441	189	94	76
8	112	84	105	100	218	563	1,780	3,580	381	186	94	76
9	102	82	105	125	243	504	1,810	3,880	417	*189	97	76
10	94	82	102	150	359	485	1,700	3,540	399	189	94	76
11	90	102	83	146	504	441	1,560	3,320	355	171	94	74
12	88	121	80	144	523	417	1,520	3,110	376	164	90	74
13	88	175	100	140	510	393	1,790	*2,390	348	154	*88	81
14	90	234	100	138	478	381	2,910	1,820	321	151	85	94
15	92	193	98	*140	441	376	3,640	1,680	300	151	85	94
16	90	164	95	155	435	376	3,970	1,870	385	148	85	*90
17	92	142	100	170	453	353	4,580	1,920	266	145	83	90
18	92	129	150	200	472	365	5,800	1,820	257	142	83	94
19	90	121	180	220	530	348	4,470	1,720	248	145	81	104
20	88	112	190	220	710	342	4,040	1,700	234	138	81	121
21	88	90	266	210	1,100	387	4,240	1,600	226	132	81	110
22	104	90	257	190	1,200	631	3,700	1,490	222	139	81	99
23	118	92	220	190	1,390	914	2,970	1,580	214	126	83	97
24	*110	90	205	280	1,970	1,350	2,420	1,260	275	123	83	104
25	110	88	210	340	3,270	1,860	2,110	1,100	348	118	81	110
26	135	88	280	320	*3,400	1,960	1,860	977	262	118	78	107
27	182	88	320	290	2,150	1,760	1,670	867	234	115	76	94
28	148	95	300	280	1,520	*1,630	1,530	776	234	112	85	85
29	152	85	260	320	-	1,480	1,510	688	222	115	110	81
30	126	75	230	340	-	1,400	1,620	617	218	126	107	78
31	129	---	180	321	---	1,390	---	*583	---	123	99	---
Total	3,449	3,302	4,906	6,239	23,531	26,065	73,530	64,708	9,970	4,841	2,822	2,681
Mean	111	110	158	201	840	841	2,451	2,087	332	156	91.0	89.4
Cfsm	0.331	0.328	0.472	0.600	2.51	2.51	7.32	6.23	0.991	0.466	0.272	0.267
In.	0.38	0.37	0.54	0.69	2.61	2.89	8.16	7.18	1.11	0.54	0.31	0.30
Ac-ft	6,840	6,550	9,730	12,370	46,670	51,700	145,800	128,300	19,780	9,600	5,600	5,320

Calendar year 1957: Max 6,140 Min 75 Mean 713 Cfsm 2.13 In. 28.87 Ac-ft 516,000  
Water year 1957-58: Max 5,800 Min 74 Mean 619 Cfsm 1.85 In. 25.08 Ac-ft 448,300

Peak discharge (base, 3,500 cfs).--Feb. 25 (9 to 11 p.m.) 4,140 cfs (4.94 ft); Apr. 18 (2 p.m.) 6,220 cfs (6.01 ft); May 9 (12 m.) 4,020 cfs (4.90 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4-10, Nov. 21 to Dec. 4, Dec. 6-9, 12-20, Dec. 23 to Jan. 30 (no gage-height record Jan. 2-14; discharge estimated on basis of 1 discharge measurement, weather records, and records for stations at Enaville and near Cataldo).

## 4130. Coeur d'Alene River at Enaville, Idaho

Location.--Lat 47°34'20", long 116°15'10", in NW¼ sec. 30, T. 49 N., R. 2 E., on right bank 800 ft upstream from highway bridge, a quarter of a mile northwest of Enaville Post Office, 1.1 miles upstream from South Fork, and 3.5 miles downstream from North Fork.

Drainage area.--895 sq mi.

Records available.--March 1911 to April 1913 (fragmentary), October 1939 to September 1958. Published as North Fork of Coeur d'Alene River at Enaville 1911-13.

Gage.--Water-stage recorder. Datum of gage is 2,100.00 ft above mean sea level, referenced to bench mark near mouth of North Fork. Mar. 3, 1911, to Apr. 12, 1913, staff gage at site a quarter of a mile downstream at different datum. Oct. 18 to Dec. 22, 1939, staff gage at present site and datum.

Average discharge.--19 years (1939-58), 1,925 cfs (1,394,000 acre-ft per year).

Extremes.--Maximum discharge during year, 14,500 cfs Apr. 18 (gage height, 70.51 ft); minimum, 139 cfs Nov. 9 (gage height, 61.05 ft).  
1911-13, 1939-58: Maximum discharge, 28,100 cfs Dec. 15, 1946, from rating curve extended above 13,000 cfs by logarithmic plotting; maximum gage height, 74.93 ft Feb. 11, 1951; minimum discharge, 104 cfs Dec. 28, 1952 (gage height, 60.10 ft).  
From local information concerning high-water marks, flood in December 1933 reached a stage of 79.47 ft and that in April 1938 a stage of 78.16 ft.

Remarks.--Records good except those for periods of backwater from logging operations, which are fair. No appreciable regulation or diversion above station.

Revisions (water years).--WSP 1396: 1945.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1 to Nov. 15, Feb. 24 to Apr. 27, May 25 to June 6, Aug. 8-20)

60.5	139	62.0	945	68.0	8,920
60.8	240	63.0	1,700	70.0	13,100
61.1	378	64.0	2,630	71.0	15,300
61.5	609	66.0	5,550		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	210	328	269	536	1,200	3,860	3,330	4,140	1,640	647	348	248
2	274	287	314	495	1,090	3,190	3,260	5,610	1,520	828	328	229
3	438	257	314	615	1,000	2,740	3,310	6,800	1,440	640	305	225
4	455	229	305	628	931	2,420	3,580	7,090	1,340	640	296	225
5	383	210	*291	542	861	2,260	3,670	6,860	1,260	585	287	218
6		200	296	443	812	2,090	3,660	7,020	1,220	560	282	210
7	314	190	287	358	805	1,890	3,710	7,360	1,250	548	274	210
8	319	180	314	305	917	1,760	3,890	7,880	1,190	542	265	207
9	282	167	333	405	1,090	1,610	4,010	8,720	1,230	532	269	207
10	244	164	328	478	1,720	1,510	3,850	8,570	1,190	*518	265	203
11	225	253	291	466	2,380	1,440	3,540	7,770	1,100	495	257	203
12	207	410	282	455	2,210	1,380	3,360	7,530	1,120	478	248	196
13	196	653	358	449	2,080	1,320	3,730	*6,050	1,060	460	*240	214
14	203	931	336	432	1,960	1,280	*6,070	4,490	987	449	233	257
15	210	745	333	*438	1,770	1,240	8,610	3,960	945	443	233	265
16	200	603	323	489	1,750	1,240	10,000	4,440	903	427	233	*248
17	200	513	383	628	1,880	1,200	11,500	4,760	861	416	229	240
18	196	455	578	785	1,950	1,200	13,700	4,580	835	410	222	248
19	190	410	640	854	2,200	1,170	11,500	4,380	791	416	222	248
20	180	378	711	847	3,090	1,150	10,200	4,500	771	410	218	323
21	180	338	917	798	5,000	1,230	10,700	4,370	744	394	218	310
22	248	305	987	737	4,820	1,570	9,360	4,130	718	373	214	287
23	323	310	833	711	5,250	2,040	7,540	3,780	704	373	210	323
24	*314	296	730	973	5,430	2,820	6,150	3,550	833	363	207	300
25	319	287	685	1,310	9,860	4,100	5,210	3,210	994	355	207	314
26	383	282	966	1,220	*11,300	4,800	4,540	2,840	840	343	207	314
27	536	282	1,180	1,090	7,340	4,430	4,000	2,520	764	338	200	291
28	489	296	1,050	1,060	5,090	*4,010	3,620	2,310	737	323	210	265
29	405	278	973	1,250	-	3,660	3,450	2,070	704	343	244	253
30	358	225	896	1,340	-----	3,460	3,550	1,860	672	400	291	240
31	343	-----	764	1,320	-----	3,410	-----	1,740	-----	373	269	-----
Total	9,124	10,462	17,249	22,457	85,786	71,480	176,600	154,890	30,361	14,220	7,731	7,551
Mean	294	349	556	724	3,064	2,306	5,887	4,996	1,012	459	249	252
Cfsm	0.328	0.390	0.621	0.809	3.42	2.58	6.58	5.58	1.13	0.513	0.278	0.282
In.	0.38	0.43	0.72	0.93	3.56	2.97	7.34	6.44	1.26	0.59	0.32	0.31
Ac-ft	18,100	20,750	34,210	44,540	170,200	141,800	350,300	307,200	60,220	28,200	15,330	14,980
Calendar year 1957: Max	18,200	Min	164	Mean	1,983	Cfsm	2.22	In.	30.07	Ac-ft	1,435,000	
Water year 1957-58: Max	13,700	Min	164	Mean	1,666	Cfsm	1.86	In.	25.25	Ac-ft	1,206,000	

Peak discharge (base, 8,000 cfs).--Feb. 26 (1 a.m.), 12,900 cfs (69.78 ft); Apr. 18 (6 p.m.) 14,500 cfs (70.51 ft); May 9 (3 to 6 p.m.) 9,060 cfs (68.02 ft).

\* Discharge measurement made on this day.

Note.--Backwater from logging operations Oct. 1 to Nov. 15.

4135. Coeur d'Alene River near Cataldo, Idaho

Location.--Lat 47°34', long 116°18', in sec. 26, T. 49 N., R. 1 E., on left bank 1½ miles upstream from Cataldo and 3 miles downstream from South Fork.

Drainage area.--1,220 sq mi, approximately.

Records available.--April 1911 to December 1912, July 1920 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 2,100 ft above mean sea level, referenced to bench mark "2143 S" (U. S. Geol. Survey Bull. 567, p.82). Datum of 1929, supplementary adjustment of 1947 is 2.84 ft higher. Apr. 25, 1911, to Dec. 31, 1912, staff gage at site 300 ft downstream at different datum. July 29, 1920, to Oct. 10, 1925, staff gage at present site and datum.

Average discharge.--39 years, 2,494 cfs (1,806,000 acre-ft per year).

Extremes.--Maximum discharge during year, 17,000 cfs Apr. 18 (gage height, 47.01 ft); minimum, 298 cfs Sept. 12 (gage height, 37.98 ft).  
1911-12, 1920-58: Maximum discharge, 55,300 cfs Dec. 22 or 23, 1933 (gage height, 56.9 ft, from floodmark), from rating curve extended above 24,000 cfs by logarithmic plotting; minimum, 122 cfs Dec. 4, 1929; minimum gage height, 37.03 ft Sept. 6, 1931.

Remarks.--Records good. No appreciable regulation or diversion above station. Records of chemical analyses and water temperatures for the water year 1958 are given in WSP 1574.

Cooperation.--Water-stage-recorder graph furnished by Washington Water Power Co.

Revisions (water years).--WSP 1396: 1945.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1 to Nov. 20, Nov. 22, Nov. 24 to Dec. 17, Dec. 20-26,  
Jan. 26, 27, Feb. 28 to Mar. 11, May 29 to June 9)

Oct. 1 to Apr. 18

Apr. 19 to Sept. 30

38.3	298	42.0	4,170	37.9	273	41.0	2,570
38.6	440	44.0	8,270	38.2	374	42.0	3,930
39.0	700	46.0	13,800	38.6	551	44.0	8,270
40.0	1,620	47.0	17,000	39.0	790	46.0	13,800
41.0	2,750			40.0	1,570		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	366	500	482	949	2,130	4,620	4,000	5,270	*2,530	982	496	370
2	420	464	567	858	1,970	3,960	3,940	6,860	2,330	930	483	345
3	567	430	581	1,080	1,810	3,480	4,000	8,290	2,200	938	455	358
4	568	400	581	1,080	1,680	3,110	4,300	8,730	2,050	938	447	335
5	500	390	548	932	1,540	2,930	4,430	8,490	1,930	874	438	331
6	440	385	*554	764	1,470	2,740	4,380	8,750	1,880	839	430	324
7	440	385	567	809	1,450	2,410	4,490	9,240	1,940	839	409	318
8	446	376	581	530	1,610	2,270	4,630	10,000	1,830	846	405	311
9	395	357	609	672	1,960	2,050	4,780	11,200	1,890	*811	409	307
10	385	357	609	780	2,730	*1,900	4,630	11,400	1,840	777	397	304
11	366	415	567	780	3,650	1,810	4,330	10,500	1,690	732	397	304
12	343	554	512	756	3,520	1,690	4,170	*10,100	1,710	719	386	301
13	338	820	609	679	3,490	1,590	4,540	8,250	1,630	671	*374	314
14	348	1,370	637	644	3,350	1,540	6,760	6,200	1,530	653	370	363
15	352	1,140	630	*665	3,100	1,460	9,480	5,680	1,450	641	367	378
16	343	976	595	790	2,960	1,440	11,300	6,370	1,400	611	360	*356
17	348	860	716	1,080	3,080	1,390	13,300	6,960	1,340	600	356	356
18	348	772	1,020	1,520	3,180	1,380	16,100	6,750	1,270	589	349	363
19	325	716	1,150	1,630	3,560	1,370	13,700	6,660	1,240	589	342	394
20	316	686	1,200	1,580	4,300	1,320	12,400	6,910	1,200	567	335	421
21	307	602	1,600	1,480	5,670	1,420	12,600	6,840	1,130	546	331	417
22	371	567	1,830	1,360	5,730	1,840	11,200	6,540	1,080	536	331	405
23	435	560	1,570	1,270	6,050	2,500	9,230	6,070	1,040	521	328	397
24	*435	524	1,410	1,760	7,720	3,430	7,500	5,720	1,240	501	321	409
25	440	512	1,340	2,430	10,900	4,690	6,380	5,270	1,450	496	321	421
26	518	512	1,780	2,240	12,800	5,290	5,680	4,630	1,250	483	314	421
27	716	512	2,000	1,880	8,390	4,980	5,060	4,100	1,130	473	311	397
28	679	548	1,910	1,780	5,870	4,680	4,490	3,800	1,100	490	328	374
29	567	518	1,790	2,060	—	*4,330	4,430	3,320	1,060	478	367	397
30	518	440	1,600	2,320	—	4,150	4,550	2,940	990	567	405	349
31	542	—	1,320	2,330	—	4,090	—	2,680	—	531	390	—
Total	13,502	17,636	31,465	39,298	115,670	85,870	210,770	214,520	46,350	20,738	11,752	10,790
Mean	436	588	1,015	1,268	4,131	2,770	7,026	6,920	1,545	669	379	360
Cfs/m	0.357	0.482	0.832	1.04	3.39	2.27	5.76	5.67	1.27	0.548	0.311	0.295
In.	0.41	0.54	0.96	1.20	3.53	2.62	6.43	6.54	1.41	0.63	0.36	0.33
Ac-ft	26,780	34,980	62,410	77,950	229,400	170,300	418,100	425,500	91,930	41,130	23,510	21,400

Calendar year 1957: Max 21,900 Min 307 Mean 2,712 Cfs/m 2.22 In. 30.16 Ac-ft 1,963,000  
Water year 1957-58: Max 16,100 Min 301 Mean 2,242 Cfs/m 1.84 In. 24.96 Ac-ft 1,623,000

Peak discharge (base, 11,100 cfs)--Feb. 26 (2 a.m.) 14,600 cfs (46.36 ft); Apr. 18 (5:30 p.m.) 17,000 cfs (47.01 ft); May 10 (3 a.m.) 11,700 cfs (45.32 ft).

\* Discharge measurement made on this day.

## 4145. St. Joe River at Calder, Idaho

Location.--Lat 47°16', long 116°11', in sec. 3, T. 45 N., R. 2 E., on right bank 150 ft southwest of Chicago, Milwaukee, St. Paul and Pacific Railroad station at Calder.

Drainage area.--1,030 sq mi, approximately.

Records available.--April 1911 to September 1912 (published as "near Calder"), July 1920 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 2,096.76 ft above mean sea level, datum of 1929, supplementary adjustment of 1947, or 2,100 ft above mean sea level, datum of Geological Survey as given in Bulletin 567. Apr. 14, 1911, to Sept. 30, 1912, staff gage at site 2½ miles downstream at different datum. July 13 to Dec. 21, 1920, staff gage at present site and datum.

Average discharge.--39 years (1911-12, 1920-58), 2,316 cfs (1,676,000 acre-ft per year).

Extremes.--Maximum discharge during year, 14,000 cfs May 12 (gage height, 87.18 ft); minimum, 238 cfs Jan. 1 (gage height, 79.11 ft).  
1911-12, 1920-58: Maximum discharge, 53,000 cfs Dec. 23, 1933, computed on basis of slope between gages downstream; maximum gage height, 93.1 ft Apr. 18, 1938, from floodmark; minimum discharge, 91 cfs Nov. 27, 1952; minimum gage height, 78.43 ft Dec. 5, 1928.

Remarks.--Records good except those for periods of ice effect, which are fair. No diversion above gage.

Cooperation.--Water-stage-recorder graph furnished by Washington Water Power Co.

Revisions.--WSP 1182: Drainage area.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1, 2)

79.1	235	80.5	965	83.0	4,140
79.5	375	81.0	1,420	85.0	7,960
80.0	615	82.0	2,610	87.0	13,400

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	335	411	363	b240	604	1,870	2,190	4,900	5,350	1,400	615	415
2	415	395	424	b300	566	1,610	2,190	6,170	4,880	1,350	593	407
3	688	371	403	b350	535	1,470	2,390	7,150	4,510	1,390	593	407
4	571	324	*363	b370	520	1,380	2,750	7,570	4,290	1,290	571	399
5	485	304	343	b350	510	1,300	2,680	7,850	4,040	1,220	555	383
6	438	314	359	b320	520	1,190	2,610	8,460	*4,030	1,200	550	375
7	428	339	415	b300	540	1,050	2,820	8,860	3,980	1,190	540	375
8	428	328	415	b280	633	1,040	2,880	10,200	3,680	1,260	525	371
9	399	300	395	b350	761	925	2,860	11,600	3,820	*1,140	540	367
10	391	318	b310	b430	1,100	885	2,640	12,600	3,660	1,060	520	363
11	383	446	b290	b420	1,310	832	2,440	12,400	3,300	1,020	505	351
12	371	510	b340	b410	1,190	803	2,610	13,200	3,320	965	495	347
13	359	588	b380	b390	1,250	789	3,260	9,930	3,050	933	*480	371
14	387	639	b360	*b390	1,280	768	5,390	7,960	2,980	901	465	411
15	387	540	b350	b410	1,160	761	6,150	7,940	2,750	878	460	*446
16	375	465	399	b450	1,160	754	7,300	9,500	2,580	862	460	446
17	375	424	550	510	1,250	727	8,140	10,500	2,410	825	456	424
18	391	391	615	555	1,280	714	10,000	10,800	2,300	810	451	420
19	379	375	525	530	1,530	694	7,640	11,400	2,180	957	456	420
20	363	347	560	b480	2,100	688	10,200	12,500	2,070	840	451	500
21	359	279	718	475	2,720	789	9,500	13,000	1,960	782	438	460
22	407	339	663	b450	2,510	1,210	7,720	12,900	1,860	754	420	555
23	460	387	b460	451	2,760	1,510	6,320	12,100	1,750	727	415	490
24	451	395	470	545	3,240	2,190	5,350	12,800	2,040	701	411	540
25	*460	359	485	593	*4,670	2,940	4,740	11,900	1,950	682	407	515
26	505	387	645	550	4,510	2,860	4,400	*10,400	1,690	675	395	560
27	615	383	621	510	3,120	*2,540	4,030	9,400	1,620	657	387	505
28	495	375	555	525	2,340	2,480	3,870	8,590	1,590	639	415	415
29	438	b300	530	598	-	2,340	*3,820	7,510	1,490	657	460	395
30	415	b280	490	682	-	2,390	4,140	6,570	1,420	761	540	375
31	415	-----	b310	657	-	2,340	-----	5,900	-----	663	460	-----
Total	13,368	11,613	14,106	13,871	45,669	43,839	143,030	302,560	86,550	29,189	15,029	12,808
Mean	431	387	455	447	1,631	1,414	4,768	9,760	2,885	942	485	427
Cfs/m	0.418	0.376	0.442	0.434	1.58	1.37	4.63	9.48	2.80	0.915	0.471	0.415
In.	0.48	0.42	0.51	0.50	1.65	1.58	5.16	10.92	3.13	1.05	0.54	0.46
Ac-ft	26,520	23,030	27,980	27,510	90,580	86,950	283,700	800,100	171,700	57,900	29,810	25,400

Calendar year 1957: Max 16,000 Min 230 Mean 2,405 Cfs/m 2.33 In. 31.70 Ac-ft 1,741,000  
water year 1957-58: Max 13,200 Min 240 Mean 2,004 Cfs/m 1.95 In. 26.40 Ac-ft 1,451,000

Peak discharge (base, 8,500 cfs).--Apr. 20 (4 p.m.) 11,600 cfs (86.41 ft); May 12 (10:30 a.m.) 14,000 cfs (87.18 ft); May 22 (4 a.m.) 13,700 cfs (87.08 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

## 4150. St. Maries River at Lotus, Idaho

Location.--Lat 47°14'40", long 116°37'30", in sec. 17, T. 45 N., R. 2 W., on left bank 1 mile northwest of Lotus, 1 mile downstream from Carlton Creek, and 5½ miles southwest of St. Maries.

Drainage area.--437 sq mi.

Records available.--July, August, October to December 1911, January 1912 (gage heights only), February to October 1912, July 1920 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 2,140.19 ft above mean sea level, referenced to bench mark "U.S.G.S. 2155 1911 35" (Geological Survey Bull. 567, P. 45). Datum of 1929, supplementary adjustment of 1947, is 3.17 ft higher. Prior to Oct. 1, 1945, staff gages at sites 0.8 to 1.3 miles upstream at different datums. Oct. 1, 1945, to Feb. 21, 1949, staff gage at present site and datum.

Average discharge.--38 years (1920-58), 515 cfs (372,800 acre-ft per year).

Extremes.--Maximum discharge during year, 4,840 cfs Feb. 25 (gage height, 5.87 ft); minimum daily, 49 cfs Sept. 11, 12.

1911-12, 1920-58: Maximum discharge observed, 23,800 cfs Dec. 22, 23, 1933, from rating curve extended above 4,000 cfs by logarithmic plotting; maximum gage height, 13.4 ft probably Feb. 9, 1951, from floodmark (ice jam); minimum discharge, 11 cfs Nov. 23, 1952 (gage height, 0.98 ft).

Remarks.--Records good except those for periods of ice effect, which are poor. No regulation or diversion above station.

Cooperation.--Water-stage-recorder gage furnished by Washington Water Power Co.

Revisions (water year).--WSP 1062: Drainage area at former site. WSP 1346: 1912.

Rating tables, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Dec. 8, 14-16, June 25)

Oct. 1 to Dec. 20

Dec. 21 to Sept. 30

0.0	43	-0.2	46	2.0	593
.2	72	0.0	68	3.0	1,220
.5	115	.3	107	4.0	2,130
1.0	208	.6	159	5.0	3,420
1.5	348	1.0	245	5.4	4,040
1.7	418	1.5	394		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	74	b100	b160	716	1,180	1,020	1,120	408	132	75	80
2	56	70	b123	b150	579	982	1,000	1,180	374	128	73	57
3	129	63	*125	b160	497	812	1,010	1,240	358	135	70	56
4	117	57	108	b190	429	698	1,740	1,240	398	133	69	55
5	89	60	109	b180	384	654	1,820	1,220	330	125	68	55
6	80	63	106	b150	429	598	1,560	1,240	*297	121	67	53
7	87	69	b140	b120	497	513	1,410	1,190	303	128	66	53
8	93	b60	201	b100	782	493	1,300	1,220	278	*351	65	a52
9	89	b55	b136	b130	1,120	415	1,210	1,270	426	192	65	a51
10	74	66	b129	b170	1,860	387	1,110	1,280	418	150	66	a50
11	67	115	b123	b160	1,950	355	1,030	1,280	333	132	63	a49
12	64	164	b117	b160	1,450	339	969	1,340	318	121	*62	a49
13	63	270	b110	b160	1,740	330	1,000	1,160	315	113	61	a50
14	66	414	125	*b159	1,950	309	1,410	962	327	106	60	59
15	73	275	128	b140	1,350	309	1,800	904	275	104	59	130
16	69	197	134	b210	1,510	297	2,530	910	244	100	58	*132
17	66	152	b150	b260	1,630	278	2,950	930	222	99	57	84
18	67	129	b265	b480	1,540	278	3,860	930	192	94	57	78
19	67	121	b250	b450	1,680	283	2,800	943	171	112	57	76
20	67	120	b500	b400	2,090	286	3,260	950	159	120	57	76
21	63	90	b650	b370	2,430	349	2,960	950	151	100	55	78
22	69	100	598	b330	1,950	539	2,540	910	144	92	55	108
23	97	104	333	b300	2,060	593	2,340	848	135	89	54	94
24	112	102	283	b480	2,400	884	1,870	788	177	85	53	84
25	*96	108	272	b660	*3,980	1,250	1,580	722	264	83	52	85
26	103	108	643	b580	3,500	1,260	1,500	648	187	81	a52	78
27	168	104	486	b500	2,050	*1,130	1,590	593	159	80	a51	73
28	120	93	364	534	1,470	1,030	*1,360	552	151	78	a52	68
29	93	b85	394	878	-	962	1,210	501	142	79	56	66
30	86	b80	327	1,130	-----	1,080	1,120	451	135	83	63	63
31	79	-----	190	872	-----	1,150	-----	418	-----	80	67	-----
Total	2,635	3,550	7,518	10,723	44,003	20,023	52,859	29,910	7,791	3,626	1,885	2,122
Mean	85.0	118	243	346	1,572	646	1,762	965	260	117	60.8	70.7
Cfs/m	0.195	0.270	0.556	0.792	3.60	1.48	4.03	2.21	0.595	0.268	0.139	0.162
In.	0.22	0.30	0.64	0.91	3.74	1.70	4.50	2.55	0.66	0.31	0.16	0.18
Ac-ft	5,230	7,040	14,910	21,270	87,280	39,720	104,800	59,330	15,450	7,190	3,740	4,210

Calendar year 1957: Max 7,620 Min 40 Mean 582 Cfs/m 1.53 In. 18.07 Ac-ft 421,400  
Water year 1957-58: Max 3,980 Min 49 Mean 511 Cfs/m 1.17 In. 15.87 Ac-ft 370,200

Peak discharge (base, 2,200 cfs).--Feb. 10 (8 to 9 p.m.) 2,400 cfs (4.23 ft); Feb. 14 (1 a.m.) 2,280 cfs (4.13 ft); Feb. 25 (6 p.m.) 4,840 cfs (5.87 ft); Apr. 18 (11 a.m.) 4,100 cfs (5.44 ft).

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for nearby stations.

b Stage-discharge relation affected by ice.

## 4155. Coeur d'Alene Lake at Coeur d'Alene, Idaho

Location.--Lat 47°40', long 116°46', in sec. 24, T. 50 N., R. 4 W., 500 ft southwest of south end of Eleventh Street, Coeur d'Alene.

Drainage area.--3,700 sq mi, approximately.

Records available.--April 1903 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 2,100.00 ft above mean sea level, referred to originally accepted elevation (2,157.40 ft) of Geological Survey bench mark in south-east corner of Merriam Building (see WSP 882). Gage heights reduced to elevations above mean sea level. Datum of 1929, supplementary adjustment of 1947, is 3.00 ft higher. Apr. 26, 1903, to Feb. 14, 1905, staff gage at mouth of St. Joe River at datum about 18.7 ft higher. Feb. 15, 1905, to Mar. 23, 1921, staff gage and Mar. 24, 1921, to Dec. 22, 1930, water-stage recorder, at Johnson Wharf 800 ft southeast of railroad station and 1 mile northwest of present site at datum 19.75 ft higher. Dec. 23, 1930, to Feb. 9, 1931, staff gage at present site and datum.

Extremes.--Maximum contents during year, 381,900 acre-ft Apr. 23 (elevation, 2,130.80 ft); minimum, 68,010 acre-ft Jan. 16, 17 (elevation, 2,122.53 ft).  
1903-58. Maximum contents, 834,900 acre-ft Dec. 25, 1933 (elevation, 2,139.05 ft); minimum, 2,700 acre-ft below zero of contents table Oct. 10-12, 1904, Sept. 24, 25, 1905, Oct. 14 to Nov. 3, 1906 (elevation, 2,119.9 ft).  
Maximum contents known prior to 1903, 753,300 acre-ft May 31, 1894 (elevation, 2,137.6 ft, from high-water marks).

Remarks.--The Washington Water Power Co. stores water in Coeur d'Alene Lake by regulation at Post Falls Dam for power generation at Post Falls and other plants on Spokane River. Storage is within natural range of lake stage. Contents given herein are those above elevation 2,120.0 ft. Capacity of lake between elevations 2,120 and 2,140 ft, 889,000 acre-ft.

Cooperation.--Water-stage-recorder graph furnished by Washington Water Power Co.

Revisions.--WSP 1182: Drainage area.

Capacity table, water year 1957-58 (elevation, in feet, and contents, in acre-feet)

		2,121.0	26,800	2,127.0	195,300							
		2,123.0	80,700	2,129.0	288,100							
		2,125.0	155,200	2,131.0	392,500							
Elevation, in feet, at 12 p.m., water year October 1957 to September 1958												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27.50	25.87	24.01	23.09	24.37	26.39	25.70	28.87	28.63	27.90	27.93	27.76
2	27.52	25.77	23.96	22.96	24.41	28.12	25.77	28.78	28.30	27.91	27.93	27.67
3	27.50	25.69	23.90	22.92	24.40	27.88	25.90	28.79	27.98	27.93	27.95	27.57
4	27.43	25.58	23.87	22.92	24.33	27.55	26.17	28.86	27.63	27.93	27.90	27.52
5	27.43	25.47	23.81	22.91	24.30	27.24	26.30	28.97	27.32	27.94	27.89	27.49
6	27.40	25.36	23.82	22.85	24.23	26.92	26.38	29.09	27.06	27.98	27.90	27.46
7	27.38	25.26	23.80	22.80	24.21	26.62	26.44	29.20	26.81	28.01	27.90	27.45
8	27.30	25.18	23.79	22.74	24.27	26.31	26.50	29.38	26.57	28.01	27.90	27.42
9	27.24	25.09	23.73	22.70	24.42	26.02	26.50	29.62	26.61	28.00	27.90	27.39
10	27.20	25.01	23.69	22.70	24.85	25.77	26.50	29.91	26.90	28.00	27.90	27.38
11	27.17	24.99	23.64	22.69	25.31	25.54	26.47	30.27	27.10	28.00	27.91	27.37
12	27.10	24.97	23.59	22.73	25.68	25.34	26.41	30.50	27.27	27.94	27.91	27.35
13	27.06	24.98	23.57	22.69	26.03	25.16	26.43	30.68	27.37	27.96	27.90	27.32
14	26.98	24.99	23.52	22.62	26.18	24.98	26.59	30.80	27.42	27.94	27.90	27.30
15	26.89	24.88	23.49	22.59	26.17	24.82	26.97	30.39	27.52	27.97	27.89	27.30
16	26.81	24.80	23.48	22.53	26.20	24.67	27.47	30.22	27.59	27.97	27.89	27.29
17	26.74	24.77	23.48	22.69	26.20	24.50	28.16	30.16	27.63	27.97	27.89	27.26
18	26.67	24.69	23.49	22.82	26.19	24.40	28.82	30.12	27.69	28.00	27.89	27.22
19	26.59	24.61	23.50	22.97	26.23	24.27	29.50	30.12	27.68	28.00	27.88	27.25
20	26.52	24.56	23.47	23.02	26.37	24.12	29.97	30.17	27.77	27.99	27.88	27.22
21	26.44	24.48	23.56	23.02	26.64	24.02	30.40	30.21	27.83	27.99	27.88	27.23
22	26.43	24.40	23.57	22.95	26.81	23.97	30.70	30.29	27.91	27.98	27.88	27.23
23	26.38	24.35	23.53	22.92	26.97	23.98	30.79	30.32	27.92	27.92	27.86	27.22
24	26.32	24.30	23.44	23.09	27.25	24.11	30.71	30.32	28.01	27.96	27.86	27.20
25	26.30	24.27	23.45	23.39	27.77	24.39	30.50	30.31	27.99	27.92	27.84	27.19
26	26.32	24.19	23.48	23.55	28.30	24.70	30.25	30.22	27.93	27.93	27.86	27.13
27	26.30	24.18	23.50	23.60	28.52	24.94	29.97	30.06	27.98	27.97	27.80	27.10
28	26.27	24.16	23.49	23.77	28.52	25.18	29.69	29.84	27.89	27.91	27.81	27.09
29	26.18	24.09	23.44	24.00	-	25.33	29.37	29.60	27.93	27.96	27.81	27.06
30	26.10	24.02	23.35	24.18	-	25.50	29.08	29.30	27.91	27.98	27.81	27.05
31	25.99	-	23.24	24.30	-	25.62	-	28.98	-	27.96	27.61	-
(†)	162,600	108,400	87,180	116,100	263,900	152,300	292,200	287,100	234,200	236,600	229,500	197,200
(*)	-52,800	-54,200	-21,220	+28,920	+147,800	-111,600	+139,900	-5,100	-52,900	+2,400	-7,100	-32,300

Calendar year 1957..... † -43,720

Water year 1957-58..... † -18,200

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

\* Change in contents, in acre-feet.

Note.--Add 2,100 ft to obtain elevation above mean sea level.



## 4170. Hayden Lake at Hayden Lake, Idaho

Location.--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 at Hayden Lake.

Records available.--May 1920 to September 1958.

Gage.--Staff gage read once daily. Datum of gage is 2,200.21 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1925, at datum 30.35 ft higher. Oct. 1, 1925, to Mar. 26, 1931, at datum 21.60 ft higher.

Extremes.--Maximum gage height observed during year, 40.52 ft Apr. 25-27; minimum observed, 33.73 ft Nov. 10.

1920-58: Maximum gage height observed, 42.46 ft Apr. 22, 1956; minimum observed, 19.38 ft Dec. 16, 1931.

Remarks.--Water is pumped from lake for irrigation and domestic supply. Lake has no natural surface outlet, but due to the permeability of the lakebed, a considerable part of the total inflow leaves the lake by infiltration to the ground water of Rathdrum Prairie. Some surface flow left the lake during high stages through a controlled outlet in the dike at southwest corner of lake. Estimated flow at outlet was 22 cfs on May 22. This water seeps rapidly into the ground in an extremely permeable area adjacent to the outlet.

Revisions (water years).--WSP 962: 1921(M). WSP 1216: 1950.

Gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34.12	33.90	33.85	34.00	34.87	37.92	38.39	40.44	39.70	38.75	37.44	36.00
2	34.18	33.88	33.85	33.99	34.90	37.97	38.53	40.42	39.67	38.70	37.38	35.94
3	34.17	33.86	33.84	33.99	34.94	38.02	38.56	40.40	39.64	38.68	37.34	35.90
4	34.16	33.84	33.83	33.99	34.96	38.06	38.64	40.40	39.62	38.66	37.26	35.86
5	34.16	33.82	33.81	33.98	34.98	38.08	38.72	40.38	39.58	38.62	37.24	35.82
6	34.16	33.80	33.83	33.98	35.02	38.13	38.77	40.36	39.54	38.58	37.18	35.78
7	34.15	33.78	33.85	33.96	35.05	38.14	38.82	40.36	39.55	38.54	37.14	35.76
8	34.16	33.77	33.84	33.96	35.08	38.16	38.88	40.36	39.53	38.50	37.10	35.72
9	34.13	33.75	33.82	33.95	35.13	38.17	38.92	40.34	39.54	38.46	37.06	35.68
10	34.12	33.73	33.83	33.95	35.30	38.17	38.94	40.34	39.50	38.42	37.00	35.66
11	34.10	33.80	33.82	33.96	35.52	38.18	38.98	40.34	39.48	38.38	36.96	35.64
12	34.09	33.80	33.80	33.97	35.66	38.18	39.00	40.34	39.46	38.34	36.90	35.62
13	34.07	33.86	33.80	33.98	35.85	38.16	39.02	40.34	39.40	38.27	36.86	35.58
14	34.06	33.95	33.80	33.99	35.94	38.17	39.06	40.31	39.38	38.24	36.82	35.56
15	34.04	33.95	33.79	34.04	36.02	38.18	39.16	40.28	39.32	38.18	36.76	35.52
16	34.02	33.94	33.78	34.05	36.12	38.18	39.34	40.24	39.28	38.14	36.72	35.50
17	34.00	33.94	33.80	34.13	36.19	38.16	39.62	40.20	39.24	38.10	36.68	35.48
18	33.98	33.94	33.85	34.16	36.27	38.15	39.82	40.18	39.22	38.04	36.62	35.44
19	33.96	33.94	33.84	34.21	36.37	38.15	40.04	40.12	39.18	38.00	36.58	35.44
20	33.94	33.94	33.84	34.22	36.50	38.15	40.22	40.07	39.10	37.96	36.52	35.40
21	33.92	33.90	33.85	34.27	36.66	38.16	40.32	40.04	39.06	37.92	36.50	35.36
22	33.92	33.89	33.88	34.28	36.80	38.18	40.40	40.00	39.02	37.88	36.44	35.33
23	33.92	33.88	33.88	34.30	36.94	38.18	40.46	39.98	38.98	37.82	36.40	35.30
24	33.94	33.86	33.92	34.39	37.10	38.22	40.48	39.94	39.00	37.78	36.36	35.26
25	33.94	33.85	33.92	34.49	37.36	38.26	40.52	39.90	39.02	37.74	36.32	35.26
26	33.94	33.83	33.94	34.50	37.64	38.30	40.52	39.86	38.98	37.68	36.26	35.24
27	33.94	33.80	33.94	34.58	37.74	38.32	40.52	39.83	38.94	37.64	36.20	35.22
28	33.94	33.85	33.95	34.64	37.84	38.36	40.50	39.84	38.88	37.60	36.17	35.20
29	33.94	33.84	33.97	34.70	---	38.40	40.48	39.80	38.84	37.54	36.14	35.18
30	33.94	33.83	34.00	34.74	---	38.44	40.46	39.77	38.78	37.52	36.10	35.16
31	33.92	---	34.00	34.83	---	38.48	---	39.73	---	37.48	36.08	---

## 4180. Rathdrum Prairie Canal at Huetter, Idaho

Location.--Lat 47°43', long 116°52', in sec. 6, T. 50 N., R. 4 W., on left bank 450 ft downstream from outlet of discharge pipe, five-eighths of a mile north of pumping plant, and three-quarters of a mile northwest of Huetter.

Records available.--April 1946 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 2,273.02 ft above mean sea level (Bureau of Reclamation bench mark).

Extremes.--1946-58: Maximum daily discharge, 66 cfs June 29 to July 2, 1947; no flow for long periods each year.

Remarks.--Records excellent except those for period of no gage-height record, which are poor. Canal carries water which is pumped from Spokane River in sec. 7, T. 50 N., R. 4 W., for irrigation of first unit of Rathdrum Prairie project.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							0	12	0	54	53	a50
2							0	0	0	48	53	a50
3							0	0	0	53	54	a50
4							0	0	0	51	54	a50
5							0	0	0	51	54	a50
6							0	0	0	51	54	a50
7			(*)				0	0	0	52	54	a50
8							0	15	0	54	55	a50
9							0	20	9.3	53	55	a50
10							0	23	40	*53	54	a48
11							0	*25	48	54	54	a45
12							0	25	47	54	55	a45
13							*0	26	46	54	54	a45
14							0	26	46	54	*54	a45
15							0	26	45	54	54	a43
16							0	27	46	54	54	a39
17							0	28	49	54	54	*36
18							0	28	49	54	54	a36
19							0	29	51	54	54	a14
20							0	34	54	54	54	0
21							10	37	55	54	54	0
22							16	42	55	54	54	0
23							14	43	55	53	54	0
24							14	46	53	53	54	0
25		(*)					14	50	52	54	54	0
26							13	51	54	54	53	0
27							13	42	55	53	53	0
28							17	34	54	53	53	0
29							16	49	55	53	53	0
30							16	47	55	53	53	0
31		-----			-----		-----	*41	-----	53	a52	-----
Total	0	0	0	0	0	0	143	826	1,075.3	1,647	1,668	846
Mean	0	0	0	0	0	0	4.77	26.6	35.8	53.1	53.8	28.2
Ac-ft	0	0	0	0	0	0	284	1,640	2,150	3,270	3,310	1,680
Calendar year 1957: Max	58				Min 0	Mean 13.8		Ac-ft 9,970				
Water year 1957-58: Max	55				Min 0	Mean 17.0		Ac-ft 12,310				

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

a No gage-height record; discharge estimated on basis of recorded range in stage, 1 discharge measurement, and knowledge of when pumps were stopped.

## 4185. Spokane Valley Farms Co.'s Canal at Post Falls, Idaho

Location.--Lat 47°43', long 116°57', in sec. 3, T. 50 N., R. 5 W., on left bank 300 ft downstream from headgate and half a mile northwest of Post Falls.

Records available.--May 1911 to September 1917, September 1919 to September 1958.

Gage.--Water-stage recorder. Prior to Apr. 22, 1938, staff gages at several sites within 1,000 ft of present site at various datums.

Extremes.--1911-17, 1919-58: Maximum daily discharge, 312 cfs May 22-24, 26, 28, 1956; no flow or small amount of leakage during non-irrigation seasons.

Remarks.--Records good except those below 5 cfs, which are poor. Canal diverts water for irrigation from Spokane River in SE $\frac{1}{4}$  sec. 3, T. 50 N., R. 5 W.

Cooperation.--Water-stage recorder inspected by employee of Spokane Valley Farms Co. One discharge measurement furnished by Washington Water Power Co.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	1			0	8	0	72	272	127	232	213
2	0	1			0	8	0	72	272	254	234	215
3	0	1			0	8	0	72	276	255	236	217
4	0	1			0	8	0	72	272	254	235	214
5	0	1			0	8	0	74	272	254	234	213
6	0	1			0	8	0	113	272	254	232	210
7	0	1			19	8	0	121	270	254	238	210
8	0	0	(*)		13	8	0	121	270	254	241	213
9	0	0			1	*8	0	122	272	254	238	216
10	0	1			16	9	49	122	269	*254	237	216
11	0	1			27	12	74	*123	270	253	235	215
12	0	0			18	12	70	124	272	254	234	215
13	0	0			18	12	*70	124	272	253	234	215
14	0	0			11	12	69	124	275	254	*233	172
15	0	0			1	14	68	180	275	253	238	144
16	0	0		(*)	1	14	68	194	275	253	246	101
17	0	0			6	14	68	193	272	253	250	*63
18	0	0			8	14	68	193	271	240	252	23
19	0	0			8	15	69	195	271	238	252	22
20	0	0			8	14	68	238	271	236	252	15
21	0	0			8	10	69	251	274	235	244	0
22	0	0			7	2	69	254	276	*234	238	0
23	0	0			7	2	69	277	276	235	236	0
24	0	0			7	1	69	280	273	234	236	0
25	*0	0			7	0	68	281	272	234	236	0
26	0	0			7	0	68	280	271	234	236	0
27	0	0			8	0	69	279	265	235	236	0
28	0	0			8	0	68	278	256	236	235	0
29	3	0			-	0	70	279	257	234	235	0
30	3	0			-----	0	72	276	196	234	223	0
31	2	-----			-----	0	-----	*276	-----	234	217	-----
Total	8	9	0	0	214	229	1,432	5,660	8,055	7,480	7,355	3,322
Mean	0.3	0.3	0	0	7.6	7.4	47.7	185	268	241	237	111
Ac-ft	16	18	0	0	424	454	2,840	11,230	15,980	14,840	14,590	6,590

Calendar year 1957: Max 279 Min 0 Mean 89.7 Ac-ft 64,890  
 Water year 1957-58: Max 281 Min 0 Mean 92.5 Ac-ft 66,980

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

## 4190. Spokane River near Post Falls, Idaho

Location.--Lat 47°42'10", long 116°58'40", in SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 4, T. 50 N., R. 5 W., on right bank 1 mile downstream from powerplant of Washington Water Power Co.,  $\frac{1}{2}$  miles downstream from intake of Spokane Valley Farms Co.'s canal, and  $\frac{1}{2}$  miles southwest of Post Falls.

Drainage area.--3,840 sq mi, approximately, of which about 122 sq mi in the vicinity of Hayden Lake is noncontributing to this station.

Records available.--January 1913 to September 1958. Prior to October 1949, published as "at Post Falls."

Gage.--Water-stage recorder. Datum of gage is 2,000.00 ft above mean sea level, referenced to same datum as gage on Coeur d'Alene Lake at Coeur d'Alene (see p. 266). Datum of 1929, supplementary adjustment of 1947, is 3.00 ft higher. Jan. 1, 1913, to Nov. 21, 1920, staff gage, and Sept. 16, 1934, to Nov. 15, 1949, water-stage recorder, at site 0.8 mile upstream. Nov. 22, 1920, to Sept. 15, 1934, water-stage recorder at site 0.6 mile upstream. All gages at present datum.

Average discharge.--River only, 45 years, 6,104 cfs (4,419,000 acre-ft per year); river, Spokane Valley Farms Co.'s canal, and Rathdrum Prairie Canal, 45 years, 6,211 cfs (4,497,000 acre-ft per year).

Extremes.--Maximum discharge during year, 24,800 cfs Apr. 24 (gage height, 69.47 ft); minimum, 97 cfs Aug. 6 (gage height, 55.04 ft); minimum daily discharge, 104 cfs Aug. 18.

1913-58: Maximum discharge, 50,100 cfs when recorder was not operating Dec. 25, 1933 (determined from unpublished records collected by Washington Water Power Co. for station at Liberty Bridge); minimum daily, that of Aug. 18, 1958.

Remarks.--Records excellent except those below 1,500 cfs, which are good. Spokane Valley Farms Co.'s canal (see preceding page) and Rathdrum Prairie Canal (see p. 268) divert water above gage for irrigation. Figures of daily discharge do not include water diverted by these canals. Flow regulated by dam at Post Falls and affected by storage in Coeur d'Alene Lake (see p. 266).

Cooperation.--Water-stage-recorder graph furnished by Washington Water Power Co.

Revisions.--WSP 1182: Drainage area.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	982	2,320	1,940	4,190	4,150	16,400	7,540	17,500	16,700	2,160	802	1,360
2	1,239	1,940	1,940	4,580	4,030	16,000	7,530	17,100	16,000	1,530	482	1,420
3	1,640	2,570	2,020	2,310	4,720	15,200	7,640	16,900	15,100	1,810	145	1,380
4	1,590	2,800	2,060	2,090	4,990	14,500	8,920	16,900	14,300	1,870	530	1,250
5	1,660	2,800	1,990	1,980	4,960	13,900	9,970	17,100	13,500	1,450	442	735
6	1,650	2,780	1,960	2,300	5,070	15,100	10,100	17,400	12,500	743	263	672
7	1,880	2,520	*2,020	2,400	5,130	12,100	10,200	17,700	11,700	1,430	117	609
8	1,980	2,320	2,000	3,010	5,100	11,400	10,600	18,000	11,200	1,600	125	543
9	2,020	2,270	2,100	2,120	5,160	10,600	10,900	18,600	5,430	1,700	125	543
10	1,890	2,260	2,110	1,950	5,200	*8,620	10,800	*19,300	548	*1,620	125	543
11	1,950	2,300	2,050	1,900	5,230	8,040	10,700	20,200	1,380	1,640	125	543
12	2,060	2,420	1,860	1,820	5,490	7,640	10,600	21,300	1,870	1,400	125	543
13	1,970	2,360	1,860	3,010	7,570	7,360	*10,400	21,900	3,040	426	122	569
14	2,310	3,000	1,800	3,420	8,650	6,800	11,100	22,100	3,490	935	*117	550
15	2,420	3,900	1,420	3,060	10,000	6,440	11,900	21,500	2,240	795	114	550
16	2,420	3,110	1,870	*3,090	10,100	6,280	13,100	21,100	2,790	795	112	911
17	2,140	2,300	1,900	2,440	10,000	5,960	14,400	20,500	2,440	780	107	*1,170
18	2,210	3,000	2,110	2,240	10,100	5,720	16,100	20,300	2,440	788	104	919
19	2,180	2,620	2,850	1,830	10,000	5,600	18,000	20,300	2,470	1,050	107	562
20	2,020	2,310	2,960	3,070	10,500	5,510	19,500	20,300	1,590	1,050	109	536
21	2,050	2,340	2,920	3,580	11,100	5,440	21,100	20,500	1,300	795	109	550
22	2,030	2,080	3,210	4,140	11,900	5,340	22,200	20,500	649	795	114	750
23	1,990	2,050	3,820	4,060	12,200	5,310	22,800	20,700	2,060	795	122	948
24	2,030	1,900	4,040	3,280	13,000	5,340	22,800	20,600	2,780	788	125	1,140
25	*2,060	1,930	3,180	1,260	13,900	5,490	22,400	20,600	3,540	795	125	1,360
26	2,120	1,900	3,630	3,170	15,200	5,720	21,600	20,700	3,580	438	131	1,410
27	2,160	1,930	4,200	3,650	16,200	6,010	20,700	20,300	2,740	154	133	1,240
28	2,040	1,940	4,210	2,980	16,600	6,200	20,000	19,800	3,300	543	133	1,030
29	2,840	1,960	4,250	3,300	-	6,360	19,200	19,100	748	494	139	953
30	2,990	1,940	4,240	3,910	-	6,520	18,300	18,200	2,280	630	154	675
31	2,790	-	4,200	4,080	-	7,220	-	*17,600	-	772	142	-
Total	63,242	73,170	82,720	89,220	247,010	262,120	441,160	604,600	163,705	32,571	5,711	25,864
Mean	2,040	2,439	2,668	2,846	8,829	8,463	14,760	19,500	5,457	1,051	184	862
Ac-ft	125,400	145,100	164,100	175,000	499,900	519,900	875,000	*1,199	324,700	64,600	11,330	51,240
(+)	16	18	0	0	424	454	3,124	12,870	18,110	18,110	17,900	8,270

Adjusted for diversion through Spokane Valley Farms Co.'s canal and Rathdrum Prairie Canal

Mean Cfs	2,040	2,439	2,668	2,846	8,829	8,463	14,760	19,710	5,761	1,345	475	1,001
In.												
Ac-ft	125,400	145,100	164,100	175,000	490,300	520,400	878,100	*1,212	342,800	82,710	29,230	59,510

Observed

Calendar year 1957: Max	33,700	Min	131	Mean	6,699	Ac-ft	4,850,000
Water year 1957-58: Max	22,900	Min	104	Mean	5,724	Ac-ft	4,145,000

Adjusted

Calendar year 1957: Mean	6,802	Cfs	In.	Ac-ft	4,925,000
Water year 1957-58: Mean	5,833	Cfs	In.	Ac-ft	4,225,000

\* Discharge measurement made on this day.

† Diversion, in acre-feet, through Spokane Valley Farms Co.'s canal and Rathdrum Prairie Canal.

‡ Expressed in thousands.

4195. Spokane River above Liberty Bridge, near Otis Orchards, Wash.

Location.--Lat 47°40'55", long 117°05'05", in NW<sup>1</sup>/<sub>4</sub> sec. 11, T. 25 N., R. 45 E., on left bank 1.2 miles upstream from Liberty Bridge, 1<sup>1</sup>/<sub>2</sub> miles southeast of Otis Orchards, and 3.3 miles northeast of Greenacres.

Drainage area.--3,880 sq mi, approximately.

Records available.--October 1950 to September 1958 in reports of the Geological Survey. January 1929 to September 1950 in reports of Washington Water Power Co.

Gage.--Water-stage recorder. Datum of gage is 2,000 ft above mean sea level (levels by Washington Water Power Co.).

Average discharge.--8 years (1950-58), 6,649 cfs (4,814,000 acre-ft per year), unadjusted.

Extremes.--Maximum discharge during year, 24,000 cfs Apr. 24 (gage height, 17.54 ft); minimum daily, 70 cfs Aug. 18-21.

1950-58: Maximum discharge, 38,800 cfs Apr. 26, 1956 (gage height, 20.43 ft); minimum, 61 cfs Aug. 7, 1951; minimum gage height observed, 7.67 ft Sept. 2, 1955.

Maximum stage known since 1932, 22.24 ft Dec. 25, 1933 (discharge, 50,100 cfs), determined from unpublished records collected by Washington Water Power Co. at this station.

Remarks.--Records excellent except those for periods of no gage-height record, which are fair. Flow partly regulated by powerplant at Post Falls, Idaho, and by Coeur d'Alene Lake (see p. 266). Spokane Valley Farms Co.'s canal (see p. 269) and Rathdrum Prairie Canal (see p. 268) divert water above station for irrigation.

Cooperation.--Gage-height record collected in cooperation with Washington Water Power Co.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

7.6	49	3,020
7.8	99	4,760
8.0	170	7,100
8.5	405	17,300
9.0	750	26,100
10.0	1,690	

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	870	2,720	1,880	4,120	4,050	16,200	7,240	17,300	16,500	2,150	775	1,140
2	1,160	2,660	*1,900	3,680	4,220	15,700	7,300	16,900	15,700	1,580	624	1,420
3	1,560	2,460	1,990	2,300	4,440	15,000	7,320	16,700	14,800	1,780	140	1,370
4	1,580	2,760	1,980	2,060	4,880	14,400	8,460	16,700	13,900	1,860	471	1,370
5	1,610	2,770	1,920	1,960	4,840	13,600	9,610	*16,900	13,100	1,450	451	*752
6	1,620	2,730	1,930	2,270	4,920	12,800	9,770	17,200	12,200	870	342	650
7	1,750	2,400	1,940	2,380	4,980	12,100	9,870	17,600	11,600	1,330	85	595
8	1,920	2,290	1,930	2,020	4,960	11,500	10,300	17,900	10,900	1,730	90	523
9	1,920	2,190	2,010	2,110	5,000	10,500	10,500	18,400	5,590	1,660	90	530
10	1,940	2,190	2,040	*1,960	5,040	*8,720	10,500	19,200	430	1,660	90	536
11	1,790	2,230	1,990	1,940	5,080	7,800	*10,500	20,000	1,300	1,680	90	536
12	1,950	2,360	1,800	1,840	5,200	7,380	10,300	20,900	1,780	1,540	90	542
13	1,900	2,300	1,800	3,020	7,160	7,130	10,100	21,500	2,840	513	85	568
14	2,250	2,850	1,740	3,390	9,420	6,580	10,900	21,700	3,480	877	80	542
15	2,300	*3,800	1,580	3,060	9,870	6,200	11,700	21,300	2,210	745	80	542
16	2,290	3,050	1,820	3,050	9,930	6,080	12,700	*20,800	2,810	738	75	838
17	2,030	2,220	1,840	2,540	*9,900	5,820	14,000	20,300	2,400	723	75	1,210
18	2,070	2,860	2,000	2,280	9,900	5,530	15,800	20,200	2,370	723	70	1,060
19	2,080	2,530	2,670	1,870	9,900	5,420	17,600	20,200	2,410	969	70	582
20	1,980	2,250	2,870	3,070	10,200	5,310	19,200	20,200	1,640	1,130	70	523
21	1,970	2,260	2,810	3,410	10,900	5,250	20,600	20,500	1,340	723	70	530
22	2,010	2,010	3,020	4,120	11,700	5,200	21,700	20,600	675	738	75	730
23	1,930	1,980	3,540	4,060	12,000	5,140	22,300	20,700	*1,860	730	80	775
24	*1,960	1,820	3,870	3,300	12,700	5,160	22,400	20,600	2,600	738	85	1,170
25	1,970	1,850	3,220	1,280	13,700	5,310	22,100	20,600	3,520	745	85	1,370
26	1,990	1,840	3,370	3,010	15,000	5,510	21,500	20,600	3,680	552	90	1,430
27	2,120	1,870	4,120	3,640	16,000	5,770	20,800	20,200	2,710	110	90	1,330
28	1,980	1,870	4,120	2,970	16,300	5,980	19,800	19,800	3,580	472	95	1,020
29	2,700	1,870	4,140	3,080	-	6,080	18,900	19,000	970	481	100	970
30	2,820	1,890	4,150	3,850	-----	6,220	18,100	18,200	1,980	600	110	725
31	2,770	-----	4,140	3,970	-----	6,810	-----	17,400	-----	*745	100	-----
Total	60,790	70,880	79,930	87,610	242,000	256,200	431,670	600,100	160,675	32,322	4,928	25,879
Mean	1,961	2,363	2,578	2,826	8,643	8,265	14,390	19,360	5,356	1,043	159	863
Ac-ft	120,600	140,600	158,580	173,800	480,000	508,200	856,200	*1,190	318,700	64,110	9,770	51,350
Calendar year 1957: Max		34,600	Min	125	Mean	6,729	Ac-ft	4,871,000				
Water year 1957-58: Max		22,400	Min	70	Mean	5,625	Ac-ft	4,072,000				

\* Discharge measurement made on this day.

\* Expressed in thousands.

Note.--No gage-height record Oct. 1-4, July 27, Aug. 7-31; discharge estimated on basis of records for station near Post Falls, Idaho.

4200. Liberty Lake at Liberty Lake, Wash.

Location.--Lat 47°39'10", long 117°05'20", in NE $\frac{1}{4}$  sec. 22, T. 25 N., R. 45 E., on right wall of concrete outlet flume at town of Liberty Lake, 15 miles east of Spokane.

Drainage area.--13.7 sq mi.

Records available.--December 1950 to September 1958 (fragmentary).

Gage.--Staff gage read once daily. Datum of gage is 2,046.48 ft above mean sea level, datum of 1929, supplementary adjustment of 1947. Prior to Apr. 11, 1952, staff gages at various locations within a few feet of present site at same datum.

Extremes.--Maximum gage height observed during year, 2.88 ft Apr. 22-24; minimum observed, -0.36 ft Sept. 30.  
1950-58: Maximum gage height observed, 4.42 ft May 1, 3, 1952; minimum observed, that of Sept. 30, 1958.

Remarks.--Stage controlled by gate at outlet. No known diversion.

Gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.34	0.24	0.30	0.64	1.40	2.64	2.34	2.68	2.28	1.70	0.96	0.14
2	.34	.24	.31	.64	1.44	2.68	2.38	2.64	2.24	1.68	.94	.10
3	.34	.24	.30	.68	1.44	2.68	2.40	2.60	2.22	1.68	.92	.06
4	.32	.22	.30	.68	1.44	2.64	2.44	2.56	2.20	1.68	.88	.04
5	.32	.20	.30	.68	1.46	2.62	2.48	2.54	2.18	1.68	.84	.03
6	.32	.20	.30	.66	1.46	2.60	2.48	2.52	2.14	1.64	.78	.00
7	.32	.20	.30	.66	1.46	2.60	2.48	2.50	2.12	1.60	.78	.00
8	.32	.20	.30	.66	1.48	2.56	2.48	2.50	2.10	1.58	.76	-.02
9	.30	.20	.30	.66	1.48	2.54	2.46	2.54	2.10	1.56	.72	-.04
10	.30	.20	.30	.66	1.56	2.48	2.44	2.54	2.12	1.54	.70	-.06
11	.28	.20	.30	.68	1.80	2.44	2.44	2.56	2.10	1.52	.68	-.06
12	.28	.22	.30	.68	1.84	2.42	2.42	2.56	2.10	1.50	.66	-.10
13	.28	.24	.32	.68	1.74	2.36	2.46	2.58	2.08	1.46	.62	-.12
14	.28	.26	.32	.70	1.80	2.28	2.54	2.60	2.08	1.42	.58	-.14
15	.26	.28	.32	.72	1.84	2.28	2.60	2.60	2.06	1.40	.56	-.14
16	.26	.28	.34	.76	1.88	2.20	2.64	2.62	2.04	1.38	.54	-.14
17	.26	.28	.34	.84	1.90	2.18	2.70	2.62	2.00	1.36	.50	-.16
18	.26	.28	.34	.94	1.92	2.14	2.74	2.64	2.00	1.34	.46	-.18
19	.26	.28	.34	.98	1.94	2.10	2.78	2.64	1.98	1.30	.44	-.20
20	-	.28	.36	.98	1.98	2.06	2.80	2.64	1.94	1.28	.44	-.22
21	-	.28	.38	1.04	2.00	2.06	2.86	2.58	1.90	1.26	.42	-.26
22	-	.28	.40	1.06	2.04	2.10	2.88	2.50	1.88	1.24	.40	-.28
23	-	.28	.42	1.08	2.08	2.10	2.88	2.48	1.86	1.22	.38	-.30
24	.20	.30	.44	1.10	2.20	2.10	2.88	2.46	1.86	1.18	.36	-.32
25	.22	.30	.48	1.20	2.32	2.14	2.84	2.42	1.86	1.16	.34	-.34
26	.24	.30	.50	1.24	2.46	2.18	2.84	2.40	1.84	1.12	.30	-.34
27	.24	.30	.52	1.26	2.56	2.20	2.82	2.38	1.82	1.10	.24	-.34
28	.26	.30	.54	1.28	2.60	2.22	2.80	2.32	1.82	1.08	.22	-.34
29	.26	.30	.56	1.32	-	2.26	2.76	2.30	1.80	1.04	.20	-.34
30	.24	.30	.58	1.34	-----	2.28	2.72	2.28	1.74	1.02	.18	-.36
31	.24	-----	.60	1.36	-----	2.30	-----	2.26	-----	1.00	.16	-----

Note.--Add 2,046.48 ft to obtain elevation above mean sea level.

## 4225. Spokane River at Spokane, Wash.

Location.--Lat 47°39'35", long 117°26'50", in SW<sup>1</sup>/<sub>4</sub> sec. 13, T. 25 N., R. 42 E., on right bank at Cochran Street in Spokane, half a mile upstream from Latah Creek.

Drainage area.--4,290 sq mi, approximately.

Records available.--April 1891 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,696.6 ft above mean sea level, datum of 1929 (river-profile survey). Prior to July 1, 1921, water-stage recorders and staff or wire-weight gages at several sites within 4 miles of present site at various datums.

Average discharge.--67 years, 6,822 cfs (4,939,000 acre-ft per year), unadjusted.

Extremes.--Maximum discharge during year, 24,400 cfs Apr. 24 (gage height, 25.17 ft); minimum, 504 cfs Aug. 17 (gage height, 16.66 ft); minimum daily, 814 cfs Aug. 23.  
1891-1958: Maximum discharge, 49,000 cfs (estimated) May 31, 1894 (see WSP 532); minimum, 95 cfs Sept. 19, 1956 (gage height, 15.60 ft); minimum daily, 740 cfs Sept. 7, 1947.

Remarks.--Records good. Flow partly regulated by powerplant of Washington Water Power Co. at Post Falls, Idaho, and at Spokane, and by Coeur d'Alene Lake (see p. 266). Spokane Valley Farms Co.'s canal (see p. 269) and Rathdrum Prairie Canal (see p. 268) divert water above station for irrigation. In 1946, approximately 22,600 acres (of which about 15,000 acres utilized surface water) were under irrigation upstream from Spokane.

Cooperation.--Gage-height record collected in cooperation with Washington Water Power Co.

Revisions (water years).--WSP 532: 1891-1904. WSP 1246: Drainage area. WSP 1286: 1907-9.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

17.0	755	21.0	8,090
17.5	1,230	23.0	14,800
18.0	1,840	25.0	23,500
19.0	3,470		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,710	3,250	2,570	4,580	4,490	16,700	7,980	18,400	17,600	3,150	1,560	1,400
2	1,850	3,180	*2,590	4,430	4,510	16,400	8,010	17,900	16,800	2,830	1,540	1,880
3	2,130	3,110	2,590	3,070	4,700	15,600	8,120	17,600	16,000	2,590	1,080	1,970
4	2,240	3,220	2,530	5,270	15,000		8,360	17,500	15,200	2,980	1,280	*1,980
5	2,240	3,250	2,610	2,790	5,290	14,300	10,200	17,700	14,300	2,530	1,280	1,630
6	2,210	3,250	2,610	2,760	5,290	13,600	10,300	18,100	13,200	2,180	1,260	1,390
7	2,260	3,110	2,610	*3,070	5,450	12,800	10,400	18,500	12,800	2,060	1,020	1,550
8	2,460	2,970	2,610	2,780	5,400	12,000	10,700	18,800	12,200	2,540	995	1,280
9	2,430	2,830	2,610	2,730	5,450	11,300	11,200	*19,200	*8,850	2,570	1,000	1,270
10	2,620	2,830	2,620	2,760	*5,470	9,770	11,200	19,900	2,690	2,560	894	1,260
11	2,400	2,860	2,660	2,680	5,590	8,860	11,100	20,800	3,040	2,570	984	1,300
12	2,380	2,970	2,640	2,610	5,560	8,460	11,000	21,700	3,360	2,430	939	1,320
13	2,570	2,930	2,450	3,080	7,140	*8,120	10,800	22,400	4,030	1,840	957	*1,220
14	2,490	3,170	2,430	3,890	9,280	7,650	*11,200	22,700	4,850	1,750	948	1,280
15	2,840	4,170	2,150	3,690	9,880	7,220	12,300	22,300	3,700	1,660	930	1,260
16	2,680	3,670	2,400	3,630	10,000	7,060	13,100	*21,900	3,930	1,640	921	1,340
17	2,760	3,090	2,460	3,550	10,100	6,800	14,400	21,400	3,680	1,670	894	1,760
18	2,620	3,160	2,460	2,910	10,100	6,520	16,000	21,200	3,470	1,640	912	1,780
19	2,640	3,290	2,860	2,540	10,100	6,400	17,900	21,200	3,680	1,780	912	1,390
20	2,710	2,910	3,470	3,510	10,300	6,300	19,700	21,200	3,290	2,050	921	1,250
21	2,530	2,930	3,220	3,630	11,000	6,230	21,200	21,300	2,620	1,670	912	1,260
22	2,570	2,740	3,510	4,470	12,000	6,130	22,300	21,400	2,200	1,710	903	1,340
23	2,610	2,730	3,930	4,470	12,300	6,080	23,000	21,500	2,550	1,590	814	1,480
24	2,620	2,590	4,430	4,050	12,800	6,080	23,200	21,500	3,420	1,660	858	1,750
25	*2,620	2,540	4,070	2,640	13,800	6,180	23,000	21,500	4,370	1,590	867	1,980
26	2,570	2,540	3,650	2,980	14,900	6,300	22,400	21,500	4,450	1,560	876	1,900
27	2,730	2,470	4,470	4,250	16,200	6,580	21,600	21,200	3,690	1,080	905	2,040
28	2,610	2,530	4,510	3,560	16,700	6,800	21,000	20,800	4,290	*1,250	921	1,700
29	2,960	2,540	4,490	3,560		6,930	20,200	20,200	7,260	1,340	921	1,710
30	3,290	2,590	4,580	4,290		7,060	19,300	19,300	2,520	1,540	921	1,560
31	3,290	-----	4,530	4,350		7,490	-----	18,500	-----	1,580	930	-----
Total	78,640	89,440	97,300	106,140	249,070	282,720	451,870	628,900	204,020	61,590	31,051	46,030
Mean	2,537	2,981	3,139	3,424	8,895	9,120	15,060	20,290	6,801	1,987	1,002	1,534
Ac-ft	156,000	177,400	193,000	210,500	484,000	560,800	896,300	*1,247	404,700	122,200	61,590	91,300
Calendar year 1957: Max			34,600	Min	903	Mean	7,283	Ac-ft	5,272,000			
Water year 1957-58: Max			23,200	Min	814	Mean	6,375	Ac-ft	4,615,000			

\* Discharge measurement made on this day.

† Expressed in thousands.

4240. Latah Creek at Spokane, Wash.

Location.--Lat 47°39'10", long 117°26'55", in NW $\frac{1}{4}$  sec. 24, T. 25 N., R. 42 E., on left bank in Spokane, three-quarters of a mile upstream from mouth.

Drainage area.--619 sq mi.

Records available.--April 1948 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,720 ft (from topographic map). Prior to Nov. 22, 1948, wire-weight gage at site half a mile upstream at different datum.

Average discharge.--10 years, 276 cfs (199,800 acre-ft per year).

Extremes.--Maximum discharge during year, 6,090 cfs Feb. 13 (gage height, 8.55 ft); minimum, 9.0 cfs Aug. 22 (gage height, 1.74 ft).

1948-58: Maximum discharge, 11,900 cfs May 24, 1948 (gage height, 18.73 ft, from floodmarks, site and datum then in use), from rating curve extended above 7,300 cfs on basis of slope-area and contracted-opening measurements of peak flow; minimum, 3.8 cfs Sept. 4, 5, 8, 1955 (gage height, 2.12 ft).

Remarks.--Records good except those for periods of channel reconstruction and stabilization, which are fair. No regulation. Some diversions for irrigation above station.

Revisions.--WSP 1216: Drainage area.

Rating tables, water year 1957-58, except periods of channel reconstruction and stabilization (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 4

Dec. 4 to Sept. 30

2.4	12.5	1.8	10.5	3.0	250
2.6	22	1.9	14.5	4.0	795
2.9	44	2.0	21	5.0	1,520
3.2	77	2.2	44	6.0	2,490
		2.5	97	8.0	5,150

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	24	40	100	856	567	408	274	54	27	13.5	13
2	15.5	22	43	80	621	472	395	240	56	26	13.5	15
3	15.5	21	46	60	484	434	706	208	55	26	12.5	14
4	17	20	48	55	360	380	1,590	167	54	32	13	*13.5
5	19.5	20	*52	57	320	350	1,780	154	44	32	13	13
6	20	20	55	54	603	355	984	145	39	26	12.5	13
7	22	19.5	50	50	687	320	*729	145	35	25	12.5	13
8	20	19.5	76	47	1,140	286	567	143	35	24	12.5	12.5
9	18.5	19.5	104	43	1,340	320	456	*137	*39	26	12.5	12
10	17.5	19.5	93	43	*2,530	266	129	129	40	23	13	12
11	17	20	72	45	2,370	240	434	126	41	32	13	12
12	17	22	*63	54	1,310	212	355	121	40	26	12.5	13
13	17.5	24	57	*51	*4,710	*187	305	143	47	21	11.5	13.5
14	17.5	28	56	218	*5,450	174	310	137	47	19	11.5	13.5
15	18	41	54	*312	1,700	161	412	116	41	18.5	12	13.5
16	18	66	54	1,140	1,970	161	940	104	39	18	12	13.5
17	17.5	63	62	*1,990	1,580	154	1,230	91	36	17	12	13.5
18	17.5	56	67	1,820	1,290	151	1,660	82	34	16.5	12	13.5
19	17.5	52	118	1,050	997	164	977	74	32	16	12	14
20	17	46	137	684	1,040	174	984	69	29	16	11.5	13.5
21	17	45	175	440	*997	170	783	65	28	16	11.5	13.5
22	18.5	42	297	282	826	208	615	63	27	14.5	11.5	14
23	*19.5	40	*262	*254	783	226	808	58	26	14.5	11.5	16
24	20	38	151	1,440	783	194	561	57	33	13.5	13	16
25	21	38	129	1,960	2,390	283	511	55	37	13.5	13	15
26	22	38	321	1,240	1,560	517	738	51	35	13.5	13	14.5
27	23	36	604	768	951	462	758	50	30	13	12	14
28	24	37	250	*1,210	723	350	579	50	28	*13.5	12	14
29	24	35	243	1,630	-	365	412	50	27	14	13	13.5
30	24	34	*243	1,760	-----	450	325	50	26	14.5	12	13.5
31	26	-----	120	1,100	-----	511	-----	52	-----	13.5	12	-----
Total	594.0	1,008.0	4,142	20,137	38,351	9,264	21,687	3,406	1,135	621.0	383.0	408.5
Mean	19.2	33.6	134	650	1,370	299	723	110	37.8	20.0	12.4	13.6
Cfsm	0.031	0.054	0.216	1.05	2.21	0.463	1.17	0.178	0.061	0.032	0.020	0.022
In.	0.04	0.06	0.25	1.21	2.30	0.56	1.30	0.20	0.07	0.04	0.02	0.02
Ac-ft	1,180	2,000	8,220	39,940	76,070	18,370	43,020	6,760	2,250	1,230	760	810

Calendar year 1957: Max 6,440 Min 11.5 Mean 306 Cfsm 0.494 In. 6.69 Ac-ft 221,200  
 Water year 1957-58: Max 4,710 Min 11.5 Mean 277 Cfsm 0.447 In. 6.07 Ac-ft 200,600

Peak discharge (base, 2,500 cfs).--Jan. 17 (5 p.m.) 3,010 cfs (6.91 ft); Jan. 24 (11 p.m.) 2,600 cfs (6.32 ft); Feb. 10 (4:30 p.m.) 3,250 cfs (7.09 ft); Feb. 13 (6 p.m.) 6,090 cfs (8.55 ft); Feb. 25 (1 p.m.) 3,350 cfs (6.80 ft); Apr. 4 (11 p.m.) 2,520 cfs (5.97 ft).

\* Channel measurement made on this day.

Note.--Channel reconstruction and stabilization Nov. 12 to Apr. 17 (stage-discharge relation affected by ice Nov. 23, 29, Dec. 31 to Jan. 4). No gage-height record May 28 to June 2, June 22 to July 5, Aug. 24 to Sept. 3; discharge estimated on basis of weather records.



4250. Medical Lake at Medical Lake, Wash.

Location.--Lat 47°34'23", long 117°41'00", in SE $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 18, T. 24 N., R. 41 E., at end of Lake Street in town of Medical Lake.

Drainage area.--1.50 sq mi.

Records available.--March 1953 to September 1958 (fragmentary), discontinued.

Gage.--Staff gage read once daily. Datum of gage is 2,378.73 ft above mean sea level; gage readings have been reduced to elevations above mean sea level. Mar. 29, 1953, to May 25, 1954, at present site at datum 16.61 ft higher. May 26, 1954, to Sept. 10, 1956, at site 0.5 mile northwest at causeway to State Hospital in town of Medical Lake at datum 6.61 ft higher. Sept. 11, 1956, to Sept. 15, 1957, at present site at datum 6.61 ft higher.

Extremes.--Maximum elevation observed during year, 2,389.10 ft Mar. 3-5; minimum observed, 2,387.19 ft Sept. 23-27.

1953-58: Maximum elevation observed, 2,397.97 ft Mar. 19, 1954; minimum observed, 2,387.08 ft Jan. 14, 1957.

Remarks.--Lake has no natural surface outlet. Since Mar. 14, 1954, a pump has been in operation intermittently to lower the lake. The water is pumped into a tributary of Deep Creek.

Gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.25	7.31	7.43	7.65	8.23	9.08	-	-	8.60	8.15	7.80	7.34
2	7.27	7.31	7.43	7.65	8.25	9.08	-	-	8.59	8.13	7.79	7.32
3	7.27	7.31	7.45	7.65	8.25	9.10	-	-	8.58	8.13	7.77	7.31
4	7.27	7.31	7.45	7.65	8.27	9.10	-	-	8.58	8.13	7.73	7.31
5	7.27	7.31	7.47	7.65	8.29	9.10	-	8.74	8.57	8.13	7.71	7.30
6	7.27	7.31	7.47	7.67	8.29	9.08	-	8.73	8.56	8.13	7.69	7.30
7	7.27	7.31	7.49	7.67	8.31	9.08	-	8.72	8.54	8.13	7.67	7.30
8	7.25	7.31	7.49	7.67	8.33	9.08	-	8.71	8.53	8.13	7.65	7.30
9	7.25	7.31	7.49	7.67	8.37	9.06	-	8.71	8.51	8.13	7.64	7.29
10	7.25	7.31	7.51	7.69	8.41	9.04	-	8.71	8.52	8.13	7.62	7.29
11	7.25	7.33	7.51	7.71	8.43	9.04	8.94	8.68	8.52	8.11	7.61	7.28
12	7.25	7.35	7.49	7.77	8.43	9.00	-	-	8.53	8.09	7.60	7.28
13	7.25	7.37	7.49	7.80	8.45	8.98	-	8.70	8.53	8.08	7.59	7.27
14	7.25	7.37	7.49	7.84	8.45	8.98	-	8.70	8.52	8.07	7.58	7.27
15	7.25	7.39	7.49	7.86	8.47	8.96	-	8.69	8.51	8.06	7.56	7.25
16	7.25	7.41	7.51	7.90	8.55	8.96	-	8.69	8.50	8.04	7.54	7.24
17	7.25	7.41	-	7.94	8.62	8.96	-	8.69	-	8.03	7.53	7.23
18	7.25	7.41	-	7.98	8.65	8.94	-	8.69	-	8.01	7.52	7.22
19	7.25	7.41	-	8.00	8.69	8.94	-	8.69	-	7.99	7.51	7.22
20	7.27	7.39	7.55	8.00	8.71	8.92	-	8.68	-	7.98	7.49	7.21
21	7.27	7.39	7.55	8.02	8.75	8.92	-	8.68	-	7.97	7.48	7.21
22	7.27	7.39	7.55	8.02	8.79	8.90	-	8.67	-	7.96	7.47	7.20
23	7.26	7.39	7.57	8.00	8.81	8.90	-	8.67	-	7.94	7.45	7.19
24	7.29	7.39	7.57	8.04	8.85	8.88	-	8.66	-	7.92	7.44	7.19
25	7.29	7.39	7.59	8.09	-	8.88	-	8.65	8.23	7.90	7.42	7.19
26	7.29	7.39	7.59	8.11	-	8.88	-	8.65	8.22	7.88	7.41	7.19
27	7.29	7.39	7.61	8.13	-	8.88	-	8.65	8.20	7.87	7.40	7.19
28	7.29	7.39	7.61	8.15	9.06	8.90	8.81	-	8.19	7.85	7.39	-
29	7.29	7.41	7.61	8.17	-	8.90	-	8.61	8.19	7.83	7.37	-
30	7.29	7.41	7.63	8.21	-	-	-	8.61	8.17	7.82	7.37	-
31	7.31	-	7.63	8.23	-	-	-	8.60	-	7.81	7.35	-

Note.--Add 2,380 ft to obtain elevation above mean sea level.

4270. Little Spokane River at Elk, Wash.

Location.--Lat 48°01'20", long 117°16'20", in SE $\frac{1}{4}$  sec. 8, T. 29 N., R. 44 E., on right bank half a mile upstream and northeast of Elk.

Drainage area.--115 sq mi.

Records available.--July 1948 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,875 ft (from topographic map).

Average discharge.--10 years, 59.9 cfs (43,370 acre-ft per year).

Extremes.--Maximum discharge during year, 113 cfs Feb. 26, 27 (gage height, 1.67 ft); minimum, 39 cfs Nov. 29 (gage height, 1.12 ft).  
1948-58: Maximum discharge, 148 cfs Apr. 7, 1956 (gage height, 1.87 ft); maximum gage height, 2.98 ft Jan. 16, 1957 (backwater from ice); minimum discharge, 28 cfs Jan. 16, 1954 (gage height, 1.01 ft).

Remarks.--Records good. No regulation or diversion.

Revisions.--WSP 1216: Drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

1.08	40
1.2	52
1.4	75
1.7	118

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45	48	41	47	62	105	80	84	61	56	47	46
2	46	47	42	47	62	102	81	82	61	55	47	46
3	45	47	42	46	61	99	84	81	*60	55	47	46
4	45	46	43	46	58	98	89	80	58	55	47	46
5	45	44	42	46	58	96	98	78	57	55	47	46
6	45	43	43	46	58	96	93	78	57	55	47	46
7	45	43	43	46	60	95	92	78	57	*54	48	45
8	45	43	43	46	61	95	89	*78	58	53	48	46
9	45	43	43	*46	64	92	88	78	58	53	48	45
10	45	43	43	45	72	91	*89	77	62	53	48	46
11	45	44	42	45	75	89	88	77	61	53	47	45
12	45	44	43	46	75	88	88	77	60	52	47	44
13	45	49	43	49	*77	86	88	76	60	52	46	46
14	45	51	43	49	75	*85	86	75	58	52	46	46
15	45	51	42	50	73	84	86	73	57	52	46	45
16	45	49	43	50	75	82	91	72	56	52	46	45
17	45	47	44	61	76	81	92	71	55	52	46	44
18	45	46	45	60	76	81	93	70	55	51	46	44
19	45	44	46	58	76	80	92	69	54	50	46	*44
20	45	43	48	56	80	80	93	68	54	49	*46	45
21	45	42	48	54	81	82	92	66	54	49	45	47
22	47	42	49	53	80	82	91	66	54	48	46	47
23	48	41	48	54	81	81	91	66	54	47	46	47
24	48	41	48	60	85	80	89	66	55	47	46	47
25	*48	41	49	62	105	80	89	66	56	47	47	48
26	49	40	51	62	112	78	89	64	56	47	47	48
27	50	40	51	60	113	78	89	63	57	47	47	47
28	50	41	53	63	110	78	89	62	56	47	47	46
29	48	*41	51	54	-	78	86	61	56	48	47	46
30	50	40	50	64	---	80	85	60	56	48	47	44
31	49	---	49	64	---	80	---	60	---	48	46	---
Total	1,433	1,324	1,411	1,645	2,142	2,682	2,680	2,222	1,713	1,582	1,447	1,373
Mean	46.2	44.1	45.5	53.1	76.5	86.5	89.3	71.7	57.1	51.0	46.7	45.8
Cfsm	0.402	0.383	0.396	0.462	0.665	0.752	0.777	0.623	0.497	0.443	0.406	0.398
In.	0.46	0.43	0.46	0.53	0.69	0.87	0.87	0.72	0.55	0.51	0.47	0.44
Ac-ft	2,840	2,650	2,800	3,280	4,250	5,320	5,320	4,410	3,400	3,140	2,870	2,720
Calendar year 1957: Max	105			Min	40	Mean	52.7	Cfsm 0.458	In. 6.21	Ac-ft	38,180	
Water year 1957-58: Max	113			Min	40	Mean	59.3	Cfsm 0.516	In. 7.00	Ac-ft	42,960	

\* Discharge measurement made on this day.

4275. Diamond Lake near Newport, Wash.

Location.--Lat 48°08'05", long 117°10'35", in NE $\frac{1}{4}$  sec. 1, T. 30 N., R. 44 E., on south-east shore of Diamond Lake, 7 miles southwest of Newport.

Drainage area.--5.7 sq mi, approximately.

Records available.--July 1953 to September 1958 (fragmentary).

Gage.--Staff gage read twice weekly. Altitude of gage is about 2,340 ft (from topographic map).

Extremes.--Maximum gage height observed during year, 4.95 ft Feb. 25; minimum observed, 3.22 ft Sept. 30.

1953-58: Maximum gage height observed, that of Feb. 25, 1958; minimum observed, that of Sept. 30, 1958.

Remarks.--No known regulation. Some diversion for domestic use.

Gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.50	-	-	-	-	-	4.83	-	-	-	-	-
2	-	3.64	-	-	-	-	-	4.77	-	4.18	3.75	-
3	3.52	-	-	-	-	-	4.86	-	4.42	-	-	3.38
4	-	-	3.86	4.17	-	4.84	-	-	-	4.17	-	-
5	-	-	-	-	4.60	-	-	4.75	4.58	-	-	3.36
6	-	-	-	-	-	4.85	-	-	-	-	3.66	-
7	-	-	3.88	4.17	-	-	-	4.75	4.40	4.14	-	-
8	3.54	-	-	-	4.59	-	4.87	-	-	-	3.64	-
9	-	3.62	-	4.14	-	-	4.87	-	-	4.12	3.62	3.34
10	3.53	-	-	-	-	4.85	4.87	4.73	-	-	-	-
11	-	-	3.90	4.15	4.69	-	-	-	4.40	-	-	3.32
12	3.52	-	-	-	-	4.81	4.85	-	-	4.10	-	-
13	-	-	-	-	4.74	-	-	4.72	4.37	-	3.56	-
14	-	3.72	3.90	-	-	4.80	-	-	-	-	3.54	-
15	-	-	-	4.41	-	-	-	-	4.36	4.02	-	-
16	3.52	3.78	-	-	-	4.77	-	4.70	-	-	3.53	3.30
17	3.52	-	-	-	-	-	4.85	-	-	4.00	-	-
18	-	-	3.94	4.47	4.77	-	-	-	-	-	-	-
19	3.52	-	-	-	-	4.75	4.91	-	4.34	-	3.48	3.28
20	-	3.80	3.96	-	4.79	-	-	4.56	-	-	-	-
21	-	-	-	4.49	-	-	-	-	4.30	-	3.45	-
22	3.55	-	-	4.50	4.78	4.79	4.83	4.54	-	3.96	-	-
23	-	3.78	-	-	-	-	-	4.52	-	-	3.40	3.26
24	-	-	3.98	4.61	-	-	4.81	-	-	3.90	-	-
25	-	-	-	-	4.95	4.80	-	-	4.28	-	-	-
26	3.61	-	-	-	-	-	4.80	-	-	3.86	3.40	3.24
27	-	3.78	4.14	-	4.91	4.79	-	4.46	-	-	-	-
28	-	-	-	4.63	-	-	-	-	4.28	-	3.56	-
29	3.63	3.80	-	-	-	4.79	-	4.45	-	3.82	-	-
30	-	-	4.18	-	-	-	4.79	-	4.20	-	-	3.22
31	-	-	-	4.67	-	-	-	-	-	3.78	3.46	-



4285. Eloika Lake near Elk, Wash.

Location.--Lat 48°01'45", long 117°22'25", in NE $\frac{1}{4}$  sec. 9, T. 29 N., R. 43 E., on east shore  $\frac{1}{2}$  miles upstream from outlet and 5 miles northwest of Elk.

Drainage area.--87.5 sq mi.

Records available.--May 1953 to September 1958.

Gage.--Staff gage read once daily. Altitude of gage is 1,920 ft (from topographic map).

Extremes.--Maximum gage height observed during year, 7.77 ft Feb. 28; minimum observed, 2.34 ft Aug. 31 to Sept. 6.

1953-58: Maximum gage height observed, that of Feb. 28, 1958; minimum observed, 2.32 ft Sept. 3-6, 1955.

Maximum stage known, that of Feb. 28, 1958.

Remarks.--No known regulation or diversion.

Gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.56	2.86	2.96	3.29	3.93	7.53	4.95	5.35	5.53	3.07	2.50	2.34
2	2.60	2.86	2.97	3.29	3.87	7.35	4.97	5.27	5.51	3.05	2.49	2.34
3	2.59	2.86	2.99	3.29	3.86	6.99	5.03	5.21	5.51	3.05	2.48	2.34
4	2.59	2.85	2.98	3.29	3.85	6.71	5.21	5.09	5.51	3.05	2.46	2.34
5	2.59	2.85	2.98	3.29	3.83	6.49	5.45	5.03	5.51	3.03	2.44	2.34
6	2.66	2.84	2.98	3.29	3.81	6.33	5.65	4.97	5.47	3.01	2.43	2.34
7	2.66	2.84	2.98	3.29	3.83	6.09	5.75	4.93	5.45	2.99	2.44	2.36
8	2.67	2.84	2.97	3.29	3.86	6.01	5.85	4.85	5.43	2.97	2.44	2.38
9	2.68	2.84	2.96	3.29	3.93	5.83	5.85	4.81	5.41	2.96	2.42	2.38
10	2.69	2.84	2.96	3.29	4.09	5.65	5.85	4.75	5.41	2.95	2.40	2.40
11	2.70	2.84	2.95	3.29	4.37	5.53	5.79	4.71	5.45	2.95	2.39	2.42
12	2.70	2.86	2.95	3.29	4.59	5.39	5.75	4.65	5.45	2.94	2.38	2.42
13	2.72	2.92	2.95	3.33	4.73	5.25	5.85	4.61	5.45	2.89	2.37	2.44
14	2.72	2.99	2.95	3.33	4.93	5.12	5.55	4.55	5.45	2.86	2.36	2.46
15	2.73	3.05	2.94	3.35	5.03	5.03	5.45	4.49	5.44	2.83	2.37	2.46
16	2.74	3.06	2.93	3.37	5.11	4.93	5.45	4.45	5.43	2.79	2.38	2.44
17	2.74	3.07	2.95	3.46	5.15	4.83	5.45	4.35	5.41	2.77	2.38	2.46
18	2.74	3.08	2.95	3.51	5.17	4.77	5.55	4.27	5.37	2.75	2.38	2.46
19	2.74	3.07	2.95	3.55	5.24	4.72	5.60	4.23	5.33	2.74	2.38	2.46
20	2.74	3.05	2.95	3.58	5.35	4.67	5.71	4.15	5.27	2.73	2.36	2.46
21	2.73	3.03	2.95	3.63	5.55	4.67	5.83	4.09	5.25	2.71	2.38	2.47
22	2.77	3.02	3.05	3.61	5.79	4.67	5.89	4.05	5.20	2.69	2.38	2.48
23	2.80	3.01	3.05	3.61	5.95	4.67	5.94	3.95	5.17	2.65	2.38	2.49
24	2.79	3.00	3.05	3.71	6.11	4.67	5.93	3.90	5.16	2.63	2.38	2.49
25	2.79	2.99	3.10	3.73	6.59	4.69	5.89	3.85	5.15	2.61	2.39	2.49
26	2.82	2.97	3.15	3.73	7.37	4.75	5.83	3.79	5.15	2.59	2.38	2.50
27	2.83	2.95	3.20	3.75	7.71	4.79	5.77	3.73	5.15	2.58	2.38	2.50
28	2.84	2.95	3.24	3.81	7.77	4.83	5.65	3.69	5.13	2.56	2.39	2.51
29	2.85	2.96	3.27	3.85	-	4.85	5.57	3.65	5.11	2.55	2.38	2.53
30	2.86	2.96	3.29	3.91	-	4.89	5.45	3.59	5.09	2.54	2.38	2.53
31	2.86	-	3.30	3.93	-	4.93	-	3.55	-	2.52	2.34	-

## 4310. Little Spokane River at Dartford, Wash.

Location.--Lat 47°47'00", long 117°24'50", in NE<sup>1</sup> sec. 6, T. 26 N., R. 43 E., on right bank 50 ft downstream from highway bridge at Dartford, 6 miles upstream from mouth, and 8 miles north of Spokane.

Drainage area.--665 sq mi.

Records available.--April 1929 to September 1932, December 1946 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,580 ft (from topographic map). Prior to Mar. 16, 1951, staff gage at same site and datum.

Average discharge.--14 years (1929-32, 1947-58), 324 cfs (234,600 acre-ft per year).

Extremes.--Maximum discharge during year, 2,040 cfs Feb. 26 (gage height, 4.95 ft); minimum, 133 cfs Aug. 15, 16, 20 (gage height, 1.54 ft).  
1929-32, 1946-58: Maximum discharge, 2,240 cfs Mar. 18, 1950 (gage height, 5.1 ft, from graph based on gage readings); minimum observed, 63 cfs July 24, 1930 (gage height, 1.07 ft).

Remarks.--Records good. Small diversions for irrigation and domestic use above station. No known regulation.

Revisions (water years).--WSP 1216: Drainage area. WSP 1286: 1930, 1932(M), 1947-49(M). WSP 1446: 1951(M).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

1.5	124	3.0	760
1.7	175	4.0	1,360
2.2	368	5.0	2,080

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	153	181	188	191	452	1,340	575	655	295	207	150	142
2	155	172	201	207	428	1,210	575	633	282	207	147	142
3	161	167	194	214	419	1,110	615	605	*274	211	142	145
4	158	167	191	207	396	1,010	906	580	266	207	142	145
5	158	161	*185	204	386	972	1,240	565	251	201	140	145
6	167	158	188	201	400	882	1,090	550	247	194	142	145
7	169	161	197	197	428	820	990	*550	255	197	142	145
8	172	164	194	194	505	793	924	545	247	*191	142	145
9	172	164	197	194	575	760	882	530	255	191	140	145
10	167	167	188	194	848	715	*842	510	262	191	142	145
11	164	175	178	197	1,120	685	842	505	274	185	142	142
12	161	188	185	207	918	645	793	525	274	185	142	142
13	164	225	181	*262	954	610	750	510	266	178	140	147
14	167	270	181	262	*924	580	730	476	266	172	158	155
15	164	239	178	307	810	565	735	452	255	169	153	155
16	181	229	181	342	826	550	798	433	239	167	133	155
17	169	211	191	515	912	*535	832	419	229	167	136	155
18	161	201	201	605	859	520	966	409	225	161	*136	155
19	158	194	204	428	859	515	912	386	218	158	136	*155
20	153	185	214	373	930	505	1,000	377	207	155	138	155
21	150	172	218	333	1,070	535	1,010	364	204	153	138	158
22	161	172	225	307	972	595	918	359	204	153	140	158
23	169	169	214	303	960	570	900	346	204	150	136	158
24	*181	172	211	423	*990	540	859	333	211	150	140	161
25	194	178	239	476	1,460	565	820	324	229	150	140	161
26	201	178	266	466	1,870	565	798	316	218	150	138	161
27	201	175	274	409	1,600	545	788	311	211	150	138	158
28	188	185	251	438	1,470	540	745	311	211	150	145	158
29	178	178	247	520	-	530	720	299	207	150	147	155
30	194	172	236	555	-----	595	675	286	201	164	145	155
31	191	-----	211	495	-----	605	-----	286	-----	155	145	-----
Total	5,262	5,530	6,409	10,226	24,341	21,507	25,260	13,747	7,187	5,369	4,355	4,543
Mean	170	184	207	330	789	694	842	443	240	173	140	151
Cfs/m	0.256	0.277	0.311	0.496	1.31	1.04	1.27	0.666	0.361	0.260	0.211	0.227
In.	0.29	0.31	0.36	0.57	1.36	1.20	1.41	0.77	0.40	0.30	0.24	0.25
Ac-ft	10,440	10,970	12,710	20,280	48,280	42,660	50,100	27,270	14,260	10,650	8,640	9,010

Calendar year 1957: Max	1,680	Min	120	Mean	278	Cfs/m	0.418	In.	5.67	Ac-ft	200,900
Water year 1957-58: Max	1,870	Min	133	Mean	366	Cfs/m	0.550	In.	7.46	Ac-ft	265,300

\* Discharge measurement made on this day.

## 4325. Long Lake at Long Lake, Wash.

Location.--Lat 47°50'15", long 117°50'20", in NW¼SW¼ sec. 13, T. 27 N., R. 39 E., at left end of spillway at Long Lake dam, 12 miles north of Reardan.

Drainage area.--5,920 sq mi, approximately.

Records available.--October 1913 to September 1958. Prior to October 1950 monthly discharge only for some periods, published in WSP 1316.

Gage.--Water-stage recorder and staff gage, with long distance indicator in powerhouse. Datum of gage is at mean sea level (levels by Washington Water Power Co.).

Extremes.--Maximum contents during year, 104,050 acre-ft Sept. 22 (elevation, 1,535.97 ft); minimum, 87,250 acre-ft Apr. 21 (elevation, 1,532.59 ft).  
1913-58: Maximum contents, 104,200 acre-ft for many days in 1950-56 (elevation, 1,536.0 ft); minimum, since filling reservoir in 1920, 7,950 acre-ft Mar. 31, 1955 (elevation, 1,514.20 ft).

Remarks.--Reservoir is formed by concrete dam, completed in 1913 and raised in 1950. Capacity, 104,200 acre-ft between elevations 1,512 (lower limit of normal operation) and 1,536 ft (top of gates). Contents at elevation 1,512 ft by capacity table used prior to October 1915, 148,600 acre-ft. Records given herein represent usable contents. Water used for power. Diversions above station for irrigation of about 25,000 acres in Idaho and Washington. Other regulation in Coeur d'Alene Lake and at powerplants along Spokane River.

Cooperation.--Lake elevations and capacity table furnished by Washington Water Power Co.

Month-end elevation and usable contents, water year October 1957 to September 1958

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1,535.80	103,200	-
Oct. 31.....	1,535.65	102,450	-750
Nov. 30.....	1,535.59	102,150	-300
Dec. 31.....	1,535.42	101,300	-850
Calendar year 1957.....	-	-	+250
Jan. 31.....	1,534.43	98,350	-4,950
Feb. 28.....	1,534.81	98,250	+1,900
Mar. 31.....	1,535.70	102,700	+4,450
Apr. 30.....	1,534.73	97,850	-4,850
May 31.....	1,535.10	99,700	+1,850
June 30.....	1,535.40	101,200	+1,500
July 31.....	1,535.38	101,100	-100
Aug. 31.....	1,535.48	101,600	+500
Sept. 30.....	1,535.79	103,150	+1,550
Water year 1957-58.....	-	-	-50

† Elevation at 12 p.m.

4330. Spokane River at Long Lake, Wash.

Location.--Lat 47°50'15", long 117°50'25", in SW $\frac{1}{4}$  sec. 13, T. 27 N., R. 39 E., on left bank at Long Lake powerhouse, 1 $\frac{1}{2}$  miles upstream from Chamokane Creek and 12 miles north of Reardan.

Drainage area.--5,920 sq mi, approximately.

Records available.--April 1939 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,299.00 ft above mean sea level, datum of 1929.

Average discharge.--19 years, 7,984 cfs (5,780,000 acre-ft per year), adjusted for storage.

Extremes.--Maximum discharge during year, 32,600 cfs Apr. 23 (gage height, 72.80 ft); minimum not determined, occurred sometime during period of backwater from Little Falls powerplant; minimum daily, 150 cfs July 27, Aug. 3, 17, 24.  
1939-58: Maximum discharge recorded, 49,400 cfs May 24, 1948 (gage height, 78.66 ft); minimum not determined, occurred sometime during periods of backwater; minimum daily, 114 cfs Sept. 2, 1956.

Remarks.--Records good. Flow regulated above station by Coeur d'Alene Lake (see p. 266) and Long Lake (see preceding page), and by powerplants of Washington Water Power Co. Water diverted for irrigation above station and is equivalent to that shown for Spokane River at Spokane (see p. 273).

Cooperation.--Records furnished by Washington Water Power Co.

Revisions.--WSP 1216: Drainage area.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,740	4,290	2,960	4,960	6,230	16,600	9,830	20,600	19,900	4,050	2,760	2,660
2	3,010	4,020	3,480	5,430	6,280	21,300	10,300	18,400	18,800	4,390	2,010	3,520
3	3,090	3,370	3,390	4,630	6,220	16,000	9,860	19,400	16,000	4,130	150	3,690
4	3,180	4,280	3,180	4,280	6,230	17,800	9,320	22,700	15,900	1,840	2,190	3,550
5	2,570	4,270	2,970	3,610	6,230	16,400	14,100	17,300	*16,000	3,480	2,320	2,900
6	2,080	4,280	3,320	4,140	6,250	14,800	15,500	*20,400	12,500	2,430	2,200	210
7	3,050	3,660	3,450	4,260	6,770	14,800	11,200	17,200	13,100	3,120	1,650	210
8	3,120	3,420	3,010	4,210	6,920	16,200	12,300	18,200	13,000	3,400	1,840	2,960
9	3,170	3,570	3,630	4,080	6,550	16,500	13,300	20,000	10,500	3,790	1,750	2,170
10	3,170	2,370	3,750	4,000	9,900	8,910	13,600	21,000	*5,630	3,200	305	2,760
11	3,650	3,590	4,270	3,390	8,290	8,610	13,100	26,000	4,440	3,290	2,180	2,230
12	3,570	3,650	3,630	2,790	9,120	8,710	13,100	19,000	4,400	3,800	2,110	1,400
13	2,310	3,820	3,960	4,040	12,200	9,190	15,400	22,700	4,580	1,910	1,620	565
14	4,080	4,080	3,390	5,480	14,800	9,520	10,600	23,100	5,390	2,570	1,960	457
15	3,950	5,520	1,280	5,480	14,100	9,290	12,300	23,400	4,240	2,800	1,640	3,180
16	3,820	4,350	3,980	5,550	12,300	7,190	17,100	22,500	5,070	2,650	1,440	3,160
17	3,380	3,530	3,980	5,790	12,300	7,310	19,700	21,300	4,490	2,720	150	1,490
18	2,230	4,110	3,890	5,810	12,500	7,480	14,600	25,400	5,060	2,810	1,770	1,440
19	2,530	4,250	3,890	5,840	12,100	7,150	22,700	18,600	4,390	2,720	2,560	1,980
20	2,830	4,090	4,040	5,780	13,100	7,170	25,200	21,500	4,100	1,370	2,100	1,730
21	*3,430	4,030	3,780	5,790	13,200	7,180	19,500	22,000	3,180	2,950	1,910	642
22	3,380	4,070	3,310	5,790	15,000	7,180	25,700	22,000	367	2,820	1,670	3,440
23	3,290	3,720	4,040	5,820	15,500	7,710	25,600	21,700	4,160	2,810	1,090	3,130
24	3,710	2,780	5,410	5,820	13,200	7,510	24,100	22,000	4,490	2,680	150	3,490
25	3,510	3,900	4,980	5,840	19,400	7,160	22,200	25,700	5,220	2,580	2,210	2,940
26	3,320	4,040	5,470	5,860	19,700	7,340	25,100	17,600	5,040	1,590	2,340	2,000
27	3,080	3,600	5,490	5,830	20,900	7,960	27,100	23,500	4,200	150	2,450	1,580
28	3,380	1,330	5,400	5,830	16,000	8,020	21,200	21,500	4,000	2,350	1,930	796
29	3,770	3,440	5,120	5,950		8,080	22,700	19,400	3,160	2,130	2,530	2,790
30	4,870	3,370	5,450	6,200	---	8,210	17,300	19,700	4,850	2,320	210	1,980
31	4,340	---	5,410	6,270	---	8,610	---	19,400	---	2,630	210	---
Total	102,590	112,810	123,200	158,550	323,190	325,890	513,610	653,200	226,157	85,510	51,015	64,750
Mean	3,309	3,760	3,958	5,115	10,510	10,510	17,120	21,070	7,538	2,758	1,646	2,158
Ac-ft	203,500	223,800	244,400	314,500	641,000	645,400	*1,019	*1,296	448,600	169,800	101,200	128,400
(†)	-750	-300	-850	-4,950	+1,900	+4,450	-4,850	+1,850	+1,500	-100	+500	+1,550

Adjusted for change in contents in Long Lake

Mean	3,298	3,756	3,962	5,035	11,580	10,580	17,040	21,110	7,564	2,757	1,654	2,185
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In	-	-	-	-	-	-	-	-	-	-	-	-
Ac-ft	202,800	223,500	243,600	309,600	642,900	650,800	*1,014	*1,298	450,100	169,500	101,700	130,000

Observed

Calendar year 1957: Max	43,700	Min	144	Mean	8,398	Ac-ft	6,080,000
Water year 1957-58: Max	27,100	Min	150	Mean	7,508	Ac-ft	5,436,000

Adjusted

Calendar year 1957: Mean	8,398	Cfsm	1.42	In.	19.26	Ac-ft	6,080,000
Water year 1957-58: Mean	7,508	Cfsm	1.27	In.	17.22	Ac-ft	5,436,000

\* Discharge measurement made on this day.

† Change in contents, in acre-feet, in Long Lake.

\* Expressed in thousands.

Note.--Backwater from Little Falls throughout the year.



## 4355. Feeder canal at Grand Coulee, Wash.

Location.--Lat 47°57'00", long 118°59'40", on line between secs. 1 and 2, T. 28 N., R. 30 E., on left bank at Grand Coulee, a quarter of a mile downstream from intake and half a mile southwest of Grand Coulee Dam.

Records available.--October 1951 to September 1958 (pumping seasons only).

Gage.--Water-stage recorder. Datum of gage is 1,550.0 ft above mean sea level, Bureau of Reclamation, adjustment of 1937. Supplementary water-stage recorder 3,100 ft downstream from base gage at same datum. Auxiliary water-stage recorder 1 mile downstream from base gage.

Extremes.--1951-58: Maximum daily discharge, 11,000 cfs July 11, 1954; no flow except during pumping seasons.

Remarks.--Records good. Water is pumped (beginning May 1951) from Franklin D. Roosevelt Lake behind Grand Coulee Dam, through a lift of about 280 ft into feeder canal for a distance of 2 miles into an equalizing reservoir. From equalizing reservoir it is distributed through a system of canals to the Columbia Basin project.

Cooperation.--Discharge records furnished by Bureau of Reclamation.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					0	7,360		0	9,580	*6,350	6,350	0
2					0	7,360		0	9,580	6,350	6,350	2,570
3					0	7,310		0	*9,580	4,640	5,600	5,090
4					0	7,260		0	9,580	3,180	4,790	6,350
5					0	7,210		0	9,580	3,180	4,790	4,340
6					0	7,160		0	9,530	3,180	5,700	3,180
7					0	7,160		0	9,530	4,180	5,550	3,180
8					0	7,160		0	9,530	5,550	6,350	3,180
9					0	6,960		0	9,530	6,350	6,350	3,180
10					0	4,790		0	9,530	6,350	6,350	2,870
11					0	908		0	*9,530	6,350	5,900	1,610
12					1,010	0		0	9,480	6,350	4,790	454
13					4,740	0		0	7,920	6,350	4,790	0
14					7,710	0		0	6,350	*6,300	4,790	0
15					7,710	0		0	6,350	6,350	4,790	0
16					7,660	0		2,570	6,350	6,350	4,790	0
17					7,660	0		6,000	6,150	6,350	4,130	1,710
18					7,660	0		6,000	6,350	6,250	*3,180	3,180
19					7,610	0		6,050	6,350	4,790	3,180	4,030
20					7,610	0		6,760	6,350	4,790	3,180	6,350
21					7,560	0		7,920	6,350	4,790	3,180	6,350
22					7,560	0		*7,610	6,350	4,790	3,680	6,350
23					7,510	0		7,410	*6,350	4,490	4,790	3,430
24					7,510	0		9,230	6,350	*3,730	4,790	1,160
25					7,460	0		9,330	6,350	7,660	4,790	0
26					7,410	0		9,380	6,350	8,420	3,030	0
27					7,410	0		9,430	7,010	6,350	857	0
28					7,410	0		9,430	7,970	6,350	3,180	0
29					-	0		9,480	7,970	6,350	3,830	0
30					-----	0		9,530	7,310	6,350	4,790	0
31					-----	0	-----	9,530	-----	6,350	4,130	-----
Total	0	0	0	0	119,200	70,638	0	125,660	235,090	175,170	142,747	68,564
Mean	0	0	0	0	4,257	2,279	0	4,054	7,836	5,651	4,605	2,285
Ac-ft	0	0	0	0	236,400	140,100	0	249,200	466,300	347,400	283,100	136,000
Calendar year 1957: Max 8,020 Min 0 Mean 1,660 Ac-ft 1,202,000												
Water year 1957-58: Max 9,580 Min 0 Mean 2,567 Ac-ft 1,858,000												

\* Discharge measurement made on this day.

4360. Franklin D. Roosevelt Lake at Grand Coulee Dam, Wash.

Location.--Lat 47°57'20", long 118°59'10", in lot 3, sec. 1, T. 28 N., R. 30 E., in block 12 of Grand Coulee Dam at Grand Coulee.

Drainage area.--74,100 sq mi, approximately.

Records available.--April 1938 to September 1958. Prior to October 1943, published as Columbia River Reservoir at Grand Coulee Dam.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, Bureau of Reclamation datum, or 1,425 ft above mean sea level, datum of 1929, supplementary adjustment of 1947 (levels by Bureau of Reclamation). Prior to Apr. 24, 1942, staff gage at site 2,000 ft upstream at same datum.

Extremes.--Maximum contents during year, 9,581,300 acre-ft July 5 (elevation, 1,290.24 ft); minimum, 6,302,400 acre-ft Mar. 20 (elevation, 1,244.34 ft).  
1938-58: Maximum contents recorded, 9,586,200 acre-ft July 17, 1942, June 3, 1945 (elevation, 1,290.3 ft); minimum observed, 16,200 acre-ft Aug. 29, 1938 (elevation, 956.1 ft).

Remarks.--Reservoir is formed by concrete dam; construction of dam began in 1934; was completed in 1941; storage began early in construction period. Capacity, 5,071,700 acre-ft between elevations 1,208 (proposed lower limit of operation) and 1,288 ft (top of gates) above mean sea level. Storage below 1,208 ft, 4,330,000 acre-ft. Figures given herein represent total contents. Water is used for power development and diversion by pumping for irrigation of Grand Coulee project of Bureau of Reclamation, began in May 1951.

Revisions (water years).--WSP 1286: 1942, 1945(M)

Capacity table (elevation, in feet, and contents, in acre-feet)  
(Prepared by Geological Survey from data furnished by  
Bureau of Reclamation)

1,240.0	6,033,400
1,250.0	6,663,200
1,260.0	7,327,500
1,270.0	8,030,700
1,280.0	8,775,400
1,290.0	9,562,000

Elevation, in feet, at 12 p.m., water year October 1957 to September 1958											
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Sept.
1	87.34	87.64	86.78	82.36	70.21	58.65	45.24	48.26	86.41	89.88	89.99
2	87.36	87.67	86.57	81.85	70.32	58.02	45.32	48.39	87.18	89.91	89.84
3	87.30	87.72	86.43	81.51	69.90	57.03	45.37	48.52	87.61	89.94	89.56
4	87.25	87.42	86.25	80.91	69.60	56.12	45.41	48.65	87.63	89.82	89.45
5	87.23	87.24	86.10	80.57	69.12	55.27	45.52	48.60	87.56	89.82	89.31
6	87.24	87.08	85.93	79.68	68.74	54.80	45.83	49.28	87.35	89.87	89.76
7	87.23	87.08	86.00	79.05	68.30	54.57	45.62	49.93	87.36	89.74	89.77
8	87.24	87.06	85.95	78.32	68.04	54.33	45.37	50.79	87.53	89.83	89.78
9	87.36	87.29	85.62	77.88	67.96	53.63	45.24	51.93	87.56	89.91	89.81
10	87.33	87.52	85.58	77.34	67.80	52.77	45.33	53.20	87.56	89.82	89.89
11	87.34	87.53	85.34	76.92	67.55	51.89	45.34	54.63	87.62	89.85	89.78
12	87.35	87.64	85.22	76.53	67.32	50.94	45.56	55.96	87.61	89.94	89.87
13	87.44	87.70	85.00	75.77	67.09	49.99	45.50	56.95	87.66	89.86	89.36
14	87.42	87.57	84.90	75.24	66.58	49.00	45.49	57.20	87.60	89.85	89.35
15	87.37	87.44	84.75	74.99	66.42	48.14	45.58	57.52	87.70	89.91	89.49
16	87.28	87.34	84.43	74.82	66.35	47.15	46.05	58.04	87.71	90.00	89.92
17	87.21	87.47	84.22	74.80	65.73	46.33	46.22	58.74	87.95	89.95	89.88
18	87.19	87.28	83.80	74.78	64.83	45.52	46.06	59.94	88.46	89.92	89.12
19	87.28	87.28	83.60	74.72	63.98	44.90	46.19	60.88	89.02	89.89	89.01
20	87.43	87.22	83.35	74.19	63.22	44.46	46.40	62.26	89.42	89.91	89.96
21	87.30	87.10	83.20	73.82	62.36	44.56	46.28	63.90	89.56	89.98	89.90
22	87.28	87.02	83.11	73.42	61.62	44.86	46.40	65.91	89.70	89.90	89.95
23	87.16	87.07	82.99	72.85	61.03	45.25	46.88	68.39	89.82	89.96	90.04
24	87.12	87.26	83.07	72.64	60.31	45.16	47.22	71.39	89.86	89.85	90.08
25	87.03	86.97	83.39	72.43	60.02	45.30	47.51	74.55	89.87	89.77	90.04
26	87.23	87.06	83.15	72.32	59.88	45.51	48.03	77.11	89.83	89.70	90.02
27	87.45	86.90	83.08	71.91	59.71	45.54	48.14	79.25	89.85	89.75	89.91
28	87.40	86.93	82.89	71.49	59.23	45.73	47.85	81.11	89.93	89.90	89.88
29	87.52	86.83	82.89	70.98	58.73	45.72	47.82	82.72	89.86	89.92	90.02
30	87.51	86.80	82.77	70.70	58.44	45.64	47.86	84.30	89.88	89.80	89.92
31	87.66	86.97	82.59	70.35	58.00	45.37	48.00	85.48	89.88	89.83	89.92
(†)	9,374.6	9,306.2	8,975.4	8,056.1	7,275.1	6,367.2	6,525.4	9,201.7	9,552.4	9,548.3	9,536.3
(‡)	+22,300	-68,400	-330,800	-913,300	-781,000	-907,900	+158,200	+12,676	+350,700	-4,100	+7,300

Calendar year 1957..... † 174,700

Water year 1957-58..... ‡ 184,000

† Contents, in thousands of acre-feet, at end of month.

‡ Change in contents, in acre-feet.

†† Expressed in thousands.

Note.--Add 1,200 ft to obtain elevation above mean sea level (Bureau of Reclamation).

## 4365. Columbia River at Grand Coulee Dam, Wash.

Location--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, 2,500 ft downstream from Grand Coulee Dam and 14 miles upstream from Nespelem River.

Drainage area--74,100 sq mi, approximately.

Records available--April 1913 to June 1923 (monthly discharge only), July to December 1923, January 1924 to May 1928 (monthly discharge only), June 1928 to September 1958. Published as "at Grand Coulee, near Nespelem" prior to 1936 and as "at Grand Coulee" 1936-42.

Gage--Water-stage recorder. Datum of gage is at mean sea level, Bureau of Reclamation adjustment of 1937. June 27 to Dec. 31, 1923, June 12, 1928, to Mar. 31, 1931, staff gages at site half a mile upstream at datum 2.4 ft lower. Apr. 1, 1931, to Dec. 31, 1935, water-stage recorder at site 850 ft downstream at present datum. Since June 12, 1955, auxiliary water-stage recorder 6 miles downstream from base gage.

Average discharge--45 years, 108,800 cfs (78,770,000 acre-ft per year), unadjusted.

Extremes--Maximum discharge during year, 387,100 cfs June 6 (elevation, 975.43 ft); minimum, 31,630 cfs Dec. 26 (elevation, 944.85 ft, Bonneville Power Administration telemark reading); minimum elevation, 940.24 ft Sept. 15; minimum daily discharge, 36,700 cfs Dec. 25.

1913-58: Maximum discharge, 637,800 cfs June 12, 1948 (elevation, 987.90 ft); minimum, 14,900 cfs Dec. 17, 1956 (elevation, 934.37 ft); minimum daily, 15,300 cfs Feb. 1, 1937.

Maximum discharge known, 725,000 cfs (estimated) during flood in June 1894.

Remarks--Records excellent. Feeder canal diverts water by pumping from Franklin D. Roosevelt Lake for Columbia Basin project (see p. 283). Other diversions above station for irrigation are a small percentage of flow past gage. Flow regulated by Franklin D. Roosevelt Lake (see preceding page) and reservoirs in Kootenai, Pend Oreille, and Spokane River basins. Records of chemical analyses and suspended sediment loads for the water year 1958 are given in WSP 1574.

Revisions (water years)--WSP 1286: 1942, 1947.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	62,900	57,500	54,500	48,600	49,300	86,700	66,800	94,000	358,700	*215,500	*112,100	76,600
2	62,000	53,800	62,900	52,300	41,700	88,100	65,500	105,700	362,600	214,000	111,200	82,900
3	65,300	51,300	59,900	60,900	54,400	92,300	63,900	112,700	372,900	208,000	103,500	84,800
4	65,800	60,500	61,500	59,000	53,900	95,700	69,000	120,400	376,700	207,000	106,200	73,700
5	59,400	59,900	57,800	52,100	54,900	94,300	69,300	119,900	368,600	197,500	101,400	72,800
6	61,500	60,800	55,200	66,400	54,200	79,100	66,400	109,100	360,800	191,800	97,800	60,500
7	61,500	61,200	49,700	62,300	55,900	66,200	76,100	107,200	338,400	187,500	91,600	54,700
8	62,800	60,000	47,500	61,200	52,300	77,300	78,800	114,300	327,400	177,000	88,100	67,400
9	57,100	53,700	55,200	58,600	43,500	93,400	78,700	114,400	326,800	*168,000	83,800	64,600
10	62,400	50,600	*53,100	60,000	52,400	92,100	70,600	119,700	327,800	175,000	81,500	64,800
11	59,600	58,200	53,100	58,500	54,900	91,900	73,800	125,800	328,100	161,200	84,300	62,200
12	60,800	56,500	52,800	54,700	55,200	92,500	68,200	137,700	338,500	164,100	81,600	60,600
13	54,200	59,800	52,700	63,900	56,100	*90,700	78,000	171,500	344,000	161,900	82,400	54,000
14	*61,100	*63,700	51,200	61,900	59,500	93,800	75,200	197,100	339,900	159,000	81,700	50,400
15	63,200	55,400	52,300	52,900	54,800	92,500	74,000	210,200	322,300	*147,500	79,900	61,500
16	62,600	53,600	57,100	53,800	47,500	92,400	74,900	216,400	317,200	143,100	84,900	68,500
17	61,100	49,000	55,500	55,200	62,500	81,100	90,400	221,300	291,500	147,500	79,800	84,000
18	59,400	59,400	58,100	51,700	73,000	82,200	98,100	221,500	271,500	143,200	82,600	62,100
19	53,000	60,200	54,900	49,600	70,800	77,900	98,100	230,400	260,200	137,500	*83,300	58,300
20	*50,700	62,200	53,200	62,700	71,000	69,600	100,200	228,900	257,400	129,600	86,900	54,000
21	59,200	65,200	51,700	59,600	77,000	51,400	103,800	*226,200	260,000	129,600	86,300	51,100
22	62,400	57,900	49,700	58,600	79,600	50,500	105,100	225,800	245,600	135,200	79,400	69,700
23	62,500	52,100	52,100	57,400	77,800	47,700	93,000	221,600	247,900	126,600	77,900	67,600
24	59,000	50,800	44,400	55,100	79,200	63,000	94,300	215,100	244,200	135,100	77,800	70,500
25	57,100	58,600	36,700	50,800	77,700	63,600	98,000	222,500	238,100	121,200	84,000	62,900
26	51,300	58,300	52,100	51,500	81,000	63,300	92,400	251,000	238,600	114,900	82,100	59,900
27	51,700	63,300	51,200	59,400	81,800	69,700	109,000	293,600	226,700	113,200	95,900	55,100
28	57,300	52,700	51,400	57,600	85,200	70,100	*112,500	316,300	227,200	112,800	83,900	56,400
29	58,300	60,100	47,600	*56,000	---	75,300	107,400	330,100	225,200	112,200	76,900	62,400
30	57,000	59,000	56,900	53,500	---	76,300	101,700	345,300	217,200	113,100	85,800	61,600
31	54,500	---	50,200	55,700	---	73,800	---	351,600	---	114,800	76,500	---
Total	*1,836.5	*1,725.3	*1,636.2	*1,764.5	*1,756.5	*2,434.4	*2,553.2	*6,077.3	*8,962	*4,760.6	*2,713	*1,915.2
Mean	59,240	57,510	52,780	56,920	62,730	78,530	85,110	196,000	298,700	153,600	87,520	63,840
Ac-ft	*3,643	*3,422	*3,245	*3,500	*3,484	*4,829	*5,064	*12,050	*17,780	*9,443	*5,381	*3,799
Calendar year 1957: Max	395,700			Min	38,700	Mean	107,400	Ac-ft	77,790,000			
Water year 1957-58: Max	376,700			Min	36,700	Mean	104,500	Ac-ft	75,640,000			

\* Discharge measurement made on this day.

† Expressed in thousands.

Note.--No base gage-height record Nov. 20 to Dec. 11, Dec. 21 to Jan. 3, June 13, July 27-31; discharge computed on basis of Bonneville Power Administration hourly telemark readings.

4379. Rufus Woods Lake at Bridgeport, Wash.

Location.--Lat 47°59'40", long 119°38'05", in SW $\frac{1}{4}$  sec. 24, T. 29 N., R. 25 E., in intake structure (corrected) at Chief Joseph Dam, half a mile upstream from Foster Creek, and  $1\frac{1}{2}$  miles southeast of Bridgeport.

Drainage area.--75,000 sq mi, approximately.

Records available.--November 1954 to September 1958.

Gage.--Water-stage transmitter and recorder. Datum of gage is at mean sea level, datum of 1929, supplementary adjustment of 1947. Prior to June 28, 1955, staff gage at same site and datum.

Extremes.--Maximum contents during year, 516,300 acre-ft Oct. 18, 19, 21, Feb. 19 (elevation, 946.0 ft); minimum, 380,500 acre-ft July 6 (elevation, 927.0 ft).  
1954-58: Maximum contents, 532,200 acre-ft June 27, 1956 (elevation, 948.1 ft); minimum since normal low operating level reached in November 1954, that of July 6, 1958.

Remarks.--Reservoir is formed by concrete gravity-type dam completed in June 1955; storage began in November 1954. Capacity, 287,600 acre-ft between elevations 901.5 (spillway crest and lower limit of operation) and 946.0 ft (normal maximum operating pool). Storage below 901.5 ft, 228,600 acre-ft. Records given herein represent total contents. Water used for power development.

Cooperation.--Lake elevations furnished by Corps of Engineers.

Month-end elevation and contents, water year October 1957 to September 1958

Date	Elevation (feet) <sup>†</sup>	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	944.9	508,000	-
Oct. 31.....	943.8	499,800	-8,200
Nov. 30.....	944.5	505,000	+5,200
Dec. 31.....	944.9	508,000	+3,000
Calendar year 1957.....	-	-	+74,400
Jan. 31.....	945.0	508,800	+800
Feb. 28.....	944.5	505,000	-3,800
Mar. 31.....	942.1	487,200	-17,800
Apr. 30.....	935.0	435,700	-51,500
May 31.....	937.4	452,900	+17,200
June 30.....	935.0	435,700	-17,200
July 31.....	942.2	488,000	+52,300
Aug. 31.....	935.1	422,300	-65,700
Sept. 30.....	939.8	470,300	+48,000
Water year 1957-58.....	-	-	-37,700

<sup>†</sup> Elevation at 12 p.m.

4380. Columbia River at Bridgeport, Wash.

Location.--Lat 48°00'25", long 119°39'50", in SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> sec. 14, T. 29 N., R. 25 E., on left bank at Bridgeport, 1 mile downstream from Foster Creek and 1½ miles downstream from Chief Joseph Dam.

Drainage area.--75,000 sq mi, approximately.

Records available.--April 1952 to September 1958.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (levels by Corps of Engineers)

Average discharge.--6 years, 117,600 cfs (85,140,000 acre-ft per year).

Extremes.--Maximum discharge during year, 376,600 cfs June 5 (elevation, 785.80 ft); minimum, 32,400 cfs Dec. 20 (elevation, 754.21 ft); minimum daily, 36,400 cfs Dec. 25. 1952-58: Maximum discharge, 488,600 cfs June 7, 1956 (elevation, 792.20 ft); minimum recorded, 31,000 cfs Dec. 21, 1956 (elevation, 753.88 ft); minimum daily, 31,000 cfs Jan. 11, 1953.

Remarks.--Records excellent except those for periods of no gage-height record, which are good. Feeder canal diverts water by pumping from Franklin D. Roosevelt Lake for Columbia Basin project (see p. 283). Other diversions above station for irrigation are small percentage of flow past gage. Flow regulated by Rufus Woods Lake (see p. 286), and affected by storage in Franklin D. Roosevelt Lake (see p. 284) and reservoirs in Kootenai, Pend Oreille, and Spokane River basins.

Rating table, water year 1957-58 (elevation, in feet, and discharge, in cubic feet per second)

55.0	36,000	60.0	63,000	75.0	208,000
56.0	41,000	65.0	99,000	80.0	282,000
57.0	46,000	70.0	145,500	85.5	371,500
58.0	51,500				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	58,500	55,200	52,800	44,000	47,400	91,000	78,500	102,500	353,800	220,900	112,800	78,500
2	61,800	53,700	a82,000	50,500	41,700	91,600	69,000	90,400	356,200	217,600	110,100	79,000
3	66,100	52,800	a80,000	55,500	51,500	94,600	*61,900	107,900	361,500	211,500	107,400	73,800
4	65,600	63,500	a61,000	57,200	49,600	96,100	62,700	115,200	367,400	204,100	103,800	69,800
5	59,900	59,900	a58,000	53,500	51,900	95,700	74,000	113,000	364,000	199,200	104,300	64,200
6	59,100	60,700	a56,000	62,800	52,900	88,400	68,700	110,500	353,600	193,400	101,600	61,400
7	64,600	60,400	a50,000	62,500	53,900	71,100	79,000	106,400	334,000	181,600	93,400	63,400
8	62,200	a58,000	a48,000	63,600	52,200	74,300	82,400	108,900	325,700	167,500	87,500	64,600
9	63,300	a52,000	a56,000	58,900	47,300	90,000	81,800	106,000	321,700	160,900	80,600	65,300
10	58,600	a50,000	a55,000	58,900	50,800	89,600	82,000	112,400	322,500	161,600	79,900	63,000
11	57,800	a54,000	a50,000	56,400	52,100	90,700	85,200	122,100	320,200	162,900	79,200	63,900
12	59,800	a60,000	*54,000	51,300	55,800	92,800	79,600	134,600	*325,400	154,200	80,900	61,700
13	56,300	a58,000	50,000	61,800	57,400	91,200	69,400	150,100	335,400	157,500	83,800	59,100
14	58,600	63,000	49,400	61,100	61,600	95,300	74,000	186,700	335,100	156,700	85,500	58,700
15	*62,600	61,300	54,000	46,900	50,700	94,800	78,500	207,300	315,100	144,100	85,100	59,000
16	63,000	49,100	60,000	50,700	53,800	95,100	77,600	216,000	318,000	*131,600	83,500	59,000
17	63,300	50,200	58,000	51,500	62,800	83,000	84,800	222,900	294,500	131,600	79,500	56,900
18	57,600	56,800	57,400	53,700	68,300	83,400	95,500	221,600	271,600	133,200	81,500	60,700
19	54,500	57,400	56,900	49,200	72,200	82,900	97,200	231,900	264,400	129,400	82,900	62,300
20	48,700	60,000	50,300	57,500	77,700	72,700	100,200	227,400	253,200	128,100	*87,200	62,300
21	62,200	61,300	48,200	57,000	77,300	57,400	102,900	229,400	251,800	120,000	93,200	58,600
22	66,500	59,200	48,400	58,700	77,600	53,700	104,800	*223,600	253,400	128,500	93,500	61,700
23	64,900	53,300	53,300	61,900	77,600	53,400	89,000	225,900	242,100	128,400	92,800	60,800
24	58,500	49,600	43,400	59,100	77,800	62,900	85,000	207,600	240,200	126,300	86,300	59,900
25	58,400	55,600	36,400	45,200	77,800	61,000	107,800	222,000	235,500	125,600	92,600	60,100
26	49,000	55,900	41,900	45,400	81,000	66,600	88,800	251,200	235,200	118,600	77,600	61,400
27	48,800	60,400	52,000	58,100	84,700	67,700	104,400	282,000	230,400	114,500	80,600	61,600
28	63,100	52,600	48,500	56,200	86,800	76,100	114,500	330,500	225,400	111,300	86,300	69,400
29	57,500	56,900	47,900	57,800	-	78,300	*104,000	323,600	230,400	115,100	77,800	*62,700
30	57,500	57,600	47,800	54,500	-----	77,900	107,400	333,500	227,100	114,200	79,000	62,800
31	57,400	-----	49,400	54,200	-----	78,100	-----	347,500	-----	114,600	78,300	-----
Total	*1,645.5	*1,698.4	*1,614	*1,715	*1,754.2	*2,496.4	*2,590.6	*5,950.6	*8,864.8	*4,659.9	*2,746.5	*1,898.4
Mean	59,530	56,910	52,060	55,320	62,650	80,530	86,350	192,000	295,500	150,300	86,600	63,280
Ac-Ft	*3,660	*3,369	*3,201	*3,402	*3,478	*4,952	*5,158	*11,800	*17,580	*9,243	*5,448	*3,765
Calendar year 1957: Max	381,400				Min	36,400	Mean	107,300	Ac-ft	77,700,000		
Water year 1957-58: Max	367,400				Min	36,400	Mean	103,700	Ac-ft	75,040,000		

\* Discharge measurement made on this day.

† Expressed in thousands.

‡ No gage-height record; discharge estimated on basis of records for stations at Grand Coulee Dam and at Trinidad.

## 4385. Okanagan River at Okanagan Falls, British Columbia

(International gaging station)

Location.--Lat 49°20', long 119°35', on right bank 0.1 mile downstream from dam at outlet of Skaha Lake at Okanagan Falls, B. C.

Drainage area.--2,650 sq mi, approximately.

Records available.--January 1915 to September 1958. Monthly discharge only for some periods, published in WSP 1316.

Gage.--Water-stage recorder. Datum of gage is 1,092.82 ft above mean sea level (Geodetic Survey of Canada, 1947 joint adjustment). Prior to Oct. 2, 1933, staff gages at sites about 600 and 700 ft upstream at different datums. Oct. 2, 1933, to Apr. 13, 1936, staff gage and Apr. 14, 1936, to Nov. 12, 1954, water-stage recorder, at site 200 ft upstream at same datum.

Average discharge.--43 years, 521 cfs (377,200 acre-ft per year).

Extremes.--Maximum discharge during year, 2,790 cfs Apr. 25 (gage height, 2.88 ft); minimum, 348 cfs Sept. 30 (gage height, 0.75 ft); 1915-58: Maximum discharge, that of Apr. 25, 1958; minimum observed, 4.6 cfs Mar. 14, 1931.

Remarks.--Diversion above station for irrigation of approximately 38,000 acres. Flow regulated by control dams at outlets of Okanagan and Skaha Lakes.

Cooperation.--This station is maintained by Canada under agreement with the United States.

Revisions.--WSP 1152: Drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Sept. 1-9)

Oct. 1 to Apr. 25			Apr. 26 to Aug. 31			Sept. 1-30		
0.9	490		0.9	478		0.9	435	
1.4	880		1.4	870		1.1	565	
2.0	1,500		2.0	1,470				
2.8	2,660		2.8	2,660				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	680	511	525	525	518	511	504	688	664	564	549	551
2	680	511	525	518	512	511	504	689	664	564	549	546
3	688	511	525	518	518	511	518	672	664	*556	549	534
4	688	511	525	518	518	511	518	664	648	542	549	529
5	688	511	525	518	518	*511	518	664	648	549	549	525
6	688	*511	525	518	518	511	518	664	648	549	549	520
7	688	525	525	518	518	511	518	656	594	549	556	515
8	688	532	525	518	518	511	518	656	556	549	556	510
9	688	525	525	518	518	511	518	656	556	*549	549	505
10	688	532	525	518	518	511	518	664	556	556	549	500
11	688	546	525	518	518	511	511	664	564	*549	549	500
12	688	546	525	511	518	511	511	664	564	542	549	500
13	688	546	525	511	518	511	511	664	564	542	549	500
14	688	546	518	511	518	504	564	656	672	535	549	500
15	688	539	525	511	518	504	640	656	572	535	549	500
16	688	539	518	511	518	504	632	656	572	542	549	494
17	688	539	518	511	511	504	632	648	572	542	549	500
18	688	539	518	511	511	504	656	648	572	542	549	500
19	688	539	518	511	511	497	664	656	572	549	549	500
20	576	546	518	511	511	497	688	664	572	549	549	500
21	511	546	518	518	511	497	712	664	564	549	549	500
22	511	539	518	525	511	504	872	664	564	549	549	500
23	511	539	511	525	511	497	*1,260	672	564	542	549	500
24	511	539	518	525	511	497	*1,850	672	564	542	549	*494
25	511	539	518	518	511	504	*2,550	672	564	549	556	500
26	511	539	525	511	511	504	*2,560	672	564	549	556	500
27	511	539	518	511	511	504	1,880	672	564	549	556	500
28	511	539	518	*511	511	497	*1,370	664	564	549	*556	500
29	511	539	518	*518	-	504	*1,140	664	564	549	556	500
30	511	532	525	518	-----	504	*828	664	564	549	556	442
31	511	-----	525	518	-----	504	-----	664	-----	549	556	-----
Total	19,253	15,995	16,170	16,002	14,420	15,673	26,203	20,584	17,534	16,979	17,082	15,165
Mean	621	533	522	516	515	506	873	664	584	548	551	506
Ac-ft	38,190	31,730	32,070	31,740	28,600	31,090	51,970	40,830	34,780	33,680	33,880	30,080
Calendar year 1957: Max				1,480	Min	223	Mean	598	Ac-ft	432,900		
Water year 1957-58: Max				2,560	Min	442	Mean	578	Ac-ft	418,600		

\* Discharge measurement made on this day.

4390. Osoyoos Lake near Oroville, Wash.

(International gaging station)

Location.--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.

Drainage area.--3,150 sq mi, approximately.

Records available.--July 1928 to September 1958.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, U. S. Coast and Geodetic Survey datum of 1929. Prior to Sept. 2, 1928, staff gage and Sept. 2, 1928, to Nov. 9, 1929, water-stage recorder, 100 ft south of international boundary. Nov. 10, 1929, to Apr. 11, 1956, staff gage or water-stage recorder at present site. All elevations prior to Oct. 1, 1944, at datum 2.39 ft lower. To convert from present datum to Geodetic Survey of Canada 1934 datum, subtract 1.63 ft; to convert from present datum to 1947 joint adjustment of U. S. Coast and Geodetic Survey and Geodetic Survey of Canada, subtract 0.26 ft.

Extremes.--Maximum elevation during year, 913.58 ft Apr. 28; minimum, 911.31 ft Jan. 8. 1928-58: Maximum elevation, 916.74 ft May 31, 1948; minimum, 908.82 ft (present datum) Oct. 14, 1929.

Flood of May 29, 1894, reached an elevation of 918.8 ft ± 0.5 ft (present datum), 1 mile below present lake outlet, from floodmark on old Okanogan Hotel Building, pointed out in 1930 by Mr. and Mrs. Stansbury, who kept a diary and operated the hotel in 1894.

Remarks.--Approximately 44,000 acres are irrigated above station in Canada. Elevation may occasionally be affected by dam at Zosel's mill in Oroville.

Cooperation.--This station is maintained by the United States under agreement with Canada.

Revisions.--WSP 1346: Drainage area.

Elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12.45	11.64	11.66	11.40	11.35	11.88	12.12	13.13	11.93	11.35	11.46	11.56
2	12.51	11.64	11.67	11.39	11.35	11.90	12.14	12.91	11.94	11.34	11.46	11.54
3	12.53	11.64	11.67	11.38	11.34	11.89	12.17	12.77	11.94	11.33	11.46	11.53
4	12.43	11.64	11.65	11.37	11.34	11.90	12.18	12.64	11.92	11.33	11.44	11.53
5	12.35	11.64	11.63	11.36	11.34	11.91	12.18	12.55	11.89	11.33	11.44	11.54
6	12.25	11.64	11.60	11.36	11.33	11.91	12.18	12.48	11.85	11.34	11.45	11.54
7	12.17	11.65	11.58	11.34	11.34	11.90	12.18	12.43	11.84	11.34	11.46	11.55
8	12.12	11.66	11.56	11.33	11.35	11.92	12.17	12.42	11.81	11.35	11.47	11.57
9	12.07	11.67	11.54	11.33	11.37	11.92	12.15	12.42	11.79	11.39	11.48	11.58
10	12.03	11.69	11.52	11.33	11.38	11.92	12.14	12.40	11.72	11.41	11.50	11.59
11	11.99	11.71	11.49	11.33	all.38	11.92	12.14	12.39	11.78	11.44	11.53	11.59
12	11.97	11.74	11.49	11.35	all.38	11.91	12.13	12.38	11.82	11.48	11.52	11.59
13	11.95	11.80	11.47	11.35	all.40	11.91	12.13	12.33	11.84	11.48	11.50	11.60
14	11.95	11.87	11.45	11.36	all.38	11.90	12.14	12.28	11.86	11.48	11.48	11.59
15	11.92	11.94	11.44	11.37	all.36	11.90	12.19	12.24	11.83	11.48	11.47	11.59
16	11.90	12.00	11.44	11.36	11.38	11.90	12.25	12.23	11.80	11.49	11.46	11.59
17	11.90	12.05	11.44	11.38	11.37	11.89	12.30	12.24	11.75	11.49	11.45	11.62
18	11.90	12.09	11.47	11.38	11.39	11.89	12.34	12.24	11.70	11.49	11.45	11.63
19	11.90	12.04	11.46	11.38	11.45	11.90	12.36	12.24	11.65	11.49	11.46	11.64
20	11.89	11.95	11.45	11.38	all.50	11.90	12.39	12.26	11.59	11.48	11.46	11.64
21	11.88	11.87	11.44	11.38	all.53	11.92	12.42	12.27	11.54	11.47	11.47	11.64
22	11.84	11.79	11.43	11.36	all.56	11.95	12.41	12.28	11.48	11.47	11.48	11.65
23	11.80	11.71	11.41	11.36	11.61	11.98	12.39	12.27	11.43	11.44	11.49	11.66
24	11.78	11.66	11.43	11.36	11.68	11.99	12.54	12.24	11.39	11.42	11.49	11.65
25	11.75	11.61	11.43	11.35	11.78	12.02	12.95	12.22	11.38	11.42	11.51	11.68
26	11.71	11.59	11.44	11.34	11.84	12.05	13.24	12.19	11.37	11.41	11.52	11.69
27	11.68	11.60	11.43	11.34	11.87	12.06	13.51	12.14	11.41	11.40	11.52	11.69
28	11.64	11.64	11.43	11.35	11.87	12.07	13.56	12.08	11.42	11.41	11.54	11.70
29	11.61	11.64	11.42	11.35	-	12.07	13.47	12.04	11.39	11.44	11.55	11.70
30	11.61	11.65	11.42	11.36	-----	12.10	13.32	11.98	11.36	11.46	11.55	11.70
31	11.62	-----	11.40	11.35	-----	12.11	-----	11.92	-----	11.46	11.55	-----

a No record; elevation estimated on basis of recorded range in stage and records for station at Bridge Street, at Oroville.

Note.--Add 900.00 ft to obtain elevation above mean sea level.

## 4395. Okanogan River at Oroville, Wash.

Location.--Lat 48°55'55", long 119°25'05", in SW $\frac{1}{4}$  sec. 27, T. 40 N., R. 27 E., on left bank in Oroville 20 ft downstream from Great Northern Railway trestle, half a mile downstream from Tonasket Creek, and  $1\frac{1}{2}$  miles downstream from Osoyoos Lake.

Drainage area.--3,210 sq mi, approximately.

Records available.--October 1942 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 899.77 ft above mean sea level, datum of 1929, supplementary adjustment of 1947. Prior to Oct. 26, 1944, staff gage at Zosel's milldam 200 ft upstream at same datum. Oct. 26, 1944, to Mar. 6, 1948, water-stage recorder on railroad trestle 20 ft upstream at same datum. Auxiliary water-stage recorder half a mile downstream used during high-water periods since Apr. 10, 1948. May 15, 1946, to Apr. 9, 1948, auxiliary staff gage at same site and datum.

Average discharge.--16 years, 731 cfs (529,200 acre-ft per year).

Extremes.--Maximum discharge during year, 2,010 cfs Apr. 28; maximum gage height, 10.75 ft May 25 (backwater from Similkameen River); minimum discharge, 182 cfs Nov. 14 (gage height, 6.09 ft).

1942-58: Maximum discharge recorded, 3,430 cfs June 2, 1948 (gage height, 15.28 ft); maximum gage height, 16.50 ft May 31, 1948 (backwater from Similkameen River); maximum daily reverse flow, 2,270 cfs May 29, 1948; minimum gage height, 3.98 ft Mar. 1, 1948.

Remarks.--Records good. Diversions made to irrigate approximately 44,000 acres in Canada and minor diversions in the United States above station. Natural regulation in several large lakes and artificial regulation in Okanogan Lake as an aid to navigation in that lake; also variations in pondage back of Zosel's milldam at Oroville, 200 ft above gage.

Rating tables, water year 1957-58, except period of backwater from Similkameen River (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 26		Mar. 27 to Sept. 30	
6.5	387	6.3	325
7.3	1,010	7.0	745
		8.0	1,380
		9.0	2,080

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	706	522	570	586	586	546	721	1,720	843	541	445	445
2	826	546	570	586	586	554	733	1,610	795	*559	439	463
3	970	554	618	570	586	546	751	1,540	793	559	445	463
4	978	554	682	570	586	554	781	1,470	826	553	445	463
5	970	546	682	570	586	554	793	1,390	829	553	439	463
6	938	538	674	570	578	554	805	1,340	835	553	403	469
7	906	508	666	570	586	546	847	1,310	805	464	373	451
8	874	*485	642	578	586	554	865	1,340	727	421	367	481
9	858	462	650	570	594	554	871	1,450	767	427	373	481
10	842	470	642	578	594	554	871	1,520	745	445	379	493
11	834	478	610	586	594	554	877	1,530	739	445	439	493
12	826	470	610	586	594	554	877	1,490	763	457	475	499
13	826	455	626	586	602	554	877	1,400	757	463	475	529
14	826	421	618	586	602	554	895	1,330	757	463	469	529
15	810	428	618	594	594	546	913	1,320	745	463	463	517
16	754	435	*618	586	594	554	949	1,340	733	463	457	511
17	730	441	610	602	594	554	985	1,320	703	457	463	511
18	730	589	618	602	515	530	1,010	1,280	691	457	415	511
19	730	842	610	602	498	538	1,020	1,250	667	451	415	523
20	730	834	610	602	455	538	1,040	1,310	643	457	409	523
21	730	810	610	602	470	554	1,070	1,200	625	445	403	529
22	722	778	602	594	478	570	1,070	1,230	607	451	403	547
23	698	762	602	594	*500	578	1,080	*1,160	541	445	403	*577
24	698	754	602	594	522	602	1,150	1,090	487	439	403	565
25	690	738	602	594	546	626	1,320	1,030	481	*433	415	583
26	674	554	594	586	546	*634	*1,650	1,070	475	433	421	589
27	674	500	586	586	538	655	*1,900	961	487	433	439	595
28	658	554	586	*586	546	655	*1,980	1,080	547	433	*439	595
29	578	562	586	586	-	667	1,920	947	547	439	451	619
30	538	562	586	586	-----	679	1,830	1,030	555	439	439	613
31	530	-----	586	586	-----	697	-----	907	-----	439	433	-----
Total	23,854	17,152	19,086	18,174	15,586	17,917	32,451	39,955	20,495	14,480	13,237	15,630
Mean	769	572	616	586	557	578	1,082	1,289	683	467	427	521
Ac-ft	47,310	34,020	37,860	36,050	30,910	35,540	64,370	79,250	40,650	28,720	26,260	31,000
Calendar year 1957: Max	1,750			Min	300	Mean	648	Ac-ft	469,000			
Water year 1957-58: Max	1,980			Min	367	Mean	679	Ac-ft	491,900			

\* Discharge measurement made on this day.

Note.--Backwater from Similkameen River May 16 to June 9.



4420. Toats Coulee Creek near Loomis, Wash.

Location.--Lat 48°50'00", long 119°41'50", in SE $\frac{1}{4}$  sec. 33, T. 39 N., R. 25 E., on left bank 600 ft upstream from Deer Creek, 1,800 ft upstream from intake of Whitestone Irrigation Canal, and 3 miles northwest of Loomis.

Drainage area.--130 sq mi.

Records available.--May 1920 to September 1926 (fragmentary), April 1957 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,880 ft (from topographic map). May 11 to June 2, 1920, staff gage 1,000 ft downstream at different datum. June 3, 1920, to Sept. 30, 1926, water-stage recorder 600 ft downstream at different datum.

Extremes.--Maximum discharge during year, 852 cfs May 29 (gage height, 5.08 ft); minimum, 4.7 cfs Nov. 9, but may have been less during periods of ice effect.  
1920-26, 1957-58: Maximum discharge, 1,100 cfs May 19, 1957 (gage height, 5.67 ft); minimum, 1.6 cfs Sept. 13, 14, 1926 (gage height, 0.72 ft, site and datum then in use).  
Flood of May 28, 1948, 6,010 cfs, result of slope-area measurement of peak flow.

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

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.8	4.5	1.6	34	3.0	210
1.0	9.5	2.0	64	4.0	440
1.2	16	2.5	120	5.0	820

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.5	11	9.0	7.0	10	11.5	10.5	44	431	70	23	10.5
2	12	10	9.8	7.5	10	12.5	14	*82	350	72	22	9.8
3	11	9.0	9.8	8.0	10.5	11.5	15	81	308	62	21	9.8
4	10	9.5	10	8.5	10.5	11.5	14.5	84	276	*55	20	9.8
5	9.5	9.5	9.5	8.5	10	11.5	14	97	242	61	20	9.8
6	9.0	8.0	9.2	8.5	10	10	14	122	222	94	19	8.9
7	9.0	*8.5	8.9	8.5	10.5	10.5	14	168	262	82	19	8.4
8	9.0	6.0	9.8	8.5	11.5	9.8	14.5	220	242	80	18	7.8
9	9.5	7.5	10	8.5	11.5	12	14.5	274	198	85	18	7.8
10	9.5	12	9.8	9.0	10.5	11.5	15	288	190	77	17	8.4
11	9.5	12	9.5	9.0	10.5	10.5	16.5	294	244	62	16	8.1
12	9.5	12	9.5	9.0	10.5	10.5	19	272	218	52	15	7.8
13	9.5	11.5	9.0	9.0	10.5	10.5	24	226	182	46	14	9.2
14	9.5	11.5	9.0	9.5	10	11.5	27	244	196	43	13	9.8
15	9.0	8.0	*7.0	10	10	10.5	24	296	150	40	13	9.2
16	9.0	8.0	8.0	10.5	10.5	10.5	22	362	147	37	12	8.9
17	9.0	8.0	9.8	11	10.5	10	21	422	118	35	11	10.5
18	9.0	7.5	10.5	11	12	10.5	21	449	109	33	10	10.5
19	9.0	7.0	10.5	10.5	13	10.5	20	556	102	33	9.5	10.5
20	9.0	7.0	10.5	10	13	10.5	20	636	95	30	9.0	10
21	9.0	8.0	10.5	9.0	13	12	21	684	88	28	9.0	9.5
22	9.5	9.0	10	8.5	13	14	19.5	692	80	26	8.5	9.5
23	11	12	10.5	8.5	*13	13	19.5	684	75	24	8.0	9.8
24	12	12	10.5	8.5	19	13.5	18.5	*648	72	24	7.8	10
25	13	11	10.5	8.5	19	14	18	576	72	23	7.8	10.5
26	15	11.5	10.5	*8.5	15.5	13	17.5	512	69	22	*7.8	*11
27	14	10.5	10.5	10	12.5	12	17.5	449	84	*21	9.2	11
28	13	10.5	9.0	10.5	11.5	12	18.5	528	75	20	14	10.5
29	12	9.0	8.0	10.5	-	*12	22	692	66	19	14	9.5
30	12.5	8.5	7.5	10.5	-----	14	31	556	67	22	11.5	8.7
31	13	-----	7.0	10.5	-----	13	-----	452	-----	25	10.5	-----
Total	323.0	283.3	292.6	285.5	331.5	360.3	557.5	11,690	5,030	1,403	427.6	285.5
Mean	10.4	9.44	9.44	9.21	11.8	11.6	18.8	377	168	45.3	13.8	9.52
Cfsm	0.080	0.073	0.073	0.071	0.091	0.089	0.143	2.90	1.29	0.348	0.106	0.073
In.	0.09	0.08	0.08	0.08	0.09	0.10	0.16	3.34	1.44	0.40	0.12	0.08
Ac-ft	641	562	580	566	658	715	1,110	23,190	9,980	2,780	848	566

Calendar year 1957: Max - Min - Mean - Cfsm - In. - Ac-ft -  
Water year 1957-58: Max 692 Min 6.0 Mean 58.3 Cfsm 0.448 In. 6.06 Ac-ft 42,200

Peak discharge (base, 200 cfs).--May 22 (9:30 p.m.) 804 cfs (4.96 ft); May 29 (2 a.m.) 852 cfs (5.08 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 15-22, Nov. 29 to Dec. 1, Dec. 13-16, 22, Dec. 28 to Jan. 26. No gage-height record Oct. 1 to Nov. 6, Jan. 3-25, July 28 to Aug. 25; discharge estimated on basis of recorded range in stage, weather records, and records for nearby stations.

## 4422. Whitestone Irrigation Canal near Loomis, Wash.

Location.--Lat 48°49'50", long 119°41'25", in SW $\frac{1}{4}$  sec. 34, T. 39 N., R. 35 E., on right bank 300 ft downstream from headworks and 2 $\frac{1}{2}$  miles northwest of Loomis.

Records available.--April 1957 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,700 ft (from topographic map).

Extremes.--1957-58: Maximum daily discharge, 48 cfs May 21, 1958; no flow during non-irrigation season.

Remarks.--Records excellent. Canal carries water which is diverted from Toats Coulee Creek for irrigation in Whitestone Irrigation District, of about 2,000 acres

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-23

Apr. 3 to Sept. 30

0.6	5.7	0.5	3.3	1.4	26
.7	7.4	.7	6.8	1.8	39
.8	9.3	.9	11.5	2.1	49
.9	11.5	1.1	17		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.4						0	*24	47	43	22	8.6
2	10						0	30	46	45	18	8.4
3	10						2.9	36	45	44	16.5	8.2
4	9.7						3.5	38	43	42	15.5	8.4
5	9.3						3.3	40	41	43	15	8.2
6	9.3						3.3	40	42	38	14.5	7.6
7	9.1						3.3	43	46	40	14	7.4
8	9.5						3.3	44	45	15.5	13	7.2
9	9.7						3.6	45	43	0	13	7.0
10	10						4.2	45	40	0	12	7.4
11	7.9						4.3	44	25	0	11.5	7.4
12	6.9						4.7	43	13	0	11.5	7.2
13	6.9						5.7	43	18.5	23	11	8.2
14	6.9						6.1	44	16	14	10.5	8.6
15	6.9						5.9	45	13	21	10	8.4
16	6.9						7.4	47	26	31	9.8	8.2
17	6.9						8.6	47	38	31	9.2	9.5
18	6.7						8.6	47	40	30	9.0	9.8
19	6.7						8.2	47	39	30	8.6	9.2
20	6.6						8.4	47	38	27	8.2	6.4
21	6.7						8.4	48	39	25	7.6	8.8
22	6.9						8.2	32	39	23	7.6	8.6
23	2.2						7.9	47	40	21	7.4	8.6
24	0						7.6	47	41	21	7.2	8.8
25	0						7.4	46	42	19.5	7.0	9.2
26	0						7.4	*46	42	18.5	*6.8	*9.5
27	0						7.4	46	40	*17.5	7.4	9.8
28	0						8.8	46	38	17	12	9.8
29	0						11	47	41	27	12	9.0
30	0						16.5	45	41	37	9.8	8.6
31	0							46	-----	27	8.8	-----
Total	180.1	0	0	0	0	0	185.9	1,335	1,105.5	771.0	346.4	252.0
Mean	5.81	0	0	0	0	0	6.20	43.1	36.8	24.9	11.2	8.40
Ac-ft	357	0	0	0	0	0	369	2,650	2,190	1,530	687	500

Calendar year 1957: Max - Min - Mean - Ac-ft -  
 Water year 1957-58: Max 48 Min 0 Mean 11.4 Ac-ft 8,280

\* Discharge measurement made on this day.

4423. Sinlahekin Creek above Chopaka Creek, near Loomis, Wash.

Location.--Lat 48°51'10", long 119°38'50", in NE $\frac{1}{4}$  sec. 26, T. 39 N., R. 25 E., on right bank 400 ft upstream from mouth of Chopaka Creek, 2 miles above mouth, and 2 $\frac{1}{2}$  miles north of Loomis.

Drainage area.--256 sq mi.

Records available.--April 1957 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,150 ft (from topographic map).

Extremes.--Maximum discharge during year, 792 cfs May 22 (gage height, 7.98 ft); minimum, 13 cfs Aug. 25 (gage height, 1.08 ft).  
1957-58: Maximum discharge, 1,680 cfs May 19, 1957 (gage height, 8.62 ft); minimum, 8.6 cfs Sept. 18, 1957.

Remarks.--Records good except those for periods of ice effect, which are fair. No regulation. Diversion above station by Whitestone Irrigation Canal (see p. 292) and other smaller diversions for irrigation.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1 to Nov. 22)

1.0	11.5	4.0	190
1.4	21	6.0	440
2.0	47	8.0	796
3.0	105		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	27	b22	b20	28	33	33	52	506	58	25	14.5
2	21	24	23	b22	27	33	36	72	433	58	23	14.5
3	23	21	26	b22	27	32	46	*103	376	51	22	14.5
4	20	24	27	b24	26	31	41	136	332	*46	22	15
5	18.5	25	27	25	26	31	34	163	264	46	22	15
6	17.5	25	27	26	26	30	31	205	246	87	21	15
7	17.5	*24	26	26	26	31	30	304	269	77	21	15
8	18.5	21	27	26	30	30	31	390	256	96	20	14.5
9	18.5	20	28	26	31	31	31	499	205	116	20	14.5
10	18.5	23	27	27	30	30	30	539	192	III	18.5	14.5
11	18	24	27	27	29	30	30	554	265	93	18.5	14.5
12	18.5	31	27	28	29	29	32	557	275	81	18	15
13	18.5	30	27	28	29	29	35	499	234	61	18	16
14	18.5	27	26	29	28	28	40	475	257	54	17	17
15	18	25	*26	30	27	28	38	498	217	50	17	18
16	18	24	28	31	28	28	28	559	173	38	17	18.5
17	18	23	30	31	29	27	25	579	139	33	16	19
18	18	23	34	31	32	27	34	599	124	31	16	20
19	18	22	34	29	34	27	35	660	111	30	15	20
20	18.5	20	31	28	33	27	32	712	100	29	14.5	20
21	18	b18.5	30	27	31	29	38	734	92	28	15	20
22	19	23	28	27	30	35	40	752	83	27	14.5	19.5
23	22	26	28	27	*30	33	42	744	74	27	14	19.5
24	27	26	29	27	44	32	42	732	66	25	13.5	20
25	29	26	29	27	62	33	40	683	65	25	13.5	21
26	33	35	30	27	50	30	38	*646	63	24	*13.5	*21
27	31	29	30	*27	40	28	38	566	80	*24	14	21
28	29	26	29	29	35	28	38	577	83	24	15.5	21
29	27	b24	b26	31	-	*28	38	653	65	21	14.5	21
30	29	b21	b23	32	-	35	42	610	60	25	14.5	21
31	32	-----	b21	30	-----	37	-----	507	-----	27	14.5	-----
Total	668.0	736.5	853	847	897	940	1,068	15,359	5,725	1,523	538.5	530.0
Mean	21.5	24.6	27.5	27.3	32.0	30.3	35.6	495	191	49.1	17.4	17.7
Ac-ft	1,320	1,460	1,690	1,680	1,780	1,860	2,120	30,460	11,360	3,020	1,070	1,050
Calendar year 1957: Max - Min - Mean - Ac-ft -												
Water year 1957-58: Max 752 Min 13.5 Mean 81.3 Ac-ft 58,870												

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

4424. Palmer Lake near Nighthawk, Wash.

Location.--Lat 48°54'30", long 119°36'50", in SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 6, T. 39 N., R. 26 E., on north-east shore 2 miles east of outlet and 4 miles south of Nighthawk.

Drainage area.--293 sq mi.

Records available.--April 1956 to September 1958.

Gage.--Staff gage read once daily. Datum of gage is 1,100 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Extremes.--Maximum elevation observed during year, 1,156.44 ft May 26; minimum observed, 1,144.27 ft Sept. 18-16.  
1956-58: Maximum elevation observed, 1,159.47 ft May 22, 1956; minimum observed, 1,144.26 ft Sept. 22, 23, 1957.

Remarks.--Lake affords natural pondage for high stages of Similkameen River. No known regulation. Diversions for irrigation of about 1,000 acres above station. Whitestone Irrigation District diverts water from Toats Coulee Creek for irrigation of about 2,000 acres in Whitestone Creek basin.

Elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	44.33	44.98	45.74	46.06	45.16	45.08	45.02	44.98	54.82	46.64	44.90	44.33
2	44.36	45.01	45.76	46.04	45.14	45.10	45.04	45.08	54.30	46.48	44.88	44.32
3	44.40	45.04	45.78	46.02	45.12	45.07	45.06	45.19	53.82	46.34	44.85	44.32
4	44.42	45.05	45.80	46.00	45.10	45.05	45.08	45.58	53.38	46.24	44.83	44.31
5	44.43	45.08	45.84	46.00	45.08	45.05	45.10	45.80	52.78	46.14	44.80	44.31
6	44.43	45.11	45.86	45.99	45.06	45.04	45.08	46.30	52.50	46.10	44.76	44.30
7	44.43	45.15	45.88	45.99	45.06	45.02	45.06	46.68	52.12	46.06	44.70	44.30
8	44.44	45.16	45.88	45.98	45.07	45.00	45.04	47.40	51.90	46.03	44.69	44.29
9	44.45	45.20	45.90	45.98	45.06	45.00	45.04	48.20	51.70	45.99	44.68	44.28
10	44.46	45.21	45.92	45.98	45.05	45.00	45.02	49.30	51.40	45.98	44.62	44.28
11	44.48	45.22	45.94	45.99	45.04	44.99	45.00	50.30	51.10	45.96	44.56	44.28
12	44.50	45.26	45.94	46.00	45.03	44.97	45.02	51.10	50.96	45.90	44.56	44.27
13	44.52	45.30	45.96	45.95	45.02	44.96	45.02	51.48	50.84	45.87	44.55	44.27
14	44.54	45.34	45.98	45.90	45.02	44.95	45.02	51.48	50.52	45.80	44.54	44.27
15	44.55	45.37	45.99	45.86	45.01	44.94	45.00	51.44	50.30	45.70	44.53	44.27
16	44.57	45.40	46.00	45.80	45.01	44.93	44.98	51.54	50.00	45.64	44.52	44.27
17	44.58	45.42	46.04	45.76	45.00	44.92	44.98	52.04	49.72	45.58	44.51	44.28
18	44.60	45.44	46.08	45.72	45.00	44.92	44.98	52.52	49.46	45.52	44.50	44.28
19	44.60	45.46	46.10	45.66	45.01	44.92	44.98	53.12	49.16	45.46	44.49	44.29
20	44.62	45.48	46.10	45.60	45.00	44.92	44.98	53.78	48.84	45.40	44.48	44.29
21	44.64	45.51	46.10	45.54	45.00	44.90	44.98	54.59	48.58	45.36	44.47	44.29
22	44.67	45.54	46.10	45.48	45.00	44.93	44.98	55.18	48.32	45.31	44.46	44.30
23	44.69	45.55	46.10	45.42	45.00	44.94	44.98	55.81	48.18	45.25	44.46	44.30
24	44.72	45.57	46.10	45.38	45.01	44.94	44.98	56.17	47.91	45.19	44.45	44.30
25	44.76	45.59	46.10	45.34	45.00	44.94	44.98	56.35	47.62	45.12	44.43	44.31
26	44.80	45.63	46.10	45.37	45.00	44.95	44.98	56.44	47.30	45.06	44.42	44.32
27	44.83	45.65	46.10	45.28	45.03	44.95	44.98	56.34	47.10	45.04	44.40	44.33
28	44.86	45.67	46.10	45.24	45.05	44.96	44.98	56.20	46.95	44.99	44.38	44.34
29	44.90	45.69	46.08	45.22	-	44.96	44.98	56.08	46.98	44.96	44.36	44.35
30	44.95	45.71	46.08	45.20	-	44.99	44.98	55.82	46.74	44.94	44.36	44.36
31	44.97	-----	46.07	45.18	-----	45.00	-----	55.38	-----	44.92	44.35	-----

Note.--Add 1,100 ft to obtain elevation above mean sea level.

4425. Similkameen River near Nighthawk, Wash.

(International gaging station)

Location.--Lat 48°59'10", long 119°37'00", in NW $\frac{1}{4}$  sec. 7, T. 40 N., R. 26 E., on left bank three-quarters of a mile upstream from Oroville-Tonasket Irrigation District canal intake, about  $1\frac{1}{2}$  miles downstream from and northeast of Nighthawk, and 12 miles upstream from mouth.

Drainage area.--3,550 sq mi, approximately.

Records available.--May 1911 to September 1958 (prior to September 1928, mean monthly discharge included Oroville-Tonasket Irrigation District canal). Published as "near Oroville" 1911-28.

Gage.--Water-stage recorder. Datum of gage is 1,137.70 ft above mean sea level, international joint adjustment of 1947. Prior to Sept. 11, 1928, staff gages at sites 7 miles downstream (below Oroville-Tonasket Irrigation District canal) at various datums.

Average discharge.--47 years, 2,245 cfs (1,625,000 acre-ft per year).

Extremes.--Maximum discharge during year, 15,500 cfs May 25 (gage height, 11.50 ft); minimum, 262 cfs Sept. 16 (gage height, 2.75 ft).  
1928-58: Maximum discharge, 38,700 cfs May 30, 1948 (gage height, 17.62 ft); minimum, 120 cfs Jan. 6, 1930 (gage height, 2.05 ft).

Remarks.--Records excellent. Flow at high stages regulated by natural diversion into and release from Palmer Lake. Several small diversions above station for irrigation of about 2,900 acres in the United States in 1946 and approximately 10,500 acres in Canada in 1957.

Cooperation.--This station is maintained by the United States under agreement with Canada.

Revisions.--WSP 1182: Drainage area.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 19

Mar. 20 to Sept. 30

2.8	300	2.7	240	6.0	3,200
3.0	390	3.0	380	8.0	6,600
3.5	660	3.5	690	10.0	11,300
4.0	990	4.0	1,060	12.0	17,000
4.5	1,410	5.0	2,000		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	415	1,230	460	345	485	550	669	*1,640	9,380	2,020	690	290
2	420	948	445	309	490	512	650	2,150	8,650	1,880	641	290
3	420	787	490	335	475	506	704	2,790	8,080	*1,840	614	298
4	420	684	540	368	465	518	711	3,400	7,620	1,830	581	330
5	435	*642	550	501	460	534	732	3,680	7,400	1,770	555	330
6	440	618	534	534	455	540	732	4,090	7,120	1,810	555	312
7	440	806	501	523	455	528	732	4,740	7,020	1,870	543	294
8	440	*594	490	496	470	512	739	6,020	7,120	1,840	519	285
9	435	550	506	485	470	496	768	7,660	6,440	1,980	501	285
10	435	506	594	480	450	470	782	8,150	5,900	1,920	489	280
11	440	506	624	490	440	470	790	8,150	5,750	1,820	459	276
12	440	545	567	512	440	485	812	7,840	5,380	1,690	453	276
13	440	528	556	556	440	490	858	7,120	5,160	1,570	435	285
14	440	518	572	550	445	485	1,020	6,660	4,960	1,450	424	276
15	435	518	523	540	440	470	1,260	6,880	4,570	1,390	408	276
16	435	506	*501	540	440	470	1,310	7,680	4,210	1,300	391	272
17	440	496	480	556	435	475	1,310	8,810	3,950	1,210	380	290
18	435	480	501	578	440	480	1,290	9,500	3,710	1,150	375	294
19	430	460	512	624	440	470	1,290	10,400	3,540	1,080	355	312
20	430	460	506	624	440	471	1,270	12,000	3,700	1,140	345	360
21	430	450	496	618	455	471	1,310	12,700	3,030	985	340	574
22	435	395	470	594	475	495	1,400	13,800	2,850	932	330	568
23	435	354	430	562	*480	531	1,410	14,700	2,630	895	316	507
24	445	460	440	550	518	568	1,360	14,700	2,490	850	308	477
25	435	594	485	550	550	588	1,350	15,000	2,510	820	298	*465
26	445	660	496	540	562	600	1,320	14,800	2,340	*760	294	447
27	455	659	512	*523	594	*614	1,280	14,200	2,220	732	*298	489
28	475	589	496	*512	578	614	1,260	13,700	2,290	711	303	513
29	485	556	480	512	-	607	*1,260	13,800	2,210	711	298	501
30	485	506	435	506	-----	641	1,350	11,700	2,070	760	294	483
31	831	-----	376	496	-----	655	-----	10,100	-----	739	294	-----
Total	14,031	17,382	15,574	15,910	13,277	16,316	31,769	278,570	143,860	41,455	13,085	10,935
Mean	455	559	502	513	474	526	1,059	8,986	4,795	1,337	422	364
Ac-ft	27,830	34,480	30,890	31,360	26,330	32,360	63,010	552,500	285,300	82,220	25,960	21,690
Calendar year 1957: Max	22,900						Mean 2,445		Ac-ft 1,770,000			
Water year 1957-58: Max	15,000				Min 272		Mean 1,677		Ac-ft 1,214,000			

\* Discharge measurement made on this day.

4450. Okanogan River near Tonasket, Wash.

(International gaging station)

Location.--Lat 48°38'00", long 119°27'50", in lot 3, sec. 8, T. 36 N., R. 27 E., on right bank 1,000 ft upstream from Chewiliken Creek and  $5\frac{1}{2}$  miles south of Tonasket.

Drainage area.--7,270 sq mi, approximately.

Records available.--April 1929 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 860.78 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Average discharge.--29 years, 2,927 cfs (2,119,000 acre-ft per year).

Extremes.--Maximum discharge during year, 16,100 cfs May 26 (gage height, 13.93 ft); minimum, 542 cfs Aug. 26, 27 (gage height, 4.24 ft).

1929-58: Maximum discharge, 40,900 cfs May 31, 1948 (gage height, 21.79 ft, from floodmark); minimum recorded, 126 cfs Sept. 5, 1931 (gage height, 3.43 ft).

Remarks.--Records excellent except those for periods of ice effect or shifting control, which are fair. Diversions above station for irrigation of about 10,700 acres in the United States and 45,580 acres in Canada. Flow affected by regulation of Okanogan and Skaha Lakes and by natural storage in other lakes. Some diurnal fluctuation at low flow caused by powerplant on Similkameen River.

Cooperation.--This station is maintained by the United States under agreement with Canada.

Revisions (water years).--WSP 862: 1937. WSP 1216: Drainage area. WSP 1316: 1934(M), 1938(M).

Rating tables, water year 1957-58, except periods of ice effect and shifting control (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-31

Nov. 1 to Sept. 30

4.9	1,100	4.2	510	8.0	4,250
5.2	1,310	5.0	1,120	11.0	9,440
5.5	1,530	6.0	1,880	14.0	16,300

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,130	1,580	1,150	1,040	1,160	1,270	1,430	3,130	10,600	2,620	1,000	614
2	1,270	1,760	1,130	990	1,150	1,250	1,480	3,380	9,880	*2,500	972	622
3	1,400	1,560	1,120	980	1,150	1,090	1,560	3,830	9,100	2,360	935	646
4	1,460	1,420	1,220	990	1,140	1,160	1,560	4,360	8,500	2,270	912	646
5	1,450	*1,320	1,280	1,060	1,130	1,180	1,570	4,710	8,140	2,210	882	678
6	1,460	1,270	1,290	1,160	1,130	1,180	1,570	4,960	7,890	2,170	868	688
7	1,460	1,250	1,260	1,180	1,130	1,210	1,560	*5,320	7,660	2,250	798	670
8	1,440	1,210	1,220	1,150	1,160	1,190	1,580	6,150	7,700	2,140	768	654
9	1,390	*1,180	1,210	1,140	1,190	1,160	1,580	7,700	7,330	2,180	742	662
10	1,370	1,140	1,230	1,130	1,250	1,130	1,600	8,940	6,860	2,270	734	662
11	1,370	1,110	1,300	1,130	1,190	1,100	1,620	9,120	6,340	2,210	710	670
12	1,370	1,120	1,300	1,160	1,160	1,100	1,610	9,120	6,250	2,080	790	662
13	1,370	1,140	1,240	1,180	1,160	1,100	1,620	8,480	5,860	1,960	766	694
14	1,370	1,120	1,250	1,220	1,140	1,100	1,670	7,830	5,700	1,800	766	742
15	1,370	1,070	*1,250	1,210	1,150	1,100	1,640	7,700	5,400	1,720	750	734
16	1,330	1,070	1,210	1,210	1,160	1,080	2,080	8,120	5,040	1,640	726	734
17	1,300	1,080	1,200	1,250	1,160	1,080	2,180	9,100	4,680	1,560	718	750
18	1,300	1,060	1,190	1,230	1,210	1,100	2,210	10,100	4,450	1,480	694	766
19	1,300	b1,020	1,200	1,240	1,190	1,080	2,210	10,600	4,180	1,430	662	798
20	1,280	b1,000	1,210	1,280	1,130	1,080	2,230	11,900	4,010	1,390	622	822
21	1,280	b980	1,210	1,280	1,130	1,100	2,220	12,900	3,740	1,340	614	890
22	1,300	b1,000	1,190	1,260	1,180	1,130	2,330	13,900	3,480	1,270	614	1,060
23	1,280	b1,050	1,160	1,250	1,180	1,160	2,370	15,000	3,280	1,190	614	1,100
24	1,280	b1,100	1,140	1,210	*1,140	1,250	2,420	15,500	2,990	1,160	598	1,060
25	1,290	1,290	1,150	1,200	1,480	1,390	2,470	15,800	2,670	1,050	580	1,040
26	1,280	1,390	1,210	*1,200	1,360	1,340	2,770	16,000	2,840	1,050	598	1,050
27	1,270	1,250	1,190	1,190	1,280	1,360	3,070	*15,800	2,710	1,040	606	*1,040
28	1,270	1,230	1,200	*1,190	1,280	1,360	3,180	15,100	2,780	*1,010	638	1,070
29	1,270	1,230	1,180	1,190	-----	1,370	*3,160	15,100	2,890	1,000	*630	1,100
30	1,190	1,200	1,140	1,180	-----	*1,380	3,070	14,100	2,740	1,010	630	1,100
31	1,180	-----	1,120	1,170	-----	1,440	-----	12,000	-----	1,030	614	-----
Total	41,080	36,180	37,350	36,250	33,270	37,020	61,800	305,750	185,650	52,370	22,559	24,422
Mean	1,325	1,206	1,205	1,169	1,188	1,194	2,060	9,863	5,522	1,689	728	814
Ac-ft	81,480	71,760	74,080	71,900	65,990	73,430	122,600	606,400	328,600	103,900	44,750	48,440

Calendar year 1957: Max 23,400 Min 940

Water year 1957-58: Max 16,000 Min 590

Mean 3,144

Mean 2,339

Ac-ft 2,276,000

Ac-ft 1,693,000

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--Shifting-control method used Feb. 23 to May 6.

4473. Okanogan River near Malott, Wash.

Location.--Lat 48°14'20", long 119°43'50", in SE $\frac{1}{4}$  sec. 30, T. 32 N., R. 25 E., on left bank, 2 miles downstream from Chiliwist Creek, 4 miles southwest of Malott, and 13 miles upstream from mouth.

Drainage area.--8,210 sq mi, approximately.

Records available.--April to September 1958.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, supplementary adjustment of 1947.

Ext. emes.--Maximum daily discharge during period, 16,800 cfs May 26; minimum, 610 cfs Aug. 27 (elevation, 78.54 ft).

Remarks.--Records excellent except those for periods of doubtful or no gage-height record, which are fair. Diversions above station for irrigation of about 15,000 acres in the United States and 45,580 acres in Canada. Flow affected by regulation of Okanogan and Skaha lakes and by natural storage in other lakes. Some diurnal fluctuation at low flow caused by powerplant on Similkameen River.

Rating table, Apr. 4 to Sept. 30, 1958 (elevation, in feet, and discharge, in cubic feet per second)

778.5	590	784.0	6,920
779.0	900	786.0	10,600
780.0	1,740	789.0	17,500
782.0	3,980		

Discharge, in cubic feet per second, April to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							1,750	3,460	11,500	2,780	1,110	652
2							1,800	3,560	10,600	2,690	1,070	670
3							1,900	*3,900	10,500	2,570	1,020	682
4							1,970	4,380	9,200	2,430	1,000	700
5							1,940	4,850	8,600	2,410	942	700
6							1,920	5,120	8,300	2,340	921	712
7							1,910	5,440	8,000	2,330	928	718
8							1,890	6,110	8,100	2,350	900	724
9							1,890	7,400	8,200	2,240	844	688
10							1,880	9,500	7,500	2,350	823	694
11							1,890	9,800	6,700	2,370	802	688
12							1,900	9,700	6,600	2,290	809	700
13							1,920	9,200	5,780	2,180	802	706
14							1,970	8,500	5,480	2,010	795	742
15							2,040	8,200	5,240	1,890	781	781
16							2,260	8,700	5,120	1,800	760	774
17							2,440	9,400	4,790	1,720	754	774
18							2,540	10,300	4,580	1,630	754	795
19							2,520	11,200	4,280	1,570	736	816
20							2,560	12,500	4,110	1,510	712	858
21							2,560	13,500	3,930	1,470	*676	886
22							2,560	*14,400	3,640	1,410	864	963
23							2,650	15,500	3,400	1,320	852	1,190
24							2,680	16,300	3,230	1,250	640	1,200
25							2,690	16,600	3,060	1,210	635	1,150
26							2,790	16,800	2,930	1,100	630	1,150
27							3,100	16,400	*2,910	1,080	620	1,160
28							3,370	16,000	2,860	1,050	852	1,140
29							3,470	15,600	2,880	1,090	670	*1,190
30							3,440	14,800	2,970	1,080	676	1,200
31							-----	13,000	-----	1,080	670	-----
Total							70,200	320,120	174,890	56,600	24,448	25,803
Mean							2,340	10,330	5,830	1,826	789	860
Ac-ft							139,200	634,900	346,900	112,500	48,490	51,180

Calendar year : Max Min Mean Ac-ft  
Water year : Max Min Mean Ac-ft

\* Discharge measurement made on this day.

Note.--No gage-height record Apr. 1-3, May 11-21, 23-28, May 30 to June 12; discharge estimated on basis of records for station near Tonasket. Doubtful gage-height record May 8-10, 22, 29, June 13-26, July 10-15, 20, 24-29, Aug. 4-21, Sept. 6-8; discharge computed from partially estimated gage heights.

4495. Methow River at Twisp, Wash.

Location.--Lat 48°21'40", long 120°06'50", in NW¼ sec. 17, T. 33 N., R. 22 E., on left bank a quarter of a mile downstream from Twisp River and 0.3 mile east of center of Twisp.

Drainage area.--1,330 sq mi, approximately.

Records available.--June 1919 to September 1958. Monthly discharge only for some periods, published in WSP 1316.

Gage.--Water-stage recorder. Altitude of gage is 1,580 ft (from topographic map). Prior to Oct. 3, 1919, several staff gages in the immediate vicinity at different datum. Oct. 3, 1919, to Sept. 30, 1929, and Oct. 31 to Nov. 6, 1933, chain gage on road bridge 40 ft upstream at same datum as staff gages. Nov. 7 to Dec. 18, 1933, staff gage at present site at different datum.

Average discharge.--39 years, 1,318 cfs (954,200 acre-ft per year).

Extremes.--Maximum discharge during year, 15,900 cfs May 25 (gage height, 8.29 ft); minimum, 202 cfs Sept. 1, 2 (gage height, 1.35 ft).  
1919-29, 1933-58: Maximum discharge, 40,800 cfs May 29, 1948 (gage height, 12.94 ft, in gage well), from rating curve extended above 18,000 cfs on basis of slope-area measurement of peak flow; minimum observed, 134 cfs Sept. 4, 5, 1926, Sept. 9, 10, 1929, but may have been less during period of ice effect Jan. 6 to Mar 4, 1937.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. A large part of flow diverted above station for irrigation by two canals of Methow Valley Irrigation District, by Risley ditch, and by many other smaller ditches. Diversions for irrigation of 7,410 acres above station (1946 estimate).

Revisions (water years).--WSP 512: Drainage area. WSP 1316: 1921(M), 1928(M), 1934.

Rating tables, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 25				May 26 to Sept. 30			
1.5	235	3.0	1,740	1.3	185		
1.7	330	4.0	3,600	1.7	355		
2.0	520	6.0	8,500	2.1	620		
2.5	1,010	8.1	15,100	2.5	1,010		

Note.--Same as preceding table above 2.5 ft.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*341	450	305	b260	258	363	690	1,690	6,810	1,560	498	206
2	350	430	305	b260	253	358	750	2,150	6,090	1,480	458	206
3	325	404	305	b270	253	352	824	2,810	5,750	1,460	440	213
4	320	392	305	285	253	352	835	3,020	5,680	1,430	422	220
5	350	392	300	285	253	346	835	3,120	5,820	1,440	394	216
6	325	385	300	280	258	346	835	3,640	6,160	1,490	366	213
7	325	380	305	268	258	346	835	4,840	6,190	1,480	335	210
8	325	368	305	276	265	336	857	6,480	5,720	1,440	325	210
9	325	358	300	271	271	341	868	7,860	5,120	1,440	315	210
10	315	358	300	280	276	336	890	7,460	4,900	1,370	305	210
11	310	358	295	276	276	330	935	7,180	4,590	1,300	287	210
12	310	*358	295	280	285	330	1,040	6,320	4,220	1,210	282	210
13	315	358	290	271	285	325	1,210	5,270	3,980	1,140	269	216
14	315	354	*295	276	276	325	1,370	4,920	3,800	1,050	260	220
15	315	341	285	276	271	330	1,400	5,200	3,480	955	252	224
16	325	356	305	276	271	336	1,420	6,320	3,240	900	248	232
17	341	350	300	271	276	336	1,400	7,490	3,140	810	240	240
18	336	325	305	266	290	336	1,380	8,280	3,020	782	236	240
19	350	325	300	258	305	336	1,360	9,610	2,850	764	232	244
20	350	315	300	266	310	341	1,480	11,400	2,620	710	224	252
21	325	295	295	262	305	358	1,430	12,200	2,400	665	220	256
22	346	320	276	253	305	418	1,400	13,800	2,240	629	*220	256
23	368	320	285	271	315	424	1,370	14,400	2,120	596	220	248
24	358	320	295	266	*380	450	1,320	14,600	2,440	564	220	256
25	374	325	285	*258	437	506	1,280	14,900	*2,150	533	216	264
26	380	325	295	258	424	542	1,250	14,400	1,960	512	213	264
27	374	320	290	253	392	565	1,240	14,000	1,960	491	210	264
28	363	320	290	258	374	572	1,200	13,000	1,940	470	213	*274
29	358	300	b260	258	-	580	1,220	*11,400	1,760	548	213	272
30	398	310	b240	262	-----	646	*1,380	8,980	1,630	*566	210	282
31	464	-----	b240	258	-----	*672	-----	7,520	-----	548	206	-----
Total	10,591	10,472	9,051	8,306	8,376	12,534	34,307	254,280	115,800	30,423	8,749	7,044
Mean	342	349	292	268	299	404	1,144	8,202	3,793	981	282	235
Ac-ft	21,010	20,770	17,960	16,470	16,610	24,860	68,050	504,300	225,700	60,340	17,350	13,970
Calendar year 1957:	Max	17,900	Min	159	Mean	1,508	Ac-ft	1,092,000				
Water year 1957-58:	Max	14,900	Min	206	Mean	1,392	Ac-ft	1,007,000				

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

b Stage-discharge relation affected by ice.



4497. Beaver Creek near Twisp, Wash.

Location.--Lat 48°23'50", long 120°02'20", in SE $\frac{1}{4}$  sec. 35, T. 34 N., R. 22 E., on left bank 3 miles downstream from South Fork and 4 miles northeast of Twisp.

Drainage area.--62 sq mi, approximately.

Records available.--May 1956 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 2,250 ft (from topographic map).

Extremes.--Maximum discharge during year, 370 cfs May 21; maximum gage height, 2.68 ft May 20; minimum discharge, 7.0 cfs Sept. 11.  
1956-58: Maximum discharge, 966 cfs May 18, 1957; maximum gage height, 3.35 ft May 16, 1956; minimum discharge, 5.3 cfs Nov. 14, 1956 (gage height, 1.03 ft).

Remarks.--Records fair except those for periods of ice effect, which are poor. No regulation. Several small diversions for irrigation above station.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 31 to June 26, Aug. 23 to Sept. 30)

1.1	5.6	1.4	14.5	2.2	132
1.2	7.4	1.6	26	2.5	250
1.3	10.5	1.9	65	2.8	445

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	11	9.8	8	11	13.5	16.5	37	118	38	15	8.9
2	11	11	9	8	11	15	17.5	44	121	38	14.5	9.5
3	11	9.8	9.8	8	11	13.5	17.5	50	118	37	14	8.9
4	11	10.5	9.5	9	11	13.5	17.5	56	113	36	13.5	8.9
5	11	10	9.5	10	11	13.5	17	65	103	37	13.5	8.6
6	11	10	9.8	11.5	11	13.5	16.5	85	94	39	13.5	8.3
7	11	9	9.8	10	11	13.5	16.5	121	96	34	13	8.0
8	10.5	8.5	9.8	10	11.5	12.5	16.5	145	94	35	13.5	8.0
9	10.5	9	10	10	11.5	12.5	17	152	76	34	13.5	7.7
10	11	9.8	10	11.5	11.5	13	17.5	169	70	28	13	7.4
11	10.5	9.8	10	11.5	11	13	18.5	193	76	25	11	7.2
12	11	9.8	10.5	12	11	12.5	20	158	78	23	10.5	7.4
13	11	*10	10.5	11.5	11	13	23	127	76	23	10.5	8.6
14	12	10	*10.5	11.5	11	13	25	132	65	21	9.5	8.6
15	11	9	10.5	11.5	11	13	22	152	58	20	10	8.9
16	10.5	9	11	11.5	11	13	22	214	54	20	10.5	8.9
17	10	9	11	12	11	13	23	201	53	19	10.5	9.8
18	10	9	11	11.5	13.5	13	23	223	52	18.5	11	9.2
19	9.8	8.5	11	11	16.5	13	23	241	50	18	11	9.5
20	9.8	8.5	11	11.5	14	13	26	270	48	17.5	11	9.8
21	10	8	11	11	13.5	14	25	300	45	17	10	9.5
22	10	8.5	11	11	13.5	15.5	23	279	44	17	8.5	9.2
23	10.5	9	12	11	13.5	15.5	23	256	43	16.5	*8.0	8.9
24	11	9	11	11	*23	17	23	250	43	16.5	9.5	9.5
25	13	10	11.5	*11	25	18.5	23	214	43	16.5	9.2	9.2
26	14	10	11.5	11	18.5	18	22	197	*43	15.5	9.2	8.9
27	12.5	9.8	12.5	11	15	17.5	22	155	48	15.5	10.5	8.6
28	11	9.5	11	11	13.5	17.5	23	*185	42	15.5	10.5	*8.6
29	11	9.5	10	11	-	17	26	116	40	*17	10.5	8.3
30	11.5	9.2	9	11	-----	18	*31	101	40	18	9.8	8.3
31	11.5	-----	8	11	-----	*17.5	-----	117	-----	16.5	9.5	-----
Total	339.6	282.7	322.5	332.5	368.0	450.5	636.5	5,005	2,044	742.5	347.7	261.1
Mean	11.0	9.42	10.4	10.7	13.1	14.5	21.2	161	68.1	24.0	11.2	8.70
Cfs/m	0.177	0.152	0.168	0.173	0.211	0.234	0.342	2.60	1.10	0.387	0.181	0.140
In.	0.20	0.17	0.19	0.20	0.22	0.27	0.38	3.00	1.23	0.45	0.21	0.16
Ac-ft	674	561	640	660	730	894	1,260	9,930	4,050	1,470	690	518
Calendar year 1957: Max	561				Min 8	Mean 38.1	Cfs/m 0.615	In. 8.55	Ac-ft 27,610			
Water year 1957-58: Max	300				Min 7.2	Mean 30.5	Cfs/m 0.492	In. 6.68	Ac-ft 22,080			

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7-9, 15-24, Dec. 2, 11, 15, 22, Dec. 29 to Jan. 5, Jan. 7-9, 19, 22, 24.

4500. Alta Lake near Pateros, Wash.

Location.--Lat 48°01'30", long 119°56'30", in SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 10, T. 29 N., R. 23 E., on west shore 2 $\frac{1}{2}$  miles southwest of Pateros.

Drainage area.--4.03 sq mi.

Records available.--November 1954 to September 1958 (fragmentary).

Gage.--Staff gage read once daily. Altitude of gage is 1,175 ft (from topographic map).

Extremes.--Maximum gage height observed during year, 12.00 ft May 29; minimum observed, 8.95 ft Oct. 21.  
1954-58: Maximum gage height observed, that of May 29, 1958; minimum observed, 6.16 ft Nov. 17, 1955.

Remarks.--Small diversion for irrigation. No known regulation. Lake has no natural surface outlet.

Gage height, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	9.03	9.04	9.17	-	10.09	-	-	11.97	11.82	11.45	10.96
2	9.04	9.02	9.04	-	9.30	10.10	10.89	-	11.97	-	11.42	-
3	-	9.02	9.04	-	-	-	-	11.72	-	11.85	-	-
4	9.03	-	-	9.16	-	10.17	-	11.76	-	-	11.37	-
5	9.01	-	9.03	-	-	-	11.02	-	11.97	-	11.35	10.88
6	9.00	-	-	9.16	-	-	-	11.81	11.95	11.81	11.33	10.87
7	-	9.01	9.05	-	-	-	11.09	-	11.95	-	11.31	10.87
8	8.98	-	9.05	-	9.37	10.24	-	-	-	11.81	11.29	-
9	-	9.00	9.05	-	-	-	-	-	-	-	11.29	10.86
10	-	9.00	9.04	-	9.39	-	-	11.89	-	11.79	11.26	10.88
11	-	9.01	9.04	9.15	-	-	11.20	-	-	-	11.26	10.87
12	8.98	9.01	9.05	-	-	-	11.22	-	11.95	11.74	11.24	-
13	-	9.04	9.04	-	-	-	-	11.92	-	-	11.22	10.87
14	8.99	-	9.04	-	-	10.33	11.16	-	11.95	-	11.20	10.86
15	-	9.04	-	-	9.44	10.35	-	11.93	-	11.70	11.17	-
16	8.98	9.04	9.09	-	9.46	10.37	-	11.93	11.93	-	11.18	10.84
17	-	9.04	-	-	9.48	-	-	11.95	11.92	11.68	11.17	10.83
18	-	9.03	-	9.23	-	-	-	-	-	11.66	11.16	10.83
19	8.96	9.02	-	-	9.55	-	11.43	11.95	11.91	11.65	11.14	-
20	8.96	-	9.13	9.23	-	-	-	-	11.91	11.64	11.14	10.80
21	8.95	9.03	9.13	-	-	-	11.46	11.95	11.90	11.62	-	-
22	-	9.02	9.13	-	9.61	10.50	-	-	11.89	-	11.12	10.78
23	-	9.02	-	-	9.62	10.50	-	-	-	-	11.09	-
24	-	9.02	-	9.25	9.78	10.56	-	11.98	11.93	11.56	11.08	10.76
25	-	9.02	9.16	9.26	9.91	-	-	-	-	-	11.07	-
26	9.04	9.03	-	-	-	-	-	11.62	11.97	-	11.52	-
27	9.03	9.02	-	-	-	-	-	-	-	-	11.04	10.74
28	-	9.03	9.18	-	-	-	-	-	11.91	11.50	11.02	-
29	-	9.02	9.18	-	-	10.68	-	12.00	-	-	11.01	10.74
30	-	9.02	-	-	-	-	11.68	-	-	-	10.98	-
31	-	-	9.17	-	-	10.79	-	-	-	11.47	10.97	-

## 4510. Stehekin River at Stehekin, Wash.

Location.--Lat 48°19'30", long 120°41'20", in SE $\frac{1}{4}$  sec. 26, T. 33 N., R. 17 E., on left bank 1,200 ft upstream from Boulder Creek,  $\frac{1}{2}$  miles upstream from Lake Chelan, and 2 miles northwest of Stehekin. Records include flow of Boulder Creek.

Drainage area.--372 sq mi, includes that of Boulder Creek.

Records available.--October 1910 to October 1915, October 1926 to September 1958. Monthly discharge only for some periods, published in WSP 1316.

Gage.--Water-stage recorder. Datum of gage is 1,100 ft above mean sea level, unadjusted. Prior to Aug. 17, 1911, staff gage three-eighths of a mile upstream from mouth at Lake Chelan at different datums (datum change made June 13, 1911). Aug. 17, 1911, to Oct. 31, 1915, staff gage a quarter of a mile downstream from Boulder Creek at different datum.

Average discharge.--37 years, 1,388 cfs (1,005,000 acre-ft per year).

Extremes.--Maximum discharge during year, 12,100 cfs May 25 (gage height, 26.62 ft); maximum gage height, 26.84 ft May 21 (backwater from debris); minimum discharge, 215 cfs Jan. 16 (gage height, 18.27 ft).

1910-15, 1926-58: Maximum discharge, 18,900 cfs May 29, 1948 (gage height, 29.00 ft), from rating curve extended above 9,000 cfs on basis of slope-area measurement of peak flow; minimum, 56 cfs Jan. 21, 1930.

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

Cooperation.--Gage-height record collected in cooperation with, and two discharge measurements furnished by Public Utility District No. 1 of Chelan County.

Revisions (water years).--WSP 412: 1914. WSP 1316: 1911(M), 1914-15(M). WSP 1446: 1912(M)

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 21						May 22 to Sept. 30					
	18.3	210	22.0	2,580		18.9	420	23.0	4,620		
	19.0	440	23.0	3,880		19.3	600	25.0	8,400		
	20.0	920	24.0	5,410		20.0	1,020	27.0	13,000		
	21.0	1,600	25.4	8,100		21.0	1,980				

Discharge, in cubic feet per second, water year October 1957 to September 1958											
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Sept.
1	584	1,040	396	271	230	579	646	1,960	4,110	1,570	1,250
2	602	816	379	265	228	556	685	2,450	4,080	1,590	1,140
3	507	690	376	271	225	530	710	2,680	4,100	1,670	1,080
4	444	620	372	259	222	512	700	2,720	*4,600	1,890	943
5	408	570	362	256	222	498	690	2,810	5,220	2,370	908
6	376	534	365	250	225	472	695	3,370	5,680	2,200	992
7	365	489	354	247	225	460	725	4,520	5,350	2,130	1,130
8	344	456	362	247	230	456	755	6,070	4,640	2,100	999
9	323	428	393	244	241	420	780	6,020	4,560	1,980	908
10	*309	416	396	247	253	404	838	5,390	4,300	1,950	940
11	302	416	386	238	256	393	909	5,000	3,800	2,060	1,040
12	295	440	382	238	268	382	1,030	4,010	3,490	1,990	1,030
13	399	464	362	230	274	368	1,200	3,240	3,670	1,690	980
14	480	440	368	241	280	362	1,310	3,040	3,670	1,460	960
15	354	404	348	238	274	358	1,330	3,370	3,490	1,410	980
16	323	382	351	259	277	354	1,380	4,280	3,670	1,510	960
17	298	368	354	259	280	348	1,330	5,060	4,060	*1,710	880
18	283	358	358	241	289	348	1,240	5,430	4,250	1,770	920
19	268	348	*348	230	316	351	1,220	6,520	4,320	1,720	910
20	259	316	348	230	330	351	1,430	7,100	4,220	1,560	940
21	250	295	344	228	337	382	1,410	7,810	4,050	1,630	*1,050
22	262	316	357	225	372	420	1,330	9,410	3,880	1,700	1,040
23	265	484	334	228	448	440	1,260	9,410	3,900	1,540	1,090
24	256	552	334	228	624	494	1,200	10,200	3,870	1,370	1,100
25	271	520	337	225	755	561	1,160	11,000	3,100	1,370	1,050
26	295	489	323	222	725	579	1,090	10,600	2,730	1,450	1,000
27	292	456	348	222	660	599	1,100	10,100	3,120	1,550	920
28	283	444	334	232	610	615	1,130	9,740	2,550	1,650	920
29	424	404	312	232	-	620	1,230	6,900	2,000	1,670	770
30	3,450	400	292	241	-----	665	*1,470	5,250	1,740	1,580	700
31	1,500	-----	280	235	-----	656	-----	4,460	-----	1,370	560
Total	15,071	14,355	10,955	7,479	9,676	14,513	31,983	180,120	116,220	53,210	30,090
Mean	486	478	353	241	346	468	1,066	5,610	3,874	1,716	971
Cfsm	1.31	1.28	0.949	0.648	0.930	1.26	2.87	15.6	10.4	4.61	2.61
In.	1.51	1.44	1.10	0.75	0.97	1.45	3.20	18.01	11.62	5.32	3.01
Ac-ft	29,890	28,470	21,730	14,830	19,190	28,790	63,440	357,300	230,500	105,500	59,680
Calendar year 1957: Max	8,030	Min	205	Mean	1,368	Cfsm	3.68	In.	49.95	Ac-ft	990,600
Water year 1957-58: Max	11,000	Min	222	Mean	1,379	Cfsm	3.71	In.	50.33	Ac-ft	998,000

\* Discharge measurement made on this day.

Note.--No gage-height record Aug. 10-20, Aug. 24 to Sept. 8; discharge estimated on basis of recorded range in stage, weather records, and records for nearby stations.

## 4517. Antilon Lake Feeder System near Manson, Wash.

Location.--Lat 47°58'30", long 120°09'30", in SE $\frac{1}{4}$  sec. 26, T. 29 N., R. 21 E., on left bank at tunnel outlet 500 ft upstream from Antilon Lake and 6 miles north of Manson.

Records available.--March to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 2,500 ft (from topographic map).

Extremes.--Maximum daily discharge during period, 68 cfs May 17-20; minimum daily, 0.5 cfs Sept. 26.

Remarks.--Records good except those for periods of doubtful or no gage-height record, which are poor. Flow at site represents total diversion from headwaters of 10 streams, which have a drainage area of 52 sq mi and are tributaries to Lake Chelan. Water stored in Antilon Lake is used for irrigation of 4,000 acres near Manson.

Discharge in cubic feet per second, March to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						-	7.2	14	g58	28	13.5	8.2
2						-	7.5	*g16.5	g45	33	13.5	8.2
3						-	7.8	20	40	38	13.5	8.2
4						-	7.8	18	g57	39	13.5	8.2
5						-	7.8	18	38	38	13.5	7.8
6						-	8.0	20	g39	37	13	7.5
7						-	8.0	35	g44	34	12.5	7.5
8						-	g9.4	g44	48	34	12	7.2
9						-	11	50	45	31	11.5	7.5
10						-	12	55	51	29	11.5	7.5
11						-	13.5	60	59	28	11	7.5
12						-	13	60	57	27	10.5	6.2
13						*3.7	12.5	*g59	55	25	10.5	1.9
14						5.0	g10.5	*g58	50	25	10.5	1.9
15						4.0	10	g61	45	26	8.2	1.8
16						4.2	9.5	g63	42	*24	5.1	2.6
17						4.2	g8.6	g68	42	21	10.5	6.5
18						4.2	8.2	68	50	21	10.5	7.8
19						4.2	7.5	68	39	19.5	10.5	7.8
20						4.2	8.2	g68	37	19	*10	5.0
21						4.4	8.6	67	33	18.5	9.4	5.2
22						4.8	9.0	g67	32	18	9.0	4.2
23						5.0	9.4	g64	31	17.5	9.0	3.2
24						5.7	9.4	63	38	17	8.6	3.2
25						5.7	8.5	63	32	16.5	8.2	2.0
26						5.7	8.0	g63	30	16	8.6	5
27						6.5	g7.2	63	32	16	9.4	1.0
28						6.8	8.5	64	29	15.5	9.0	2.5
29						6.8	10	g65	27	15.5	9.0	4.4
30						6.8	11.5	64	27	15.5	8.6	6.5
31						g7.2	-----	g62	-----	15	8.6	-----
Total						-	278.1	1,628.5	1,222	757.5	322.7	159.5
Mean						-	9.27	52.5	40.7	24.4	10.4	5.32
Ac-ft						-	552	3,230	2,420	1,500	640	316
Calendar year : Max Min Mean Ac-ft												
Water year : Max Min Mean Ac-ft												

\* Discharge measurement made on this day.

g Discharge computed from once-daily staff-gage readings.

Note.--Doubtful or no gage-height record Mar. 30, Apr. 1-7, 9-13, 15, 16, 18-26, Apr. 28 to May 1, May 3-7, 9-12, 18, 19, 21, 24, 25, 27, 28, 30, June 3, 6; discharge estimated on basis of recorder graph and observer's notes.

## 4520. Lake Chelan at Chelan, Wash.

Location.--Lat 47°50'00", long 120°03'40", in lot 3, sec. 15, T. 27 N., R. 22 E., on south shore of Lake Chelan at Lakeside, 2 miles west of Chelan.

Drainage area.--951 sq mi.

Records available.--September 1897 to December 1899, January to June 1905 and December 1910 to September 1911 (fragmentary gage heights only); October 1911 to September 1958. Records of change in contents prior to October 1911, published in WSP 482 and 492 in conjunction with records for Chelan River near Chelan have been found to be unreliable and should not be used. Month-end contents October 1911 to September 1950 published in WSP 1316.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, adjustment of 1912. Prior to Jan. 1, 1900, staff gage at Lakeside about 1 mile west of Chelan at datum 1,070.18 ft above mean sea level, adjustment of 1912. Jan. 1 to June 30, 1905, staff gage at upper highway bridge at Chelan at different datum. Dec. 5, 1910, to Nov. 13, 1927, staff gage at Forest Service boat landing at Chelan at datum 1,076.07 ft above mean sea level, adjustment of 1912.

Extremes.--Maximum elevation during year, 1,100.03 ft June 27 (contents, 677,100 acre-ft); minimum, 1,081.41 ft Apr. 12 (contents, 75,860 acre-ft).

1897-99, 1905, 1910-58: Maximum elevation, 1,100.05 ft July 19, 1947 (contents, 677,800 acre-ft); minimum since completion of dam in 1927, 1,079.68 ft Apr. 3, 4, 1937 (contents, 21,400 acre-ft). Minimum elevation, 1,076.78 ft Jan. 27, 28, Dec. 2-5, 1898.

Remarks.--Reservoir is formed by low concrete dam at lake outlet completed Sept. 3, 1927. Usable capacity between elevations 1,079 and 1,100 ft, 676,100 acre-ft. Regulation between these elevations is allowed by stipulation of Federal Power Commission. Water is used for power development. Elevation of lake maintained between 1,092 and 1,100 ft during period Aug. 16 to Sept. 15 for scenic effect and recreational purposes. In 1946, an estimated 6,280 acres were irrigated above station, with an estimated annual depletion of about 11,000 acre-ft.

Cooperation.--Gage-height record collected in cooperation with Public Utility District No. 1 of Chelan County.

Revisions (water years).--WSP 1246: 1951. WSP 1286: 1952. WSP 1446: Drainage area. See also Records available.

Capacity table, water year 1957-58 (elevation, in feet, and capacity, in acre-feet)

1,081	62,900	1,089	318,000	1,095	512,600
1,083	126,200	1,090	350,200	1,096	545,200
1,085	189,800	1,091	382,600	1,097	577,800
1,086	221,800	1,092	415,000	1,098	610,500
1,087	253,800	1,093	447,400	1,099	643,300
1,088	285,800	1,094	480,000	1,100	676,100

Mean elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	96.79	93.80	90.80	87.80	84.69	83.67	81.61	82.53	97.25	99.66	99.79	99.86
2	96.72	93.72	90.68	87.68	84.63	83.63	81.60	82.65	97.56	99.86	99.78	99.77
3	96.61	93.63	90.58	87.57	84.58	83.58	81.61	82.85	97.62	99.87	99.81	99.60
4	96.49	93.57	90.48	87.46	84.51	83.53	81.62	83.03	98.11	99.90	99.78	99.49
5	96.39	93.47	90.38	87.35	84.45	83.50	81.58	83.24	98.40	99.96	99.69	99.37
6	96.25	93.36	90.28	87.24	84.36	83.41	81.56	83.49	98.60	99.97	99.68	99.25
7	96.13	93.27	90.20	87.11	84.29	83.35	81.55	83.76	99.17	99.95	99.67	99.15
8	96.03	93.17	90.10	86.99	84.22	83.28	81.54	84.20	99.55	99.94	99.67	99.05
9	95.94	93.07	89.99	86.89	84.18	83.22	81.49	84.69	99.64	99.94	99.66	99.00
10	95.82	92.98	89.87	86.80	84.13	83.16	81.48	85.09	99.58	99.92	99.68	98.91
11	95.70	92.88	89.78	86.77	84.07	83.09	81.43	85.42	99.69	99.94	99.71	98.80
12	95.60	92.77	89.68	86.60	84.03	83.03	81.42	85.80	99.77	99.98	99.73	98.70
13	95.50	92.69	89.57	86.50	83.98	82.95	81.45	86.01	99.82	99.89	99.70	98.62
14	95.44	92.61	89.48	86.40	83.91	82.85	81.48	86.24	99.83	99.85	99.69	98.52
15	95.29	92.50	89.37	86.34	83.85	82.74	81.49	86.49	99.78	99.79	99.68	98.39
16	95.16	92.37	89.29	86.24	83.83	82.63	81.54	86.82	99.73	99.78	99.67	98.28
17	95.07	92.25	89.19	86.15	83.79	82.55	81.58	87.21	99.85	99.78	99.69	98.27
18	94.94	92.15	89.12	86.05	83.76	82.45	81.56	87.68	99.85	99.79	99.72	98.13
19	94.81	92.06	89.04	85.94	83.73	82.36	81.59	88.20	99.85	99.78	99.75	98.10
20	94.70	91.94	88.96	85.82	83.69	82.27	81.68	88.78	99.82	99.80	99.71	98.01
21	94.59	91.82	88.86	85.70	83.64	82.19	81.74	89.39	99.80	99.79	99.71	97.95
22	94.47	91.70	88.75	85.60	83.63	82.15	81.84	90.13	99.80	99.81	99.74	97.90
23	94.40	91.59	88.65	85.50	83.60	82.08	81.90	90.90	99.90	99.78	99.75	97.79
24	94.30	91.50	88.58	85.44	83.67	82.05	81.96	91.71	99.95	99.76	99.77	97.64
25	94.21	91.41	88.50	85.28	83.72	81.99	82.03	92.67	99.94	99.77	99.83	97.54
26	94.11	91.34	88.45	85.18	83.75	81.91	82.09	93.60	99.94	99.73	99.89	97.45
27	94.01	91.23	88.34	85.06	83.74	81.85	82.19	94.50	99.98	99.71	99.85	97.32
28	93.90	91.15	88.25	84.98	83.70	81.81	82.26	95.40	99.96	99.74	99.80	97.24
29	93.78	91.02	88.14	84.88	-	81.74	82.34	96.09	99.90	99.78	99.84	97.14
30	93.85	90.89	88.02	84.81	-----	81.75	82.41	96.55	99.88	99.81	99.80	97.03
31	93.89	-----	87.92	84.75	-----	81.67	-----	96.92	-----	99.83	99.80	-----
(*)	475,710	377,370	281,270	180,530	147,770	82,810	109,400	580,690	672,180	669,560	670,540	577,100
(+)	-95,850	-98,340	-96,100	-100,700	-32,760	-64,960	+26,590	+471,300	+91,490	-2,620	+980	-93,440

Calendar year 1957..... \* -120,700

Water year 1957-58..... \* +5,540

\* Contents, in acre-feet, at end of month, based on elevations at 12 p.m. at Lakeside.

\* Change in contents, in acre-feet.

Note.--Add 1,000 ft to obtain elevation above mean sea level.

## 4525. Chelan River at Chelan, Wash.

Location.--Lat 47°50'05", long 120°00'40". In SE $\frac{1}{4}$  sec. 13, T. 27 N., R. 22 E., near right bank in forebay upstream from control dam at outlet of Lake Chelan, a quarter of a mile south of Chelan.

Drainage area.--951 sq mi.

Records available.--November 1903 to September 1958. Published as "below Chelan Lake" 1904-5. Adjusted records for October 1903 to September 1911, published in WSP 482, 492, and 870 have been found to be unreliable and should not be used.

Gage.--Water-stage recorder and concrete power dam. Datum of gage is at mean sea level, adjustment of 1912. Prior to Jan. 7, 1927, staff gage at site 800 ft downstream at same datum. Jan. 7 to Sept. 30, 1927, staff gage about 500 to 1,000 ft below dam at same datum. Oct. 1, 1927, to Nov. 10, 1928, staff gage and Nov. 11, 1928, to Mar. 19, 1939, water-stage recorder at sites  $\frac{3}{4}$  miles downstream at same datum.

Average discharge.--54 years (1904-58), 2,040 cfs (1,477,000 acre-ft per year), adjusted for storage since October 1911.

Extremes.--Maximum daily discharge during year, 7,600 cfs June 9; minimum daily, 2 cfs Apr. 27.

1903-58: Maximum daily discharge, 16,000 cfs May 30, 1948; no flow part of day Jan. 30, 1917, when lake outlet was blocked with ice, and at other times owing to artificial regulation.

Remarks.--Unmeasured water that is diverted for irrigation above station is small percentage of total runoff. Chelan County Public Utility District No. 1 diverts water at Chelan to develop about 54,000 horsepower and to irrigate an unknown area near Chelan, which quantity is included in records of daily discharge. Diversions for irrigation of about 6,280 acres, depletion 11,000 acre-ft (1946 estimate). Flow regulated by Lake Chelan (see preceding page).

Cooperation.--Records of water used for power and irrigation furnished by the Public Utility District No. 1 of Chelan County.

Revisions (water years).--WSP 482: 1904-13. WSP 612: 1924. WSP 1216: Drainage area. WSP 1246: 1951. WSP 1286: 1952. See also Records available.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,280	2,310	2,270	2,280	1,420	1,610	1,750	839	1,260	2,310	1,620	1,480
2	2,260	2,320	2,270	2,280	1,380	1,500	1,710	951	1,600	2,300	1,500	1,810
3	2,260	2,320	2,310	2,290	1,520	1,650	1,820	868	1,830	2,260	1,020	2,220
4	2,260	2,320	2,300	2,280	1,510	1,750	1,760	442	1,910	1,010	1,520	2,220
5	2,260	2,310	2,310	2,290	1,650	1,840	1,570	665	1,950	2,610	1,600	2,220
6	2,280	2,310	2,310	2,290	1,730	1,750	1,510	671	1,830	3,110	1,530	2,220
7	2,270	2,320	2,320	2,280	1,800	1,800	1,540	593	1,850	3,310	1,150	2,230
8	2,280	2,320	2,330	2,280	1,980	1,710	1,540	701	2,610	2,870	1,150	2,200
9	2,290	2,310	2,320	2,270	1,610	1,780	1,530	1,260	7,600	2,580	1,000	2,220
10	2,280	2,330	2,320	2,260	1,500	1,580	1,810	1,890	5,110	2,570	71	2,210
11	2,270	2,300	2,320	2,260	1,500	2,040	1,670	1,510	3,750	2,580	1,140	2,220
12	2,270	2,300	2,330	2,260	1,490	1,700	1,560	1,020	4,130	2,680	1,140	2,210
13	2,280	2,310	2,310	2,280	1,490	2,020	1,370	782	4,780	2,910	1,140	2,220
14	2,280	2,320	2,320	2,240	1,440	2,150	1,450	913	6,000	2,260	1,150	2,230
15	2,290	2,310	2,340	2,250	1,410	2,200	1,620	705	5,960	2,340	1,150	2,220
16	2,280	2,320	2,280	2,250	1,490	2,200	1,590	557	4,360	2,240	1,000	2,220
17	2,290	2,320	2,320	2,250	1,490	2,150	1,530	70	4,670	2,220	72	2,140
18	2,290	2,310	2,300	2,260	1,490	2,190	1,830	70	6,080	2,070	876	2,220
19	2,300	2,320	2,300	2,270	1,470	2,180	1,590	602	6,090	2,040	987	2,130
20	2,300	2,330	2,300	2,260	1,490	2,180	1,100	1,010	6,060	1,790	997	1,890
21	2,280	2,320	2,290	2,260	1,480	2,060	750	685	6,040	2,050	980	1,530
22	2,290	2,320	2,290	2,260	1,390	2,000	700	866	5,120	1,790	988	1,880
23	2,300	2,320	2,300	2,240	963	1,750	716	1,010	4,260	1,870	866	2,210
24	2,310	2,330	2,320	2,250	1,440	1,740	709	69	4,950	1,920	72	2,220
25	2,300	2,320	2,270	2,240	1,520	2,030	864	69	4,400	1,950	953	2,220
26	2,310	2,330	2,270	2,260	1,490	2,130	8	69	3,660	1,940	988	2,230
27	2,310	2,330	2,290	2,250	1,480	1,980	2	69	5,010	1,280	988	2,220
28	2,300	2,320	2,290	2,240	1,500	1,880	753	798	5,960	1,690	988	2,230
29	2,300	2,320	2,300	2,240	-	1,850	922	1,430	2,970	1,590	988	2,230
30	2,310	2,290	2,280	1,900	-----	1,930	924	1,410	2,310	1,590	622	2,220
31	2,300	-----	2,290	1,400	-----	1,920	-----	1,300	-----	1,800	72	-----
Total	70,860	69,510	71,400	68,870	42,103	59,210	38,178	23,917	121,890	67,530	30,298	63,920
Mean	2,288	2,317	2,303	2,222	1,504	1,910	1,273	772	1,963	2,178	977	2,130
Ac-ft	140,500	137,900	141,600	136,600	85,510	117,400	75,720	47,440	241,800	135,300	60,100	122,800
(†)	-35,850	-38,340	-98,100	-100,700	-32,760	-64,960	-26,590	-47,500	-31,490	-2,620	+980	-33,440

Adjusted for change in contents in Lake Chelan

Mean	726	665	740	584	914	853	1,719	8,436	5,601	2,135	993	561
Cfsm	0.763	0.699	0.778	0.614	0.961	0.897	1.81	8.87	5.89	2.25	1.04	0.590
In.	0.88	0.78	0.90	0.71	1.00	1.03	2.02	10.23	6.57	2.59	1.20	0.66
Ac-ft	44,650	39,560	45,500	35,900	50,750	52,440	102,300	518,700	333,300	131,300	61,080	33,360

Observed

Calendar year 1957: Max	10,500	Min	30	Mean	2,225	Ac-ft	1,611,000
Water year 1957-58: Max	7,600	Min	2	Mean	1,994	Ac-ft	1,443,000

Adjusted

Calendar year 1957: Mean	2,058	Cfsm	2.16	In.	29.38	Ac-ft	1,490,000
Water year 1957-58: Mean	2,001	Cfsm	2.10	In.	28.57	Ac-ft	1,449,000

† Change in contents, in acre-feet, in Lake Chelan, furnished by Chelan Public Utility District No. 1.

Note.--Discharges are combined flows of power conduit, irrigation diversion below dam, and waste water.

4528. Entiat River near Ardenvoir, Wash.

Location.--Lat 47°48'30", long 120°24'50", in SE $\frac{1}{4}$  sec. 26, T. 27 N., R. 19 E., on left bank, 6 miles northwest of Ardenvoir.

Drainage area.--207 sq mi.

Records available.--September 1957 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,563.22 ft above mean sea level (from Conservation Division plane-table survey).

Extremes.--Maximum discharge during period September 1957 to September 1958, 4,110 cfs May 25 (gage height, 7.72 ft); minimum, 52 cfs Jan. 1 (gage height, 0.83 ft).

Remarks.--Records good. No known regulation or diversion.

Rating table, Sept. 1, 1957, to Sept. 30, 1958 (gage height, in feet, and discharge, in cubic feet per second)

0.8	50	2.0	200	4.0	950
1.1	70	2.5	330	6.0	2,350
1.5	114	3.0	500	8.0	4,450

Discharge, in cubic feet per second, 1957

Day	Discharge	Day	Discharge	Day	Discharge	Day	Discharge
Sept. 1.....	a105	Sept. 9.....	117	Sept. 17.....	105	Sept. 25.....	86
2.....	a102	10.....	109	18.....	117	26.....	86
3.....	a100	11.....	106	19.....	109	27.....	102
4.....	a100	12.....	106	20.....	100	28.....	105
5.....	a100	13.....	105	21.....	94	29.....	117
6.....	a110	14.....	105	22.....	90	30.....	99
7.....	130	15.....	102	23.....	88		
8.....	125	16.....	104	24.....	87		

Total.....	3,111
Mean.....	104
Cubic feet per second per square mile.....	0.502
Runoff in inches.....	0.56
Runoff in acre-feet.....	6,170

a No gage-height record; discharge estimated on basis of records for nearby stations.

Note.--Discharge measurement made on Aug. 25.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	94	144	85	54	68	131	117	292	1,890	488	198	105
2	93	127	82	68	68	125	127	378	1,560	448	190	102
3	93	115	85	69	69	121	134	486	1,500	432	180	100
4	93	118	82	80	68	117	131	536	1,510	444	174	95
5	93	111	79	79	68	114	130	588	*1,820	464	164	91
6	91	108	74	77	68	109	130	672	1,840	452	157	88
7	89	102	81	70	68	106	130	885	1,980	432	157	87
8	88	97	87	73	71	102	130	1,170	1,820	428	*162	88
9	87	95	82	69	72	102	130	1,410	1,650	408	147	*95
10	86	96	*77	71	74	97	133	1,390	1,610	*561	147	96
11	85	96	71	72	74	96	141	1,430	*1,430	372	146	94
12	83	96	80	71	74	96	155	1,310	1,310	363	150	94
13	85	102	69	70	74	91	182	1,150	1,270	339	146	95
14	89	97	74	*70	*74	89	202	1,090	1,260	312	139	90
15	83	91	74	72	73	89	200	1,120	1,220	290	134	88
16	80	88	78	78	74	88	208	1,290	1,230	278	134	86
17	79	86	80	76	75	87	212	1,540	1,250	278	134	94
18	77	86	82	72	80	86	208	1,710	1,270	290	130	94
19	76	84	77	69	90	96	210	*2,000	1,230	295	130	107
20	*74	73	79	72	90	*86	245	2,540	1,180	272	128	105
21	73	61	81	70	88	91	245	2,740	1,130	258	127	96
22	77	79	80	68	95	100	240	*2,280	1,050	258	127	93
23	76	*97	81	69	110	101	238	3,520	992	255	127	86
24	76	97	80	68	154	106	*228	3,700	998	240	127	84
25	97	91	82	69	190	117	220	3,920	925	230	131	84
26	105	89	87	68	166	115	212	3,820	775	228	128	83
27	90	84	80	68	149	114	208	3,720	815	228	130	80
28	85	88	80	68	139	114	205	3,290	696	230	127	78
29	83	76	82	69	-	115	210	2,660	612	230	120	77
30	205	75	74	70	-----	122	238	2,150	540	225	115	76
31	186	-----	62	69	-----	118	-----	1,920	-----	212	108	-----
Total	2,871	2,849	2,447	2,196	2,563	3,231	5,499	57,709	37,993	10,060	4,414	2,729
Mean	92.6	95.0	78.9	70.8	91.5	104	183	1,862	1,286	325	142	91.0
Cfs/m	0.447	0.459	0.361	0.342	0.442	0.502	0.894	9.00	6.12	1.57	0.696	0.440
In.	0.52	0.51	0.44	0.39	0.46	0.58	0.99	10.37	6.83	1.81	0.79	0.49
Ac-ft	5,690	5,650	4,850	4,360	5,080	6,410	10,910	114,500	75,360	19,950	8,760	5,410
Calendar year 1957: Max	-	-	-	Min	-	Mean	-	Cfs/m	-	In.	-	Ac-ft
Water year 1957-58: Max	3,920	Min	54	Mean	369	Cfs/m	1.78	In.	24.18	Ac-ft	266,900	

\* Discharge measurement made on this day.

4530. Entiat River at Entiat, Wash.

Location.--Lat 47°39'40", long 120°13'30", in SE $\frac{1}{4}$  sec. 17, T. 25 N., R. 21 E., on right bank at Entiat, a quarter of a mile upstream from mouth.

Drainage area.--419 sq mi.

Records available.--October 1910 to September 1925, June 1951 to September 1958 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 690 ft (from topographic map). October 1910 to Sept. 30, 1925, staff gage at site three-quarters of a mile upstream at different datum.

Average discharge.--22 years, 507 cfs (367,100 acre-ft per year), unadjusted.

Extremes.--Maximum discharge during year, 4,500 cfs May 26 (gage height, 5.32 ft); minimum daily, 98 cfs Jan. 1.  
1910-25, 1951-58: Maximum discharge, 5,380 cfs June 18, 1916; maximum gage height, 5.71 ft June 11, 1956; minimum discharge, 29 cfs Jan. 26, 1956, result of freezeup.  
Maximum discharge known, 10,800 cfs May 29, 1948, on basis of conveyance-slope measurement of peak flow.

Remarks.--Records good except those for period of ice effect, which are fair. Many diversions above station for irrigation of an estimated 2,560 acres in 1946 with a resulting estimated depletion of 4,480 acre-ft of flow. Occasional regulation by millpond 10 miles upstream.

Revisions (water years).--WSP 1316: 1914-16(M), 1918(M).

Rating tables, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 6

May 7 to Sept. 30

1.2	86	1.2	92	3.0	1,170
1.7	215	1.6	208	4.0	2,380
2.2	420	2.0	380	5.3	4,460
2.9	900	2.5	720		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	138	206	123	a98	109	252	215	410	2,270	612	233	a122
2	136	182	123	b117	109	235	238	523	2,040	577	222	a119
3	138	172	123	b120	111	215	255	656	1,890	577	212	a116
4	138	166	126	b130	111	212	252	712	1,830	570	208	a113
5	140	163	121	b120	111	203	248	748	1,900	577	201	a110
6	138	158	123	b115	111	194	248	828	2,160	570	195	a107
7	153	153	121	111	116	188	248	1,190	2,370	563	188	a105
8	138	148	143	111	126	180	248	1,510	2,270	556	188	a103
9	136	143	140	109	128	177	248	1,890	2,010	*521	185	*a102
10	136	143	*133	111	133	169	252	1,890	1,920	488	178	118
11	138	143	119	111	133	166	266	1,930	*1,750	476	172	115
12	136	148	128	111	143	166	281	1,800	1,590	464	172	115
13	133	150	121	a105	138	158	317	1,570	1,510	440	172	118
14	138	150	114	*107	*138	153	361	1,450	1,470	416	166	115
15	131	140	119	109	136	153	361	1,460	1,390	375	*163	113
16	128	138	128	123	136	150	352	1,660	1,350	360	163	113
17	126	136	128	123	140	143	348	1,930	1,370	344	163	121
18	123	133	131	114	146	140	343	2,120	1,390	360	163	129
19	121	133	128	107	161	143	338	*2,380	1,360	375	157	140
20	*119	121	126	116	169	*143	385	2,880	1,280	344	154	157
21	119	a110	131	107	169	156	395	3,080	1,230	320	151	145
22	131	a100	126	104	177	172	390	3,540	1,140	316	148	142
23	140	*138	128	111	209	177	390	3,810	1,090	311	145	132
24	128	146	128	109	274	182	*366	3,980	1,090	298	142	129
25	153	138	128	109	375	203	352	4,280	1,070	276	137	129
26	174	143	143	107	348	209	348	4,350	926	268	142	129
27	153	140	133	107	301	209	330	4,190	926	264	142	126
28	143	133	126	114	274	209	321	4,170	845	260	142	121
29	138	123	126	114	-	212	321	3,760	752	260	134	115
30	197	a110	116	116	-----	232	348	3,040	672	256	132	113
31	266	-----	a110	111	-----	222	-----	2,560	-----	248	129	-----
Total	4,406	4,307	3,913	3,470	4,732	5,723	9,365	70,297	44,801	12,642	5,199	3,632
Mean	142	144	126	112	159	185	312	2,268	1,435	408	168	121
Ac-ft	8,740	8,540	7,760	6,880	9,390	11,350	18,580	139,400	88,860	25,080	10,310	7,200
Calendar year 1957:	Max	3,650		Min	72	Mean	468	Ac-ft	338,500			
Water year 1957-58:	Max	4,350		Min	98	Mean	473	Ac-ft	342,100			

\* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

b Stage-discharge relation affected by ice.



4540. White River near Plaln, Wash.

Location.--Lat 47°52'30", long 120°52'10", in NE<sup>1</sup>/<sub>4</sub> sec. 5, T. 27 N., R. 16 E., on left bank at downstream side of Forest Service bridge, 1<sup>1</sup>/<sub>2</sub> miles downstream from Sears Creek, 4 miles upstream from Wenatchee Lake, and 12<sup>1</sup>/<sub>2</sub> miles northwest of Plaln.

Drainage area.--150 sq mi.

Records available.--May 1911 to April 1912; May to September 1912, July to August 1913, and October 1913 to March 1914 (monthly discharge only); April to September 1914; August 1954 to September 1958. Published as "near Chlwaikum" 1911-14.

Gage.--Water-stage recorder. Altitude of gage is 1,880 ft (from river-profile map). May 1911 to September 1914 staff gage at same site at different datum.

Extremes.--Maximum discharge during year, 5,780 cfs May 26 (gage height, 13.25 ft); minimum observed, 109 cfs Oct. 18 (gage height, 2.16 ft), but may have been less during period of no gage-height record.

1911-14, 1954-58: Maximum discharge, that of May 26, 1958; minimum, 104 cfs Mar. 10, 1956; minimum gage height observed, that of Oct. 18, 1957.

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

Revisions (water years).--WSP 1316: 1914.

Rating tables, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 26					May 27 to Sept. 30				
2.1	100	8.0	2,210	2.5	150	8.0	2,120		
2.5	169	10.0	3,180	3.0	257	10.0	3,350		
3.0	283	12.0	4,400	4.0	540	12.0	4,400		
4.0	583	13.0	5,390	6.0	1,270	13.0	5,390		
6.0	1,380								

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	212	400	192	b160	154	467	336	1,290	2,280	778	429	264
2	223	320	182	163	152	443	358	1,570	2,160	796	388	196
3	190	273	180	158	152	412	356	1,680	2,190	858	366	169
4	163	251	175	154	150	397	347	1,600	2,540	900	312	150
5	150	232	169	150	150	382	342	1,710	2,940	1,030	304	154
6	141	216	173	146	150	358	361	1,970	3,180	956	345	188
7	136	199	173	143	148	342	373	2,440	2,970	928	374	211
8	134	186	276	143	150	320	412	3,100	2,550	908	337	231
9	134	175	253	141	156	304	430	3,120	2,650	827	*306	242
10	127	171	241	141	160	288	480	2,800	2,440	788	309	*231
11	124	186	*232	141	160	276	531	2,640	2,070	*796	345	253
12	120	105	256	139	160	266	613	2,150	1,950	778	339	209
13	a130	236	219	137	161	253	758	1,810	2,100	673	314	169
14	a140	216	219	137	161	244	800	1,780	*2,120	582	312	192
15	a120	194	203	*137	*160	239	790	1,960	2,030	540	319	202
16	a110	180	203	182	161	232	808	2,350	2,120	568	312	192
17	a110	171	201	203	163	227	794	2,640	2,340	617	285	275
18	*a110	169	199	190	175	223	752	2,800	2,440	659	312	222
19	a110	165	197	175	219	*223	758	3,430	2,430	620	306	468
20	a110	*145	201	169	223	219	952	*3,580	2,380	564	309	282
21	a110	139	190	165	221	239	936	3,830	2,320	558	332	246
22	a110	158	186	161	258	258	876	4,410	2,170	610	345	220
23	a110	252	182	161	333	270	814	4,570	2,170	572	342	186
24	124	239	186	165	544	288	769	4,660	2,130	508	355	187
25	162	234	188	161	571	314	*734	5,130	1,570	498	332	292
26	203	230	184	158	606	309	696	5,070	1,410	530	326	211
27	171	214	166	154	540	322	692	4,880	1,690	540	306	209
28	148	212	182	161	496	342	720	4,810	1,290	558	271	217
29	272	192	173	161	-	339	797	3,520	964	554	255	207
30	1,660	192	b160	161	-----	350	984	2,810	830	536	233	179
31	630	-----	b160	160	-----	336	-----	2,490	-----	472	217	-----
Total	6,510	6,352	6,101	4,877	6,934	9,482	19,369	92,600	64,424	21,102	9,937	6,616
Mean	210	212	197	157	248	306	646	2,987	2,147	681	321	221
Cfsm	1.40	1.41	1.31	1.05	1.65	2.04	4.31	19.9	14.3	4.54	2.14	1.47
In.	1.61	1.57	1.51	1.21	1.72	2.35	4.80	22.96	15.97	5.23	2.46	1.64
Ac-ft	12,910	12,600	12,100	9,670	13,750	18,810	38,420	183,700	127,800	41,860	19,710	13,120

Calendar year 1957: Max 4,010 Min 110 Mean 703 Cfsm 4.69 In. 63.59 Ac-ft 508,700  
 Water year 1957-58: Max 5,130 Min 110 Mean 697 Cfsm 4.65 In. 63.03 Ac-ft 504,400

Peak discharge (base, 2,000 cfs).--Oct. 30 (8 a.m.) 2,760 cfs (9.15 ft); May 9 (1 a.m.) 3,670 cfs (10.88 ft); May 26 (3 a.m.) 5,780 cfs (13.25 ft); June 6 (11:30 p.m.) 3,520 cfs (10.63 ft); June 17 (11 p.m.) 2,840 cfs (9.43 ft).

\* Discharge measurement made on this day.  
 a No gage-height record; discharge estimated on basis of 1 discharge measurement, weather records, and records for nearby stations.  
 b Stage-discharge relation affected by ice.

## 4545. Wenatchee Lake near Plain, Wash.

Location.--Lat 47°49'50", long 120°46'30", in sec. 19, T. 27 N., R. 17 E., on north (left) shore,  $2\frac{1}{2}$  miles upstream from outlet,  $7\frac{1}{2}$  miles northwest of Plain, and 33 miles upstream from Leavenworth.

Drainage area.--276 sq mi.

Records available.--January 1932 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,860.00 ft above mean sea level, subject to correction to datum of 1929. Prior to Jan. 4, 1935, staff gage at same site and datum.

Extremes.--Maximum elevation during year, 1,876.63 ft May 26; minimum, 1,869.49 ft Oct. 21.

1932-58: Maximum elevation recorded, 1,879.65 ft May 29, 1948; minimum, 1,869.27 ft Dec. 1, 1936.

Remarks.--No regulation or diversions.

Revisions (water years).--WSP 1216: Drainage area. WSP 1396: 1944.

Mean elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69.75	70.64	69.90	69.86	69.95	70.77	70.42	71.48	73.57	71.13	70.23	69.86
2	69.72	70.42	69.89	69.84	69.93	70.69	70.45	71.89	73.27	71.02	70.18	69.81
3	69.70	70.24	69.86	69.82	69.92	70.82	70.46	72.21	73.09	70.99	70.14	69.74
4	69.68	70.12	69.87	69.81	69.90	70.57	70.46	72.35	73.15	70.98	70.08	69.71
5	69.66	70.03	69.87	69.80	69.89	70.54	70.43	72.42	73.41	71.03	70.04	69.67
6	69.64	69.96	69.91	69.78	69.88	70.49	70.42	72.61	73.74	71.06	70.04	69.65
7	69.62	69.90	69.91	69.77	69.88	70.44	70.45	73.02	73.83	71.03	70.06	69.66
8	69.60	69.85	70.07	69.76	69.89	70.39	70.48	73.72	73.53	70.99	70.06	69.70
9	69.59	69.82	70.20	69.77	69.90	70.35	70.51	74.26	73.34	70.93	70.03	69.73
10	69.57	69.78	70.21	69.78	69.93	70.30	70.57	74.21	73.23	70.85	69.99	69.76
11	69.57	69.78	70.18	69.77	69.93	70.27	70.62	74.09	72.95	70.80	69.99	69.76
12	69.55	69.83	70.16	69.77	69.94	70.24	70.72	73.69	72.65	70.77	69.99	69.74
13	69.55	69.91	70.14	69.76	69.98	70.20	70.88	73.12	72.54	70.68	69.99	69.71
14	69.60	69.94	70.12	69.77	69.98	70.17	71.05	72.75	72.53	70.62	69.97	69.67
15	69.61	69.93	70.06	69.84	69.98	70.14	71.17	72.70	72.54	70.56	69.96	69.67
16	69.60	69.89	70.06	69.90	69.98	70.13	71.27	72.99	72.53	70.51	69.96	69.71
17	69.58	69.85	70.05	70.06	69.99	70.11	71.30	73.49	72.62	70.51	69.96	69.77
18	69.56	69.82	70.08	70.08	70.00	70.09	71.29	73.82	72.74	70.53	69.95	69.83
19	69.54	69.80	70.08	70.05	70.02	70.08	71.25	74.16	72.79	70.54	69.95	69.98
20	69.52	69.78	70.11	70.01	70.06	70.07	71.46	74.76	72.75	70.49	69.93	70.10
21	69.50	69.75	70.09	69.98	70.08	70.08	71.62	74.92	72.68	70.43	69.95	70.07
22	69.51	69.73	70.05	69.94	70.12	70.13	71.59	75.40	72.58	70.42	69.98	70.01
23	69.53	69.73	70.01	69.93	70.23	70.16	71.48	75.64	72.48	70.41	69.96	69.82
24	69.52	69.82	70.03	69.97	70.47	70.20	71.36	76.04	72.43	70.38	69.97	69.84
25	69.54	69.86	70.09	69.95	70.84	70.25	71.25	76.30	72.22	70.35	69.98	69.87
26	69.61	69.92	70.13	69.93	71.02	70.29	71.18	76.58	71.86	70.33	69.97	69.92
27	69.65	69.94	70.07	69.91	70.99	70.31	71.09	76.53	71.89	70.35	69.94	69.90
28	69.66	69.97	70.06	69.95	70.86	70.34	71.07	76.38	71.85	70.34	69.91	69.88
29	69.65	69.93	70.01	69.97	-	70.36	71.09	75.72	71.58	70.36	69.91	69.84
30	70.34	69.90	69.96	69.99	-----	70.42	71.21	74.73	71.29	70.34	69.91	69.81
31	70.87	-----	69.90	69.99	-----	70.42	-----	73.99	-----	70.29	69.84	-----

Note.--Add 1,800 ft to obtain elevation above mean sea level.

4550. Wenatchee River below Wenatchee Lake, Wash.

Location.--Lat 47°48'30", long 120°43'20", in sec. 28, T. 27 N., R. 17 E., on left bank 0.1 mile downstream from lake outlet,  $\frac{1}{4}$  miles northwest of Plain, and 17 miles northwest of Leavenworth.

Drainage area.--276 sq mi.

Records available.--January 1932 to September 1958 (discontinued).

Gage.--Water-stage recorder. Datum of gage is 1,860.00 ft above mean sea level, datum of 1912; gage readings have been reduced to elevations above mean sea level. Prior to Jan. 5, 1935, staff gage and Jan. 5, 1935, to Sept. 6, 1956, water-stage recorder, at site  $\frac{3}{4}$  miles upstream from outlet at same datum.

Average discharge.--26 years, 1,317 cfs (953,500 acre-ft per year).

Extremes.--Maximum discharge during year, 8,490 cfs May 26 (elevation, 1,876.46 ft); minimum, 170 cfs Oct. 21 (elevation, 1,869.50 ft).  
1932-58: Maximum discharge recorded, 13,700 cfs May 29, 1948 (elevation of lake surface, 1,879.65 ft); minimum, 96 cfs Nov. 30, Dec. 1-3, 1952; minimum elevation of lake surface, 1,869.27 ft Dec. 1, 1936.

Remarks.--Records good. Natural regulation in lake. No diversion.

Revisions.--WSP 1216: Drainage area.

Rating table, water year 1957-58 (elevation, in feet, and discharge, in cubic feet per second)

1,869.5	170	1,871.0	1,280
1,869.7	245	1,873.0	3,690
1,870.0	410	1,875.0	6,380
1,870.5	790	1,877.0	9,300

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	275	916	362	334	386	1,020	700	1,810	4,240	1,380	604	322
2	260	709	356	322	350	943	718	2,230	3,870	1,270	564	312
3	250	572	344	317	362	889	736	2,630	3,640	1,250	533	280
4	237	491	344	306	356	835	736	2,800	3,730	1,260	491	265
5	225	434	359	300	350	808	718	2,890	4,040	1,320	458	245
6	217	386	368	290	344	754	718	3,130	4,500	1,350	452	241
7	213	362	392	280	344	709	736	3,610	4,610	1,310	464	245
8	202	334	452	280	344	676	754	4,480	4,210	1,270	458	260
9	198	306	540	285	344	644	799	5,230	3,990	1,220	434	275
10	198	295	548	290	356	612	844	5,150	3,830	1,150	*422	*295
11	191	295	*526	285	362	580	907	5,030	3,480	*1,100	428	300
12	188	328	519	290	368	556	980	4,520	3,120	1,080	428	300
13	188	362	505	280	360	533	1,150	3,760	2,980	1,000	422	*290
14	209	366	491	295	386	512	1,320	3,210	*2,970	916	410	275
15	209	380	464	322	392	491	1,460	3,170	2,970	853	404	275
16	205	356	452	*356	398	484	1,530	3,550	2,950	817	404	290
17	198	334	446	434	*404	477	1,580	4,210	3,070	808	398	312
18	*191	322	452	464	416	477	1,570	4,830	3,250	835	392	350
19	184	306	464	458	422	*464	1,520	*1,180	3,290	853	386	434
20	177	*290	477	440	452	458	1,730	*5,880	3,250	817	380	519
21	174	270	464	422	470	464	1,950	6,090	3,200	763	386	484
22	177	255	446	404	491	477	1,910	6,760	3,070	763	392	470
23	184	265	416	404	556	505	1,770	7,360	2,970	754	398	428
24	184	317	452	416	727	526	1,650	7,620	2,690	736	404	374
25	194	334	452	404	1,070	572	*1,530	8,020	2,650	709	416	398
26	221	380	464	392	1,260	604	1,460	8,420	2,280	668	410	434
27	237	386	452	380	1,210	636	1,380	8,340	2,280	668	398	422
28	237	404	446	398	1,120	660	1,350	8,130	2,250	684	380	410
29	237	380	422	404	-	684	1,380	7,180	1,910	692	356	386
30	663	362	386	410	-----	709	1,520	5,730	1,600	684	350	362
31	1,130	-----	356	404	-----	709	-----	4,780	-----	544	334	-----
Total	7,853	11,517	13,597	11,066	14,420	19,468	37,106	155,530	97,090	29,614	13,156	10,253
Mean	253	384	439	357	515	628	1,237	5,017	3,236	955	424	342
Cfs/m	0.917	1.39	1.59	1.29	1.87	2.28	4.48	18.2	11.7	3.46	1.54	1.24
In.	1.06	1.55	1.83	1.49	1.94	2.62	5.00	20.96	13.08	3.99	1.77	1.38
Ac-ft	15,580	22,840	26,970	21,950	28,600	38,610	73,600	308,500	192,600	58,740	26,090	20,340
Calendar year 1957: Max	6,950	Min	174	Mean	1,159	Cfs/m	4.20	In.	57.00	Ac-ft	839,100	
Water year 1957-58: Max	8,420	Min	174	Mean	1,153	Cfs/m	4.18	In.	56.67	Ac-ft	834,400	

\* Discharge measurement made on this day.

## 4570. Wenatchee River at Plain, Wash.

Location.--Lat 47°45'50", long 120°39'30", in lot 8, sec. 12, T. 26 N., R. 17 E., on left bank at Plain a quarter of a mile downstream from Beaver Creek, 7½ miles downstream from Nason Creek, and 12 miles north of Leavenworth.

Drainage area.--591 sq mi.

Records available.--October 1910 to September 1958. Published as "near Leavenworth" 1910-31.

Gage.--Water-stage recorder. Altitude of gage is 1,805 ft (from river-profile map). Prior to Jan. 8, 1932, staff gages at site a quarter of a mile downstream at different datum.

Average discharge.--48 years, 2,190 cfs (1,585,000 acre-ft per year).

Extremes.--Maximum discharge during year, 14,700 cfs May 26 (gage height, 9.81 ft); minimum, 330 cfs Oct. 22 (gage height, 1.73 ft).  
1910-29, 1931-58: Maximum discharge, 22,700 cfs May 29, 1948 (gage height, 12.43 ft, from high-water mark in well); minimum, 168 cfs Nov. 30, 1952 (gage height, 1.31 ft).

Remarks.--Records excellent. Wenatchee Park Land & Irrigation Co. diverts a maximum of about 12 cfs from Chlwwa River for irrigation of 1,400 acres near Plain. Natural regulation by Wenatchee Lake.

Revisions (water years).--WSP 482: 1911-14. WSP 1316: 1914(M), 1916(M), 1919(M), 1921-23(M), 1927(M).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

1.7	315	5.0	3,680
2.2	600	7.0	7,440
3.0	1,210	10.0	15,200
4.0	2,270		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	475	1,420	642	574	656	1,610	1,300	3,280	7,530	2,280	960	523
2	464	1,120	635	574	642	1,500	1,370	4,050	6,910	2,110	908	517
3	458	962	614	580	635	1,410	1,390	4,720	6,520	2,070	870	470
4	442	840	614	574	621	1,320	1,370	4,900	6,910	2,080	825	455
5	431	761	607	561	614	1,290	1,330	5,090	7,180	2,190	761	420
6	420	705	628	548	607	1,230	1,340	5,560	7,930	2,160	740	404
7	414	656	712	529	607	1,160	1,370	6,480	8,290	2,100	747	409
8	398	607	848	523	607	1,110	1,430	7,950	7,530	2,090	747	420
9	387	580	960	517	621	1,070	1,500	9,180	7,130	1,950	719	442
10	376	554	930	535	635	1,020	1,570	8,960	6,890	1,850	691	464
11	365	561	*892	529	642	976	1,690	8,790	6,160	1,760	684	*464
12	355	628	870	535	670	952	1,820	7,840	5,530	1,710	*698	453
13	360	733	832	523	691	930	2,150	6,540	5,330	*1,620	691	448
14	404	754	810	535	698	900	2,390	5,840	*5,310	1,490	670	431
15	398	698	768	580	698	878	2,550	5,800	5,240	1,380	663	442
16	382	649	754	719	*698	862	2,690	6,520	5,170	1,310	656	453
17	*370	607	747	*818	705	840	2,750	7,550	5,380	1,300	649	493
18	365	580	754	832	719	825	2,700	8,240	5,600	1,360	642	561
19	360	561	754	796	761	818	2,650	9,250	5,600	1,370	635	684
20	350	535	796	761	810	810	3,260	10,500	5,440	1,300	610	818
21	340	*487	789	726	832	*848	3,410	*10,800	5,260	1,210	620	726
22	355	493	754	691	870	915	3,270	11,900	5,020	1,210	630	705
23	387	505	712	698	1,010	960	3,060	12,800	4,820	1,200	640	635
24	370	614	719	712	1,510	1,020	2,860	13,300	4,820	1,150	649	568
25	414	628	754	698	1,880	1,110	2,690	13,900	4,320	1,100	649	600
26	461	705	803	670	2,020	1,130	*2,520	14,400	3,630	1,050	642	670
27	511	691	775	656	1,800	1,170	2,420	14,400	3,840	1,050	621	621
28	499	719	768	670	1,730	1,210	2,390	14,200	3,660	1,050	594	600
29	461	663	733	684	-	1,240	2,470	12,700	3,090	1,060	574	561
30	1,240	628	677	691	-----	1,330	2,740	10,200	2,600	1,050	590	529
31	1,820	-----	600	677	-----	1,510	-----	8,500	-----	1,020	535	-----
Total	14,872	20,664	23,251	19,716	24,889	33,754	66,410	274,140	168,640	47,610	21,300	15,984
Mean	480	689	750	636	889	1,089	2,214	8,843	5,621	1,536	687	533
Cfs/m	0.812	1.17	1.27	1.08	1.50	1.84	3.75	15.0	9.51	2.60	1.16	0.902
In.	0.94	1.30	1.46	1.24	1.57	2.12	4.18	17.25	10.61	3.08	1.34	1.01
Ac-ft	29,500	40,990	46,120	39,110	49,370	66,950	131,700	543,700	334,500	94,450	42,250	31,700
Calendar year 1957: Max	12,400	Min	340	Mean	2,097	Cfs/m	3.55	In.	48.15	Ac-ft	1,518,000	
Water year 1957-58: Max	14,400	Min	340	Mean	2,003	Cfs/m	3.39	In.	46.02	Ac-ft	1,450,000	

\* Discharge measurement made on this day.

4580. Icicle Creek above Snow Creek, near Leavenworth, Wash.

Location.--Lat 47°32'25", long 120°42'55", in SE $\frac{1}{4}$  sec. 28, T. 24 N., R. 17 E., on right bank three-eighths of a mile upstream from Snow Creek and 4 $\frac{1}{2}$  miles southwest of Leavenworth.

Drainage area.--193 sq mi.

Records available.--September 1936 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,450 ft (from river-profile map).

Average discharge.--22 years, 616 cfs (446,000 acre-ft per year).

Extremes.--Maximum discharge during year, 5,040 cfs May 25 (gage height, 10.36 ft); minimum, 79 cfs Nov. 21 (gage height, 2.04 ft).

1936-58: Maximum discharge, 11,600 cfs May 28, 1948 (gage height, 13.93 ft), from rating curve extended above 7,000 cfs on basis of slope-area measurement of peak flow; minimum daily, 45 cfs Nov. 30, 1952.

Remarks.--Records good. No diversion. Some regulation in headwater lakes for irrigation.

Revisions (water years).--WSP 1246: 1936-41. WSP 1286: 1948. WSP 1446: 1943(M).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

2.1	84	6.0	1,080
2.5	125	7.0	1,640
3.0	192	8.0	2,390
4.0	382	9.0	3,350
5.0	670	10.5	5,240

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	107	276	135	422	151	391	290	840	2,100	607	215	125
2	99	220	129	133	147	371	313	1,080	1,900	552	203	123
3	104	186	126	136	146	350	307	1,180	1,770	541	192	120
4	102	171	127	127	142	335	299	1,160	1,930	541	186	115
5	101	159	124	129	141	325	291	1,260	2,330	544	173	111
6	99	149	129	124	140	311	295	1,530	2,540	529	154	108
7	96	141	208	110	137	297	303	1,960	2,210	514	166	107
8	99	133	273	118	140	286	323	2,490	1,880	499	163	106
9	100	127	254	114	141	278	327	2,620	1,810	483	156	108
10	100	127	220	120	144	265	343	2,560	1,640	441	154	108
11	99	135	198	124	141	257	364	2,620	1,490	425	156	107
12	98	146	*188	121	147	257	413	2,060	1,350	*413	163	105
13	104	180	166	118	147	245	505	1,590	*1,330	397	*146	103
14	113	176	170	117	147	232	568	1,490	1,330	343	140	106
15	108	151	153	135	145	232	568	1,700	1,290	337	136	*117
16	101	135	159	218	144	225	579	2,150	1,290	323	136	111
17	107	124	154	278	*147	218	576	2,480	1,390	321	138	131
18	103	126	151	252	174	211	556	2,640	1,420	325	147	141
19	*97	122	142	213	211	210	565	3,250	1,330	315	147	220
20	92	101	166	203	216	211	888	3,370	1,280	295	142	239
21	90	*83	159	188	215	*220	800	*3,680	1,260	284	140	288
22	94	125	151	176	239	232	708	4,290	1,180	278	140	184
23	97	127	142	171	311	245	656	4,370	1,110	274	137	151
24	101	140	141	178	439	263	607	4,220	1,180	263	136	138
25	133	138	150	171	600	290	565	4,620	980	254	135	147
26	156	144	213	162	532	282	*541	4,520	840	252	135	171
27	144	138	190	159	461	282	535	4,290	1,040	248	133	149
28	129	142	170	164	420	282	538	3,780	944	248	130	135
29	132	120	159	164	-	284	568	2,900	780	245	127	125
30	438	135	147	160	-----	297	670	2,460	674	238	133	115
31	386	-----	130	158	-----	291	-----	2,300	-----	227	129	-----
Total	3,929	4,382	5,124	4,863	6,265	8,475	14,861	81,440	43,598	11,566	4,688	4,114
Mean	127	146	165	157	224	273	495	2,627	1,453	373	151	137
Cfs/m	0.658	0.756	0.855	0.815	1.16	1.41	2.56	13.6	7.53	1.93	0.782	0.710
In.	0.76	0.84	0.99	0.94	1.21	1.63	2.86	15.69	8.40	2.23	0.90	0.79
Ac-ft	7,790	8,690	10,160	9,650	12,430	16,810	29,480	161,500	86,480	22,940	9,500	8,160

Calendar year 1957: Max 3,710 Min 88 Mean 524 Cfs/m 2.72 In. 36.85 Ac-ft 379,400  
 Water year 1957-58: Max 4,620 Min 88 Mean 530 Cfs/m 2.75 In. 37.24 Ac-ft 383,400

Peak discharge (base, 2,500 cfs).--May 8 (12 p.m.) 2,880 cfs (8.54 ft); May 25 (11 p.m.) 5,040 cfs (10.36 ft); June 5 (11 p.m.) 2,730 cfs (8.38 ft).

\* Discharge measurement made on this day.

4590. Wenatchee River at Peshastin, Wash.

Location.--Lat 47°34'50", long 120°37'00", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 8, T. 24 N., R. 18 E., on right bank 1 mile northwest of Peshastin and 3 $\frac{1}{2}$  miles upstream from Peshastin Creek.

Drainage area.--1,000 sq mi, approximately.

Records available.--October 1928 to February 1929 (monthly discharge only), March 1929 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,028.04 ft above mean sea level, datum of 1929. Prior to Mar. 24, 1932, staff gage at site 1 $\frac{1}{4}$  miles downstream at different datum.

Average discharge.--30 years, 3,016 cfs (2,183,000 acre-ft per year).

Extremes.--Maximum discharge during year, 21,000 cfs May 26 (gage height, 12.16 ft); minimum, 426 cfs Sept. 7 (gage height, 1.76 ft).

1929-58: Maximum discharge, 32,300 cfs May 28, 1948 (gage height, 15.88 ft); minimum, 183 cfs Oct. 14, 1939; minimum gage height, 1.24 ft Nov. 1, 1952; minimum daily discharge, 270 cfs Oct. 2, 1929, Nov. 30, 1936, Dec. 1, 1952.

Remarks.--Records excellent. Numerous diversions upstream for irrigation of an estimated 5,200 acres above station, and domestic use above and below station. Diversion by Icicle Creek irrigation canal 8 miles upstream from station is used for irrigation of a substantial part of the 22,000 acres irrigated below station.

Revisions (water years).--WSP 1316: 1929-32(M).

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

1.7	390	3.0	1,320	7.0	7,530
2.0	580	4.0	2,420	10.0	14,700
2.5	920	5.0	3,840	13.0	23,500

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	658	1,880	836	780	920	2,400	1,860	4,380	10,600	3,200	1,170	606
2	626	1,510	829	766	892	2,240	2,040	5,450	9,660	2,910	1,100	593
3	612	1,250	808	794	878	2,100	2,080	6,560	9,050	2,810	1,060	560
4	606	1,100	801	780	864	1,980	2,040	6,630	9,210	2,780	995	528
5	593	1,000	794	766	843	1,900	1,950	6,890	10,100	2,890	942	482
6	586	920	815	745	843	1,780	1,920	7,510	11,500	2,910	892	444
7	574	864	942	710	843	1,700	1,940	8,790	11,400	2,810	871	432
8	574	808	1,110	704	857	1,620	2,020	10,800	10,300	2,780	885	450
9	548	766	1,300	704	871	1,550	2,100	12,400	9,660	2,670	857	482
10	534	752	1,230	738	906	1,480	2,140	12,300	9,560	2,480	829	515
11	528	745	1,170	731	928	1,420	2,300	12,300	8,510	2,340	*822	534
12	515	794	*1,130	738	958	1,400	2,470	10,900	*7,630	*2,280	822	528
13	515	913	1,080	717	980	1,330	2,870	9,100	7,530	2,220	808	*528
14	548	988	1,060	717	995	1,290	3,280	8,110	7,310	2,000	794	515
15	586	928	1,010	766	988	1,270	3,420	8,130	7,190	1,840	780	548
16	554	857	935	942	*980	1,230	3,560	9,160	7,070	1,720	766	574
17	554	794	988	*1,130	1,010	1,200	3,600	10,700	7,290	1,660	759	593
18	554	773	995	1,170	1,070	1,170	3,600	11,600	7,610	1,750	738	690
19	*496	752	995	1,090	1,160	1,170	3,480	13,300	7,550	1,740	738	794
20	470	710	1,020	1,060	1,230	1,160	4,440	14,900	7,530	1,630	724	1,090
21	463	632	1,040	1,020	1,270	1,200	4,620	15,500	7,130	1,540	704	1,060
22	495	*658	1,000	965	1,360	*1,330	4,360	*17,400	6,850	1,500	710	878
23	541	690	942	958	1,590	1,430	3,940	18,600	6,530	1,500	724	857
24	528	787	935	972	2,280	1,540	3,810	18,900	6,610	1,450	724	769
25	608	829	995	955	3,060	1,700	3,580	20,000	6,060	1,370	731	731
26	684	885	1,090	920	3,170	1,720	3,380	20,700	4,980	1,330	731	857
27	710	892	1,080	899	2,880	1,720	*3,280	20,400	5,250	1,310	704	801
28	697	928	1,020	928	2,620	1,740	3,230	19,700	5,100	1,310	697	752
29	654	864	995	955	-----	1,790	3,300	17,200	4,400	1,310	671	724
30	1,280	829	928	965	-----	1,940	3,650	14,000	2,660	1,300	658	690
31	2,410	-----	822	950	-----	1,920	-----	12,000	-----	1,260	645	-----
Total	20,290	27,098	30,755	27,048	37,246	49,420	90,260	384,110	232,030	62,580	25,051	19,595
Mean	655	903	992	873	1,330	1,594	3,009	12,390	7,734	2,019	808	653
Ac-ft	40,240	53,750	61,000	53,650	73,880	98,020	179,000	761,900	460,200	124,100	49,690	38,870
Calendar year 1957: Max	17,600	Min	463	Mean	2,846	Ac-ft	2,060,000					
Water year 1957-58: Max	20,700	Min	432	Mean	2,755	Ac-ft	1,994,000					

Peak discharge (base, 11,000 cfs).--May 11 (6:30 a.m.) 12,600 cfs (9.19 ft); May 26 (11 p.m.) 21,000 cfs (12.16 ft).

\* Discharge measurement made on this day.

4620. Mission Creek near Cashmere, Wash.

Location.--Lat 47°30'15", long 120°28'30", in SE 1/4 sec. 8, T. 23 N., R. 19 E., on right bank 1 1/2 miles upstream from mouth and 1 1/2 miles south of Cashmere.

Drainage area.--77.9 sq mi.

Records available.--May 1954 to November 1958 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 850 ft (from topographic map).

Extremes.--1957-58: Maximum discharge during water year, 151 cfs Feb. 25; maximum gage height, 1.78 ft Feb. 24; minimum discharge, 1.9 cfs Aug. 29 to Sept. 1 (gage height, 0.34 ft).

1958: Maximum discharge during period October to November, 73 cfs Nov. 6 (gage height, 1.32 ft); maximum gage height, 1.90 ft Nov. 29 (backwater from ice); minimum discharge, 2.6 cfs Oct. 6; minimum gage height, 0.43 ft Oct. 5.

1954-58: Maximum discharge, 463 cfs Apr. 22, 1956 (gage height, 2.78 ft); minimum daily, 0.1 cfs Aug. 25 to Sept. 12, 1955.

Remarks.--Records good except those for periods of ice effect, which are fair. No regulation. Many small diversions for domestic use and irrigation above station.

Rating table, Oct. 1, 1957, to Nov. 30, 1958, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1, 1957, to Feb. 21, 1958)

0.3	1.6	0.8	17
.4	3.1	1.0	32
.5	5.3	1.3	67
.6	8.2	1.8	158

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.6	12.5	6.8	b10	15	56	58	79	35	11.5	3.8	1.9
2	4.4	12	5.6	b10	15	50	73	84	37	10.5	2.4	2.2
3	4.8	11.5	8.8	b11	15.5	44	76	87	29	10.5	2.4	2.5
4	4.8	10.5	5.9	b11	15.5	40	72	88	28	9.8	3.0	2.6
5	6.5	10.5	5.9	11.5	16	38	66	88	25	8.2	2.8	2.5
6	7.0	10.5	7.6	10.5	17	33	63	92	26	8.6	2.6	2.4
7	6.8	10	12	10	17	32	63	100	28	9.3	2.8	2.2
8	7.3	10	14.5	9.6	20	29	63	109	24	10	2.6	2.5
9	7.3	8.9	15	10	22	29	62	98	24	11	2.5	2.5
10	7.0	8.6	*11	10.5	24	27	63	90	24	*8.9	2.5	2.5
11	6.8	9.3	10	9.3	25	26	66	88	24	7.3	2.4	2.5
12	6.5	8.9	9.3	9.3	27	27	73	80	*21	6.5	*2.4	*2.5
13	6.8	11	8.6	8.6	29	26	80	72	20	5.3	2.5	3.0
14	7.0	10.5	7.9	8.9	29	25	85	63	19.5	4.9	2.4	3.0
15	6.5	9.6	7.3	9.3	28	25	78	62	19	5.1	2.2	3.8
16	5.9	9.3	8.2	10.5	*27	25	72	64	17.5	4.9	2.2	3.8
17	7.3	8.9	7.6	11.5	28	24	70	64	17	5.1	2.2	4.0
18	6.5	8.9	7.6	*12	32	24	68	64	15	4.6	2.2	3.8
19	6.2	*8.9	8.2	14	42	*24	70	70	14.5	4.9	2.2	4.2
20	*5.9	8.9	10.5	12.5	49	25	109	68	14	4.6	2.2	3.8
21	5.6	6.2	10.5	11.5	47	31	92	67	13	4.4	2.2	3.5
22	7.3	8.6	9.3	13	59	49	92	*66	11.5	3.8	2.2	3.5
23	9.3	8.2	11	7.9	89	64	78	64	11.5	3.1	2.4	3.8
24	9.6	7.3	10.5	10.5	118	66	*78	59	22	2.8	2.0	4.2
25	23	7.3	11	10.5	134	72	73	57	20	2.6	2.0	4.6
26	19.5	7.3	24	10.5	100	73	67	53	16.5	2.5	2.0	4.0
27	15.5	6.5	17.5	11.5	80	67	63	49	17	2.5	2.0	4.2
28	13.5	7.0	16	13	66	64	80	43	15	2.5	2.0	4.2
29	14	5.3	b13	15	-	62	80	40	14	5.4	1.9	4.0
30	16	4.6	b12	15.5	-	63	64	36	13.5	12	1.9	3.8
31	14.5	-----	b11	16	-----	62	-----	37	-----	6.2	1.9	-----
Total	273.3	267.5	317.7	348.0	1,176.0	1,296	2,145	2,181	610.5	198.6	72.8	98.0
Mean	8.82	8.92	10.2	11.2	42.0	41.8	71.5	70.4	20.4	6.41	2.35	3.27
Ac-ft	542	531	650	890	2,330	2,570	4,250	4,330	1,210	394	144	194
Calendar year 1957: Max	145			Min	2.6	Mean	22.0	Ac-ft	15,920			
Water year 1957-58: Max	134			Min	1.9	Mean	24.6	Ac-ft	17,820			

Peak discharge (base, 100 cfs).--Feb. 25 (7 a.m.) 151 cfs (1.77 ft); Apr. 20 (4 a.m.) 116 cfs (1.60 ft); May 8 (7 p.m.) 118 cfs (1.61 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Discharge, in cubic feet per second, 1953

Day	Oct.	Nov.	Day	Oct.	Nov.	Day	Oct.	Nov.	Day	Oct.	Nov.	Day	Oct.	Nov.
1	3.5	3.8	7	2.8	15.5	13	4.0	47	19	4.9	14	25	3.8	23
2	3.3	3.8	8	11.5	13	14	*3.8	25	20	4.2	16.5	26	3.8	15.5
3	3.1	4.4	9	5.1	15.5	15	3.8	21	21	4.2	29	27	3.5	b13
4	3.0	7.0	10	6.5	14	16	3.8	15.5	22	4.0	31	29	3.5	b9
5	2.8	5.6	11	4.6	13.5	17	3.5	13	23	3.8	34	29	3.5	b8
6	2.6	30	12	4.3	40	18	3.5	*12	24	3.8	31	30	3.5	b12
												31	3.8	-

Total.....125.8  
Mean.....4.06  
Runoff in acre-feet.....250

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

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

## 4645. Columbia River at Trinidad, Wash.

Location.--Lat 47°13'30", long 120°00'50", in SE $\frac{1}{4}$  sec. 13, T. 20 N., R. 22 E., on left bank half a mile southwest of Trinidad, 8 $\frac{1}{2}$  miles downstream from Colocham Creek, and 12 miles downstream from Rock Island Dam.

Drainage area.--89,700 sq mi, approximately.

Records available.--January to December 1910 (gage heights only), May 1913 to September 1958. Published as "at Wenatchee" 1910, 1913-16, and as "at Vernita" 1917-30.

Gage.--Water-stage recorder. Datum of gage is 499.3 ft above mean sea level (river-profile survey). Prior to Jan. 1, 1916, staff gage 1 mile upstream from highway bridge at Wenatchee (24 miles upstream) at datum 583 ft above mean sea level, unadjusted. Jan. 1 to Dec. 31, 1916, staff gage on pier of highway bridge at Wenatchee at datum 579.30 ft above mean sea level, unadjusted. Jan. 14, 1917, to Sept. 30, 1930, staff gages at ferry at Vernita (50 miles downstream) at datum 388.7 ft above mean sea level, unadjusted.

Average discharge.--45 years, 119,300 cfs (86,370,000 acre-ft per year), unadjusted.

Extremes.--Maximum discharge during year, 397,800 cfs June 5 (gage height, 47.95 ft); minimum, 39,800 cfs Dec. 26 (gage height, 19.87 ft).

1913-58: Maximum discharge, 692,600 cfs June 12, 1948 (gage height, 59.35 ft); minimum, 4,120 cfs Feb. 10, 1932 (gage height, 11.40 ft).

Maximum discharge known, about 740,000 cfs June 7, 1894 (based on information obtained at other points).

Remarks.--Records excellent. Diversion above station for irrigation of about 500,000 acres is small percentage of flow past gage. Some diurnal fluctuation caused by powerplants at Rock Island, Chief Joseph, and Grand Coulee Dams. Flow regulated by Rufus Woods Lake (see p. 286), Franklin D. Roosevelt Lake (see p. 284) and reservoirs in Kootenai, Pend Oreille, Spokane, Okanogan, and Chelan River basins.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

20.1	41,100	30.0	118,800
21.0	46,500	35.0	177,500
23.0	59,500	40.0	250,100
26.0	82,500	48.0	398,900

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	62,000	61,800	61,700	53,100	57,500	97,400	85,600	125,600	385,000	230,800	120,200	82,500
2	60,400	60,600	57,800	48,400	51,100	98,300	85,800	102,000	384,800	231,800	117,400	83,100
3	69,000	59,600	66,500	55,500	44,200	98,200	75,200	111,800	386,300	220,300	115,900	82,500
4	70,300	60,300	64,800	60,500	56,700	97,500	69,100	127,000	392,400	215,800	111,200	76,400
5	67,500	66,300	65,900	60,300	51,400	97,500	73,500	135,200	394,500	210,000	107,200	70,200
6	63,300	66,600	62,100	57,500	57,600	100,000	79,400	131,100	389,400	207,600	110,200	66,900
7	66,200	65,100	59,700	69,900	58,000	88,300	78,200	132,400	374,600	198,800	103,500	65,200
8	67,000	63,600	51,700	66,700	56,400	78,400	88,900	132,700	359,800	188,200	97,000	66,300
9	68,900	62,300	50,700	65,000	56,800	85,100	89,100	138,500	351,400	173,700	88,100	69,600
10	65,700	55,900	61,800	63,200	50,100	96,700	89,800	142,200	355,000	170,700	84,400	68,300
11	62,200	54,600	59,000	62,900	56,000	97,800	90,200	152,800	347,800	174,500	83,300	65,700
12	61,700	61,200	52,500	59,700	57,300	*96,800	93,600	159,100	343,000	167,100	83,900	67,800
13	63,900	66,200	*60,100	57,300	59,300	99,300	83,400	168,700	355,800	165,700	84,900	63,100
14	58,800	62,000	53,100	64,000	63,700	101,100	79,900	195,500	360,000	168,400	88,300	63,900
15	64,700	67,000	54,200	65,400	64,200	100,900	86,500	218,800	349,400	162,600	88,300	62,500
16	*66,700	60,100	59,000	50,600	55,000	100,900	88,100	238,400	336,600	144,000	87,700	62,200
17	67,900	55,400	67,100	55,100	59,000	100,600	88,300	245,800	328,800	140,500	86,200	63,000
18	65,700	52,200	60,900	56,600	70,700	85,500	101,200	250,400	304,300	*140,800	82,500	60,500
19	61,400	62,400	63,600	59,700	74,100	90,700	110,400	259,200	289,900	140,800	85,200	66,100
20	56,500	62,000	58,400	52,100	78,300	86,300	111,600	268,700	284,300	136,200	87,400	67,400
21	54,000	64,800	55,900	63,600	82,500	74,300	112,400	270,600	289,000	130,200	93,400	65,100
22	71,100	65,900	53,800	62,100	82,600	62,800	115,200	271,900	274,100	129,900	96,100	62,700
23	70,000	62,500	51,900	62,600	82,700	56,000	116,400	*278,700	262,700	138,100	97,100	66,700
24	67,100	*55,600	57,400	68,400	84,700	62,200	88,000	266,800	257,100	133,100	92,500	63,400
25	63,400	53,800	47,900	59,200	87,100	68,700	115,000	268,500	256,700	135,500	91,800	64,300
26	60,600	61,000	47,600	49,400	87,700	67,900	108,200	287,100	247,700	129,400	89,700	65,000
27	51,000	62,100	41,000	51,000	90,600	73,400	100,100	320,600	248,800	122,900	82,800	66,300
28	57,100	65,300	55,800	61,000	93,600	77,100	124,800	349,600	242,100	119,200	83,500	68,300
29	65,900	55,900	54,000	64,300	---	85,700	117,200	367,200	239,600	116,300	87,900	65,900
30	61,900	62,500	51,100	62,400	---	85,300	116,400	369,800	244,500	121,900	82,700	67,100
31	63,400	---	52,300	58,100	---	85,900	---	378,100	---	119,000	80,900	---
Total	*1976.1	*1834.6	*1759.3	*1845.6	*1868.9	*2694.4	*2861.5	*16866.8	*8614.2	*4983.8	*2889.2	*2027.5
Mean	63,750	61,150	56,750	59,540	66,750	86,920	95,580	221,500	320,500	160,800	93,200	67,580
Ac-ft	*3,920	*3,639	*3,490	*3,661	*3,707	*5,344	*5,676	*13,620	*19,070	*9,985	*5,731	*4,021
Calendar year 1957:	Max	420,800	---	---	Min	41,600	Mean	117,600	Ac-ft	85,140,000	---	---
Water year 1957-58:	Max	394,500	---	---	Min	41,600	Mean	112,900	Ac-ft	81,760,000	---	---

\* Discharge measurement made on this day.

† Expressed in thousands.



4650. Crab Creek at Irby, Wash.

Location.--Lat 47°21'30", long 118°51'00", in NW<sup>1</sup> sec. 31, T. 22 N., R. 32 E., on right bank 8 ft upstream from highway bridge at Irby, 5 miles downstream from Lake Creek, and 7 miles west of Odessa.

Drainage area.--974 sq mi.

Records available.--September 1942 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,386.30 ft above mean sea level, datum of 1929, supplementary adjustment of 1947.

Average discharge.--16 years, 90.4 cfs (65,450 acre-ft per year).

Extremes.--Maximum discharge during year, 832 cfs Jan. 19 (gage height, 5.56 ft); minimum, 8.8 cfs Sept. 30 (gage height, 1.86 ft).  
1942-58: Maximum discharge, 8,370 cfs Feb. 27, 1957 (gage height, 11.94 ft); minimum, 2.0 cfs Jan. 12, 1948 (gage height, 1.80 ft).

Remarks.--Records good. No regulation. Some diversion above station for irrigation.

Revisions (water years).--WSP 1446: 1949-51.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 18				Jan. 18 to Sept. 30			
1.8	3.7	2.5	81	1.8	5.5	3.0	175
1.9	12	3.0	176	1.9	11	4.0	590
2.0	22	3.5	380	2.0	18	5.0	720
				2.2	36	5.6	840
				2.5	76		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*11.5	9.5	13	16	155	366	119	85	37	24	17.5	11
2	11	9.5	12	16	142	320	119	81	38	24	17.5	11
3	11	9.5	12	16	126	295	119	73	38	24	16.5	11
4	10.5	9.5	13	16	117	268	117	75	33	24	*16.5	11
5	10.5	9.5	13	17	108	236	117	72	32	24	16	11
6	10.5	10.5	13	17	101	226	117	66	31	24	16	10.5
7	10.5	10.5	13	18	101	219	116	61	30	24	14.5	10.5
8	10.5	10.5	13	18	98	208	112	58	29	24	14	10.5
9	9.5	10.5	13	18	94	202	110	54	28	24	14	*10.5
10	9.5	11	13	18	92	199	110	40	28	23	14	9.9
11	9.5	11	13	19	90	196	110	38	27	23	14.5	9.9
12	9.5	12	13	19	94	198	108	40	27	23	14	9.9
13	9.5	12	14	20	96	193	105	41	29	22	14	9.9
14	9.5	12	14	20	101	181	101	46	28	22	14	9.9
15	10.5	12	14	20	116	175	101	41	28	22	14	9.9
16	10.5	12	14	19	126	170	92	40	28	21	14	9.4
17	10.5	12	14	21	134	165	92	41	27	20	13	9.4
18	10.5	12	14	310	144	160	92	38	27	20	13	9.4
19	9.5	12	15	728	148	155	94	37	26	21	13	9.4
20	9.5	*12	15	506	150	150	92	40	27	20	13	9.4
21	9.5	12	*15	310	152	148	92	33	26	20	12.5	9.4
22	10.5	12	14	*216	168	144	92	32	26	19.5	12.5	9.4
23	10.5	12	14	170	172	142	92	30	26	19.5	12.5	9.4
24	10.5	12	14	136	178	*140	90	30	28	19.5	11.5	9.4
25	10.5	12	14	164	172	138	*90	30	27	19.5	11.5	9.4
26	10.5	12	14	219	226	136	90	30	*27	19.5	11.5	9.4
27	9.5	11	14	219	*415	132	89	30	26	19.5	11.5	9.4
28	9.5	12	15	205	415	126	89	30	25	19	11.5	9.4
29	9.5	12	15	178	-	125	89	*30	25	19	11.5	9.4
30	9.5	12	15	165	-	121	87	29	24	19	11.5	8.6
31	9.5	-	16	162	-	119	-	31	-	18	11	-
Total	313.5	338.5	428	3,996	4,231	5,751	3,043	1,402	858	665.0	422.0	296.8
Mean	10.1	11.3	13.8	129	151	186	101	45.2	28.6	21.5	13.6	9.89
Ac-ft	622	671	849	7,930	8,390	11,410	6,040	2,780	1,700	1,320	837	589

Calendar year 1957: Max 7,470

Min 9.5

Mean 104

Ac-ft 75,660

Water year 1957-58: Max 728

Min 8.8

Mean 59.6

Ac-ft 43,140

Peak discharge (base, 300 cfs).--Jan. 19 (12:30 a.m.) 832 cfs (5.56 ft); Feb. 27 (6 to 8 p.m.) 445 cfs (3.61 ft).

\* Discharge measurement made on this day.

4670. Crab Creek near Moses Lake, Wash.

Location.--Lat 47°11'25", long 119°16'00", in NW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> sec. 35, T. 20 N., R. 28 E., on left bank on downstream side of highway bridge, 3 miles upstream from Parker Horn and 4 miles north of town of Moses Lake.

Drainage area.--About 2,040 sq mi.

Records available.--September 1942 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,070.39 ft above mean sea level (Bureau of Reclamation bench mark). Prior to July 14, 1956, at site 300 ft upstream at same datum.

Extremes.--Maximum discharge during year, 166 cfs Mar. 8 (gage height, 3.13 ft); minimum, 9.5 cfs Feb. 4, 5 (gage height, 1.49 ft).  
1942-58: Maximum discharge, 10,400 cfs Feb. 28, 1957 (gage height, 6.81 ft); no flow for several months each year prior to 1952, and part of each day Jan. 14, 15, 1953.

Remarks.--Records excellent. Numerous small diversions for irrigation and domestic use above station. Most of natural flow from upper basin passes this station underground. No regulation. Beginning in 1952, return flow from irrigation on Columbia Basin project has increased runoff during summer months.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

1.5	9.8	2.6	70
1.7	17	2.9	110
2.0	29	3.2	187
2.5	45		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	27	19	11	10	88	88	59	13	29	36	38
2	34	26	18.5	11	10	100	89	54	13.5	29	36	38
3	34	25	18	10.5	10	112	92	48	15.5	31	36	39
4	34	25	18	11	9.8	125	90	43	14	31	36	40
5	34	25	17.5	11.5	9.8	140	85	42	14	30	*38	39
6	36	24	16.5	11.5	9.8	147	81	40	14	33	38	39
7	35	24	16	11.5	10	154	80	38	15	33	40	39
8	34	23	16	11.5	11	166	78	38	16	33	40	39
9	35	23	15.5	11	11	165	76	35	16	34	40	39
10	35	23	15	11.5	11.5	152	76	34	17	34	40	*38
11	33	23	15	12	11	147	76	34	18	32	40	38
12	33	24	15	16	14	140	74	36	18.5	32	40	38
13	33	25	14.5	18	18	137	72	30	20	32	40	38
14	33	24	14.5	19	13	132	72	28	20	34	40	37
15	32	23	14	21	12	130	69	26	19	34	40	36
16	32	22	15	15.5	14	125	71	23	18.5	34	40	36
17	36	21	15.5	16	14	123	71	21	18.5	34	42	38
18	33	21	14.5	12.5	16.5	119	71	18	20	35	46	36
19	32	*20	15	12	16.5	117	71	16	21	36	44	36
20	31	20	*15	11.5	25	114	72	14.5	21	36	42	35
21	30	19	14.5	11.5	32	121	69	13	21	35	41	36
22	34	19.5	14	*11	36	123	68	11.5	21	35	41	36
23	36	19.5	13	11.5	41	114	64	11	23	34	41	36
24	33	19.5	13.5	11.5	51	*108	*65	11	24	35	41	36
25	32	19	13.5	11.5	68	105	65	10	*26	36	40	36
26	32	18	14.5	11	69	103	72	10	26	36	40	35
27	30	17.5	13.5	10.5	*69	105	71	10	26	35	40	35
28	29	18	13	12	74	108	66	*10.5	27	36	41	35
29	29	16	12.5	13	-	102	64	10.5	28	36	40	35
30	29	16.5	11.5	13.5	-----	96	61	11	29	36	40	34
31	28	-----	11	11	-----	90	-----	12.5	-----	36	39	-----
Total	1,011	650.5	462.5	393.5	696.9	3,806	2,219	798.5	591.5	1,046	1,238	1,110
Mean	32.6	21.7	14.9	12.7	24.9	123	74.0	25.8	19.7	33.7	39.9	37.0
Ac-ft	2,010	1,290	917	780	1,380	7,550	4,400	1,580	1,170	2,070	2,460	2,200
Calendar year 1957: Max		6,960		Min	8	Mean	110	Ac-ft	79,870			
Water year 1957-58: Max		166		Min	9.8	Mean	38.4	Ac-ft	27,810			

\* Discharge measurement made on this day.

4680. Park Lake near Coulee City, Wash.

Location.--Lat 47°34'30", long 119°24'55", in NE $\frac{1}{4}$ SW $\frac{1}{4}$  sec. 15, T. 24 N., R. 27 E., on south-east shore 0.4 mile northeast of outlet and 6 $\frac{1}{2}$  miles southwest of Coulee City.

Records available.--March 1938 to December 1956 (fragmentary), January 1957 to September 1958.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (Bureau of Reclamation bench mark). Prior to Dec. 20, 1956, staff gage at site half a mile uplake at same datum.

Extremes.--Maximum elevation during year, 1,096.12 ft July 5; minimum, 1,095.60 ft Oct. 1. 1938-58: Maximum elevation observed, 1,096.44 ft Feb. 9, 1950; minimum observed, 1,094.17 ft Sept. 30, 1939.  
Maximum elevation known, 1,101.3 ft (from well-defined alkali line at gage), date of occurrence unknown.

Remarks.--Some diversion from tributary for irrigation. Some regulation by operation of fish screens at outlet.

Mean elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	95.61	95.78	95.81	95.67	95.80	95.98	95.94	95.90	95.74	95.99	95.94	95.86
2	95.65	95.77	95.81	95.66	95.78	95.98	95.96	95.89	95.74	96.00	95.93	95.85
3	95.65	95.76	95.80	95.66	95.78	95.98	95.98	95.88	95.74	96.02	95.92	95.86
4	95.65	95.73	95.79	95.66	95.78	95.97	95.99	95.88	95.73	96.06	95.89	95.87
5	95.64	95.74	95.79	95.66	95.77	95.96	95.98	95.88	95.76	96.09	95.89	95.88
6	95.65	95.74	95.79	95.66	95.76	95.95	95.97	95.88	95.78	96.11	95.89	95.90
7	95.64	95.75	95.78	95.66	95.77	95.96	95.96	95.88	95.81	96.11	95.88	95.92
8	95.64	95.75	95.77	95.66	95.77	95.97	95.94	95.88	95.83	96.11	95.88	95.93
9	95.63	95.75	95.75	95.66	95.77	95.97	95.92	95.87	95.85	96.08	95.88	95.95
10	95.62	95.76	95.73	95.66	95.77	95.96	95.92	95.86	95.87	96.07	95.89	95.95
11	95.63	95.77	95.72	95.67	95.77	95.96	95.92	95.87	95.90	96.05	95.90	95.95
12	95.64	95.78	95.71	95.68	95.78	95.95	95.91	95.86	95.93	96.03	95.89	95.96
13	95.65	95.80	95.70	95.69	95.80	95.93	95.91	95.85	95.97	96.01	95.89	95.96
14	95.66	95.82	95.70	95.72	95.80	95.93	95.89	95.85	96.00	96.00	95.88	95.95
15	95.65	95.83	95.70	95.74	95.80	95.92	95.89	95.85	96.01	96.00	95.88	95.95
16	95.65	95.83	95.70	95.74	95.80	95.92	95.89	95.85	96.02	96.00	95.89	95.96
17	95.65	95.83	95.71	95.76	95.82	95.92	95.90	95.83	96.01	96.00	95.89	95.97
18	95.66	95.84	95.71	95.76	95.83	95.92	95.89	95.83	96.01	96.00	95.89	95.96
19	95.66	95.85	95.72	95.75	95.84	95.92	95.89	95.83	96.02	96.00	95.89	95.95
20	95.65	95.85	95.72	95.75	95.84	95.92	95.89	95.83	96.03	95.99	95.89	95.94
21	95.65	95.84	95.71	95.74	95.85	95.93	95.88	95.83	96.04	95.99	95.88	95.94
22	95.67	95.84	95.71	95.74	95.86	95.93	95.88	95.82	96.04	95.98	95.87	95.94
23	95.73	95.84	95.70	95.74	95.88	95.93	95.88	95.82	96.04	95.96	95.86	95.95
24	95.75	95.85	95.70	95.74	95.93	95.94	95.88	95.83	96.06	95.94	95.87	95.95
25	95.75	95.85	95.70	95.74	95.97	95.94	95.89	95.83	96.07	95.93	95.89	95.95
26	95.76	95.83	95.70	95.73	95.98	95.94	95.90	95.83	96.08	95.93	95.88	95.96
27	95.77	95.82	95.69	95.74	95.98	95.94	95.91	95.82	96.07	95.93	95.87	95.97
28	95.77	95.81	95.69	95.76	95.98	95.94	95.90	95.81	96.05	95.94	95.88	95.98
29	95.78	95.81	95.68	95.80	-	95.93	95.90	95.78	96.04	95.94	95.88	95.97
30	95.80	95.80	95.68	95.82	-	95.95	95.90	95.77	96.04	95.99	95.87	95.96
31	95.79	-	95.67	95.81	-	95.95	-	95.75	-	95.95	95.87	-

Note.--Add 1,000 ft to obtain elevation above mean sea level.

4685. Park Creek below Park Lake, near Coulee City, Wash.

Location.--Lat 47°34'20", long 119°25'10", in SW $\frac{1}{4}$  sec. 15, T. 24 N., R. 27 E., on left bank at highway crossing 100 ft upstream from mouth, 500 ft downstream from Park Lake, and 6 $\frac{1}{2}$  miles southwest of Coulee City.

Drainage area.--38.4 sq mi (revised).

Records available.--July 1945 to September 1958.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,091.52 ft above mean sea level (Bureau of Reclamation bench mark).

Average discharge.--13 years, 8.84 cfs (6,400 acre-ft per year).

Extremes.--Maximum discharge during year, 24 cfs July 1 (gage height, 2.32 ft); minimum, 3.6 cfs Oct. 23, June 9 (gage height, 1.82 ft).  
1945-58: Maximum discharge, 47 cfs Feb. 9, 1951 (gage height, 2.71 ft); maximum gage height, 3.05 ft Jan. 28, 1950 (backwater from ice); minimum discharge not determined, probably less than 0.1 cfs during period Aug. 17 to Sept. 21, or Oct. 1-17, 1945 (gage height, less than 1.4 ft).

Remarks.--Records good. Some diversion during summer months for irrigation above Park Lake. Occasional regulation by operation of fish screen at outlet of Park Lake.

Revisions.--WSP 1216: Drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

1.8	3.5	2.1	11.0
1.9	5.2	2.2	16.0
2.0	7.6	2.3	22

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.6	13	14.5	15	17	16	15	13	12	14	8.9	5.8
2	9.6	12.5	15	15	18	15	15.5	13	12.5	4.1	8.5	5.8
3	9.9	12.5	15	15	18	15.5	16	13	14.5	4.4	7.3	5.8
4	9.6	12.5	15	15	18	15.5	16	13	8.8	5.0	*7.0	6.2
5	9.6	12.5	15	15	16.5	15	16	12.5	4.4	5.8	6.8	6.8
6	9.6	12.5	15	15	15.5	15	16	12	4.1	8.5	7.0	7.3
7	9.6	12.5	15.5	14.5	16	15	15.5	12	3.9	13	6.5	7.9
8	9.6	13	16	14.5	16	15.5	15.5	12	3.9	12.5	6.2	8.5
9	9.2	13	*16	14.5	16	15.5	15.5	11.5	3.8	11.5	6.2	*8.9
10	9.2	13	15.5	14.5	16	15.5	15	12	4.1	10.5	6.8	9.2
11	9.2	13	15	14.5	15.5	15.5	15.5	12.5	4.3	10.5	7.3	8.9
12	9.6	13.5	15	15	16.5	15.5	15.5	13	4.4	8.9	7.0	9.2
13	9.9	13.5	14.5	*16	*17	15	16	12.5	5.2	8.5	7.0	8.9
14	9.9	13.5	14.5	16.5	17	15	15.5	12	5.6	7.9	6.5	8.9
15	10.5	13.5	14.5	16.5	17	15	14.5	12	5.8	7.9	6.5	8.9
16	10.5	13.5	14.5	17	17	15	14.5	12	6.0	8.2	6.8	9.2
17	10.5	13.5	14.5	18	16.5	15	15	10.5	5.8	8.2	7.0	9.2
18	10.5	13.5	15	17	16.5	*15	15	10.5	5.6	8.2	7.0	8.9
19	10.5	13.5	15	17	16.5	15	14.5	10.5	5.6	7.9	7.3	8.5
20	10.5	*13	15	17	15	15	14	10.5	5.8	7.0	7.3	8.5
21	10.5	13	15	16	13	15	14	10.5	6.2	7.3	7.0	8.2
22	6.2	13	15	16	13.5	15	14	10.5	6.2	7.0	6.5	8.2
23	6.8	13	15	16	14	14.5	*13.5	10.5	6.5	6.5	6.2	8.5
24	12	13	15	16	15	14.5	13.5	10.5	7.0	5.6	6.5	8.5
25	12	15	15.5	16	15.5	15	13.5	10.5	7.6	5.0	7.0	8.9
26	12	15	15.5	16	15	15	13.5	10.5	*7.6	5.3	6.8	8.9
27	12	15	15.5	16	14.5	15	13.5	10.5	7.3	5.3	6.8	9.2
28	12	15	15.5	17	15	15	13	11	7.0	6.0	7.0	9.6
29	12.5	14.5	15	18	-	15	13	*10.5	7.0	6.5	6.5	9.6
30	13	14.5	15	18	-----	15.5	13	11	8.8	11	6.5	9.2
31	13	-----	15	17	-----	15.5	-----	11.5	-----	10.5	6.2	-----
Total	319.1	402.0	467.0	494.5	447.0	470.5	440.5	357.5	197.3	248.5	213.9	250.1
Mean	10.3	13.4	15.1	16.0	16.0	15.2	14.7	11.5	6.58	8.02	6.90	8.34
Ac-ft	633	797	926	981	887	933	874	709	391	493	424	496
Calendar year 1957: Max 22 Min 1.0 Mean 11.8 Ac-ft 8,570												
Water year 1957-58: Max 18 Min 3.8 Mean 11.8 Ac-ft 8,540												

\* Discharge measurement made on this day.

4690. Blue Lake near Coulee City, Wash.

Location.--Lat 47°34'25", long 119°25'15", in SW $\frac{1}{4}$  sec. 15, T. 24 N., R. 27 E., on north-east shore near mouth of Park Creek, 6 $\frac{1}{2}$  miles southwest of Coulee City.

Records available.--March 1938 to November 1956 (fragmentary), December 1956 to September 1958.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (Bureau of Reclamation bench mark). Prior to Nov. 16, 1956, staff gage at site 0.3 mile downlake at same datum.

Extremes.--Maximum elevation during year, 1,093.46 ft Oct. 31; minimum, 1,092.90 ft Mar. 15.

1938-58: Maximum elevation, 1,093.64 ft Mar. 15, 1957; minimum observed, 1,090.50 ft Nov. 10, 1939.

Maximum elevation known, 1,101.2 ft (from alkali line at former staff gage), date of occurrence unknown.

Remarks.--Some diversion from tributaries for irrigation.

Mean elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	93.03	93.43	93.05	93.04	93.08	93.01	92.96	93.54	93.38	93.15	93.21	93.13
2	93.08	93.39	93.04	93.03	93.07	93.01	92.98	93.33	93.41	93.17	93.21	93.10
3	93.08	93.35	93.04	93.03	93.07	92.99	93.00	93.32	93.44	93.17	93.21	93.09
4	93.09	93.31	93.05	93.03	93.06	92.99	93.04	93.30	93.43	93.18	93.18	93.09
5	93.11	93.30	93.05	93.03	93.04	92.98	93.08	93.30	93.39	93.19	93.18	93.10
6	93.12	93.27	93.05	93.02	93.03	92.96	93.12	93.29	93.36	93.20	93.19	93.12
7	93.12	93.24	93.05	93.02	93.03	92.97	93.16	93.29	93.32	93.22	93.18	93.13
8	93.12	93.24	93.06	93.02	93.02	92.98	93.20	93.28	93.27	93.24	93.18	93.16
9	93.12	93.20	93.06	93.02	93.02	92.97	93.24	93.28	93.23	93.25	93.18	93.18
10	93.13	93.18	93.05	93.02	93.01	92.96	93.28	93.27	93.21	93.26	93.18	93.18
11	93.13	93.17	93.05	93.02	93.00	92.95	93.32	93.27	93.18	93.27	93.20	93.20
12	93.15	93.16	93.05	93.03	93.02	92.93	93.34	93.27	93.17	93.27	93.20	93.21
13	93.18	93.17	93.05	93.04	93.03	92.92	93.32	93.26	93.18	93.23	93.20	93.23
14	93.20	93.16	93.05	93.05	93.02	92.92	93.28	93.28	93.20	93.22	93.18	93.23
15	93.20	93.15	93.05	93.08	93.02	92.92	93.27	93.31	93.17	93.23	93.18	93.23
16	93.21	93.14	93.07	93.07	93.03	92.91	93.27	93.32	93.14	93.24	93.19	93.25
17	93.23	93.13	93.07	93.08	93.04	92.91	93.28	93.30	93.13	93.24	93.19	93.27
18	93.25	93.12	93.07	93.07	93.05	92.91	93.28	93.29	93.11	93.25	93.20	93.27
19	93.25	93.12	93.08	93.06	93.04	92.91	93.28	93.32	93.10	93.26	93.21	93.28
20	93.25	93.10	93.07	93.06	93.04	92.91	93.28	93.32	93.10	93.25	93.20	93.25
21	93.26	93.09	93.07	93.06	93.03	92.92	93.28	93.34	93.11	93.25	93.19	93.27
22	93.28	93.08	93.07	93.05	93.01	92.93	93.27	93.34	93.11	93.24	93.18	93.26
23	93.31	93.07	93.06	93.05	93.01	92.93	93.27	93.35	93.10	93.20	93.17	93.26
24	93.33	93.07	93.07	93.05	93.03	92.93	93.25	93.37	93.11	93.18	93.17	93.27
25	93.34	93.07	93.08	93.04	93.07	92.93	93.27	93.36	93.11	93.17	93.18	93.28
26	93.37	93.08	93.08	93.04	93.07	92.94	93.31	93.35	93.12	93.16	93.19	93.28
27	93.38	93.06	93.07	93.04	93.04	92.94	93.33	93.34	93.13	93.14	93.17	93.29
28	93.40	93.05	93.06	93.06	93.02	92.94	93.35	93.34	93.12	93.15	93.17	93.31
29	93.42	93.04	93.06	93.09	-	92.94	93.37	93.34	93.11	93.17	93.16	93.32
30	93.44	93.04	93.05	93.10	-----	92.96	93.36	93.36	93.11	93.21	93.15	93.30
31	93.44	-----	93.05	93.09	-----	92.96	-----	93.37	-----	93.21	93.14	-----

Note.--Add 1,000 ft to obtain elevation above mean sea level.

4695. Lenore Lake near Soap Lake, Wash.

Location.--Lat 47°31', long 119°30', in SW $\frac{1}{4}$  sec. 1, T. 23 N., R. 26 E., on east shore 300 ft downlake from outlet gate on Alkali Lake and 8.3 miles north of town of Soap Lake.

Records available.--July 1936, March 1938 to December 1956 (fragmentary), January 1957 to September 1958.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (Bureau of Reclamation bench mark). Prior to Dec. 20, 1956, reference point and various staff gages 800 ft uplake at same datum.

Extremes.--Maximum elevation during year, 1,076.91 ft Dec. 13; minimum, 1,074.67 ft Sept. 30.

1936, 1938-58: Maximum elevation observed, 1,087.73 ft June 12, 1953; minimum, that of Sept. 30, 1958.

Maximum elevation known, 1,092.2 ft (from well-defined alkali line at gage), date of occurrence unknown.

Remarks.--Some diversion from tributaries for irrigation, and pumping into and out of lake.

Mean elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76.56	76.55	76.74	76.49	76.13	75.98	76.06	76.38	-	76.04	75.50	74.93
2	76.57	76.54	76.75	76.47	76.11	75.95	76.11	76.38	-	76.03	75.48	74.90
3	76.54	76.54	76.76	76.45	76.10	75.94	76.15	76.37	76.32	76.03	75.43	74.88
4	76.53	76.54	76.77	76.43	76.08	75.93	76.15	76.37	76.31	76.02	75.40	-
5	76.52	76.54	76.78	76.41	76.07	75.91	76.17	76.38	-	76.01	75.39	-
6	76.52	76.54	76.80	76.39	76.07	75.88	76.18	76.37	-	76.00	75.38	-
7	76.52	76.54	76.83	76.36	76.06	75.88	76.20	76.39	-	76.00	75.38	-
8	76.50	76.54	76.84	76.34	76.05	75.89	76.22	76.40	-	75.99	75.34	74.89
9	76.50	76.55	76.85	76.32	76.05	75.85	76.22	76.40	76.26	75.98	75.32	74.88
10	76.50	76.56	76.85	76.30	76.03	75.82	76.22	76.40	76.24	75.98	75.30	74.88
11	76.50	76.57	76.89	76.27	76.02	75.80	76.23	76.40	76.24	75.96	75.29	74.86
12	76.50	-	76.90	76.27	76.04	75.77	76.23	76.40	-	75.93	75.28	74.85
13	76.51	-	76.90	76.26	76.05	75.75	76.24	-	-	75.87	75.26	74.83
14	76.50	-	76.86	76.26	76.03	75.73	76.26	-	-	75.85	75.23	74.82
15	76.50	-	76.82	76.26	76.02	75.71	76.26	-	-	75.85	75.21	74.81
16	76.50	-	76.82	76.24	76.03	75.69	76.27	-	-	75.84	75.20	74.81
17	76.50	-	76.80	76.24	76.03	75.67	76.29	-	-	75.84	75.18	74.82
18	76.50	76.63	76.78	76.23	76.04	75.66	76.29	-	76.20	75.83	75.17	74.81
19	76.49	-	76.78	76.22	76.03	75.65	76.31	76.40	76.20	75.82	75.15	74.78
20	76.49	76.62	76.74	76.20	76.02	75.68	76.31	76.39	76.20	75.79	75.14	74.76
21	76.48	76.62	76.72	76.18	76.01	75.73	76.32	76.40	76.19	75.77	75.13	74.75
22	76.49	76.63	76.69	76.17	76.00	75.76	76.31	76.39	76.19	75.71	75.10	74.73
23	76.53	76.64	76.68	76.16	75.99	75.80	76.31	76.40	76.17	75.65	75.08	74.72
24	76.54	76.65	76.65	76.15	76.02	75.84	76.32	76.39	76.17	75.67	75.08	74.71
25	76.55	76.67	76.64	76.12	76.07	75.87	76.33	-	76.16	75.63	75.08	74.71
26	76.55	76.69	76.64	76.11	76.04	75.90	76.36	76.41	76.16	75.60	75.06	74.70
27	76.56	76.69	76.60	76.10	76.01	75.92	76.37	76.40	76.14	75.58	75.03	74.70
28	76.56	76.69	76.59	76.12	75.99	75.95	76.37	-	76.11	75.57	75.01	74.70
29	76.56	76.70	76.56	76.15	-	75.97	76.37	76.40	76.08	75.55	74.99	74.68
30	76.59	76.72	76.54	76.14	-	76.02	76.38	76.37	76.05	75.55	74.97	74.68
31	76.57	-	76.51	76.14	-	76.04	-	76.34	-	75.53	74.96	-

Note.--Add 1,000 ft to obtain elevation above mean sea level.

4700. Soap Lake near Soap Lake, Wash.

Location.--Lat 47°24'10", long 119°29'10", in NW<sup>1</sup>SW<sup>1</sup> sec. 18, T. 22 N., R. 27 E., on east shore half a mile north of town of Soap Lake.

Records available.--May to August 1936, March 1938 to February 1957 (fragmentary), March 1957 to September 1958.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (Bureau of Reclamation bench mark). Prior to Feb. 4, 1953, staff gage or reference point at site 0.2 mile uplake. Feb. 4, 1953, to June 8, 1954, staff gage 1.5 miles uplake and June 9, 1954, to June 21, 1957, water-stage recorder 0.2 mile uplake.

Extremes.--Maximum elevation during year, 1,075.94 ft Dec. 13; minimum, 1,073.88 ft Sept. 25, 26.

1936, 1938-58: Maximum elevation observed, 1,079.20 ft Jan. 28, 1953; minimum observed, 1,070.87 ft Oct. 21, 1939.

Maximum elevation known, 1,083.1 ft (from well-defined alkali line at gage); date of occurrence unknown.

Remarks.--Some diversion from tributaries for irrigation. Water pumped from lake to reduce or limit high stages.

Mean elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75.21	75.55	75.83	75.69	75.12	74.73	74.52	74.68	74.70	74.54	74.30	73.98
2	75.25	75.55	75.84	75.67	75.10	74.71	74.55	74.68	74.70	74.55	74.29	73.94
3	75.25	75.55	75.85	75.65	75.07	74.68	74.58	74.68	74.69	74.55	74.25	73.92
4	75.25	75.56	75.86	75.63	75.04	74.65	74.58	74.68	74.69	74.56	74.23	73.92
5	75.25	75.57	75.87	75.61	75.02	74.63	74.58	74.68	74.68	74.56	74.22	73.92
6	75.25	75.57	75.88	75.58	75.00	74.60	74.59	74.69	74.67	74.56	74.21	73.93
7	75.27	75.58	75.89	75.55	74.98	74.58	74.59	74.71	74.66	74.57	74.20	73.94
8	75.27	75.59	75.90	75.53	74.97	74.57	74.59	74.71	74.65	74.56	74.19	73.94
9	75.27	75.61	75.91	75.52	74.96	74.55	74.58	74.71	74.63	74.56	74.18	73.94
10	75.27	75.62	75.92	75.50	74.94	74.54	74.59	74.71	74.63	74.56	74.18	73.94
11	75.28	75.63	75.93	75.48	74.92	74.51	74.60	74.72	74.63	74.56	74.18	73.94
12	75.29	75.65	75.93	75.47	74.93	74.48	74.61	74.71	74.63	74.55	74.16	73.95
13	75.31	75.67	75.93	75.46	74.93	74.44	74.61	74.70	74.65	74.50	74.15	73.96
14	75.31	75.68	75.92	75.45	74.91	74.42	74.61	74.70	74.65	74.48	74.13	73.94
15	75.32	75.69	75.90	75.45	74.89	74.39	74.62	74.71	74.64	74.47	74.13	73.93
16	75.32	75.70	75.89	75.43	74.89	74.38	74.62	74.72	74.64	74.47	74.13	73.94
17	75.33	75.72	75.87	75.41	74.89	74.37	74.63	74.71	74.63	74.47	74.13	73.96
18	75.34	75.74	75.86	75.38	74.88	74.35	74.63	74.70	74.63	74.47	74.13	73.96
19	75.35	75.75	75.86	75.36	74.87	74.34	74.64	74.70	74.63	74.46	74.12	73.95
20	75.35	75.75	75.85	75.34	74.86	74.35	74.64	74.71	74.63	74.45	74.12	73.92
21	75.36	75.75	75.85	75.32	74.84	74.37	74.64	74.71	74.63	74.44	74.12	73.92
22	75.38	75.77	75.83	75.29	74.83	74.39	74.64	74.72	74.62	74.43	74.11	73.91
23	75.43	75.77	75.83	75.26	74.81	74.40	74.64	74.73	74.61	74.38	74.10	73.90
24	75.45	75.78	75.82	75.24	74.82	74.42	74.64	74.73	74.63	74.38	74.10	73.89
25	75.47	75.79	75.81	75.22	74.83	74.44	74.64	74.73	74.63	74.35	74.09	73.89
26	75.48	75.80	75.81	75.19	74.82	74.46	74.66	74.74	74.63	74.34	74.08	73.88
27	75.49	75.80	75.79	75.17	74.79	74.48	74.67	74.74	74.62	74.32	74.06	73.89
28	75.51	75.81	75.78	75.16	74.76	74.48	74.67	74.73	74.59	74.33	74.05	73.90
29	75.52	75.81	75.75	75.17	-	74.49	74.68	74.73	74.56	74.33	74.03	73.90
30	75.54	75.82	75.73	75.15	-	74.51	74.68	74.72	74.55	74.33	74.02	73.90
31	75.55	-	75.71	75.14	-	74.52	-	74.71	-	74.31	74.00	-

Note.--Add 1,000 ft to obtain elevation above mean sea level.

4705. Rocky Ford Creek near Ephrata, Wash.

Location.--Lat 47°18'20", long 119°26'50", in NW¼NW¼ sec. 21, T. 21 N., R. 27 E., on right bank 1½ miles downstream from source at Rocky Ford Springs, 5 miles east of Ephrata, and 5 miles (revised) upstream from mouth.

Drainage area.--11.7 sq mi (revised).

Records available.--June 1909 to April 1910, July to December 1911, August 1942 to September 1958. Prior to January 1910, published as Upper Crab Creek near Ephrata.

Gage.--Water-stage recorder. Datum of gage is 1,064.88 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Jan. 1, 1912, staff gages at sites 4½ to 5½ miles downstream at different datums. Aug. 19, 1942, to May 23, 1945, water-stage recorder at site 3½ miles downstream at datum 5.37 ft lower.

Average discharge.--16 years (1942-58), 80.5 cfs (58,280 acre-ft per year).

Extremes.--Maximum discharge during year, 108 cfs Apr. 2 (gage height, 2.55 ft); minimum, 82 cfs Jan. 21, 26-29 (gage height, 2.18 ft).  
1909-11, 1942-58: Maximum discharge, 212 cfs Apr. 15-18, 1956 (gage height, 3.58 ft); minimum observed, 20 cfs Aug. 13-18, 1911.

Remarks.--Records good. A few small diversions for domestic use above station. Slight regulation by fish hatchery.

Revisions.--WSP 1246: Drainage area.

Rating table, water year 1957-58 (gage height, in feet,  
and discharge, in cubic feet per second)

2.0	71
2.2	85
2.5	110

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	102	97	94	87	83	96	106	101	95	94	91	90
2	101	99	93	88	83	96	106	101	95	94	91	90
3	101	99	93	87	84	97	106	100	95	93	91	91
4	102	99	93	87	84	97	106	100	95	93	91	91
5	102	98	93	87	84	98	106	100	94	93	*92	91
6	102	98	92	87	84	99	106	100	94	94	92	91
7	102	98	91	87	85	99	106	100	94	94	92	91
8	101	98	91	87	85	100	105	99	93	94	92	91
9	100	98	*91	87	85	100	105	99	93	94	92	91
10	100	97	91	86	86	101	105	99	94	94	92	91
11	100	97	91	86	87	101	104	99	94	94	92	91
12	100	97	91	86	87	101	104	99	94	93	93	91
13	101	97	91	*86	*88	102	103	99	94	93	93	91
14	100	97	91	86	88	102	103	99	93	93	93	91
15	99	97	91	85	88	103	103	99	93	93	93	92
16	99	97	91	85	88	103	102	98	93	93	93	94
17	99	96	90	84	89	103	102	98	92	92	93	*96
18	99	96	90	84	90	*104	102	98	92	92	93	97
19	99	*96	90	84	91	105	101	98	92	92	92	97
20	99	97	89	84	91	106	101	98	92	92	91	97
21	99	96	89	83	91	106	101	98	92	92	91	97
22	99	96	89	83	92	106	101	98	92	92	91	98
23	99	95	88	83	92	106	101	99	93	91	91	99
24	99	95	89	83	93	106	100	98	94	91	91	99
25	99	95	88	83	95	106	101	98	94	91	91	99
26	99	95	89	82	95	106	101	98	*94	91	91	99
27	99	95	88	82	95	106	*101	97	94	91	91	99
28	99	94	88	*82	96	106	101	*97	94	91	91	99
29	99	94	88	83	-	106	101	97	95	91	91	99
30	98	94	87	83	-----	106	101	97	95	91	91	98
31	98	-----	87	83	-----	106	-----	96	-----	91	91	-----
Total	3,095	2,897	2,797	2,630	2,479	3,179	3,081	3,057	2,808	2,967	2,843	2,831
Mean	100	96.6	90.2	84.8	86.5	103	103	98.6	93.6	92.5	91.7	94.4
Ac-ft	6,140	5,750	5,560	5,220	4,920	6,310	6,130	6,060	5,570	5,890	5,640	5,620
Calendar year 1957: Max	131			Min 87		Mean 108		Ac-ft 78,490				
Water year 1957-58: Max	106			Min 82		Mean 94.7		Ac-ft 68,600				

\* Discharge measurement made on this day.



4710. Moses Lake at Moses Lake, Wash.

Location.--Lat 47°06'00", long 119°19'20", in NW $\frac{1}{4}$  sec. 33, T. 19 N., R. 28 E., on east shore 100 ft north of U. S. Highway 10,  $1\frac{1}{2}$  miles upstream from outlet, and 2 miles southwest of town of Moses Lake.

Drainage area.--2,970 sq mi, approximately.

Records available.--June 1909 to September 1914, November 1936 to September 1945 (fragmentary), October 1945 to September 1958. Published as "at Neppel" 1912-14.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (Bureau of Reclamation bench mark). Prior to Apr. 3, 1910, staff gage at site 1 mile northeast at different datum. Apr. 3, 1910, to Sept. 30, 1914, and Nov. 19, 1936, to Nov. 24, 1944, staff gages at site  $3\frac{1}{4}$  miles northeast, at Parker Horn, at various datums. Oct. 30, 1945, to Mar. 14, 1955, water-stage recorder at site near west shore on downstream side of bridge on U. S. Highway 10 at same datum.

Extremes.--Maximum elevation during year, 1,046.85 ft Sept. 29; minimum, 1,043.51 ft Nov. 3.

1909-14, 1936-58: Maximum elevation, 1,048.29 ft Mar. 10, 1950; minimum observed, 1,038.17 ft Aug. 27, 1910.

Remarks.--Elevation controlled by dam at lake outlet. Many small diversions for irrigation.

Mean elevation, in feet, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45.25	43.58	43.69	43.72	43.91	-	46.25	45.47	45.96	46.22	46.66	46.37
2	45.25	43.55	43.69	43.72	43.90	-	46.20	45.48	45.97	46.24	46.63	46.38
3	45.24	43.52	43.70	43.72	43.90	-	46.17	-	46.00	46.28	46.59	46.39
4	45.22	43.52	43.70	43.72	43.91	-	46.12	-	46.01	46.27	46.55	46.40
5	45.22	43.53	43.70	43.72	43.90	-	46.07	-	46.03	46.24	46.53	46.42
6	45.19	43.54	43.70	43.72	43.90	45.47	46.02	45.53	46.02	46.24	46.51	46.45
7	45.07	43.55	43.69	43.72	43.90	45.55	45.97	-	46.04	46.24	46.49	46.47
8	44.93	43.56	43.70	43.72	43.90	-	45.92	45.56	46.07	46.27	46.46	46.49
9	44.79	43.57	43.71	43.73	43.91	-	45.85	45.56	46.08	46.30	46.44	46.51
10	44.67	43.57	43.74	43.73	43.95	-	45.80	45.56	46.10	46.32	46.43	46.54
11	44.56	43.58	43.76	43.74	44.00	-	45.76	45.57	46.13	46.35	46.41	46.56
12	44.47	43.60	43.76	43.76	44.07	-	45.72	45.58	46.16	46.37	46.39	46.58
13	44.38	43.63	43.76	43.78	44.15	-	45.67	45.59	46.18	46.36	46.37	46.60
14	44.32	43.65	43.74	43.81	44.20	-	45.61	45.59	46.20	46.37	46.35	46.80
15	44.23	43.66	43.76	43.83	44.24	-	45.56	45.59	46.22	46.39	46.34	46.82
16	44.16	43.66	43.75	43.84	44.30	-	45.52	45.62	46.24	46.40	46.33	46.64
17	44.10	43.66	43.75	43.86	44.38	-	45.47	45.65	46.25	46.43	46.31	46.67
18	44.03	43.67	43.74	43.86	44.44	-	45.42	45.68	46.27	46.45	46.30	46.69
19	43.98	43.67	43.74	43.87	44.49	-	45.38	45.70	46.28	46.47	46.29	46.70
20	43.92	43.67	43.74	43.87	44.54	-	45.34	45.72	46.29	46.48	46.28	46.71
21	43.87	43.67	43.74	-	44.60	-	45.30	45.75	46.30	46.50	46.28	46.73
22	43.84	43.67	43.73	43.87	44.65	-	45.28	45.78	46.23	46.53	46.28	46.75
23	-	43.67	43.72	43.87	44.71	-	-	45.80	46.17	46.55	46.30	46.77
24	-	43.68	43.72	43.86	44.78	46.73	45.25	45.83	46.16	46.54	46.31	46.77
25	-	43.68	43.71	43.87	44.86	46.67	45.29	45.85	46.18	46.57	46.32	46.79
26	-	43.68	43.72	43.88	-	46.62	45.35	45.88	46.21	46.60	46.33	46.81
27	-	43.67	43.72	43.87	-	46.55	45.39	45.90	46.22	46.61	46.34	46.83
28	-	43.68	43.71	43.88	-	46.49	45.42	45.91	46.22	46.64	46.34	46.84
29	-	43.68	43.71	43.88	-	46.42	45.42	45.92	46.20	46.67	46.35	46.84
30	-	43.68	43.71	43.90	-	46.36	45.46	45.93	46.19	46.67	46.36	46.83
31	-	-	43.72	43.90	-	46.30	-	45.94	-	46.68	46.36	-

Note.--Add 1,000 ft to obtain elevation above mean sea level.

4715. Crab Creek near Warden, Wash.

Location.--Lat 46°57'00", long 119°15'20", in SW $\frac{1}{4}$ NW $\frac{1}{4}$  sec. 24, T. 17 N., R. 28 E., on left bank 0.5 mile east of Goose Lake,  $\frac{3}{4}$  miles downstream from O'Sullivan Dam, 5 miles northwest of Othello, and 12 miles south of Warden.

Drainage area.--About 4,150 sq mi, of which 500 sq mi in the vicinity of Soap Lake is probably noncontributing.

Records available.--June to December 1909, March to December 1910, February to December 1911, February to June 1912, October 1942 to September 1952, October 1955 to September 1958. Published as Lower Crab Creek near Warden 1909-12. Records for September 1952 to September 1955 at site 2 miles upstream not equivalent owing to seepage bypassing gage.

Gage.--Water-stage recorder and timber control; prior to May 8, 1958, rock and culvert control. Altitude of gage is 880 ft (from topographic map). Prior to June 27, 1912, staff gages at several sites within 3 miles of present station at various datums. October 1942 to September 1950, water-stage recorder at site 1.6 miles upstream at different datum. October 1950 to September 1952, water-stage recorder at site 2 miles upstream at different datum.

Extremes.--Maximum discharge during year, 392 cfs May 24 (gage height, 4.45 ft), caused by partial failure of Fish and Wildlife Service Dam  $\frac{1}{2}$  mile upstream, from rating curve extended above 72 cfs; minimum, 3.6 cfs Jan. 6 (gage height, 0.57 ft); minimum daily, 11.5 cfs Mar. 4.

1909-12, 1942-52, 1955-58: Maximum discharge, 3,000 cfs Feb. 7, 1943 (gage height, 4.25 ft, site and datum then in use), from rating curve extended above 20 cfs on basis of slope-area measurement of flood in Lind Coulee; no flow for short intervals in June and July 1948, and part of each day Feb. 2-21, 1952, when water was shut off at O'Sullivan Dam.

Remarks.--Records fair. Many diversions for irrigation. Flow regulated by Potholes Reservoir and partially by Fish and Wildlife Service Dam since January 1958. Storage began in Potholes Reservoir above O'Sullivan Dam in September 1952. Discharge between then and September 1955 consisted of a small part of dam seepage. Discharge at present location includes essentially all of the seepage.

Rating tables, water year 1957-58 (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Dec. 18 to Mar. 10)

Oct. 1 to May 8		May 8 to Sept. 30	
0.5	10.5	2.0	10
0.7	19.5	2.1	13
1.0	35	2.2	18
1.3	47	2.4	35

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	30	31	26	24	25	45	23	24	28	24	22
2	32	31	30	25	23	25	44	19.5	24	28	24	22
3	31	31	30	25	23	18.5	43	21	24	28	23	22
4	30	31	30	25	23	11.5	40	21	24	27	23	22
5	31	31	30	24	21	16	38	22	24	27	*23	22
6	31	31	30	27	17.5	13	36	23	23	28	22	23
7	31	31	30	32	34	16.5	34	24	25	28	22	23
8	30	31	30	31	36	23	33	*25	26	27	20	23
9	30	31	30	32	38	24	33	*32	25	27	19.5	23
10	30	31	30	32	26	38	36	19.5	26	27	18.5	23
11	30	31	30	32	29	42	33	17.5	27	26	18.5	23
12	30	31	30	35	34	37	32	17.5	28	26	19.5	23
13	30	33	30	35	37	35	32	17.5	27	25	22	23
14	30	35	31	37	38	36	32	15.5	26	25	24	23
15	30	32	30	36	39	24	32	13.5	26	25	23	23
16	29	31	*31	35	39	16.5	31	12	27	26	23	23
17	29	31	31	37	39	21	32	12	26	26	24	*23
18	29	31	30	33	38	25	31	12	26	26	24	22
19	29	*32	30	32	38	27	31	14	26	26	23	22
20	29	31	30	31	24	30	31	14.5	24	25	22	21
21	30	30	29	*31	22	31	27	13	24	25	21	21
22	30	31	29	30	24	31	27	14	24	26	21	22
23	30	31	28	31	24	31	28	14.5	23	25	24	22
24	30	31	27	29	25	37	*29	29	22	25	22	22
25	30	30	27	23	28	*43	29	18.5	*22	24	22	22
26	30	30	28	22	*22	42	30	18.5	26	24	22	22
27	30	30	26	24	19.5	45	32	18.5	27	23	22	22
28	30	30	26	24	23	47	34	*23	27	23	22	22
29	29	30	26	24	-	59	32	23	27	24	22	22
30	30	30	25	24	-----	59	30	23	27	25	22	22
31	29	-----	25	23	-----	40	-----	24	-----	24	22	-----
Total	931	928	900	907	810.0	923.0	997	595.0	757	799	684.0	670
Mean	30.0	30.9	29.0	29.3	28.9	29.8	33.2	19.2	25.2	25.8	22.1	22.3
Ac-ft	1,850	1,840	1,790	1,800	1,610	1,830	1,980	1,180	1,500	1,580	1,360	1,330
Calendar year 1957: Max	33			Min	25		Mean	30.7	Ac-ft	22,230		
Water year 1957-58: Max	45			Min	11.5		Mean	27.1	Ac-ft	19,650		

\* Discharge measurement made on this day.

4725. Crab Creek near Smyrna, Wash.

Location.--Lat 46°50'35", long 119°36'25", in SE $\frac{1}{4}$  sec. 30, T. 16 N., R. 26 E., on left bank at highway bridge, 2 $\frac{1}{2}$  miles east of Smyrna and 17 miles upstream from mouth.

Drainage area.--About 4,500 sq mi, of which about 500 sq mi in the vicinity of Soap Lake is probably noncontributing.

Records available.--August 1942 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 530.83 ft above mean sea level (Bureau of Reclamation bench mark).

Extremes.--Maximum discharge during year, 83 cfs Oct. 10 (gage height, 2.91 ft); minimum, 11 cfs May 24 (gage height, 1.11 ft); minimum daily, 13 cfs May 23.  
1942-58: Maximum discharge, 3,300 cfs Feb. 8, 1943 (gage height, 7.5 ft, estimated by observer), from rating curve extended above 1,000 cfs; possibly no flow at times in summer of 1947.

Remarks.--Records good. Many diversions above station for irrigation. Flow is entirely regulated by Potholes Reservoir. Flow by station is essentially seepage from Potholes Reservoir and return flow from part of the Columbia Basin project.

Revisions.--WSP 1216: Drainage area.

Rating table, water year 1957-58 (gage height, in feet,  
and discharge, in cubic feet per second)

1.1	11
1.5	18
2.0	33
2.5	56
3.0	95

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	67	46	56	50	68	57	54	44	36	49	28	46
2	77	46	58	52	66	57	82	42	39	51	27	48
3	72	48	55	51	66	59	64	36	41	54	26	49
4	72	57	55	54	65	57	60	36	43	54	*26	51
5	72	55	55	55	65	46	58	36	44	52	28	50
6	75	54	53	57	64	46	55	36	45	51	29	50
7	76	54	55	58	51	45	52	36	45	50	31	50
8	78	55	55	59	51	46	49	37	43	37	33	51
9	80	48	56	57	64	48	47	37	41	32	36	52
10	82	48	57	60	66	51	48	40	34	30	39	*51
11	76	51	57	62	59	55	54	40	30	28	37	52
12	69	53	57	67	64	64	43	31	26	39	51	51
13	68	57	57	75	69	62	51	44	32	27	41	52
14	76	56	57	75	68	60	49	43	29	28	44	52
15	82	54	56	77	67	58	50	41	30	36	48	51
16	82	52	*62	72	72	54	48	40	43	38	49	52
17	80	52	61	76	72	43	46	38	46	37	49	54
18	80	*52	57	73	72	43	43	35	30	35	50	54
19	71	52	57	72	69	46	42	32	22	34	51	52
20	72	51	58	70	67	48	41	32	20	33	49	52
21	69	50	57	*68	64	52	40	33	19	35	47	49
22	69	51	55	66	61	55	39	28	22	35	46	49
23	71	51	55	66	62	54	39	13	34	34	46	50
24	71	51	53	66	68	52	*41	14	38	35	46	51
25	61	52	55	66	72	*53	44	24	*40	35	46	52
26	52	51	56	65	*70	57	46	31	37	38	46	52
27	41	50	56	64	66	57	47	32	39	.	47	54
28	35	50	55	69	56	57	46	*32	39	37	48	55
29	41	49	54	74	-	58	46	34	41	29	48	55
30	44	50	53	75	-----	57	46	33	45	28	48	55
31	45	-----	52	70	-----	55	-----	33	-----	28	48	-----
Total	2,106	1,546	1,735	2,021	1,826	1,652	1,461	1,075	1,078	1,154	1,278	1,542
Mean	67.9	51.5	56.0	65.2	65.2	53.3	48.7	34.7	35.9	37.2	41.2	51.4
Ac-ft	4,180	3,070	3,440	4,010	3,620	3,280	2,900	2,130	2,140	2,290	2,530	3,060
Calendar year 1957: Max			106		Min 15	Mean	54.1		Ac-ft	39,180		
Water year 1957-58: Max			82		Min 13	Mean	50.6		Ac-ft	36,650		

\* Discharge measurement made on this day.

## 4745. Yakima River near Martin, Wash.

Location.--Lat 47°19'10", long 121°20'10", in NE $\frac{1}{4}$  sec. 12, T. 21 N., R. 11 E., on left bank 800 ft downstream from dam at outlet of Keechelus Lake,  $\frac{3}{8}$  miles northwest of Martin, and  $\frac{9}{16}$  miles northwest of Easton.

Drainage area.--55.8 sq mi.

Records available.--October 1903 to September 1958.

Gage.--Water-stage recorder and masonry channel. Datum of gage is 2,422.40 ft above mean sea level (Bureau of Reclamation bench mark). Prior to July 20, 1923, staff gages at several sites within 2 miles of present site at various datums.

Average discharge.--55 years, 330 cfs (238,900 acre-ft per year), adjusted for storage since January 1906.

Extremes.--Maximum discharge during year, 998 cfs July 27 (gage height, 7.61 ft); minimum, 1.4 cfs Oct. 28 (gage height, 2.07 ft).

1903-58: Maximum discharge, 7,370 cfs Mar. 26, 1915, when temporary crib dam was washed out; practically no flow when gates in Keechelus Lake Dam are closed.

Remarks.--Records good. Flow regulated by Keechelus Lake (see p. 344). Keechelus Lake spillway discharge, computed from reservoir elevations and spillway rating, bypasses gage and is added to flow at station. No diversion.

Cooperation.--Gage-height record, 14 discharge measurements, and computations of daily discharge furnished by Bureau of Reclamation; 2 discharge measurements made and records reviewed by Geological Survey.

Revisions (water years).--WSP 1216: Drainage area, WSP 1286: 1910.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1-22)

2.08	1.7	2.5	19	5.0	316
2.1	2.2	2.9	46	6.0	521
2.2	5.6	3.4	92	7.0	800
2.3	9.6	4.0	157	8.0	1,140

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	84	6.4	4.8	6.8	9.2	13	14	83	596	*545	984	651
2	72	6.4	5.2	6.8	9.2	13	14	112	593	562	978	648
3	54	6.4	5.2	6.8	9.2	13	14.5	128	585	570	967	640
4	46	6.4	5.6	7.2	9.2	13	14.5	128	555	573	964	610
5	45	6.0	5.2	7.2	9.2	13	14.5	*157	514	570	950	593
6	44	6.0	5.6	7.2	9.2	13	14.5	177	498	573	939	593
7	22	6.0	6.4	7.2	9.2	13	14.5	177	498	604	928	593
8	*11.5	6.0	6.8	7.2	9.6	12.5	14.5	225	498	623	925	593
9	11	6.0	6.4	7.2	10	12.5	14.5	263	500	*657	925	591
10	11	6.0	6.0	7.2	10.5	13	15	265	500	719	925	*575
11	11	6.0	6.0	7.2	10.5	13	15	263	500	782	925	558
12	11	6.4	*6.0	7.6	10.5	13	15	284	498	821	925	531
13	11	7.2	6.0	7.6	11	13	15.5	*377	*498	830	925	526
14	10.5	6.4	6.0	7.6	11	13	15.5	480	498	872	925	510
15	10	6.0	6.0	7.6	11	13	16	521	500	890	925	498
16	10	5.6	6.0	8.0	11	13	16.5	521	500	939	925	459
17	9.2	5.6	6.0	8.8	*11	13	17	494	500	960	925	387
18	9.2	5.6	6.4	8.8	11	13	17	453	*528	*960	925	357
19	9.2	5.6	6.4	8.8	11	12.5	18	441	548	960	925	357
20	8.8	5.6	6.8	8.4	11	12.5	19.5	445	578	960	925	357
21	8.0	5.6	6.4	8.8	11	12.5	18.5	445	596	956	*925	353
22	6.8	5.2	6.4	8.8	11.5	12.5	18.5	423	596	960	922	353
23	5.2	4.8	6.4	*8.8	12	13	18.5	417	834	960	908	327
24	2.8	4.8	6.4	8.8	12.5	13	18.5	415	*613	994	897	314
25	2.2	4.8	6.8	8.8	13	13.5	18.5	415	596	995	881	316
26	2.2	4.8	7.2	8.8	13	13.5	18.5	415	580	995	854	*316
27	1.7	4.8	7.2	8.8	13	13.5	18.5	415	570	995	827	268
28	3.4	4.8	7.2	8.8	13	13.5	18.5	453	552	995	789	208
29	8.0	4.8	6.8	9.2	--	13.5	47	519	545	995	737	162
30	7.6	4.8	6.8	9.2	--	13.5	*92	575	545	995	671	51
31	7.2	-----	6.8	9.2	-----	14	-----	599	-----	995	648	-----
Total	555.5	170.8	193.2	249.2	302.5	404.0	587.5	11,085	16,312	25,795	27,785	13,301
Mean	17.9	5.69	6.23	8.04	10.8	13.0	19.6	358	544	832	898	443
Ac-ft	1,100	339	383	494	600	801	1,170	21,990	32,350	51,160	55,110	26,580
(†)	+3,430	+9,570	+19,230	+13,130	+18,590	+11,450	+28,110	+32,960	-14,200	-46,940	-50,780	-22,060

Adjusted for change in contents in Keechelus Lake

	Mean	1.32	In.	Ac-ft
Mean	73.7	167	319	222
Cfsm	1.32	2.99	5.72	3.98
In.	1.52	3.33	6.59	4.58
Ac-ft	4,630	9,910	19,610	13,620
				19,190

Observed

Calendar year 1957: Max	1,340	Min	1.7	Mean	351	Ac-ft	254,000
Water year 1957-58: Max	995	Min	1.7	Mean	265	Ac-ft	191,900

Adjusted

Calendar year 1957: Mean	249	Cfsm	4.46	In.	60.54	Ac-ft	190,200
Water year 1957-58: Mean	269	Cfsm	4.82	In.	65.31	Ac-ft	194,400

\* Discharge measurement made on this day.

† Change in contents, in acre-feet, in Keechelus Lake.

4760. Kachess River near Easton, Wash.

Location.--Lat 47°15'30", long 121°11'50", in NE¼ sec. 3, T. 20 N., R. 13 E., on left bank three-quarters of a mile downstream from Kachess Lake and 2 miles northwest of Easton.

Drainage area.--63.6 sq mi.

Records available.--October 1903 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 2,188.10 ft above mean sea level (Bureau of Reclamation bench mark). Prior to July 22, 1913, staff gage and July 22, 1913, to Aug. 14, 1916, water-stage recorder, at site a quarter of a mile upstream at different datum. Aug. 15, 1916, to Oct. 8, 1927, water-stage recorder at site half a mile downstream at different datum. Oct. 9, 1927, to Sept. 30, 1951, staff gage and water-stage recorder at present site at datum 1.33 ft higher.

Average discharge.--55 years, 287 cfs (207,800 acre-ft per year), adjusted for storage since October 1905.

Extremes.--Maximum discharge during year, 714 cfs Aug. 24, 25 (gage height, 5.41 ft); minimum, 1.4 cfs Oct. 28, 29 (gage height, 1.44 ft).

1903-58: Maximum discharge, 2,530 cfs May 28, 1948 (gage height, 8.45 ft, present datum); no flow at times when gates in dam are closed.

Remarks.--Records excellent except those below 20 cfs, which are fair. No diversion. Flow regulated by Kachess Lake (see p. 344).

Cooperation.--Gage-height record, 17 discharge measurements, and computation of daily discharge furnished by Bureau of Reclamation; 2 discharge measurements made and records reviewed by Geological Survey.

Revisions (water years).--WSP 369: 1904, 1907-8. WSP 1216: Drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

1.4	1.2	2.3	27	4.0	225
1.5	2.2	2.6	45	4.5	360
1.7	6.0	3.0	76	5.0	550
2.0	14	3.5	135	6.0	1,000

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	654	1.6	2.4	2.9	3.6	4.0	4.0	2.9	158	*470	618	698
2	650	1.6	2.4	2.9	3.6	4.0	4.8	2.7	158	470	618	694
3	626	1.6	2.4	2.9	3.6	3.6	4.4	2.7	158	470	618	690
4	586	1.6	2.2	2.9	3.5	3.5	3.8	2.7	*165	470	590	686
5	566	1.6	2.2	2.9	3.3	3.3	3.5	2.7	181	468	546	686
6	566	1.5	2.9	2.7	3.3	3.1	3.5	2.6	179	466	534	686
7	562	1.5	3.8	2.7	3.1	2.9	3.3	2.7	230	466	530	682
8	530	1.5	4.0	2.7	3.3	2.7	3.1	2.7	262	462	530	678
9	*446	1.5	3.5	2.7	3.6	2.7	3.1	2.7	*290	462	526	*674
10	366	1.5	2.9	2.7	5.2	2.6	3.5	2.7	300	462	526	674
11	330	1.7	2.6	2.6	4.8	2.6	3.1	2.7	339	490	526	670
12	303	1.9	2.4	2.7	5.0	2.6	2.9	26	*262	510	566	670
13	292	2.0	2.2	2.7	7.6	2.6	2.7	*80	365	510	590	666
14	215	*1.7	2.2	2.7	6.8	2.6	2.7	146	398	562	634	666
15	30	1.6	2.2	2.9	5.6	2.6	2.9	179	*430	590	710	662
16	2.0	1.6	2.2	2.9	5.2	2.6	3.6	177	478	590	710	658
17	1.8	1.5	2.2	3.1	*5.0	2.6	3.8	177	514	*610	710	658
18	1.6	23	2.4	3.1	5.6	2.6	3.8	177	*566	622	706	654
19	1.5	84	2.6	3.6	5.2	2.6	5.2	177	594	622	702	650
20	1.5	84	3.1	3.5	4.8	2.6	10.5	179	618	622	698	650
21	1.5	*102	3.3	3.1	4.6	2.9	7.4	179	630	618	698	650
22	1.7	98	2.9	3.1	5.0	2.9	5.8	*179	630	618	*694	646
23	1.7	17	2.9	3.1	6.6	3.1	5.2	169	630	614	710	642
24	1.7	2.4	2.9	3.5	7.6	3.6	4.8	153	594	622	714	642
25	1.7	2.2	3.8	3.6	7.8	4.2	4.0	153	570	630	714	626
26	1.5	2.4	5.4	3.5	7.0	4.6	3.6	154	570	630	710	602
27	1.5	2.4	4.4	3.5	5.6	4.4	3.5	155	534	626	710	574
28	1.4	2.6	3.6	3.5	4.6	4.2	3.1	179	486	626	710	546
29	1.4	2.2	3.3	3.5	-	4.0	2.9	177	470	622	706	554
30	1.7	2.2	3.3	3.5	-	4.0	2.9	156	*470	622	702	502
31	1.7	-	2.9	3.6	-	3.8	-	158	-	622	698	-
Total	6,147.9	449.9	91.5	95.4	140.5	100.1	121.4	3,160.8	12,328	17,242	19,954	19,436
Mean	218	15.0	2.95	3.08	5.02	3.23	4.05	102	411	556	644	648
In.	1.01	1.90	4.76	3.27	5.06	3.66	7.84	16.04	5.39	1.06	0.08	1.11
Ac-ft	3,410	6,430	18,200	11,100	17,180	12,410	26,600	54,410	18,270	3,580	270	3,770
(†)	-9,970	+5,540	+16,030	+10,910	+16,300	+12,210	+26,360	+48,140	-6,180	-30,620	-39,310	-34,780

Adjusted for change in contents in Kachess Lake

	Mean	55.5	108	263	181	309	202	447	885	307	58.2	4.39	63.4
Cfsm	0.873	1.70	4.14	2.85	4.86	3.18	7.03	13.9	4.83	0.915	0.089	0.997	
In.	1.01	1.90	4.76	3.27	5.06	3.66	7.84	16.04	5.39	1.06	0.08	1.11	
Ac-ft	3,410	6,430	18,200	11,100	17,180	12,410	26,600	54,410	18,270	3,580	270	3,770	

Observed

Calendar year 1957: Max	1,390	Min	1.4	Mean	348	Ac-ft	252,200
Water year 1957-58: Max	714	Min	1.4	Mean	219	Ac-ft	158,400

Adjusted

Calendar year 1957: Mean	219	Cfsm	3.44	In.	46.68	Ac-ft	158,300
Water year 1957-58: Mean	240	Cfsm	3.77	In.	51.20	Ac-ft	173,600

\* Discharge measurement made on this day.

† Change in contents, in acre-feet, in Kachess Lake.

4790. Cle Elum River near Roslyn, Wash.

Location.--Lat 47°14'30", long 121°03'50", in NW<sup>1</sup> sec. 11, T. 20 N., R. 14 E., on left bank 1,000 ft downstream from dam at Cle Elum Lake and 4 miles northwest of Roslyn.

Drainage area.--203 sq mi.

Records available.--October 1903 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 2,102.10 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Oct. 14, 1913, and Sept. 4, 1931, to Apr. 19, 1933, several staff gages and Oct. 14, 1913, to Sept. 3, 1931, water-stage recorder, at about same sites at same datum.

Average discharge.--55 years, 916 cfs (663,200 acre-ft per year), adjusted for storage since 1906.

Extremes.--Maximum discharge during year, 3,040 cfs July 17 (gage height, 8.85 ft); minimum daily, 1.4 cfs Nov. 14-21, Feb. 25 to Mar. 28.

1903-58: Maximum discharge, 18,700 cfs Nov. 15, 1906 (gage height, 14.05 ft); no flow at times when gates in dam are closed.

Remarks.--Records good except those for periods of doubtful gage-height record or indefinite stage-discharge relation, which are poor. No diversion above station. Flow regulated by Cle Elum Lake (see p. 344).

Cooperation.--Gage-height record, 17 discharge measurements, and computation of daily discharge furnished by Bureau of Reclamation; 2 discharge measurements made and records reviewed by Geological Survey.

Revisions (water years).--WSP 369: 1906-8. WSP 1216: Drainage area. WSP 1286: 1908-9. WSP 1316: 1904. WSP 1396: 1943, 1953.

Rating table, water year 1957-58, except periods of doubtful gage-height record or indefinite stage-discharge relation (gage height, in feet, and discharge, in cubic feet per second)

3.9	10	5.0	265
4.0	20	5.5	470
4.1	35	6.0	720
4.3	67	7.0	1,360
4.6	139	9.0	3,200

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,050	14	30	21	21	1.4	39	43	1,200	2,020	2,870	2,090
2	320	14	25	21	21	1.4	39	43	1,190	2,080	2,850	2,070
3	836	14	20	21	21	1.4	39	43	1,170	2,080	2,830	2,030
4	780	14	20	21	21	1.4	39	44	1,170	2,150	2,810	1,970
5	692	14	20	21	21	1.4	39	44	1,190	2,150	2,840	1,920
6	620	15	20	21	21	1.4	39	43	748	2,160	2,830	1,900
7	575	*16	21	21	21	1.4	41	41	1,190	2,250	2,830	1,890
8	484	16	21	21	21	1.4	41	41	1,420	2,240	2,830	1,910
9	*336	16	21	21	21	1.4	41	41	1,590	*2,210	2,830	*1,900
10	244	16	21	21	21	1.4	41	41	*1,620	2,340	2,830	1,870
11	254	17	21	21	21	1.4	41	41	1,620	2,530	2,810	1,830
12	251	17	21	21	21	1.4	41	41	1,620	2,640	2,810	1,780
13	248	9.2	*21	21	21	1.4	43	43	1,620	2,680	2,820	1,740
14	171	1.4	21	21	21	1.4	41	139	1,850	2,680	2,820	1,740
15	171	1.4	21	21	23	1.4	41	*171	2,040	2,750	2,790	1,700
16	58	1.4	21	21	23	1.4	41	380	2,080	2,830	2,710	1,650
17	14	1.4	21	21	23	1.4	41	380	1,610	2,950	2,660	1,580
18	14	1.4	21	21	*23	1.4	41	300	*1,890	*3,010	2,700	1,530
19	14	1.4	23	21	23	1.4	41	254	1,880	3,000	2,700	1,500
20	13	1.4	23	*21	23	1.4	41	254	1,930	2,980	2,690	1,490
21	13	1.4	23	21	23	1.4	41	254	1,990	2,980	2,730	1,500
22	13	5.8	21	21	23	1.4	41	254	1,990	2,980	*2,670	1,470
23	14	19	21	21	24	1.4	41	251	2,080	2,980	2,630	1,420
24	14	18	21	21	24	24	41	344	2,100	2,980	2,650	1,390
25	14	32	21	21	9.8	39	41	438	*2,030	2,980	2,640	1,360
26	14	44	21	21	1.4	*39	41	630	1,980	2,980	2,610	*1,350
27	14	*21	21	21	1.4	39	43	*1,090	1,970	2,990	2,470	1,350
28	14	36	21	21	1.4	39	43	1,540	1,930	2,690	2,360	1,110
29	14	33	21	21	-	39	43	1,720	1,910	2,690	2,280	992
30	14	30	21	21	-	39	43	1,550	1,980	2,890	2,180	968
31	14	-	21	21	-	39	-	1,280	-	2,890	2,130	-
Total	7,977	462.2	666	651	540.0	329.2	1,226	11,778	50,568	81,740	83,210	49,000
Mean	257	15.4	21.5	21.3	19.3	10.6	40.9	380	1,686	2,637	2,684	1,633
Ac-ft	15,820	917	1,320	1,290	1,070	653	2,430	23,360	100,300	162,100	165,000	97,190
(†)	-4,940	+13,660	+25,910	+19,880	+29,970	+35,670	+59,260	-19,740	-5,380	-134,810	-154,310	-79,950

Adjusted for change in contents in Cle Elum Lake

Mean	177	245	443	344	559	591	1,037	3,498	1,595	444	174	290
Cfs	0.872	1.21	2.18	1.68	2.75	2.91	5.11	17.2	7.86	2.13	0.857	1.43
In.	1.00	1.35	2.52	1.96	2.87	3.35	5.70	19.87	8.77	2.52	0.99	1.59
Ac-ft	10,880	14,580	27,230	21,170	31,040	36,320	61,690	215,100	94,920	27,290	10,690	17,240

Observed

Calendar year 1957: Max	4,940	Min	1.4	Mean	1,109	Ac-ft	803,100
Water year 1957-58: Max	3,010	Min	1.4	Mean	789	Ac-ft	571,400

Adjusted

Calendar year 1957: Mean	750	Cfs	3.69	In.	50.14	Ac-ft	542,800
Water year 1957-58: Mean	785	Cfs	3.87	In.	52.49	Ac-ft	568,100

\* Discharge measurement made on this day.

† Change in contents, in acre-feet, in Cle Elum Lake.

Note.--Doubtful gage-height record or indefinite stage-discharge relation Nov. 13-22, Feb. 25 to Mar. 24; discharge estimated.

4795. Yakima River at Cle Elum, Wash.

Location.--Lat 47°11'20", long 120°56'40", in sec. 27, T. 20 N., R. 15 E., on left bank at highway bridge at Cle Elum just upstream from Roslyn Creek, 7 miles upstream from Teanaway River.

Drainage area.--500 sq mi, approximately.

Records available.--August 1906 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 1,902.27 ft above mean sea level (levels by Bureau of Reclamation). Prior to Aug. 12, 1910, chain gage on highway bridge at different datum. Aug. 12, 1910, to July 11, 1911, staff gage; July 12, 1911, to June 27, 1923, water-stage recorder; June 28, 1923, to Oct. 21, 1924, staff gages; all at various locations within vicinity of bridge at datum 2.0 ft higher.

Average discharge.--52 years, 1,982 cfs (1,435,000 acre-ft per year), adjusted for storage since October 1906 and Kittitas Canal diversion since 1930.

Extreme.--Maximum discharge during year, 3,460 cfs July 26 (gage height, 8.15 ft); minimum 119 cfs Oct. 21.

1906-58: Maximum discharge, 25,600 cfs Nov. 14, 1906 (gage height, 12.5 ft, from floodmarks); minimum, 46 cfs Nov. 17, 1953.

Remarks.--Records good. Kittitas high-line canal diverts water from river at Easton for irrigation below station. Several smaller diversions for irrigation of several hundred acres above station. Considerable regulation by Keechelus, Kachess, and Cle Elum Lakes (see p. 344).

Cooperation.--Gage-height record collected in cooperation with, and 22 discharge measurements furnished by Bureau of Reclamation.

Revisions (water years).--WSP 369: 1910-11. WSP 832: 1936.

Rating tables, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second) (Shifting-control method used July 17 to Aug. 19)

Day	Oct. 1 to Feb. 25					Feb. 26 to Sept. 30					Aug.	Sept.
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July		
1	1,330	140	176	304	374	790	558	648	1,530	2,360	3,320	2,660
2	1,240	140	195	281	374	743	516	713	1,490	*2,410	3,280	2,610
3	1,170	140	206	284	367	664	616	830	1,440	2,410	3,250	2,610
4	1,110	136	210	272	346	600	565	870	1,440	2,420	3,250	2,530
5	1,040	130	215	266	346	558	544	850	1,430	2,390	3,220	2,500
6	946	130	260	260	346	518	537	850	1,130	2,380	3,220	2,450
7	924	130	502	254	346	506	537	881	1,390	2,490	3,220	2,470
8	*840	126	526	248	353	494	551	936	1,660	2,490	3,180	2,470
9	720	126	518	248	395	470	426	1,030	1,840	*2,410	3,200	2,440
10	462	126	478	248	470	454	415	958	*1,900	2,520	3,180	*2,410
11	486	136	423	248	510	442	*398	947	1,880	2,710	*3,180	2,340
12	478	152	388	254	518	415	415	734	1,900	2,920	3,180	2,320
13	502	180	*367	248	599	398	470	579	1,860	2,930	3,200	2,270
14	486	*215	346	254	770	376	680	624	2,080	2,900	3,220	2,240
15	462	210	311	278	671	360	*903	*1,000	2,300	3,030	3,320	2,200
16	635	195	297	318	599	355	958	1,150	2,340	3,120	3,270	2,150
17	720	180	*284	361	574	345	947	1,260	1,930	*3,270	3,220	2,060
18	653	168	290	490	*608	335	947	1,240	2,150	3,420	3,250	1,920
19	195	180	297	480	653	320	936	1,190	*2,220	3,420	*3,220	1,920
20	140	205	339	*438	690	*320	2,000	1,190	2,260	3,400	3,220	1,900
21	126	*210	374	423	690	335	2,150	1,100	2,340	3,370	3,250	1,910
22	140	210	339	374	740	350	*1,560	1,090	2,300	3,350	3,220	1,910
23	140	210	304	346	913	371	1,220	1,050	2,340	3,400	3,200	1,860
24	136	180	304	346	1,180	454	*1,040	1,000	2,470	3,390	3,230	*1,840
25	*133	156	339	353	*1,490	512	903	1,040	*2,410	3,420	3,230	1,800
26	148	156	462	339	1,330	*537	800	1,150	2,300	3,440	3,230	1,780
27	144	164	462	332	1,080	551	698	1,560	2,340	3,440	3,120	1,760
28	140	180	416	345	914	558	608	1,970	2,330	3,350	3,030	1,510
29	140	176	388	388	544	544	544	2,160	2,280	3,130	*2,970	1,270
30	140	168	346	402	-----	565	586	1,970	2,320	3,390	2,840	1,240
31	140	-----	325	395	-----	565	-----	1,670	-----	3,400	2,690	-----
Total	16,066	4,955	10,686	10,114	18,246	14,778	24,128	34,250	59,600	92,480	98,610	63,350
Mean	518	165	345	326	552	477	804	1,105	1,987	2,983	3,181	2,112
Ac-ft	31,870	9,830	21,200	20,060	36,190	29,310	47,860	67,930	118,200	185,400	195,600	125,700
(+)	-11,480	+28,770	+61,160	+43,920	+65,460	+59,330	+113,700	+272,800	-25,760	-212,400	-244,400	-136,800
(-)	10,300	0	0	0	0	0	3,050	46,410	56,200	70,580	69,400	48,390

Adjusted for change in lake contents and diversion

Mean	499	649	1,339	1,041	1,829	1,442	2,766	6,296	2,497	676	335	627
Cfsm	0.998	1.30	2.68	2.08	3.66	2.88	5.53	12.6	4.99	1.35	0.670	1.25
In.	1.15	1.45	3.09	2.40	3.81	3.32	6.17	14.52	5.57	1.56	0.77	1.40
Ac-ft	30,590	39,600	82,360	63,990	101,600	88,640	164,600	387,100	148,600	41,590	20,600	37,290

Observed

Calendar year 1957: Max	8,100	Min	126	Mean	1,776	Ac-ft	1,286,000
Water year 1957-58: Max	3,440	Min	126	Mean	1,225	Ac-ft	887,200

Adjusted

Calendar year 1957: Mean	1,597	Cfsm	3.19	In.	43.33	Ac-ft	1,156,000
Water year 1957-58: Mean	1,666	Cfsm	3.33	In.	45.21	Ac-ft	1,206,000

\* Discharge measurement made on this day.

† Change in contents, in acre-feet, for Keechelus, Kachess, and Cle Elum Lakes.

‡ Diversion, in acre-feet, by Kittitas Canal.

4836. Wilson Creek near Ellensburg, Wash.

Location.--Lat 47°07'35", long 120°29'35", in NW $\frac{1}{4}$  sec. 20, T. 19 N., R. 19 E., on right bank at downstream side of Pope farm bridge, three-quarters of a mile above Naneum Creek and 9 miles north of Ellensburg.

Drainage area.--13.6 sq mi (revised).

Records available.--March 1957 to May 1958 (flood seasons only).

Gage.--Water-stage recorder. Altitude of gage is 2,650 ft (from topographic map).

Extremes.--Maximum discharge during period November to May, 123 cfs May 8 (gage height, 2.78 ft); minimum, 0.8 cfs Nov. 21 (gage height, 1.64 ft).  
1957-58: Maximum discharge, 244 cfs May 18, 1957 (gage height, 2.96 ft); minimum, that of Nov. 21, 1957.

Remarks.--Records good except those for periods of ice effect, which are poor. About 1 cfs is diverted above station for irrigation. No regulation.

Cooperation.--Gage-height record furnished by U. S. Soil Conservation Service.

Discharge, in cubic feet per second, November 1957 to May 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		1.4	1.9	b2.5	2.9	13	9.0	27				
2		1.3	1.7	b2.5	2.8	12	11	34				
3		1.3	1.7	b2.7	2.9	10.5	10.5	40				
4		1.4	1.7	3.0	2.9	9.9	10.5	40				
5		1.4	1.7	2.8	3.0	9.4	9.9	40				
6		1.5	2.2	2.5	2.9	8.6	9.4	55				
7		1.4	2.1	2.5	3.2	7.8	9.9	74				
8		1.3	2.5	2.5	3.5	7.4	9.9	89				
9		1.3	2.8	2.5	3.7	7.4	9.9	94				
10		1.4	3.5	2.5	3.9	7.0	11	107				
11		1.5	3.2	2.5	3.7	6.4	12	104				
12		1.7	3.0	2.6	4.5	6.1	13	83				
13		1.8	2.9	2.4	4.3	5.8	15	66				
14		1.7	2.8	2.4	3.9	5.5	15	63				
15		1.5	2.8	2.8	3.7	5.3	14.5	64				
16		1.4	2.8	3.0	3.7	5.3	14.5	74				
17		1.4	*2.8	3.2	4.3	5.0	15.5	85				
18		1.4	2.8	3.0	6.1	5.0	15	83				
19		*1.3	2.8	b2.6	*7.0	5.0	*14	92				
20		1.2	2.8	2.5	8.2	5.0	18.5	94				
21		1.2	2.6	2.5	9.0	5.8	19	92				
22		1.5	2.6	2.5	12.5	8.6	18.5	96				
23		1.6	2.6	2.5	17	8.6	17.5	92				
24		1.6	2.8	2.5	21	11	16	83				
25		1.6	3.0	2.5	*24	14	15.5	78				
26		1.6	3.9	2.5	23	12	14.5	72				
27		1.6	3.7	2.5	18.5	11	14	*64				
28		1.7	b3.1	3.2	15.5	10.5	14	59				
29		1.6	b3.0	3.4	-	9.9	15	52				
30		1.8	b2.9	3.2	-----	10.5	18.5	44				
31		-----	b2.7	3.0	-----	9.4	-----	46				
Total		44.4	83.4	83.3	221.6	258.7	410.5	2,186				
Mean		1.48	2.69	2.69	7.11	8.35	13.7	70.5				
Ac-ft		88	165	165	440	513	814	4,340				
Calendar year	: Max		Min		Mean		Ac-ft					
Water year	: Max		Min		Mean		Ac-ft					

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.



4838. Naneum Creek near Ellensburg, Wash.

Location.--Lat 47°07'30", long 120°28'40", in NE $\frac{1}{4}$  sec. 20, T. 19 N., R. 19 E., on right bank 10 ft upstream from intake of Ellensburg water-supply system and 9 miles north of Ellensburg.

Drainage area.--69.5 sq mi (revised).

Records available.--March 1957 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 2,500 ft (from topographic map).

Extremes.--Maximum discharge during year, 553 cfs May 20 (gage height, 2.90 ft, from graph based on gage readings); minimum observed, less than 5 cfs Nov. 29, result of freezeup; minimum daily, 10 cfs Nov. 29, 1957-58; Maximum discharge, 700 cfs May 18, 1957 (gage height, 3.36 ft); minimum, that of Nov. 29, 1957.

Remarks.--Records good except those for periods of ice effect, which are poor. No regulation. City of Ellensburg diverts about 6 cfs from gage pool for irrigation and municipal water supply. Small diversion above station for irrigation.

Cooperation.--Gage-height record furnished by U. S. Soil Conservation Service.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.1	8.4	1.0	87
.2	12.5	1.5	170
.4	25	2.0	283
.7	52	3.0	588

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	18.5	16	12	17.5	62	45	121	203	47	25	17.5
2	18.5	18.5	16.5	13	17.5	56	49	184	180	45	25	17.5
3	18.5	18.5	17.5	14	17.5	52	48	188	162	43	25	17.5
4	17.5	18.5	17.5	15	17.5	48	46	192	149	42	25	16.5
5	18	17.5	16	16	17.5	47	47	207	142	40	24	16.
6	18.5	17.5	18.5	18	17.5	44	48	220	142	39	23	15.5
7	*18.5	16	19.5	20	17.5	38	50	266	135	40	23	15
8	18.5	15	27	21	20	36	52	312	128	40	23	14.5
9	18.5	15	18.5	21	21	34	53	358	114	38	23	14.5
10	18.5	15	18	22	21	32	60	376	108	37	20	14.5
11	18	15	17.5	22	22	31	67	378	100	35	20	14.5
12	18	17.5	16	22	24	30	77	328	95	34	20	14.5
13	19	23	16	22	25	29	90	276	87	33	20	15
14	18.5	20	16	24	24	28	94	251	82	33	20	15
15	18	18	16	24	24	28	87	256	75	31	20	15
16	17.5	16	18.5	24	22	29	87	283	71	31	19	*15
17	18	16	*17.5	24	22	29	93	322	*66	30	19	16
18	17.5	16.5	17.5	21	30	28	88	347	64	29	*19	15.5
19	16.5	*15	16	20	*38	28	*87	405	61	29	19	15.5
20	16.5	12.5	17.5	20	38	28	131	499	59	28	19	15.5
21	16.5	11	17.5	18.5	38	31	116	435	56	27	18.5	15.5
22	18	12	11	18.5	40	37	106	442	53	27	18.5	15.5
23	20	17.5	17.5	18.5	50	38	100	429	51	27	18	15.5
24	27	16.5	18.5	18.5	88	43	91	408	61	26	18	15
25	27	16.5	25	18.5	126	47	84	390	56	26	17.5	16
26	27	16	24	18.5	97	45	80	361	52	26	17.5	15.5
27	25	15.5	22	17.5	79	43	75	*358	55	25	18	15
28	22	14	18.5	17.5	68	43	73	328	51	25	18	15
29	20	10	17	18.5	-	45	75	278	49	31	18	14.5
30	20	13	14	18.5	-----	49	90	236	46	30	18	14.5
31	20	-----	11	18.5	-----	46	-----	229	-----	27	18	-----
Total	598.0	481.5	548.5	596.5	1,039.5	1,204	2,289	9,641	2,751	1,021	629.0	462.5
Mean	19.3	16.0	17.7	19.2	37.1	38.8	76.3	311	91.7	32.9	20.3	15.4
Cfsm	0.278	0.230	0.255	0.276	0.534	0.558	1.10	4.47	1.32	0.473	0.292	0.222
In.	0.32	0.28	0.29	0.32	0.56	0.64	1.22	5.16	1.47	0.55	0.34	0.25
Ac-ft	1,190	955	1,090	1,180	2,060	2,390	4,540	19,120	5,460	2,030	1,250	917

Calendar year 1957: Max - Min 10 Mean - Cfsm - In. - Ac-ft -  
 Water year 1957-58: Max 499 Min 10 Mean 58.3 Cfsm 0.839 In. 11.38 Ac-ft 42,180

Peak discharge (base, 150 cfs).--May 10 (9 p.m.) 426 cfs (2.51 ft); May 20 (about 1 a.m.) 553 cfs (2.90 ft).

\* Discharge measurement made on this day.

Note.--Discharge computed from once-daily staff-gage readings Oct. 22 to Nov. 12, Dec. 3-16, Dec. 21 to Feb. 18, May 19-23, Aug. 7-9. Stage-discharge relation affected by ice Nov. 21, 22, Nov. 28 to Dec. 1, Dec. 29 to Jan. 6, Mar. 8-15, 26-29.

4843. Cooke Creek near Ellensburg, Wash.

Location--Lat 47°05'40", long 120°22'40", in SE $\frac{1}{4}$  NW $\frac{1}{4}$  sec. 31, T. 19 N., R. 20 E., on left bank 4 miles upstream from mouth and 10 miles northeast of Ellensburg.

Drainage area--19.3 sq mi.

Records available--November 1957 to May 1958.

Gage--Water-stage recorder. Altitude of gage is 2,550 ft (from topographic map).

Extremes--Maximum discharge during period, about 250 cfs May 8 (gage height, 2.52 ft); minimum, 1.2 cfs Dec. 30 (gage height, 0.76 ft).

Remarks--Records good except those for periods of ice effect or indefinite stage-discharge relation, which are poor. Small diversion above station for irrigation. No regulation.

Rating tables, Nov. 1, 1957, to May 31, 1958, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Nov. 1 to Apr. 30

May 11-31

0.8	1.5	1.3	11	0.9	11	1.5	64
9	2.3	1.5	25	1.0	15.5	1.7	98
1.0	3.5	1.7	47	1.1	22	2.0	165
1.1	5.2	2.0	96	1.3	40		

Discharge, in cubic feet per second, November 1957 to May 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		2.1	2.7	b1.6	2.8	10.5	10.5	e65				
2		2.1	2.6	b1.8	3.0	9.1	12.5	e70				
3		2.0	2.5	b1.9	3.1	8.5	13	e75				
4		2.0	2.5	b2.0	3.1	7.3	12	e70				
5		2.0	2.4	2.0	3.2	6.7	12	e75				
6		2.0	3.2	2.0	3.2	6.4	12.5	e80				
7		2.0	3.0	b1.9	3.6	6.4	13	e85				
8		2.0	3.5	b1.8	4.5	6.0	13.5	e100				
9		2.0	3.0	b1.9	4.8	5.6	14.5	e110				
10		2.1	2.7	b2.0	5.6	5.0	15.5	e80				
11		2.3	2.6	2.1	5.6	5.0	18.5	58				
12		2.7	2.4	2.2	7.0	5.0	27	47				
13		3.2	2.1	2.1	7.0	4.6	45	48				
14		3.0	2.0	2.1	6.7	4.5	57	49				
15		2.6	2.0	2.4	6.2	4.3	39	51				
16		2.5	2.1	2.5	6.2	4.3	43	50				
17		2.4	*2.1	2.4	7.3	4.0	46	49				
18		2.4	2.2	2.5	9.8	4.0	42	47				
19		*2.3	2.1	2.0	*12	4.0	*37	44				
20		2.1	2.3	2.2	13	4.3	66	38				
21		b2.0	2.2	2.1	12.5	5.4	53	34				
22		2.1	1.9	2.1	14.5	7.0	39	31				
23		2.2	2.2	2.1	18	7.6	32	27				
24		2.3	2.2	2.2	25	9.4	25	23				
25		2.5	2.2	2.2	*40	12	21	19.5				
26		2.3	2.8	2.2	25	11.5	18.5	17				
27		2.3	2.5	2.3	15.5	11.5	17	*14.5				
28		2.4	2.1	3.2	12	11.5	17	13.5				
29		2.2	2.1	3.5	-	11	20	12.5				
30		b2.2	1.5	3.2	-----	11	42	12				
31		-----	b1.5	3.1	-----	11	-----	12.5				
Total		58.1	74.0	69.4	280.2	224.4	834.0	1,507.5				
Mean		2.27	2.39	2.24	10.0	7.24	27.8	48.6				
Ac-ft		135	147	138	556	445	1,650	2,990				

Calendar year : Max Min Mean Ac-ft  
Water year : Max Min Mean Ac-ft

\* Discharge measurement made on this day.  
b Stage-discharge relation affected by ice.  
e Stage-discharge relation indefinite; discharge estimated on basis of recorder graph, weather records, and records for nearby stations.

## 4845. Yakima River at Umanum, Wash.

Location.--Lat 46°51'45", long 120°28'30", in NW¼ sec. 20, T. 16 N., R. 19 E., on right bank at Umanum, half a mile upstream from Umanum Creek and 10 miles south of Ellensburg.

Drainage area.--1,590 sq mi, approximately.

Records available.--August 1906 to September 1958. Monthly discharge only for some periods, published in WSP 1316.

Gage.--Water-stage recorder. Datum of gage is 1,300.00 ft above mean sea level, datum of 1929. Prior to Sept. 28, 1911, staff or chain gages at approximately same site at various datums. Sept. 28, 1911, to Nov. 23, 1936, water-stage recorder at site about 300 ft upstream at datum 26.70 ft higher.

Extremes.--Maximum discharge during year, 4,890 cfs Apr. 21 (gage height, 33.05 ft); minimum, 401 cfs Nov. 10 (gage height, 30.13 ft).  
1906-58: Maximum discharge, 41,000 cfs Nov. 15 or 16, 1906 (gage height, 41.1 ft, from floodmarks, present datum); minimum recorded, 138 cfs Oct. 3, 1915 (gage height, 2.86 ft, datum then in use).

Remarks.--Records excellent. Flow partly regulated by Keechelus, Kachess, and Cle Elum Lakes (see p. 344). Water diverted above station for irrigation of about 105,000 acres.

Cooperation.--Six discharge measurements furnished by Bureau of Reclamation.

Revisions (water years).--WSP 412: 1914. WSP 1216: Drainage area. WSP 1286: 1910.

Rating table, water year 1957-58 (gage height, in feet,  
and discharge, in cubic feet per second)

30.1	380
30.5	690
31.0	1,200
32.0	2,840
33.0	4,760

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,000	513	464	576	940	2,330	1,780	2,190	3,160	2,780	*3,570	2,930
2	1,900	506	499	592	920	2,120	2,220	2,920	2,750	2,750	3,570	2,880
3	1,760	492	506	584	910	1,910	2,320	2,880	2,710	2,900	3,550	2,880
4	1,690	464	513	592	900	1,730	2,020	2,880	2,620	2,750	3,570	2,840
5	1,650	450	513	576	880	1,650	1,840	2,860	2,540	2,840	3,570	2,820
6	1,580	450	544	552	880	1,540	1,800	2,770	2,420	2,710	3,550	2,730
7	1,570	443	762	536	900	1,440	1,800	3,050	2,160	2,780	3,500	2,690
8	1,570	436	960	520	960	1,320	1,830	3,080	2,400	2,800	3,460	2,680
9	1,430	429	1,040	513	1,020	1,300	1,800	3,530	2,470	2,680	3,460	2,690
10	1,200	415	980	528	1,070	1,200	1,710	3,400	2,570	2,640	3,460	2,690
11	1,110	422	830	528	1,190	1,130	1,810	3,460	2,570	2,710	3,460	2,680
12	1,090	445	860	536	1,420	1,080	1,960	3,090	2,750	2,860	3,440	2,640
13	1,080	471	790	544	1,560	1,060	2,250	2,440	2,660	2,990	3,460	2,660
14	1,040	*536	753	532	1,570	991	2,500	2,110	2,450	2,990	3,480	2,660
15	970	588	706	609	1,530	980	2,640	2,170	2,770	3,030	3,550	2,660
16	*980	536	699	672	1,500	970	*2,570	2,440	2,780	3,140	3,590	2,680
17	1,060	513	681	*753	1,560	940	2,520	2,800	2,610	3,200	3,530	2,690
18	1,100	492	*663	890	1,710	910	2,640	2,970	2,280	3,420	3,570	2,520
19	880	457	663	920	1,810	890	2,470	3,090	*2,400	3,460	*3,480	2,400
20	609	471	672	920	*1,920	880	3,720	*3,320	2,380	3,420	3,420	2,420
21	536	492	726	860	1,940	*930	4,660	3,160	2,450	3,440	3,420	2,440
22	536	499	699	820	2,040	1,310	3,890	3,320	2,420	3,400	3,380	2,490
23	576	499	663	790	2,560	1,390	3,220	3,400	2,420	3,420	3,340	2,380
24	568	492	636	780	3,200	1,570	2,900	3,280	2,730	3,440	3,360	2,350
25	576	457	672	790	4,580	2,100	2,560	3,340	2,950	3,460	3,400	2,350
26	584	450	790	790	4,090	2,050	2,350	3,240	2,800	3,500	3,400	2,280
27	560	450	880	780	3,300	1,960	2,160	3,240	2,920	3,500	3,360	2,240
28	536	471	840	860	2,680	1,920	1,930	3,530	2,990	3,500	3,240	2,170
29	520	478	762	960	-	1,840	1,860	3,570	2,830	3,400	3,220	*1,860
30	513	450	708	1,070	-----	1,960	1,940	3,400	2,780	3,590	3,180	1,770
31	513	-----	627	991	-----	1,840	-----	3,200	-----	3,630	3,030	-----
Total	32,287	14,245	22,203	21,964	49,560	45,261	71,670	94,030	79,010	97,150	106,590	76,180
Mean	1,042	475	716	709	1,770	1,460	2,389	3,033	2,634	3,133	3,438	2,539
Ac-ft	64,040	28,250	44,040	43,560	98,300	89,770	142,200	186,500	156,700	192,700	211,400	151,100
Calendar year 1957: Max			11,600	Min	415	Mean	2,459	Ac-ft	1,780,000			
Water year 1957-58: Max			4,660	Min	415	Mean	1,946	Ac-ft	1,409,000			

\* Discharge measurement made on this day.

## 4880. Bumping River near Nile, Wash.

Location.--Lat 46°52', long 121°18', in NE<sup>1</sup>/<sub>4</sub> sec. 23, T. 16 N., R. 12 E., on left bank a quarter of a mile downstream from spillway of Bumping Lake Dam and 19 miles west of Nile.

Drainage area.--68.6 sq mi.

Records available.--June to July 1906, April 1909 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 3,367.10 ft above mean sea level (Bureau of Reclamation bench mark). June 13 to July 31, 1906, staff gage at site half a mile upstream at different datum. Apr. 27 to Aug. 6, 1909, and June 24, 1912, to June 13, 1913, staff gage at site three-eighths of a mile upstream at different datum. Aug. 7, 1909, to June 23, 1912, staff gage at site 1,300 ft upstream at different datum.

Average discharge.--49 years (1909-58), 293 cfs (212,100 acre-ft per year), adjusted for storage.

Extremes.--Maximum discharge during year, 2,160 cfs May 26 (gage height, 5.24 ft); minimum, 8.4 cfs Feb. 20 (gage height, 1.14 ft).

1906, 1909-58: Maximum discharge, 5,160 cfs Dec. 29, 1917 (gage height, 9.33 ft); practically no flow when gates in outlet conduit are closed.

Remarks.--Records good. No diversion. Flow regulated by dam at Bumping Lake (see p. 344).

Cooperation.--Gage-height record, 12 discharge measurements, and computations of daily discharge furnished by Bureau of Reclamation; 2 discharge measurements made and records reviewed by Geological Survey.

Revisions (water years).--WSP 369: 1911. WSP 1246: Drainage area. WSP 1286: 1911.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 12-18)

1.1	7.4	2.0	102	4.0	1,010
1.3	13	2.5	237	5.0	1,900
1.5	25	3.0	428	6.0	3,050
1.7	48	3.5	680		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	132	118	98	118	54	12.5	11	545	1,150	598	153	132
2	132	118	98	118	54	12.5	11	545	1,110	592	150	132
3	135	116	98	118	54	11.5	11	550	1,090	586	150	132
4	132	116	98	118	54	11	10.5	550	1,020	576	150	132
5	135	114	96	116	54	11	10	550	1,050	570	148	116
6	135	114	96	116	56	11	10	*592	807	560	148	107
7	135	111	98	116	56	10.5	10.5	664	598	492	148	107
8	132	111	98	116	56	10	10.5	770	828	594	148	104
9	130	109	98	116	56	9.9	11	940	891	*353	145	102
10	130	104	100	116	38	9.9	12	1,010	898	349	145	102
11	130	104	100	116	24	9.6	12	1,110	919	349	145	*100
12	130	*107	*100	114	25	9.4	13	*1,050	919	345	145	100
13	128	114	102	114	25	9.4	14	877	952	350	142	100
14	*125	116	102	116	25	9.2	14.5	800	968	285	142	100
15	125	116	102	120	25	9.2	16	828	849	264	142	98
16	125	116	102	120	25	8.9	17	849	776	264	142	98
17	123	114	102	107	26	8.9	19.5	905	576	261	142	98
18	123	114	104	96	27	8.9	18.5	1,040	625	237	142	98
19	120	114	104	98	16.5	8.9	25	1,230	636	180	140	98
20	120	111	107	102	8.4	8.9	107	1,440	636	161	140	100
21	118	102	107	102	8.6	9.4	411	1,580	636	158	*140	102
22	118	102	107	104	8.9	9.4	525	1,860	*630	*158	140	102
23	118	102	107	104	10	9.6	*520	2,060	625	158	138	100
24	118	100	109	90	12	11	473	2,100	636	158	138	100
25	120	100	114	77	13	11	428	2,120	636	158	138	100
26	118	98	118	77	13	10.5	395	2,110	*630	155	138	100
27	118	98	118	77	13	10.5	349	*2,110	625	155	138	98
28	118	98	118	54	13	11	326	1,940	614	155	138	98
29	118	86	118	54	-	11	365	1,590	614	153	135	98
30	118	92	118	54	-----	11	478	1,380	603	153	135	98
31	118	-----	118	54	-----	11	-----	1,230	-----	153	135	-----
Total	3,877	3,235	3,249	3,118	850.4	316.0	4,624.0	36,925	23,577	9,460	4,420	3,154
Mean	125	104	105	101	27.4	10.2	144	1,191	756	305	143	105
Ac-ft	7,690	6,420	6,440	6,180	1,890	627	9,170	73,240	46,760	18,760	8,770	6,260
(+)	-3,270	-1,120	+1,150	+3,620	+8,250	+8,440	+7,290	+660	-7,610	-9,510	-4,740	-3,070

Adjusted for change in contents in Bumping Lake

Mean	71.9	89.1	123	159	179	148	277	1,202	658	150	85.5	53.6
Cfsm	1.05	1.30	1.79	2.32	2.61	2.13	4.04	1.75	9.59	2.19	0.955	0.781
In.	1.21	1.45	2.07	2.68	2.72	2.48	4.50	20.20	10.70	2.53	1.10	0.87
Ac-ft	4,420	5,300	7,590	9,800	9,940	9,070	16,460	73,900	39,150	9,250	4,030	3,190

## Observed

Calendar year 1957: Max	1,770	Min	51	Mean	264	Ac-ft	191,300
Water year 1957-58: Max	2,120	Min	8.4	Mean	265	Ac-ft	192,000

## Adjusted

Calendar year 1957: Mean	252	Cfsm	3.67	In.	49.91	Ac-ft	182,600
Water year 1957-58: Mean	265	Cfsm	3.86	In.	52.51	Ac-ft	192,100

\* Discharge measurement made on this day.

† Change in contents, in acre-feet, in Bumping Lake.

4885. American River near Nile, Wash.

Location.--Lat 46°58'30", long 121°10'10", in SW $\frac{1}{4}$  sec. 12, T. 17 N., R. 13 E., on right bank 300 ft upstream from Bumping Lake road crossing, three-quarters of a mile upstream from mouth, and 16 miles northwest of Nile.

Drainage area.--78.9 sq mi.

Records available.--April 1909 to March 1912, July to September 1913, June to September 1914, June to September 1915, October 1939 to September 1958. Monthly discharge only for some periods, published in WSP 1316.

Gage.--Water-stage recorder. Datum of gage is 2,700.0 ft above mean sea level (Washington State Highway Department bench mark). Prior to Sept. 12, 1915, staff gage at site 300 ft downstream at different datum. Oct. 12 to Dec. 7, 1939, staff gage at present site and datum.

Average discharge.--21 years (1909-11, 1939-58), 245 cfs (177,400 acre-ft per year).

Extremes.--Maximum discharge during year, 1,800 cfs May 25 (gage height, 75.48 ft); minimum, 34 cfs Oct. 22 (gage height, 71.86 ft).  
1909-12, 1913-15, 1939-58: Maximum discharge, 2,600 cfs May 27, 1948 (gage height, 76.6 ft, from high-water mark in well), from rating curve extended above 1,400 cfs; minimum, 20 cfs Nov. 22, 1940.

Remarks.--Records good except those for period of ice effect, which are fair. No regulation or diversion.

Cooperation.--Gage-height record collected in cooperation with, and nine discharge measurements furnished by Bureau of Reclamation.

Revisions (water years).--WSP 982: 1940-42. WSP 1216: Drainage area. WSP 1286: 1911.

Rating tables, water year 1957-58, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 18-26)

Oct. 1 to May 17

May 18 to Sept. 30

71.8	26	73.5	462	71.9	32	73.5	480
72.2	86	74.0	705	72.3	94	74.0	750
72.6	167	75.0	1,560	72.7	182	75.0	1,430
75.0	281	75.5	1,760	75.1	305	75.5	1,830

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	35	108	58	b75	100	268	146	337	888	254	77	45
2	35	97	56	b72	99	244	149	413	840	235	75	45
3	35	86	55	b70	97	227	144	484	756	224	74	43
4	35	78	55	b69	93	210	140	528	756	224	74	43
5	38	74	53	b68	91	199	138	580	852	212	72	42
6	39	69	64	b67	91	185	138	*640	986	209	69	41
7	40	64	80	b67	90	175	140	796	906	257	67	39
8	43	63	83	b68	91	167	140	954	762	218	67	38
9	43	58	81	66	91	158	140	1,090	702	*193	66	38
10	43	58	81	66	95	151	146	1,120	640	180	64	38
11	42	71	79	72	97	144	158	1,130	613	167	63	*37
12	42	81	78	72	97	142	180	*940	565	157	61	37
13	42	104	74	69	95	136	213	738	525	150	60	38
14	*42	99	74	67	93	129	241	640	540	141	58	45
15	39	88	72	*90	90	125	244	635	540	130	56	45
16	38	78	71	114	88	123	253	738	535	126	56	43
17	39	72	71	149	90	119	*269	904	565	119	55	49
18	38	69	71	156	119	115	287	1,020	580	117	54	48
19	36	64	*67	149	146	114	287	1,180	560	111	52	49
20	35	61	72	142	156	112	446	1,300	525	107	49	49
21	35	52	71	134	162	119	471	1,330	525	105	*49	48
22	39	61	67	129	*175	123	429	1,500	*495	102	49	48
23	45	59	64	125	213	127	*391	1,580	470	100	46	48
24	52	58	64	131	291	149	344	1,570	520	96	45	46
25	93	56	67	127	417	160	316	1,720	435	92	45	43
26	97	*56	108	121	383	160	287	1,660	353	91	43	43
27	53	69	66	117	357	158	272	*1,610	373	87	43	42
28	84	56	110	115	297	158	259	1,430	317	84	45	39
29	81	45	100	114	-	153	253	1,150	280	82	48	39
30	110	49	b90	110	-----	151	278	1,000	267	80	52	38
31	138	-----	b80	104	-----	149	-----	958	-----	79	48	-----
Total	1,646	2,089	2,343	3,093	4,284	4,848	7,299	31,675	17,671	4,529	1,782	1,286
Mean	53.1	69.6	75.6	99.9	135	156	243	1,022	569	146	57.5	42.9
Cfsm	0.673	0.882	0.958	1.26	1.94	1.98	3.08	13.0	7.47	1.85	0.729	0.544
In.	0.78	0.98	1.10	1.46	2.02	2.23	3.44	14.93	8.33	2.13	0.84	0.61
Ac-ft	3,260	4,140	4,650	6,130	8,500	9,620	14,480	62,630	35,050	8,980	3,550	2,550

Calendar year 1957: Max 1,320 Min 35 Mean 198 Cfsm 2.51 In. 34.10 Ac-ft 143,500  
Water year 1957-58: Max 1,720 Min 35 Mean 226 Cfsm 2.86 In. 38.91 Ac-ft 163,700

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

## 4915. Tieton River at Tieton Dam, near Naches, Wash.

Location.--Lat 46°39'30", long 121°07'20", in sec. 31, T. 14 N., R. 14 E. (unsurveyed), on left bank 900 ft upstream from Wildcat Creek, 1,200 ft downstream from Tieton Dam, 19 miles upstream from Oak Creek, and 22 miles southwest of Naches.

Drainage area.--187 sq mi.

Records available.--August 1908 to December 1912, June to September 1914, June 1918 to March 1921, April 1925 to September 1958. Monthly discharge only for some periods, published in WSP 1316. Published as "at McAllister Meadows" 1908-14 and as "at Rimrock" 1918-19.

Gage.--Water-stage recorder. Datum of gage is 2,680.99 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Oct. 1, 1914, staff gage at site a third of a mile upstream at different datum. Oct. 1, 1918, to Mar. 31, 1919, Apr. 27 to Sept. 4, 1925, staff gage and reference point, and Sept. 5, 1925, to Apr. 23, 1933, water-stage recorder, at site about 800 ft downstream at different datum. Apr. 24, 1933, to Dec. 11, 1934, water-stage recorder at present site at datum 2.0 ft higher.

Average discharge.--39 years (1908-12, 1918-20, 1925-58), 493 cfs (356,900 acre-ft per year), adjusted for storage since October 1925.

Extremes.--Maximum discharge during year, 2,460 cfs May 26 (gage height, 6.15 ft); minimum daily, 10 cfs Dec. 10 to Jan. 30, Feb. 9 to May 11 (gage height, 1.56 ft). 1908-14, 1918-21, 1925-58: Maximum discharge, 8,450 cfs Dec. 22, 1933 (gage height, 9.24 ft); no flow Apr. 4-6, 10, 1930.

Remarks.--Records good except those for periods below minimum recordable stage, which are fair. No diversion above station. Flow regulated by Tieton Reservoir (see p. 344).

Cooperation.--Gage-height record, 15 discharge measurements, and computations of daily discharge furnished by Bureau of Reclamation; 2 discharge measurements made and records reviewed by Geological Survey.

Revisions (water years).--WSP 369: 1909-10. WSP 1286: 1910, 1928(M), 1935(M).

WSP 1316: 1909.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

1.5	8.0	2.5	112	4.5	900
1.6	11.5	3.0	235	5.0	1,260
1.7	17	3.5	410	6.1	2,400
2.0	40	4.0	635		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	378	74	116	10	46	10	10	10	1,430	1,250	1,480	1,040
2	338	74	116	10	46	10	10	10	1,380	1,300	1,450	1,030
3	*288	74	116	10	46	10	10	10	1,350	1,330	1,450	1,030
4	274	74	116	10	46	10	10	10	1,210	1,330	1,420	1,020
5	238	74	116	10	46	10	10	10	1,200	1,330	1,420	991
6	211	72	116	10	46	*10	10	10	1,350	1,330	1,410	984
7	195	72	116	10	*46	10	10	10	1,340	1,380	1,400	963
8	155	*72	79	*10	24	10	10	10	1,320	*1,440	1,390	942
9	137	70	26	10	10	10	10	10	1,220	1,430	1,390	935
10	137	70	10	10	10	10	10	10	1,280	1,490	1,400	*935
11	137	70	*10	10	10	10	10	10	1,240	1,600	1,400	928
12	137	70	10	10	10	10	10	52	*1,230	1,690	*1,380	928
13	137	70	10	10	10	10	10	*141	1,280	1,680	1,380	858
14	137	70	10	10	10	10	10	312	1,320	1,620	1,380	829
15	*137	61	10	10	10	10	10	500	1,370	1,570	1,370	*802
16	137	54	10	10	10	10	10	540	1,340	1,570	1,360	785
17	128	54	10	10	10	10	10	522	1,030	1,570	1,360	730
18	120	54	10	10	10	10	10	509	*935	1,560	1,350	655
19	120	54	10	10	10	10	10	518	1,140	1,550	1,340	630
20	120	54	10	10	10	10	10	464	1,140	1,540	1,340	630
21	120	54	10	10	10	10	10	406	*1,140	1,540	1,320	630
22	120	54	10	10	10	10	10	500	1,140	1,530	1,320	626
23	120	54	10	10	10	10	10	825	1,210	1,530	1,310	626
24	108	54	10	10	10	10	10	2,140	1,260	1,530	1,300	626
25	96	54	10	10	10	10	10	2,360	1,190	1,530	1,290	599
26	96	54	10	10	10	10	10	*2,390	1,140	1,520	1,280	590
27	96	54	10	10	10	10	10	2,360	1,140	1,510	1,240	536
28	84	54	10	10	10	10	10	2,260	1,140	1,500	1,170	473
29	74	91	10	10	10	10	10	*1,980	1,140	1,500	1,110	414
30	74	120	10	10	10	10	10	1,740	1,200	1,500	1,060	366
31	74	-----	10	24	-----	10	-----	1,590	-----	1,490	1,050	-----
Total	4,721	1,980	1,137	324	546	310	300	22,159	36,805	46,240	41,300	23,131
Mean	152	66.0	36.7	10.5	19.5	10.0	10.0	715	1,227	1,492	1,332	771
Ac-ft	9,360	3,930	2,260	643	1,080	615	595	43,950	73,000	91,720	81,920	45,880
(t)	+4,550	+7,790	+14,210	+16,010	+19,810	+19,850	+31,820	+55,510	-12,940	-61,260	-64,940	-28,990

Adjusted for change in contents in Tieton Reservoir

	Mean	226	197	268	271	376	333	545	1,585	1,009	495	276	284
Cfsm	1.21	1.05	1.43	1.45	2.01	1.78	2.91	8.48	5.40	2.65	1.48	1.52	
In.	1.39	1.18	1.65	1.67	2.09	2.05	3.25	9.77	6.02	3.05	1.70	1.69	
Ac-ft	13,910	11,720	16,470	16,650	20,890	20,460	32,420	97,460	60,060	30,460	16,980	16,890	

Observed

Calendar year 1957: Max	2,300	Min	9.4	Mean	556	Ac-ft	402,600
Water year 1957-58: Max	2,390	Min	10	Mean	490	Ac-ft	355,000

Adjusted

Calendar year 1957: Mean	453	Cfsm	2.42	In.	32.85	Ac-ft	327,600
Water year 1957-58: Mean	490	Cfsm	2.62	In.	35.51	Ac-ft	354,400

\* Discharge measurement made on this day.

† Change in contents, in acre-feet, in Tieton Reservoir.

Note.--Discharge computed from twice-daily staff-gage readings Oct. 28 to Nov. 30, Dec. 8 to May 12.

4925. Tieton River at headworks of Tieton Canal, near Naches, Wash.

Location.--Lat 46°40'10", long 121°00'20", in sec. 30, T. 14 N., R. 15 E. (unsurveyed), on right bank 1,000 ft downstream from headworks of Tieton Canal, 12 miles upstream from Oak Creek, and 16 miles southwest of Naches.

Drainage area.--239 sq mi.

Records available.--April 1906 to September 1958. Monthly discharge only for some periods, published in WSP 1316.

Gage.--Water-stage recorder. Datum of gage is 2,280.44 ft above mean sea level, unadjusted. Prior to July 28, 1909, staff gages at same site or sites within 1½ miles downstream referred to same datum.

Average discharge.--52 years, 559 cfs (404,700 acre-ft per year), adjusted for diversion since 1910 and for storage since October 1924.

Extremes.--Maximum discharge during year, 2,420 cfs May 26 (gage height, 5.10 ft); minimum, 10 cfs Mar. 19 (gage height, 1.39 ft).  
1906-58: Maximum discharge, 8,910 cfs Dec. 22, 1933 (gage height, 9.70 ft); no flow at times 1926, 1929, 1931-32, 1934, 1945.

Remarks.--Records good. Diversion for irrigation by Tieton Canal. Flow regulated by Tieton Reservoir, 7 miles above station.

Cooperation.--Gage-height record collected in cooperation with, and 13 discharge measurements furnished by Bureau of Reclamation.

Revisions (water years).--WSP 1216: Drainage area. WSP 1286: 1910(M), 1920.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

1.4	9	2.3	162	4.0	1,230
1.6	23	2.6	278	5.0	2,280
1.8	45	3.0	460	5.5	2,900
2.0	79	3.5	810		

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	389	73	51	44	29	103	56	*96	1,150	898	1,110	712
2	348	73	50	33	29	96	68	114	1,100	930	1,100	712
3	296	73	50	29	29	84	68	120	1,050	962	1,090	712
4	278	75	50	27	28	75	51	114	962	962	1,080	712
5	265	75	48	28	29	71	54	111	898	962	1,070	712
6	249	73	64	27	29	68	54	106	1,060	978	1,060	705
7	213	73	73	26	*35	58	54	114	1,030	1,060	1,050	712
8	153	*73	79	*26	46	31	52	134	1,030	*1,090	1,040	705
9	131	73	60	27	51	25	60	123	970	1,090	1,050	705
10	131	73	33	26	56	23	54	103	1,000	1,120	1,060	705
11	*131	73	30	25	56	*21	68	77	986	1,240	1,050	712
12	128	77	28	25	56	20	86	45	*954	1,330	*1,040	705
13	128	79	27	25	56	34	109	*77	1,030	1,300	1,040	642
14	128	75	26	25	56	34	111	222	1,040	1,240	1,030	507
15	*128	70	25	35	54	21	93	404	1,070	1,170	1,030	*588
16	128	62	25	50	52	22	89	442	1,040	1,160	1,020	564
17	125	60	24	54	56	21	*89	442	820	1,160	1,010	528
18	117	58	24	50	73	21	79	394	*671	1,150	1,010	456
19	117	60	*26	48	96	13	111	409	874	1,140	994	394
20	120	62	30	43	106	11.5	292	363	874	1,130	*1,000	404
21	120	57	26	39	109	16.5	228	296	*866	1,120	994	420
22	120	57	25	38	*117	26	183	378	858	1,120	986	425
23	123	58	23	38	125	31	159	727	898	1,110	978	452
24	117	58	27	46	244	84	146	1,820	938	1,110	970	469
25	111	58	31	44	257	77	125	2,250	892	1,110	946	458
26	109	58	46	41	186	70	93	*2,330	826	1,110	938	469
27	101	56	39	40	143	64	75	2,260	818	1,110	906	430
28	89	50	37	51	120	64	70	2,030	810	1,110	834	363
29	75	50	34	51	-	62	71	1,700	803	1,110	775	292
30	75	52	37	40	-----	66	77	1,440	842	1,110	712	283
31	73	-----	48	32	-----	57	-----	1,290	-----	1,110	712	-----
Total	4,816	1,964	1,202	1,133	2,323	1,470.0	2,925	20,511	28,150	34,302	30,685	16,733
Mean	155	63.5	38.4	36.5	83.0	47.4	97.5	662	938	1,107	990	558
Ac-ft	9,550	3,900	2,380	2,250	4,610	2,920	5,800	40,680	55,830	68,040	60,860	33,190
(+)	+4,550	+7,790	+14,210	+16,010	+19,810	+19,850	+31,820	+53,510	-12,940	-61,260	-64,940	-28,990
(*)	251	194	996	60	744	1,290	1,650	12,800	19,960	20,680	20,890	16,460

Adjusted for change in reservoir contents and diversion

Mean	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
233	200	286	298	453	391	660	1,740	1,056	447	273	347	
0.975	0.837	1.20	1.26	1.90	1.64	2.76	7.28	4.42	1.87	1.14	1.45	
In.	1.13	0.93	1.38	1.44	1.97	1.89	3.08	8.39	4.93	2.15	1.32	1.62
Ac-ft	14,350	11,880	17,590	18,320	25,160	24,060	39,270	107,000	62,850	27,460	16,810	20,660

Observed

Calendar year 1957: Max	2,330	Min	23	Mean	463	Ac-ft	335,100
Water year 1957-58: Max	2,330	Min	11.5	Mean	401	Ac-ft	290,000

Adjusted

Calendar year 1957: Mean	492	Cfsm	2.06	In.	27.97	Ac-ft	356,300
Water year 1957-58: Mean	532	Cfsm	2.23	In.	30.23	Ac-ft	385,400

\* Discharge measurement made on this day.

† Change in contents, in acre-feet, of Tieton Reservoir.

\* Diversion, in acre-feet, by Tieton Canal.

## 4940. Naches River below Tieton River, near Naches, Wash.

Location.--Lat 46°44'40", long 120°46'00", in SW¼NE¼ sec. 36, T. 15 N., R. 16 E., on left bank half a mile downstream from Wapatox power canal, three-quarters of a mile downstream from Tieton River, and 3½ miles northwest of Naches.

Drainage area.--941 sq mi.

Records available.--August to October 1905, October 1908 to September 1958. Monthly discharge only for some periods, published in WSP 1316.

Gage.--Water-stage recorder. Datum of gage is 1,549.67 ft above mean sea level, datum of 1929, supplementary adjustment of 1947. Prior to Dec. 7, 1916, staff gage and Dec. 7, 1916, to Sept. 9, 1936, water-stage recorder, at site five-eighths of a mile upstream at different datums. Sept. 10 to Oct. 30, 1936, staff gage at present site and datum.

Average discharge.--50 years, 1,711 cfs (1,239,000 acre-ft per year), adjusted for diversions by Selah Valley and Tieton Canals since 1909, city of Yakima at Oak Flat since 1929, by Wapatox Canal since 1936, for change in contents in Bumping Lake since November 1910, and in Tieton Reservoir since October 1924.

Extremes.--Maximum discharge during year, 9,350 cfs May 25 (gage height, 16.65 ft); minimum, 11.5 cfs Nov. 29 (gage height, 9.88 ft).

1905, 1908-58: Maximum discharge, 32,200 cfs Dec. 22, 23, 1933 (gage height, 14.33 ft, site and datum then in use); minimum, 1 cfs Nov. 7, 1942, and for many days in winter of 1943-44, result of regulation and diversion.

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated by Bumping Lake and Tieton Reservoir (see p. 344), by diversion at Oak Flat for municipal supply of city of Yakima below station, and by diversion of Selah Valley, Tieton, and Wapatox Canals. Small unmeasured diversions for irrigation of approximately 420 acres above station.

Cooperation.--Gage-height record collected in cooperation with, and 21 discharge measurements furnished by Bureau of Reclamation.

Revisions (water years).--WSP 1216: Drainage area. WSP 1286: 1910(M), 1911, 1929-30(M), 1932-33(M), 1935(M). WSP 1396: 1954.

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	88	22	16	b18	29	991	380	2,000	4,040	1,640	884	504
2	89	20	15.5	b18	28	847	492	*2,408	3,720	1,800	852	474
3	38	18.5	15.5	b18	27	716	*492	2,770	3,560	1,600	828	442
4	35	17.5	15.5	b18	26	604	438	2,920	3,340	1,580	820	405
5	49	17.5	15.5	20	25	534	396	3,060	*3,310	1,560	812	360
6	32	17	17	19	25	432	380	3,220	3,720	1,550	804	350
7	31	16	84	*17.5	25	380	370	*3,650	3,090	1,710	796	340
8	27	*18	17.5	28	320	390	4,160	3,190	1,590	1,780	788	312
9	24	16	37	18.5	31	281	408	4,600	2,940	1,440	788	294
10	23	16	23	19	39	233	432	4,760	2,890	*1,380	788	294
11	23	17.5	21	19	37	194	562	5,110	2,830	1,400	780	289
12	23	19	20	19	*42	194	708	*4,400	2,650	1,460	772	284
13	*23	24	19	18.5	42	164	1,020	3,530	2,680	1,440	764	280
14	23	25	18.5	17.5	56	150	1,230	3,170	2,680	1,360	740	248
15	22	22	17.5	23	47	92	*1,190	3,330	2,680	*1,230	733	248
16	16	19	17.5	113	40	82	*1,170	3,650	2,620	1,210	726	*236
17	13.5	18.5	17.5	233	45	77	1,200	4,140	2,350	1,230	719	229
18	12.5	17.5	*18.5	263	142	67	1,270	4,560	1,860	1,130	712	198
19	12	17.5	17.5	221	340	*64	1,230	*5,150	2,140	1,090	698	108
20	12.5	17	18.5	174	432	77	1,770	5,580	2,130	1,040	684	86
21	12.5	b15	17.5	106	492	95	*3,700	5,750	2,050	1,020	*684	116
22	12.5	15.5	16	80	604	108	3,310	6,630	1,990	1,020	663	106
23	15	16	15	71	829	132	2,930	7,350	*1,960	1,020	663	126
24	15	16	16	95	*1,420	274	2,580	8,400	2,100	989	642	156
25	16	16	17	66	2,250	471	2,330	9,080	2,000	972	635	166
26	17.5	16	49	45	*1,910	*457	2,120	*9,020	1,770	972	614	159
27	17.5	15.5	43	38	1,510	420	1,930	8,620	1,810	964	*614	142
28	16	15.5	31	53	1,200	402	1,810	7,780	1,710	948	558	78
29	15	b14	b23	56	-	396	1,750	6,310	1,630	972	522	*56
30	15.5	b14	b22	46	-----	457	1,790	5,120	1,620	989	474	67
31	24	-----	15.5	35	-----	402	-----	4,540	-----	916	464	-----
Total	773.0	527.0	752.5	1,975.5	11,721	10,093	39,778	154,760	76,970	39,022	22,021	7,133
Mean	24.9	17.6	24.3	63.7	419	326	1,328	4,992	2,566	1,259	710	238
Ac-ft	1,530	1,050	1,490	3,920	23,250	20,020	78,900	307,000	152,700	77,400	43,680	14,150
(†)	1,280	*6,670	*15,360	*19,630	*28,360	*29,230	*39,110	*54,170	*20,550	*70,770	*39,680	*32,060
(‡)	27,240	21,610	24,550	26,770	28,150	28,830	23,250	50,790	57,040	58,960	58,590	49,760

Adjusted for change in lake and reservoir contents and diversions

	489	493	673	786	1,395	1,255	2,375	6,701	3,180	1,034	530	535
Mean	0.520	0.524	0.715	0.835	1.48	1.33	2.52	7.12	3.38	1.10	0.63	0.59
Cfsm	0.60	0.58	0.82	0.96	1.54	1.54	2.82	8.21	3.77	1.27	0.65	0.63
Ac-ft	30,050	29,330	41,400	48,320	77,460	77,140	141,300	412,000	189,200	63,590	32,590	31,850

Observed

Calendar year 1957: Max	9,860	Min	12	Mean	1,026	Ac-ft	742,700
Water year 1957-58: Max	9,080	Min	12	Mean	1,001	Ac-ft	725,100

Adjusted

Calendar year 1957: Mean	1,486	Cfsm	1.58	In.	21.41	Ac-ft	1,076,000
Water year 1957-58: Mean	1,622	Cfsm	1.72	In.	23.39	Ac-ft	1,174,000

\* Discharge measurement made on this day.

† Change in contents, in acre-feet, in Bumping Lake and Tieton Reservoir.

‡ Diversion, in acre-feet, by Tieton, Selah Valley, and Wapatox Canals and city of Yakima.

b Stage-discharge relation affected by ice.



5005. North Fork Ahtanum Creek near Tampico, Wash.

Location.--Lat 46°33'40", long 120°55'10", in NW $\frac{1}{4}$  sec. 2, T. 12 N., R. 15 E., on left bank 150 ft downstream from Nasty Creek,  $\frac{3}{4}$  miles upstream from Tampico and confluence with South Fork, and 20 miles west of Yakima.

Drainage area.--68.9 sq mi.

Records available.--August 1907 to September 1958 (no winter records in water years 1908-9, 1916-30). Monthly discharge only for some periods, published in WSP 1316.

Gage.--Water-stage recorder. Concrete control Nov. 11, 1915, to December 1933 and Sharp-crested weir since September 1934. Altitude of gage is 2,450 ft (from topographic map). Prior to Sept. 20, 1934, staff gage or water-stage recorder at site 50 ft upstream at different datum.

Average discharge.--34 years (1909-15, 1930-58), 69.0 cfs (49,950 acre-ft per year).

Extremes.--Maximum discharge during year, 531 cfs May 23 (gage height, 2.36 ft); minimum, 5.8 cfs Nov. 29 (gage height, 0.15 ft).  
1907-58: Maximum discharge, 823 cfs May 20, 1956 (gage height, 3.00 ft); minimum, 5.0 cfs Nov. 14, 15, 1944, Jan. 20, 1945 (gage height, 0.18 ft), but may have been less during periods of ice effect.

Remarks.--Records good except those for periods of ice effect, which are fair. No diversion of importance. No regulation.

Cooperation.--Gage-height record, 21 discharge measurements, and computations of daily discharge furnished by Office of Indian Affairs; 8 discharge measurements made and records reviewed by Geological Survey.

Revisions (water years).--WSP 1216: Drainage area. WSP 1286: 1910(M), 1914-15.

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.2	9.0	1.0	124
.3	19	1.5	242
.5	42	2.0	400
.7	70	2.5	588

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	23	b18	b17	28	112	84	165	262	*68	32	23
2	17	21	19	b18	28	100	95	200	242	*67	32	*23
3	18	20	19	b18	28	91	95	218	234	66	32	24
4	19	20	19	b19	28	83	*90	228	231	61	32	24
5	23	20	19	b19	29	78	88	*237	251	58	*32	24
6	23	20	29	b20	28	70	86	248	*274	78	32	22
7	23	20	32	b20	29	64	84	283	248	154	31	21
8	24	21	26	b20	31	60	84	327	223	*91	31	*21
9	24	21	23	25	20	55	84	353	215	80	30	20
10	24	20	21	22	*36	52	86	366	210	73	30	20
11	23	22	21	21	36	48	97	373	195	66	*28	20
12	*23	23	20	22	36	47	108	307	*185	61	28	20
13	24	24	19	21	36	43	130	262	176	60	27	22
14	24	22	20	22	35	42	141	248	185	*56	27	21
15	22	21	20	28	35	42	134	254	158	54	27	*21
16	21	20	21	30	34	41	130	280	*149	51	27	21
17	21	18	20	32	38	40	139	314	143	48	26	22
18	20	20	19	30	66	38	*134	330	139	54	*26	20
19	20	20	*23	30	76	37	143	369	132	52	26	20
20	19	16	*26	29	83	37	251	393	124	47	*24	20
21	19	13	22	27	*86	42	*218	404	116	45	24	19
22	20	b18	21	26	99	47	192	428	108	*43	24	*20
23	20	b19	20	27	114	51	178	471	99	41	23	19
24	29	20	21	30	228	76	156	478	102	40	23	20
25	37	20	27	28	277	84	145	482	93	40	*23	20
26	31	19	46	27	200	86	132	446	86	40	22	19
27	27	17	32	27	160	84	120	439	84	38	23	19
28	*24	19	29	28	132	84	114	440	78	38	24	19
29	24	10	27	29	--	86	116	346	73	*37	24	18
30	28	b16	17	29	-----	86	134	397	*72	36	24	19
31	26	15	28	28	-----	81	-----	289	-----	35	23	-----
Total	717	582	711	764	2,071	1,987	3,788	10,249	4,867	1,778	837	621
Mean	23.1	19.4	22.9	24.6	74.0	64.1	126	331	162	57.4	27.0	20.7
Cfs/m	0.336	0.282	0.332	0.357	1.07	0.930	1.84	4.40	2.35	0.833	0.392	0.300
In.	0.39	0.31	0.38	0.41	1.32	1.07	2.04	5.53	2.63	0.96	0.45	0.34
Ac-ft	1,420	1,150	1,410	1,520	4,110	3,940	7,510	20,330	9,650	3,530	1,660	1,230
Calendar year 1957: Max	475											
Water year 1957-58: Max	482											
Min												
Mean												
Cfs/m												
In.												
Ac-ft												

Peak discharge (base, 200 cfs).--Feb. 25 (3 a.m.) 314 cfs (1.75 ft); Apr. 20 (3 a.m.) 268 cfs (1.59 ft); May 10 (10 p.m.) 407 cfs (2.02 ft); May 23 (11 p.m.) 531 cfs (2.36 ft); June 5 (11 p.m.) 283 cfs (1.64 ft); July 7 (10 a.m.) 298 cfs (1.71 ft).

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

## 5010. South Fork Ahtanum Creek at Conrad Ranch, near Tampico, Wash.

Location.--Lat 46°30'30", long 120°54'50", in SW $\frac{1}{4}$  sec. 23, T. 12 N., R. 15 E., on left bank at Conrad Ranch, 2 $\frac{1}{2}$  miles upstream from confluence with North Fork, 2 $\frac{1}{2}$  miles southwest of Tampico, and 20 miles southwest of Yakima.

Drainage area.--24.8 sq mi.

Records available.--March 1915 to September 1958 (no winter records prior to water year 1931). Monthly discharge only for some periods, published in WSP 1316.

Gage.--Water-stage recorder/ Concrete control effective Sept. 6, 1916, to December 1933. Altitude of gage is 2,400 ft (from topographic map). Prior to Aug. 9, 1918, staff gage at same site at datum 1.00 ft lower. Aug. 9, 1918, to Mar. 22, 1951, staff gage at present site and datum.

Average discharge.--28 years (1930-58), 19.2 cfs (1,390 acre-ft per year).

Extremes.--Maximum discharge during year, 168 cfs Feb. 25 (gage height, 1.93 ft); minimum, 5.4 cfs Nov. 29 (gage height, 0.41 ft).

1915-58: Maximum discharge observed, 424 cfs Dec. 23, 1933 (gage height, 3.10 ft), from rating curve extended above 80 cfs; minimum observed, 2.6 cfs Aug. 23, 25, 1931 (gage height, 0.35 ft).

Remarks.--Records good except those for periods of ice effect, which are fair. Diversion for irrigation of about 55 acres above station. No regulation.

Cooperation.--Gage-height record, 25 discharge measurements, and computations of daily discharge furnished by Office of Indian Affairs; 8 measurements made and records reviewed by Geological Survey.

Revisions (water years).--WSP 312: 1910. WSP 902: 1939. WSP 1246: Drainage area. WSP 1316: 1943(M). WSP 1446: 1918(M).

Rating table, water year 1957-58, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.4	5.4	1.0	52
.5	9.0	1.5	109
.6	14.5	2.0	191

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*6.6	7.4	7.0	b8.5	13.5	43	35	31	73	23	13.5	9.5
2	6.6	7.4	*6.6	b8.2	12.5	36	45	38	88	*22	12.5	*9.5
3	6.6	7.0	6.3	b8.0	12.5	*33	44	*42	*82	22	12.5	10
4	6.6	7.0	6.3	b7.8	12.5	31	*40	45	60	20	12.5	10
5	8.6	7.0	6.3	b7.6	13.5	28	38	*46	60	20	*12.5	9.5
6	9.0	7.0	9.0	b7.4	12.5	25	36	51	63	24	12.5	9.5
7	9.0	7.0	10	b7.3	14	23	35	58	61	34	12	9.5
8	9.0	7.0	9.0	b7.3	16	22	34	66	58	*24	12	*9.5
9	9.5	7.0	8.6	b7.4	17.5	21	34	74	56	22	12	9.5
10	9.0	7.0	8.2	b7.6	*18	19.5	33	78	55	20	12	9.5
11	8.6	7.8	7.8	7.8	18	18	34	84	54	19.5	*11.5	9.0
12	*8.6	7.8	7.4	8.2	18	18	36	74	*50	19	11.5	9.5
13	8.6	8.2	7.4	7.8	19	16.5	39	64	47	19	11.5	10
14	8.2	7.8	7.4	7.8	18	*16	41	57	44	*18	11.5	9.5
15	7.8	7.8	7.4	8.6	18	15	41	57	40	18	11.5	*9.5
16	7.0	7.8	7.4	8.2	18	15	38	62	*39	18	11	9.5
17	7.0	7.0	7.4	8.6	23	14	37	70	37	16.5	11	9.5
18	7.0	7.4	7.4	8.6	30	13.5	*37	76	36	16.5	*11	9.0
19	7.0	7.0	8.2	9.0	34	13.5	40	88	35	16	9.5	9.0
20	7.0	6.6	*9.0	9.0	36	13.5	75	99	33	15	*8.2	9.0
21	7.0	6.6	8.2	9.0	*37	15	*68	102	31	15	9.0	9.0
22	7.4	7.0	8.2	9.0	40	16.5	56	106	30	*15	9.0	*9.0
23	8.2	7.0	7.8	9.5	46	17.5	48	118	29	15	9.0	9.0
24	9.0	6.6	8.2	11	113	24	43	121	30	15	9.5	9.0
25	10.5	6.6	10	10.5	143	28	37	122	29	14.5	*10	9.0
26	9.5	6.6	14.5	10.5	100	*30	32	121	27	14.5	10	9.0
27	8.2	6.6	11.5	11	72	31	29	119	27	14.5	10	9.0
28	*8.2	6.6	11.5	14	53	31	28	115	25	*14	10.5	8.6
29	8.2	b6.4	10.5	14.5	-	33	27	102	24	14	10	8.2
30	8.6	b8.5	b9.5	14	-----	34	28	90	*23	13.5	10	8.2
31	8.2	-----	b9.0	13.5	-----	32	-----	81	-----	13.5	10	-----
Total	250.3	212.5	263.0	287.2	978.5	726.5	1,188	2,455	1,306	565.0	339.2	277.5
Mean	8.07	7.08	8.48	9.26	34.9	23.4	39.6	79.2	43.5	18.2	10.9	9.25
Ac-ft	496	421	522	570	1,940	1,440	2,360	4,870	2,590	1,120	673	550
Calendar year 1957: Max	91			Min	4.9	Mean	17.2	Ac-ft	12,420			
Water year 1957-58: Max	143			Min	6.3	Mean	24.2	Ac-ft	17,550			

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

5050. Yakima River near Parker, Wash.

Location.--Lat 46°29'40", long 120°26'10", in sec. 28, T. 12 N., R. 19 E., on left bank 700 ft downstream from Sunnyside diversion dam, 1½ miles east of Parker, and 3 miles downstream from Ahtanum Creek.

Drainage area.--3,650 sq mi, approximately.

Records available.--April 1908 to September 1958. Monthly discharge only for some periods, published in WSP 1316. Prior to October 1916, published as "near Wapato."

Gage.--Water-stage recorder. Datum of gage is 886.23 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Jan. 1, 1909, hook gage at site 25 ft above headgate of Sunnyside Canal at different datum. Jan. 1, 1909, to Dec. 31, 1913, chain gage at site 500 ft downstream from Sunnyside Canal at datum 1.82 ft higher than present datum. Jan. 1, 1914, to Aug. 16, 1915, chain or staff gage and Aug. 17, 1915, to Feb. 2, 1919, water-stage recorder, at site 500 ft downstream from headgate of Sunnyside Canal at datum 0.18 ft lower than present datum. Feb. 3, 1919, to Oct. 20, 1940, water-stage recorder at present site at datum 0.18 ft lower than present datum. Oct. 21, 1940, to Aug. 9, 1953, water-stage recorder at site 1,000 ft downstream from headgate of Sunnyside Canal at datum 0.18 ft lower than present datum.

Extremes.--Maximum discharge during year, 9,210 cfs Feb. 25 (gage height, 8.23 ft); minimum, 30 cfs June 18 (gage height, 1.84 ft); minimum daily, 49 cfs July 10. 1908-58: Maximum discharge, 65,000 cfs Dec. 23, 1933 (gage height, 15.0 ft, from high-water marks); minimum, less than 10 cfs for several days during latter part of irrigation season in most years prior to 1936.

Remarks.--Records good. Diversions above station for irrigation of about 200,000 acres above and 220,000 acres below station. During the irrigation season when Sunnyside Canal is carrying water, as much as 18 cfs, depending upon the stage of the canal, is released ahead of the fish screens and passes the river and canal gaging stations unmeasured. For combined flow of Yakima River and canals see following page. Some regulation by diversions and by Keechelus, Kachess, Cle Elum, and Bumping Lakes, and Tieton Reservoir (see p. 344).

Cooperation.--Gage-height record collected in cooperation with, and 20 discharge measurements furnished by Bureau of Reclamation.

Revisions (water years).--WSP 982: 1942. WSP 1122: 1934. WSP 1216: 1949-50, drainage area.

Rating table, water year 1957-58 (gage height, in feet, and discharge, in cubic feet per second)

2.0	45	5.6	620	6.0	3,740
2.4	102	4.0	940	7.0	5,890
2.8	202	5.0	2,090	9.0	11,600
3.2	370				

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	562	1,330	1,010	1,150	1,730	4,820	1,910	1,720	3,970	302	498	289
2	613	1,276	1,030	1,190	1,660	4,210	2,380	2,440	3,280	256	403	230
3	544	1,210	1,030	1,210	1,670	3,890	2,970	3,230	2,850	437	345	289
4	420	1,160	1,040	1,230	1,630	3,530	2,460	3,590	*2,420	350	370	302
5	425	1,130	1,050	1,200	1,570	*3,280	2,060	3,510	2,190	302	361	294
6	398	1,090	1,080	*1,150	1,590	3,070	1,860	3,460	2,470	202	392	202
7	330	1,200	1,250	1,580	2,830	1,700	3,820	1,810	366	*320	145	
8	381	1,210	1,650	1,110	1,650	2,720	1,630	4,540	1,700	473	268	175
9	321	1,030	*1,770	1,060	1,780	2,360	1,670	5,470	1,630	185	216	256
10	*211	922	1,730	1,100	1,880	2,320	1,510	5,700	1,530	49	253	245
11	230	922	1,620	1,100	*1,980	2,190	1,620	5,750	1,580	52	268	226
12	216	*1,080	1,550	1,140	2,240	2,150	1,920	*5,100	1,370	202	220	*241
13	202	1,140	1,450	1,160	2,500	2,030	3,380	3,330	1,670	226	*199	345
14	199	1,130	1,390	1,150	2,500	1,950	*2,940	*2,120	1,180	268	234	245
15	470	1,240	1,340	1,160	2,480	1,880	3,140	1,950	1,350	161	285	289
16	1,000	1,240	1,320	1,340	2,440	1,820	*2,870	2,320	1,280	196	321	289
17	1,990	1,160	1,310	1,430	2,500	*1,650	2,710	3,170	*1,090	223	223	437
18	1,850	1,150	*1,270	1,720	2,850	1,190	2,920	3,890	286	325	249	298
19	1,810	1,110	1,230	1,780	3,160	1,350	2,690	*4,480	*455	492	245	108
20	1,400	1,090	1,260	1,770	3,480	904	4,260	5,330	*431	296	230	122
21	1,220	1,070	1,320	1,730	*3,570	620	*7,370	5,210	414	*340	272	175
22	1,210	1,030	1,320	1,640	3,680	1,120	6,380	5,790	325	316	*285	212
23	1,280	1,030	1,270	1,580	4,290	1,550	5,080	6,730	220	260	234	280
24	1,030	1,030	1,220	1,560	5,510	1,550	4,210	7,860	453	260	193	298
25	1,340	1,030	1,230	1,590	*8,450	2,120	3,330	8,540	994	276	298	320
26	1,380	976	1,380	1,550	8,400	2,230	2,740	8,770	568	334	376	285
27	1,400	958	1,640	1,510	6,790	2,090	2,280	8,340	592	306	408	302
28	1,370	967	1,630	1,550	5,580	1,990	1,790	7,940	557	302	518	112
29	1,310	967	1,500	1,760	-	1,920	1,340	6,810	455	216	648	202
30	1,260	958	1,380	1,910	-----	2,020	*1,270	5,370	350	401	627	184
31	1,500	-----	1,250	1,830	-----	2,060	-----	4,390	-----	498	398	-----
Total	27,672	32,870	41,510	43,530	89,160	69,514	83,330	150,670	39,470	8,874	10,177	7,397
Mean	893	1,096	1,333	1,404	3,184	2,242	2,780	4,860	1,316	286	328	247
Ac-ft	54,890	65,200	82,330	86,340	176,800	137,900	165,400	298,800	78,290	17,600	20,190	14,670
Calendar year 1957: Max	18,200			Min	53		Mean	2,129	Ac-ft	1,541,000		
Water year 1957-58: Max	8,770			Min	49		Mean	1,655	Ac-ft	1,198,000		

\* Discharge measurement made on this day.

## YAKIMA RIVER BASIN

## 5050. Yakima River near Parker, Wash.--Continued

Monthly discharge of Yakima River and canals near Parker, Wash.,  
water year October 1957 to September 1958

Month	Mean discharge, in cubic feet per second							Combined flow of Yakima River and canals (acre-feet)
	Yakima River near Parker	Roca Canal at mile 36.9	Union Gap Canal (estima- ted)	New Reser- vation Canal	Old Reser- vation Canal	Sunny- side Canal	Combined flow of Yakima River and canals	
October.....	893	250	7	319	2.7	315	1,787	109,900
November.....	1,096	0	0	0	12.7	0	1,109	65,990
December.....	1,399	0	0	0	25.8	0	1,365	83,930
Calendar year 1957...	2,129	420	18	844	12.3	591	4,014	2,908,000
January.....	1,404	0	0	0	27.8	0	1,432	88,050
February.....	3,184	0	0	0	28.3	0	3,212	178,400
March.....	2,242	180	1	151	14.9	111	2,700	166,000
April.....	2,780	501	17	758	2.8	612	4,671	277,900
May.....	4,860	823	37	1,879	25.7	1,150	8,775	539,600
June.....	1,316	961	42	1,980	35.6	1,271	5,604	353,400
July.....	286	984	40	1,943	0	1,299	4,552	279,900
August.....	328	949	36	1,745	0	1,273	4,330	268,300
September.....	247	650	32	1,320	0	1,020	3,269	194,500
Water year 1957-58...	1,655	444	18	846	14.4	591	3,568	2,584,000

Note.--New Reservation, Old Reservation, and Sunnyside Canals divert from river above station and below Union Gap. Roca and Union Gap Canals head above Union Gap, but records given herein show flow in these canals that reaches the valley below Union Gap. Records for Roca and Sunnyside Canals furnished by Bureau of Reclamation. Records for Union Gap Canal estimated on basis of discharge measurements and records of flow at canal headworks. Combined flow represents flow of Yakima River that reaches valley below Union Gap.

## 5105. Yakima River at Kiona, Wash.

Location.--Lat 46°15'10", long 119°28'50", in sec. 19, T. 9 N., R. 27 E., on left bank just upstream from highway bridge at Kiona, 3½ miles downstream from intake of Kiona Canal and 25 miles upstream from mouth.

Drainage area.--5,600 sq mi, approximately.

Records available.--August to December 1895 (gage heights only, fragmentary), August 1896 to March 1915, February 1933 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 454.41 ft above mean sea level, datum of 1929, supplementary adjustment of 1947. Prior to Mar. 31, 1915, several staff or chain gages at approximately same site and datum. Feb. 6, 1933, to July 26, 1934, tape gage at present site and datum.

Extremes.--Maximum discharge during year, 10,200 cfs Feb. 26 (gage height, 8.90 ft); minimum, 844 cfs July 14 (gage height, 3.18 ft).  
1896-1915, 1933-58: Maximum discharge, 67,000 cfs Dec. 23, 1933 (gage height, 21.57 ft, from high-water marks); minimum observed, 105 cfs Sept. 11, 1906 (gage height, 2.35 ft, datum then in use)

Remarks.--Records good. Water diverted above gage for irrigation of about 424,000 acres. Some regulation by diversions and by Keechelus, Kachess, Cle Elum, and Bumping Lakes, and Picton Reservoir (see following page). The Kiona Canal bypasses station with a mean flow of approximately 23 cfs for irrigation of about 1,100 acres below station. Diversion by the Kennewick Canal was 77,540 acre-ft in water year 1958. Records of chemical analyses and water temperatures for the water year 1958 are given in WSP 1574.

Revisions (water years).--WSP 214: 1905. WSP 1122: 1934(M). WSP 1216: 1949-50, drainage area. WSP 1286: 1907(M), 1909, 1936.

Rating table, water year 1957-58 (gage height, in feet,  
and discharge, in cubic feet per second)

3.2	860
4.0	1,630
5.0	2,830
7.0	6,400
9.0	10,400

Discharge, in cubic feet per second, water year October 1957 to September 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,710	2,340	1,920	2,270	3,030	7,620	4,090	2,970	6,020	1,400	1,220	1,990
2	3,110	2,350	1,930	2,120	2,910	6,940	4,080	3,140	5,560	1,410	1,320	1,870
3	3,000	2,350	1,940	2,110	2,840	6,320	4,620	3,720	4,920	1,390	1,290	1,820
4	2,900	2,280	1,930	2,120	2,790	5,840	5,120	4,380	4,350	1,630	1,220	1,820
5	2,770	2,240	2,060	2,110	2,730	5,340	4,710	4,740	3,860	1,640	1,180	1,800
6	2,870	2,190	1,950	2,100	2,650	4,800	4,350	4,710	3,640	1,390	1,180	1,770
7	2,870	2,180	1,920	2,050	2,650	4,710	4,150	4,720	3,680	1,410	1,250	1,740
8	2,810	2,130	1,980	1,930	2,630	4,380	3,900	4,980	3,170	1,420	1,290	1,630
9	2,850	2,270	2,310	2,030	2,690	4,110	3,770	5,640	2,940	1,450	1,270	1,590
10	2,820	2,150	2,470	1,940	2,830	3,820	3,750	6,460	2,910	1,570	1,260	1,530
11	2,660	2,060	2,510	1,940	3,040	3,630	3,570	6,740	2,940	1,400	1,190	1,570
12	2,580	2,030	2,420	1,850	3,160	3,410	3,640	7,000	2,810	1,050	*1,220	1,590
13	2,450	2,070	2,360	2,040	3,450	3,290	3,860	6,440	2,640	*959	1,240	1,630
14	2,460	2,100	2,290	2,110	3,970	3,170	4,290	4,960	2,780	914	1,150	1,750
15	2,430	1,930	2,240	2,120	3,860	3,100	4,740	3,910	2,430	1,210	1,230	1,650
16	2,510	2,180	2,190	2,160	3,860	2,980	4,870	3,560	2,450	1,230	1,300	1,630
17	2,970	2,160	2,180	2,520	4,080	2,530	4,740	3,790	2,400	968	1,410	1,810
18	3,630	*2,120	2,160	2,610	4,180	2,770	4,580	4,540	2,170	1,020	1,430	1,930
19	3,330	2,050	2,120	2,730	4,740	2,450	4,810	5,190	1,700	1,080	1,430	1,980
20	3,140	2,000	2,050	2,760	4,810	2,510	4,620	5,720	1,210	1,270	1,460	1,860
21	2,790	1,980	2,090	2,730	5,010	2,360	6,220	6,420	1,290	1,290	1,430	*1,810
22	2,530	1,970	*2,170	2,660	5,080	2,250	6,620	6,360	1,140	1,150	1,430	1,830
23	2,520	1,970	2,180	2,600	5,170	2,790	5,000	6,800	1,140	1,090	1,490	1,910
24	2,520	1,970	2,190	*3,540	5,680	3,100	7,160	7,740	1,020	1,050	1,520	2,000
25	2,360	1,970	2,100	2,790	7,580	3,050	6,300	6,460	1,170	1,050	1,520	2,010
26	2,450	1,940	2,130	2,810	9,760	3,570	5,380	*9,340	1,640	1,070	1,610	2,030
27	2,510	2,010	2,340	2,660	9,680	4,130	4,900	9,700	1,580	1,040	1,820	2,010
28	2,520	1,920	2,530	2,600	*8,420	4,060	*4,420	9,480	1,290	1,100	1,860	2,030
29	2,480	1,870	2,570	2,810	-----	*4,040	3,790	9,040	1,790	1,110	2,000	1,950
30	2,430	1,880	2,590	*3,540	-----	4,000	3,240	8,060	1,570	1,090	2,150	1,830
31	2,360	-----	2,410	3,160	-----	4,020	-----	6,620	-----	1,110	2,150	-----
Total	84,320	62,640	68,180	74,160	123,480	121,490	144,290	185,530	78,210	37,961	44,520	54,430
Mean	2,720	2,068	2,199	2,392	4,410	3,919	4,810	5,985	2,607	1,225	1,436	1,814
Ac-ft	167,200	124,200	135,200	147,100	244,900	241,000	286,200	368,000	155,100	75,290	88,300	108,000

Calendar year 1957: Max 19,300 Min 1,060 Mean 3,459 Ac-ft 2,504,000  
Water year 1957-58: Max 9,760 Min 914 Mean 2,957 Ac-ft 2,140,000

\* Discharge measurement made on this day.

## Reservoirs in Yakima River basin, Wash.

Keechelus Lake.--Lat 47°19'20", long 121°20'20", in NE $\frac{1}{4}$  sec. 12, T. 21 N., R. 11 E., at dam on Yakima River at outlet of Keechelus Lake, 3 $\frac{1}{2}$  miles northwest of Martin and 9 $\frac{1}{2}$  miles northwest of Easton. Drainage area, 55.8 sq mi. Records available, January 1906 to September 1958. Staff gage read twice daily. Datum of gage is at mean sea level (Bureau of Reclamation bench mark). Maximum contents observed during year, 148,420 acre-ft May 30 (elevation, 2,513.30 ft); minimum observed, 11,690 acre-ft Oct. 3, 5 (elevation, 2,434.28 ft). Maximum contents observed during period 1906-58, 160,570 acre-ft May 16, 1925 (elevation, 2,518.09 ft); minimum observed, 448 acre-ft Sept. 6, 12, 13, 1906 (original crib dam); minimum elevation observed, 2,428.30 ft Sept. 20, 1926.

Reservoir is formed on natural lake by earth- and gravel-fill dam completed in 1917; storage began above crib dam Jan. 12, 1906, above present dam Aug. 19, 1914. To aid in construction and clearing of reservoir site, the water surface was kept low and present reservoir was not filled until June 15, 1920. Capacity, 157,800 acre-ft between gate sill (elevation, 2,425.00 ft) and spillway crest (elevation, 2,517.00 ft). Spillway raised 2 ft; construction completed Sept. 12, 1952. Records given herein represent usable contents. Water used for irrigation.

Kachess Lake.--Lat 47°15'50", long 121°12'00", in SW $\frac{1}{4}$  sec. 34, T. 21 N., R. 13 E., at dam on Kachess River at outlet of Kachess Lake, 2 $\frac{1}{2}$  miles northwest of Easton. Drainage area, 63.6 sq mi. Records available, September 1905 to September 1958. Staff gage read twice daily. Datum of gage is at mean sea level (Bureau of Reclamation bench mark). Maximum contents observed during year, 219,440 acre-ft June 13 (elevation, 2,257.64 ft); minimum observed, 76,340 acre-ft Oct. 15 (elevation, 2,219.94 ft). Maximum contents observed during period 1905-58, 244,850 acre-ft May 9, 1957 (elevation, 2,263.29 ft); minimum observed, 525 acre-ft Sept. 14, 15, 1910 (original crib dam); minimum elevation observed, 2,197.73 ft Sept. 26, 27, 1915.

Reservoir is formed on natural lake by earth- and gravel-fill dam completed in 1912. Original crib dam creating capacity of 21,000 acre-ft used Sept. 20, 1905, to June 30, 1911. Storage above present dam began June 30, 1911. Capacity, 239,000 acre-ft between gate sill (elevation, 2,192.75 ft) and top of spillway gate (elevation, 2,262.00 ft). Records given herein represent usable contents. Water used for irrigation.

Cle Elum Lake.--Lat 47°14'40", long 121°04'00", in NE $\frac{1}{4}$  sec. 10, T. 20 N., R. 14 E., at dam on Cle Elum River at outlet of Cle Elum Lake, 4 miles northwest of Roslyn. Drainage area, 203 sq mi. Records available, May 1906 to September 1958. Staff gage read twice daily. Datum of gage is at mean sea level (Bureau of Reclamation bench mark). Maximum contents observed during year, 438,830 acre-ft June 12 (elevation, 2,240.39 ft); minimum observed, 39,360 acre-ft Oct. 16 (elevation, 2,129.25 ft). Maximum contents observed during period 1906-58, 446,520 acre-ft May 8, 9, 1957 (elevation, 2,241.98 ft); minimum observed, 2,380 acre-ft Aug. 31, 1906; minimum elevation observed, 2,114.35 ft Oct. 14, 1932. Storage was uncontrolled Oct. 3, 1931, to Feb. 26, 1932. Reservoir is formed on natural lake by earth- and gravel-fill dam completed in 1933; storage began above present dam Feb. 26, 1932. Capacity, 436,900 acre-ft between gate sill (elevation, 2,110.00 ft) and top of spillway gate (elevation, 2,240.00 ft). Records given herein represent usable contents. Water used for irrigation.

Revisions (water years).--WSP 1182: 1948-49.

Bumping Lake.--Lat 46°52', long 121°18', in SW $\frac{1}{4}$  sec. 23 (unsurveyed), T. 16 N., R. 12 E., at dam on Bumping River at outlet of Bumping Lake, 11 $\frac{1}{2}$  miles upstream from American River and 19 miles west of Mile. Drainage area, 68.6 sq mi. Records available, June to July 1906, April 1909 to September 1958. Staff gage read twice daily. Datum of gage is at mean sea level (Bureau of Reclamation bench mark). Maximum contents observed during year, 36,830 acre-ft Apr. 27 (elevation, 3,428.35 ft); minimum observed, 5,540 acre-ft Dec. 5 (elevation, 3,397.49 ft). Maximum contents observed during period 1906, 1909-58, 39,840 acre-ft June 21, 22, 1925 (elevation, 3,430.55 ft); minimum observed, 1,130 acre-ft Feb. 5-9, 1949 (elevation, 3,390.80 ft).

Reservoir is formed on natural lake by earth-fill dam completed in 1910; storage began Nov. 3, 1910. Capacity, 33,700 acre-ft between gate sill (elevation, 3,389.00 ft) and spillway crest (elevation, 3,426.00 ft). Records given herein represent usable contents. Water used for irrigation.

Tieton Reservoir.--Lat 46°39'10", long 121°07'30", in SW $\frac{1}{4}$  sec. 31 (unsurveyed), T. 14 N., R. 14 E., on face of dam on Tieton River, at spillway, at Rimrock, 2,000 ft upstream from Wildcat Creek, 7 $\frac{1}{2}$  miles upstream from headworks of Tieton Canal, and 22 $\frac{1}{2}$  miles southwest of Naches. Drainage area, 187 sq mi. Records available, April 1925 to September 1958. Staff gage read twice daily. Datum of gage is at mean sea level (Bureau of Reclamation bench mark). Maximum contents observed during year, 201,070 acre-ft May 26 (elevation, 2,927.21 ft); minimum observed, 31,710 acre-ft Oct. 7 (elevation, 2,829.82 ft). Maximum contents observed during period 1925-58, 201,380 acre-ft June 21, 1937 (elevation, 2,927.33 ft); minimum observed, 89 acre-ft Oct. 12, 1926 (elevation, 2,766.77 ft).

Reservoir is formed by earth- and gravel-fill dam completed in 1925; storage began Apr. 27, 1925. Capacity, 198,000 acre-ft between sill of tunnel entrance (elevation, 2,766.00 ft) and crest of spillway gates (elevation, 2,926.00 ft). Records given herein represent usable contents. Water used for irrigation.

Cooperation.--Records furnished by Bureau of Reclamation, reviewed and prepared for publication by Geological Survey.

## Reservoirs in Yakima River basin, Wash.--Continued

Month-end elevation and usable contents, water year October 1957 to September 1958

Date	Elevation (feet)†	Contents (acre- feet)	Change in contents (acre-feet)	Elevation (feet)†	Contents (acre- feet)	Change in contents (acre-feet)
Keechelus Lake			Kachess Lake			
Sept. 30.....	2,434.37	11,800	-	2,224.13	88,440	-
Oct. 31.....	2,437.04	15,230	+3,430	2,220.68	78,470	-9,970
Nov. 30.....	2,444.39	24,800	+9,570	2,222.60	84,010	+5,540
Dec. 31.....	2,458.61	44,030	+19,230	2,227.60	100,030	+16,020
Calendar year 1957...	-	-	-73,750	-	-	-93,910
Jan. 31.....	2,467.67	57,160	+13,130	2,230.67	110,940	+10,910
Feb. 28.....	2,479.09	75,750	+18,590	2,235.29	127,840	+16,900
Mar. 31.....	2,485.41	87,200	+11,450	2,238.52	140,050	+12,210
Apr. 30.....	2,499.19	115,310	+28,110	2,245.20	166,410	+26,360
May 31.....	2,513.24	148,270	+32,960	2,256.53	214,550	+48,140
June 30.....	2,507.41	134,070	-14,200	2,255.12	208,370	-6,180
July 31.....	2,485.37	87,130	-46,940	2,247.95	177,750	-30,620
Aug. 31.....	2,453.03	36,350	-50,780	2,238.10	138,440	-39,310
Sept. 30.....	2,436.31	14,290	-22,060	2,228.63	103,660	-34,780
Water year 1957-58...	-	-	+2,490	-	-	+15,220
Cle Elum Lake			Bumping Lake			
Sept. 30.....	2,134.18	50,120	-	3,403.63	10,070	-
Oct. 31.....	2,131.95	45,180	-4,940	3,399.29	6,800	-3,270
Nov. 30.....	2,137.88	58,840	+13,660	3,397.69	5,680	-1,120
Dec. 31.....	2,147.78	84,750	+25,910	3,399.33	6,830	+1,150
Calendar year 1957...	-	-	-280,310	-	-	-8,710
Jan. 31.....	2,154.75	104,630	+19,880	3,404.11	10,450	+3,620
Feb. 28.....	2,164.48	134,600	+29,970	3,413.13	18,700	+8,250
Mar. 31.....	2,175.21	170,270	+35,670	3,420.73	27,140	+8,440
Apr. 30.....	2,191.59	229,530	+59,260	3,426.55	34,430	+7,290
May 31.....	2,236.72	421,270	+191,740	3,427.05	35,080	+660
June 30.....	2,235.58	415,890	-5,380	3,421.02	27,480	-7,610
July 31.....	2,204.70	281,080	-134,810	3,412.41	17,970	-9,510
Aug. 31.....	2,162.01	126,770	-154,310	3,407.41	13,230	-4,740
Sept. 30.....	2,132.70	46,820	-79,950	3,403.75	10,160	-3,070
Water year 1957-58...	-	-	-3,300	-	-	+90
Tieton Reservoir						
Sept. 30.....	2,830.60	32,470	-			
Oct. 31.....	2,835.08	37,020	+4,550			
Nov. 30.....	2,842.09	44,810	+7,790			
Dec. 31.....	2,853.29	59,020	+14,210			
Calendar year 1957...	-	-	-75,050			
Jan. 31.....	2,864.35	75,030	+16,010			
Feb. 28.....	2,876.62	94,840	+19,810			
Mar. 31.....	2,887.71	114,890	+19,850			
Apr. 30.....	2,903.65	146,510	+31,820			
May 31.....	2,926.60	200,020	+53,510			
June 30.....	2,921.59	187,080	-12,940			
July 31.....	2,893.50	125,820	-61,260			
Aug. 31.....	2,854.64	60,880	-64,940			
Sept. 30.....	2,830.01	31,890	-28,990			
Water year 1957-58...	-	-	-580			

† Elevation estimated at 12 p.m. from graph of twice-daily gage readings.

## 5125. Providence Coulee at Cunningham, Wash.

Location.--Lat 46°49'20", long 118°48'30", near township line in NW $\frac{1}{4}$  sec. 4, T. 15 N., R. 32 E., on right bank on upstream side of Northern Pacific Railway bridge at Cunningham.

Drainage area.--27.8 sq mi.

Records available.--January 1953 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 1,160 ft (from topographic map).

Extremes.--No flow during year.

1953-58: Maximum discharge, 2,160 cfs Feb. 21, 1956 (gage height, 10.04 ft); no flow most of each year.

Remarks.--No flow since Feb. 25, 1957. No known regulation or diversion. Calendar year figures for 1957 are as follows: Maximum, 51 cfs; mean, 0.151 cfs; cubic feet per second per square mile, 0.0054 cfs; runoff in inches, 0.07 cfs; runoff in acre-feet, 109 cfs.

## 5130. Esquatzel Coulee at Connell, Wash.

Location.--Lat 46°39'40", long 118°51'40", in NE $\frac{1}{4}$  sec. 36, T. 14 N., R. 31 E., on right bank 30 ft downstream from Main Street in Connell.

Drainage area.--240 sq mi.

Records available.--January 1953 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 840 ft (from topographic map).

Extremes.--No flow during year.

1953-58: Maximum discharge, 5,560 cfs Feb. 21, 1956 (gage height, 12.68 ft); no flow most of each year.

Remarks.--No flow since Feb. 26, 1957. No known regulation or diversion. Calendar year figures for 1957 are as follows: Maximum, 206 cfs; mean, 0.88 cfs; cubic feet per second per square mile, 0.0037 cfs; runoff in inches, 0.05 cfs; runoff in acre-feet, 640 cfs.

## 5135. Esquatzel Coulee at Eltopia, Wash.

Location.--Lat 46°27'40", long 119°01'00", in SE $\frac{1}{4}$  sec. 2, T. 11 N., R. 30 E., on left bank on upstream side of Northern Pacific Railway bridge at Eltopia.

Drainage area.--394 sq mi.

Records available.--January 1953 to September 1958.

Gage.--Water-stage recorder. Altitude of gage is 580 ft (from topographic map).

Extremes.--No flow during year.

1953-58: Maximum discharge, 3,740 cfs Feb. 22, 1956 (gage height, 18.23 ft); no flow most of each year.

Remarks.--No flow since Feb. 28, 1956. Considerable regulation by natural pondage in Esquatzel Coulee near Mesa. No known diversions.



As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or flood-flow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at partial-record stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. Discharge measurements made at miscellaneous sites for both low flow and high flow are given in a third table.

## Low-flow partial-record stations

Measurements of streamflow in the area covered by this report made at low-flow, partial-record stations are given in the following table. Most of these measurements were made during periods of base flow when streamflow is primarily from ground-water storage. These measurements, when correlated with the simultaneous discharge of a nearby stream where continuous records are available, will give a picture of the low-flow potentiality of stream. The column headed "Period of record" shows the water years in which measurements were made at the same, or practically the same, site.

Discharge measurements made at low-flow partial-record stations during water year 1958

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Spokane River basin, Wash.						
4295	Little Spokane River at Chattaroy.	NE $\frac{1}{4}$ sec.34, T.28 N., R.43 E., at former gaging station at Chattaroy.	300	1948*, 1952, 1955-57	9-17-58	75.3
4296	Deer Creek near Chattaroy.	On line between SW $\frac{1}{4}$ and SE $\frac{1}{4}$ sec. 26, T.28 N., R.43 E., 1 mile upstream from mouth near Chattaroy.	31.9	1948, 1952, 1955-57	9-17-58	.59
4301	Dragoon Creek at mouth, near Chattaroy.	NE $\frac{1}{4}$ sec.4, T.27 N., R.43 E., at mouth $\frac{1}{4}$ miles southwest of Chattaroy.	117	1948, 1952, 1955-57	9-17-58	15.6
4301.5	Little Spokane River below Dragoon Creek, near Chattaroy.	On line between secs. 3 and 4, T.27 N., R.43 E., 500 ft below Dragoon Creek and 1 mile south of Chattaroy.	512	1952, 1955-57	9-17-58	104
4302	Little Spokane River at Buckeye.	NE $\frac{1}{4}$ sec.16, T.27 N., R.43 E., 50 ft above county road bridge at Buckeye.	518	1952, 1955-57	9-17-58	114
4302.5	Little Spokane River near Buckeye.	SE $\frac{1}{4}$ sec.21, T.27 N., R.43 E., 50 ft below county road bridge and $\frac{1}{2}$ miles south of Buckeye.	523	1952, 1955-57	9-17-58	112
4303	Little Spokane River above Deadman Creek, near Dartford.	S $\frac{1}{2}$ sec.28, T.27 N., R.43 E., at county road bridge $\frac{1}{2}$ mile above Deadman Creek and $\frac{2}{3}$ miles northeast of Dartford.	524	1952, 1955-57	9-18-56	113
4303.5	Deadman Creek near Mead.	E $\frac{1}{2}$ sec.3, T.26 N., R.43 E., 300 ft below highway bridge and 1 mile north of Mead.	80.3	1948, 1952, 1955-57	9-18-58	1.01
4304	Deadman Creek below U. S. Highway 195, near Mead.	SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.5, T.26 N., R.43 E., 1,000 ft below U. S. Highway 195 and 1 mile northwest of Mead.	94.7	1953, 1955-57	9-18-58	10.2
4305	Deep Creek at Colbert.	SE $\frac{1}{4}$ sec.22, T.27 N., R.43 E., at former gaging station at Colbert.	32.8	1948*, 1952-53, 1955-57	9-17-58	0
4306	Little Spokane River below Deadman Creek, near Dartford.	SW $\frac{1}{4}$ sec.33, T.27 N., R.43 E., below Deadman Creek, $\frac{1}{2}$ miles northeast of Dartford.	659	1957	9-18-58	128
4307	Little Spokane River above Wandermere Lake Creek, near Dartford.	NW $\frac{1}{4}$ sec.5, T.26 N., R.43 E., 400 ft above Wandermere Lake Creek and $\frac{2}{3}$ mile east of Dartford.	660	1953, 1955-57	9-18-58	137
4308	Wandermere Lake Creek near Dartford.	SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.5, T.26 N., R.43 E., 100 ft above mouth and $\frac{1}{2}$ mile east of Dartford.	4.65	1953, 1955-57	9-18-58	10.6
4312	Little Spokane River below Country Club, near Dartford.	NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.12, T.26 N., R.42 E., 10 ft above bridge and 2 miles southwest of Dartford.	688	1953, 1955-57	9-19-58	316
4315	Little Spokane River near Dartford.	SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.3, T.26 N., R.42 E., at former gaging station near Dartford.	698	1948-52*, 1953, 1956-57	9-19-58	389
4321	Little Spokane River at mouth, near Spokane.	SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.5, T.26 N., R.42 E., 50 ft downstream from bridge, $\frac{2}{3}$ mile upstream from mouth, and $\frac{5}{8}$ miles west of Dartford.	700	1913-14, 1947-48, 1953, 1955-57	9-19-58	378

\* Operated as a continuous-record-gaging station.

## Crest-stage partial-record stations

The following table contains annual maximum discharges for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained but is not published herein. The years given in the period of record represent water years for which the annual maximum has been determined. The maximum discharge for each year since the crest-stage gage was established is given. The peak discharge for some years may have been published in a previous report as a measurement of discharge. Figures given herein supersede all previous figures of peak discharge for the floods listed.

Annual maximum discharge at crest-stage partial-record stations

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
Streams tributary to Willapa Bay, Wash.							
106	Lane Creek near Naselle.	On line between secs.3 and 10, T.10 N., R.9 W., at U. S. Highway 830, 1.5 miles north-east of Naselle.	2.15	1950-58	1-20-50 2- 9-51 2- 3-52 1-22-53 2-19-54 11-18-54 12-21-55 12- 9-56 1-15-58	5.30 4.30 4.72 4.83 4.06 4.43 4.87 4.55 4.27	172 142 192 125 154 185 205 197 178
110	North Nemah River near South Bend.	SE $\frac{1}{4}$ sec.30, T.12 N., R.9 W., 500 feet below Finn Creek and 12 miles south of South Bend.	18.0	1947-54* 1955-58	11-18-54 12-11-55 12- 9-56 1-14-58	8.02 7.65 7.23 5.13	1,610 1,460 1,320 724
111	North Nemah River tributary near South Bend.	NW $\frac{1}{4}$ sec.24, T.12 N., R.10 W., at Nemah Road $\frac{1}{2}$ mile east of U. S. Highway 101 and 10 $\frac{1}{2}$ miles south of South Bend.	.37	1949-58	2-16-49 12-27-49 2- 9-51 2- 3-52 1-23-53 1-21-54 2- 8-55 12-11-55 12- 9-56 1-14-58	9.51 7.62 8.84 7.29 9.47 6.43 4.83 9.44 9.94 4.53	60.0 50.0 56.8 49.6 54.6 49.4 32.7 61.7 68.4 33.4
122	Green Creek near Lebam.	NE $\frac{1}{4}$ sec.30, T.13 N., R.7 W., at county road, 2.5 miles north-west of Lebam.	1.79	1950-58	11-26-49 2- 9-51 2- 4-52 1-22-53 1- 5-54 2- 8-55 12-11-55 12- 9-56 12-25-57	4.15 4.89 3.46 3.57 4.11 3.25 4.18 5.81 3.81	158 224 117 106 127 94.9 133 223 45.3
135	Willapa River near Willapa.	NW $\frac{1}{4}$ sec.2, T.13 N., R.8 W., 150 ft below Mill Creek and 2 $\frac{1}{2}$ miles southeast of Willapa.	130	1949-55* 1956, 1958	2- 8-55 12-21-55 12-25-57	16.38 18.92 17.36	6,270 8,040 6,950
167	Joe Creek near Cosmopolis.	SE $\frac{1}{4}$ sec.30, T.16 N., R.8 W., at U. S. Highway 101, 8 $\frac{1}{2}$ miles southeast of Cosmopolis.	2.05	1949-58	2-17-49 11-25-49 2- 9-51 2- 4-52 1-22-53 1- 6-54 2- 8-55 12-11-55 12- 9-56 12-25-57	3.47 3.91 3.66 2.08 2.96 2.91 3.25 3.19 4.92 2.58	193 232 212 88.0 138 147 179 171 329 120
Chehalis River basin, Wash.							
196	Water Mill Creek near Pe Ell (formerly Shield Creek).	SE $\frac{1}{4}$ sec.33, T.13 N., R.5 W., at State Highway 12, 1 mile southwest of Pe Ell.	1.93	1950-58	11-26-49 2- 9-51 11-30-51 1- 8-53 2-13-54 12-30-54 12-11-55 2-25-57 12-25-57	- 4.57 3.20 3.74 5.66 2.76 5.74 4.56 3.66	140 112 66.0 77.0 115 50.7 114 79.4 80.0
205	Elk Creek near Doty.	NE $\frac{1}{4}$ sec.8, T.13 N., R.5 W., $\frac{1}{2}$ mile above Nine Creek, 1 mile above Deer Creek, and 2 $\frac{1}{2}$ miles west of Doty.	46.7	1945-50*, 1952-58	2- 4-52 1- 8-53 1- 5-54 2-88-55 12-11-55 12- 9-56 12-24-57	5.85 5.88 7.79 5.73 6.84 5.95 5.52	1,160 1,190 2,240 1,120 1,640 1,220 990

\* Operated as a continuous-record-gaging station.

## Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
Chehalis River basin, Wash.--Continued							
210	South Fork Chehalis River at Boistfort.	NW $\frac{1}{4}$ sec.12, T.12 N., R.4 W., $\frac{1}{2}$ mile south of Boistfort and 6 miles above mouth.	448.0	1945-50*, 1951-58	2- 9-51 2- 4-52 1- 8-53 1- 5-54 2- 8-55 12-11-55 12- 9-56 12-24-57	9.36 7.70 7.36 8.60 9.68 9.40 9.88 7.96	4,480 2,830 2,550 3,700 2,810 4,500 4,850 3,060
Streams tributary to Pacific Ocean between Chehalis River and Strait of Juan De Fuca, Wash.							
390.5	Big Creek near Hoquiam.	SE $\frac{1}{4}$ sec.11, T.19 N., R.10 W., at Larson Road 300 ft east of U. S. Highway 101 and 11.4 miles north of Hoquiam.	0.56	1949-58	2-22-49 12-28-49 2- 9-51 1-30-52 1-22-53 12-11-53 11-18-54 11- 3-55 12- 9-56 1-16-58	5.65 5.66 5.77 2.75 5.98 5.81 5.71 5.99 65.82 3.58	72.0 95.4 81.5 25.2 123 82.7 67.2 110 120 51.5
391	Big Creek tributary near Hoquiam.	SE $\frac{1}{4}$ sec.11, T.19 N., R.10 W., at U. S. Highway 101, 11.6 miles north of Hoquiam.	.15	1949-58	2-22-49 12-28-49 2- 9-51 1-30-52 1-22-53 12-11-53 11-18-54 11- 3-55 12- 9-56 1-16-58	2.51 2.31 2.67 1.27 2.70 2.47 2.15 3.07 2.76 1.93	20.5 13.8 20.8 6.7 20.8 19.7 16.2 22.9 23.2 13.5
394	Higley Creek near Amanda Park.	SW $\frac{1}{4}$ sec.13, T.23 N., R.10 W., at North Shore road 1.6 miles east of U. S. Highway 101 and $\frac{1}{2}$ miles north of Amanda Park.	.77	1955-58	11-18-54 11- 3-55 12- 9-56 12-25-57	7.50 6.68 11.32 3.45	276 237 409 87.0
400	Clearwater River near Clearwater.	In lot 4, NW $\frac{1}{4}$ sec.18, T.24 N., R.12 W., $\frac{1}{2}$ miles north of Clearwater and 3 miles above mouth.	140	1932*, 1935, 1938-46*, 1948-49*, 1950-58	11-26-49 2-10-51 1-30-52 1-31-53 12-12-53 11-18-54 11- 3-55 12- 9-56 12-25-57	19.2 17.75 13.18 15.88 15.63 19.32 21.53 21.22 12.68	28,200 26,500 14,600 21,500 20,800 32,600 37,400 36,500 13,400
405	Queets River near Clearwater.	SW $\frac{1}{4}$ sec.36, T.24 N., R.13 W., on Quinalt Indian Reservation 2 miles below Clearwater River and 2 $\frac{1}{2}$ miles southwest of Clearwater.	445	1931-49*, 1950-58	11-26-49 2-10-51 1-30-52 1-31-53 11-18-54 11- 3-55 12- 9-56 12-25-57	23.57 22.90 17.92 20.40 23.60 25.99 25.08 18.44	95,000 86,100 45,700 64,400 95,000 118,400 108,400 49,400
416	Soleduck River tributary near Fairholm.	SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.35, T.30 N., R.10 W., at National Park road 2.6 miles southwest of Fairholm.	.42	1956-58	11- 3-55 12- 9-56 12-25-57	4.05 4.37 2.00	47.8 52.1 17.3
427	May Creek near Forks.	SW $\frac{1}{4}$ sec.35, T.28 N., R.13 W., at U. S. Highway 101, 5.0 miles south of Forks.	2.35	1950-58	12-28-49 2-10-51 1-30-52 1- 2-53 2-19-54 11-18-54 11- 3-55 12- 9-56 12-25-57	8.77 7.89 4.64 7.62 7.64 12.98 11.04 12.84 6.17	475 439 278 427 428 624 554 617 303
429	Grader Creek near Forks.	SW $\frac{1}{4}$ sec.17, T.28 N., R.13 W., at U. S. Highway 101, 2.0 miles southwest of Forks.	1.67	1950-58	11-26-49 2-10-51 11-30-51 1-31-53 2-19-54 11-18-54 11- 3-55 12- 9-56 12-25-57	4.81 4.36 3.81 4.91 4.45 5.85 6.35 6.85 4.37	235 265 210 335 288 407 503 520 199

\* Operated as a continuous-record-gaging station.

a Revised.

b Datum changed for this and subsequent measurements from those previously measured.

## Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
Streams tributary to Strait of Juan De Fuca, Wash.							
434.5	Cross Creek near Fairholm.	NE $\frac{1}{4}$ sec.31, T.30 N., R.9 W., at U. S. Highway 101, 2.1 miles east of Fairholm.	0.92	1950-56	11-26-49 2- 9-51 11-27-51 1- 9-53 1- 5-54 11-18-54 11- 3-55	3.28 2.14 .91 1.54 2.04 1.29 4.91	112 59.7 15.8 36.0 55.0 27.1 208
468	East Valley Creek at Port Angeles.	SW $\frac{1}{4}$ sec.15,T.30 N., R.6 W., at Hister Road $\frac{1}{2}$ mile south of city limits of Port Angeles.	.69	1950-58	2-24-50 2-10-51 12-18-51 1- 8-53 1- 5-54 2- 7-55 11- 3-55 12- 9-56 12-25-57	4.36 2.05 1.32 2.12 5.88 3.54 2.80 4.10 1.79	31.7 15.0 7.0 15.7 38.0 27.5 23.1 30.4 11.6
471	Lees Creek at Port Angeles.	SE $\frac{1}{4}$ sec.12, T.30 N., R.6 W., at U. S. Highway 101, 1 mile east of Port Angeles city limits.	4.77	1949-58	2-16-49 2-25-50 2- 9-51 12- 5-51 1-31-53 1- 5-54 2- 7-55 11- 3-55 12- 9-56 1-16-58	9.08 4.16 4.13 3.28 3.88 6.70 5.56 4.49 5.24 2.83	316 98.8 99.0 70.0 90.8 205 157 114 141 57.5
494	Dean Creek at Blyn.	NW $\frac{1}{4}$ sec.12, T.29 N., R.3 W., at old highway 50 ft east of U.S. Highway 101 and at west edge of Blyn.	3.44	1949-58	2-22-49 2-25-50 12-24-50 12- 5-51 1- 8-53 2-13-54 2- 8-55 3- 3-56 2-24-57 12-25-57	2.78 2.28 2.56 2.26 1.80 2.70 2.41 2.77 4.42 1.45	47.3 33.2 35.1 32.3 21.4 45.0 34.0 49.1 108 16.2
Streams tributary to Hood Canal and lower Puget Sound, Wash.							
527	Penny Creek near Quilcene.	SE $\frac{1}{4}$ sec.22, T.27 N., R.2 W., 1,000 ft west of Big Quilcene River bridge at U. S. Highway 101 and 2 miles southwest of Quilcene.	6.78	1949-58	2-22-49 2-25-50 12-16-50 11-27-51 1- 9-53 2-13-54 11-18-54 1- 6-56 2-24-57 12-25-57	2.27 1.95 2.63 3.16 2.56 3.62 2.66 3.34 2.85 2.02	532 232 352 376 223 456 191 548 281 135
530	Dosewallips River near Brinnon.	SW $\frac{1}{4}$ sec.24, T.26 N., R.3 W., $\frac{1}{2}$ mile west of Corrigenda ranger station, $5\frac{1}{2}$ miles northwest of Brinnon, and $7\frac{1}{2}$ miles above mouth.	93.5	1931-50†, 1951-58	2- 9-51 4-30-52 1- 9-53 11-13-53 11-19-54 11- 3-55 12- 9-56 2-24-58	6.56 5.15 5.88 5.88 7.10 8.26 7.15 7.02	3,990 2,230 3,200 3,330 5,330 8,050 5,430 5,180
534	Dosewallips River tributary near Brinnon.	NW $\frac{1}{4}$ sec.28, T.26 N., R.2 W., at Dosewallips River road 2.9 miles from U. S. Highway 101 and $3\frac{1}{4}$ miles northwest of Brinnon.	.55	1951-58	2-10-51 1-30-52 1- 9-53 2-13-54 11-19-54 1- 5-56 2-24-57 2-24-58	3.08 2.26 2.06 3.14 3.01 2.83 3.18 2.49	52.0 30.0 25.5 53.2 53.0 47.0 57.3 36.0
563	Annas Bay tributary near Potlatch.	SW $\frac{1}{4}$ sec.35, T.22 N., R.4 W., at U. S. Highway 101, 2.5 miles south of Potlatch.	.82	1950-58	12-28-49 2-10-51 1-30-52 1- 9-53 2-13-54 11-18-54 11- 3-55 12- 9-56 12-25-57	5.36 3.35 2.95 2.77 5.96 1.95 1.74 4.42 .91	228 113 92.6 87.0 (†) 52.5 44.5 173 20.0

† Discharge not determined.

‡ Operated as a continuous-record-gaging station.

## Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
Streams tributary to Hood Canal and lower Puget Sound, Wash.--Continued							
612	Fir Creek tributary near Potlatch.	NE $\frac{1}{4}$ sec.3, T.21 N., R.5 W., at private logging road, 8 miles southwest of Potlatch.	0.76	1955-58	11-18-54 11- 3-55 12- 9-56 12-25-57	6.72 6.34 6.53 3.57	216 200 280 79.0
695	Dewatto Creek near Dewatto.	Near center sec.23, T.23 N., R.3 W., at county road bridge $\frac{1}{2}$ miles above mouth and 2 miles northeast of Dewatto.	17.5	1948-54* 1955-57	11-19-54 11- 3-55 12- 9-56	5.88 7.42 6.91	1,170 2,110 1,750
786	Schneider Creek tributary near Shelton.	SE $\frac{1}{4}$ sec.32, T.19 N., R.3 W., at U. S. Highway 101, 8.5 miles south of Shelton.	1.12	1950-58	12-28-49 2-10-51 12- 4-51 1-31-53 1- 6-54 2- 8-55 12-11-55 12- 9-56 12-25-57	3.94 3.90 1.42 2.61 2.64 2.40 3.22 4.18 1.93	97.4 96.3 24.1 54.2 55.2 47.2 73.2 106 35
795	Deschutes River near Olympia.	NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.35, T.18 N., R.2 W., $\frac{1}{2}$ miles above mouth and 2 $\frac{1}{2}$ miles south of Olympia.	160	1946-54* 1955-57, 1958†	2- 9-55 12-13-55 2-25-57	7.44 8.46 7.78	3,540 6,080 4,210
Puyallup River basin, Wash.							
930	Kapowsin Creek near Kapowsin.	NE $\frac{1}{4}$ sec.5, T.17 N., R.5 E., $\frac{1}{2}$ mile below Kapowsin Lake and $\frac{1}{2}$ miles east of Kapowsin.	23	1928-32* 1942-57* 1958	2-24-58	3.64	218
968	Dry Creek near Greenwater.	NW $\frac{1}{4}$ sec.34, T.18 N., R.10 E. (unsurveyed), at U. S. Highway 410, 10 miles north of Chinook Pass and 12 miles southeast of Greenwater.	1.13	1957-58	12-10-56 4-20-58	1.74 .90	36.7 13.8
977	Cyclone Creek near Enumclaw.	SW $\frac{1}{4}$ sec.34, T.20 N., R.8 E., at U. S. Highway 410, 10 miles east of Enumclaw.	2.35	1950-58	3- 4-50 2-10-51 2- 4-52 1-23-53 12- 9-53 2- 8-55 12-11-55 12-18-56 1-17-58	2.35 2.40 1.93 2.32 1.74 2.34 4.28 2.54 1.95	109 112 87.5 107 286 108 246 127 88
1006	Stuck River tributary near Milton.	NE $\frac{1}{4}$ sec.3, T.20 N., R.4 E., at county road 1 mile northeast of Edgewood.	.53	1956-58	12-11-55 2-24-57 1-16-58	1.88 1.16 1.31	12.9 5.7 6.8
1022	Swan Creek near Tacoma.	Center of W $\frac{1}{2}$ sec.26, T.20 N., R.3 E., at South 72nd Street 1.8 miles east of Pacific Ave. and 4.8 miles southeast of Tacoma city center.	2.15	1951-58	2- 9-51 2- 4-52 1-31-53 1- 6-54 2- 8-55 12-11-55 12- 9-56 1-16-58	3.48 1.68 1.58 2.28 1.96 2.79 3.62 1.80	170 58.1 53.0 91.0 71.8 119 176 62.4
Streams tributary to Puget Sound between Puyallup and Snohomish Rivers, Wash.							
1028	South Fork Hylebos Creek near Puyallup.	SE $\frac{1}{4}$ sec.33, T.21 N., R.4 E., at State Highway 5D, 5.0 miles north of Puyallup.	c0.29	1949-58	12- 8-48 3-17-50 2- 9-51 2- 4-52 1-31-53 1- 6-54 2- 8-55 12-11-55 12-10-56 1-16-58	0.95 1.06 1.26 .84 4.41 .99 1.01 1.28 .97 .99	3.7 4.8 6.8 3.3 (b) 4.8 4.7 7.4 4.6 4.8
1032	Joos Creek at Tacoma.	NW $\frac{1}{4}$ sec.14, T.21 N., R.3 E., at Dumas Road 0.6 mile north of Tacoma city limits.	.78	1958	1-16-58	1.93	11.1
1072	Deep Creek at Cumberland.	SE $\frac{1}{4}$ sec.21, T.21 N., R.7 E., at the Northern Pacific RR. crossing 0.6 mile northeast of Cumberland.	2.28	1950-58	3- 4-50 2-10-51 10-22-51 1-23-53 12- 9-53 2- 8-55 12-11-55 10-21-56 1-17-58	3.83 5.51 1.70 2.85 5.24 3.46 5.39 4.90 2.95	82.0 109 12.0 43.0 93.2 59.8 102 61.0 44.2
1085	Newaukum Creek near Black Diamond.	SW $\frac{1}{4}$ sec.28, T.21 N., R.6 E., $\frac{1}{2}$ mile above mouth and 3 $\frac{1}{2}$ miles southwest of Black Diamond.	25.5	1945-50* 1951-52, 1953-58*	2- 9-51 2- 3-52	3.73 2.61	1,810 507

\* Operated as a continuous-record-gaging station.

b Datum changed for this and subsequent measurements from those previously measured.

c Above gage there is some interchange of flow with an adjoining basin (drainage area, 0.19 sq mi). The peak discharge during 1958 water year from the two basins (total drainage area, 0.48 sq mi) was 6.9 cfs.

## Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
Streams tributary to Puget Sound between Puyallup and Snohomish Rivers, Wash.--Continued							
1132	Dolloff Lake Outlet near Auburn.	SE $\frac{1}{4}$ sec.15, T.21 N., R.4 E., at junction of county road and State Highway 5, 2.2 miles west of Auburn.	3.15	1950-58	1-20-50 2-9-51 4-27-52 1-31-53 1-6-54 2-8-55 12-11-55 2-24-57	2.54 3.67 1.63 1.66 2.07 1.74 2.24 2.03	62.0 112 33.0 35.0 47.5 36.6 53.7 46.9
1132	....do.....	SW $\frac{1}{4}$ sec.14, T.21 N., R.4 E., at private driveway 50 ft south of State Highway 5 and 2 miles west of Auburn.	3.27		1-17-58	62.15	40.5
1153	Green Point Creek near Cedar Falls.	SE $\frac{1}{4}$ sec.17, T.22 N., R.9 E., at road crossing near mouth, 5 miles southeast of Cedar Falls	.73	1957-58	12-9-56 1-16-58	7.14 2.82	119 43.2
1198	North Branch Mercer Creek near Bellevue (formerly Mercer Creek tributary).	NE $\frac{1}{4}$ sec.27, T.25 N., R.5 E., on county road 0.2 mile north of Bellevue-Redmond Highway and 2.5 miles northeast of Bellevue.	2.74	1949-58	2-16-49 3-4-50 2-10-51 2-4-52 1-31-53 1-6-54 2-8-55 12-20-55 2-25-57 1-16-58	4.44 4.28 5.35 2.12 2.14 3.37 b2.57 3.48 2.97 3.13	47.0 45.1 241 17.4 19.0 33.0 27.1 46.3 33.8 37.0
1233	Evans Creek tributary near Redmond.	NW $\frac{1}{4}$ sec.16, T.25 N., R.6 E., at Redmond-Fall City highway $\frac{3}{4}$ miles southeast of Redmond.	2.46	1949-58	1-1-49 1-22-50 2-9-51 2-4-52 1-31-53 1-6-54 2-8-55 12-11-55 2-25-57 1-17-58	1.0 1.2 1.5 b.6 .6 1.3 .9 1.1 1.1 1.0	20.9 32.2 59.7 7.7 9.2 32.2 20.8 27.8 30.7 26.7
Snohomish River basin, Wash.							
1305	South Fork Skykomish River near Skykomish.	NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.31, T.26 N., R.12 E., $\frac{1}{4}$ mile below confluence of Tye and Foss Rivers and 2 $\frac{1}{2}$ miles east of Skykomish.	135	1930-31*, 1947-50*, 1951-58	2-9-51 10-3-51 1-31-53 5-19-54 6-11-55 12-11-55 12-9-56 6-3-58	11.00 7.75 9.28 7.33 7.88 9.43 9.95 6.42	14,000 5,500 9,020 4,730 5,750 9,420 10,800 3,580
1310	Beckler River near Skykomish.	SW $\frac{1}{4}$ sec.18, T.26 N., R.12 E., $\frac{1}{4}$ mile below Eagle Creek, 2 $\frac{1}{4}$ miles above mouth, and 3 miles northeast of Skykomish.	96.5	1930-33*, 1947-49*, 1950-58	11-27-49 2-9-51 10-3-51 5-19-54 6-11-55 11-4-55 12-9-56 6-3-58	9.40 10.10 7.20 8.15 7.12 8.77 8.32 8.25	9,600 11,800 4,500 6,430 3,220 4,580 6,820 6,680
1327	South Fork Skykomish River tributary at Baring.	NE $\frac{1}{4}$ sec.2, T.26 N., R.10 E., at Great Northern Railroad crossing 200 feet north of U. S. Highway 2 and $\frac{1}{4}$ mile east of Baring Post Office.	1.25	1951-58	2-10-51 2-4-52 2-8-55 12-9-53 2-8-55 12-11-55 12-9-56 1-16-58	4.67 2.13 3.06 3.15 3.46 4.27 5.26 3.06	143 40.0 87.0 89.0 107 157 217 71.2
1355	Olney Creek near Gold Bar.	SW $\frac{1}{4}$ sec.6, T.28 N., R.9 E., 5 $\frac{1}{2}$ miles north of Gold Bar and $\frac{7}{8}$ miles above mouth.	8.03	1947-50*, 1951, 1953-58	2-9-51 1-23-55 10-31-55 11-16-54 12-11-55 10-15-56 1958	6.10 5.16 4.30 4.69 4.57 4.55 4.28	5,330 11,750 720 1,210 1,090 1,080 846
1420	North Fork Snoqualmie River near Snoqualmie Falls.	SW $\frac{1}{4}$ sec.30, T.25 N., R.9 E., 1 mile above Calligan Creek, $\frac{7}{8}$ miles northeast of town of Snoqualmie Falls, and 8 $\frac{1}{2}$ miles northeast of Snoqualmie.	65	1930-50*, 1951-54, 1956-57	2-9-51 2-4-52 1-23-53 12-9-53 12-11-55 12-9-56	16.2 10.5 12.2 14.2 15.7 12.57	11,000 1,160 5,870 8,330 10,200 6,280

\* Operated as a continuous-record-gaging station.

b Datum changed for this and subsequent measurements from those previously measured.

## Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
Snohomish River basin, Wash.--Continued							
1433	South Fork Snoqualmie River tributary near North Bend.	NW $\frac{1}{4}$ sec.13, T.22 N., R.10 E., at U. S. Highway 10, 15 miles southeast of North Bend.	-	1951-58	2-10-51 10-19-51 1-31-53 12-9-53 11-18-54 12-11-55 12-9-56 4-19-58	2.70 1.76 2.86 2.98 2.92 2.73 3.07 2.02	33.0 10.0 35.0 30.0 31.1 20.6 32.5 11.7
1455	Raging River near Fall City.	On west line sec.27, T.24 N. R.7 E., at highway crossing 2 miles southwest of Fall City and 2 $\frac{1}{2}$ miles above mouth.	30.6	1946-50*, 1951, 1953-58	2-9-51 1-31-53 12-9-53 2-8-55 12-11-55 12-9-56 1-17-58	6.78 4.95 5.54 5.74 5.85 4.72 4.61	3,420 1,600 2,200 2,400 2,500 1,380 1,290
1481	South Fork Tolt River tributary near Carnation.	NW $\frac{1}{4}$ sec.36, T.26 N., R.8 E., at Weyerhaeuser Timber Co. road 9 miles northeast of Carnation and 12 miles southeast of Duvall.	2.08	1955-58	2-8-55 12-11-55 2-26-57 1-16-58	4.01 5.00 3.66 3.64	92.8 134 77.0 75.7
1525	Pilchuck River near Granite Falls.	SE $\frac{1}{4}$ sec.30, T.30 N., R.7 E., 200 ft above county road bridge and 2 miles southeast of Granite Falls.	53.5	1944-57*, 1958	1-17-58	6.98	3,520
1564	Munson Creek near Marysville.	NW $\frac{1}{4}$ sec.26, T.30 N., R.5 E., at south edge of Cedarcrest Golf Course, 2 miles northeast of Marysville.	.97	1949-58	2-22-49 3-21-50 11-27-50 3-11-52 2-3-53 1-6-54 12-31-54 12-20-55 2-24-57 1-16-58	2.31 4.32 1.84 1.53 1.94 3.22 2.27 2.93 2.75 1.95	22.3 49.5 15.4 10.9 16.6 36.5 22.3 32.3 28.2 16.8
Stillaguamish River basin, Wash.							
1640	Jim Creek near Arlington.	W $\frac{1}{2}$ sec.17, T.31 N., R.6 E., at abandoned bridge $\frac{1}{2}$ miles above mouth and 3 miles southeast of Arlington.	48.9	1938-57*, 1958	12-25-57	6.70	2,260
1695	Fish Creek near Arlington.	NW $\frac{1}{4}$ sec.18, T.31 N., R.5 E., 300 ft above former gaging station and 4 $\frac{1}{2}$ miles west of Arlington.	7.6	1951-53*, 1955-58	1-2-51 12-18-51 3-28-53 12-31-54 12-20-55 2-24-57 2-24-58	2.17 2.07 b1.43 b4.39 6.12 5.89 4.25	a66 a54 31 71.1 a207 134 68.5
Skagit River basin, Wash.							
1894	Sauk River tributary near Darrington.	SE $\frac{1}{4}$ sec.18, T.33 N., R.10 E., at Darrington-Concrete road 6.5 miles northeast of Darrington.	1.11	1951-58	2-10-51 2-5-52 1-31-53 12-19-53 2-8-55 11-3-55 12-9-56 12-25-57	9.12 3.24 7.27 4.44 4.08 4.44 9.02 3.22	160 50.6 145 88.0 78.2 87.6 184 55
1972	Skagit River tributary near Lyman.	SE $\frac{1}{4}$ sec.25, T.35 N., R.5 E., at county road on south side of Skagit River, 3 miles southwest of Lyman.	1.82	1951-58	2-10-51 1-30-52 1-2-53 12-19-53 2-7-55 11-3-55 12-9-56 12-25-57	5.31 5.18 4.87 4.89 4.68 5.41 7.76 5.40	164 158 141 142 132 164 233 160
2007	Skagit River tributary near Mount Vernon.	SE $\frac{1}{4}$ sec.4, T.32 N., R.4 E., at U. S. Highway 99, $\frac{1}{2}$ mile south of Skagit County line and 9.5 miles south of Mount Vernon.	2.58	1949-58	2-22-49 1-22-50 3-13-51 3-28-52 1953 12-9-53 2-7-55 12-11-55 12-9-56 1-16-58	2.46 2.50 1.44 1.80 (e) 1.55 1.84 1.51 1.92 (b)	61.1 62.0 27.0 38.8 <14 30.5 40.0 29.7 42.2 19

\* Operated as a continuous-record-gaging station.

&lt; Less than.

a Revised.

b Datum change for this and subsequent measurements from those previously measured.

d Beaver dam washed out upstream from station.

e Peak stage did not reach bottom of gage.

## Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
Samish River basin, Wash.							
2008	Lake Creek near Bellingham (Formerly Samish Lake tributary).	NW $\frac{1}{4}$ sec.23, T.37 N., R.3 E., 200 ft south of Samish Inn at U. S. Highway 99 and 6.5 miles southeast of Bellingham.	2.35	1949-58	2-17-49 12-28-49 2-10-51 1-30-52 1-31-53 12- 9-53 2- 8-55 11- 3-55 12- 9-56 1-24-58	6.62 5.69 5.47 3.81 3.64 3.84 4.37 5.01 6.46 3.65	f250 214 208 110 82.0 97.0 90.7 124 g200 70.6
Nooksack River basin, Wash.							
2044	Nooksack River tributary near Glacier.	SW $\frac{1}{4}$ sec.32 (unsurveyed), T.40 N., R.8 E., 6.5 miles east of Glacier.	1.15	1956-58	11- 3-55 10-17-56 1-16-58	4.57 3.54 2.90	(h) (h) (h)
2127	Tenmile Creek tributary near Bellingham.	0.1 mile north from center of sec.27, T.39 N., R.3 E., at Starry Road 2.7 miles northwest of Noon and 7 miles north-east of Bellingham.	.74	1949-58	2-17-49 12-26-49 2-10-51 1-30-52 1-23-53 12-12-53 11-19-54 12-11-55 12- 9-56 2-13-58	3.88 2.75 4.20 1.50 1.43 2.60 3.72 2.30 2.79 1.65	52.0 32.0 56.5 10.8 19.3 28.7 49.2 23.6 32.2 12.2
2128	Tenmile Creek Tributary No. 2 near Bellingham.	0.2 mile north from center of sec.27, T.39 N., R.3 E., at Starry Road 2.8 miles northwest of Noon and 7 miles north-east of Bellingham.	.24	1955-58	11-22-54 12-11-55 12- 9-56 2-13-58	2.90 1.84 2.62 1.44	33.5 13.0 29.0 10.4
Pend Oreille River basin, Wash.							
3958	Deer Creek near Dalkena.	SE $\frac{1}{4}$ sec.7, T.31 N., R.44 E., at State Highway 6B, 2.7 miles south of Davis Creek gage site and 4.5 miles southwest of Dalkena.	4.75	1954-58	5-10-54 4-22-55 4- 8-56 5-20-57 2-25-58	2.54 3.40 6.24 2.29 6.70	25.6 38.4 73.2 21.0 76.1
3959	Davis Creek near Dalkena.	NE $\frac{1}{4}$ sec.31, T.32 N., R.44 E., at State Highway 6B at outlet of Davis Lake, 2.5 miles southwest of Dalkena.	16.8	1954-58	4-18-54 4-22-55 4-22-56 5- 2-57 2-25-58	3.71 4.24 5.23 3.66 5.77	72 97.5 140 77.7 164
3961	Winchester Creek near Cusick.	SW $\frac{1}{4}$ sec.10, T.32 N., R.43 E., at county road around Callspell Lake, 4.8 miles southwest of Cusick.	16.8	1954-58	5-10-54 4-22-55 4-22-56 5-20-57 2-25-58	4.08 3.62 6.46 3.54 4.96	91.4 75.5 184 72 126
3964.5	Little Muddy Creek at Ione.	SW $\frac{1}{4}$ sec.6, T.37 N., R.43 E., at southwest edge of Ione.	11.0	1954-58	5-12-54 5-13-55 4-22-56 5-20-57 2-25-58	4.26 3.52 6.91 3.62 4.03	113 81.3 257 85.5 100
Streams tributary to Columbia River between Pend Oreille and Spokane Rivers, Wash.							
4037	Third Creek near Curlew.	NE $\frac{1}{4}$ sec.19, T.39 N., R.35 E., at county road between Curlew and Orient, 8.0 miles east of Curlew.	1.18	1954-58	5-10-54 7-27-55 4-22-56 5-20-57 2-25-58	0.68 1.88 1.72 1.83 1.78	1.9 12.6 11.6 12.0 11.6
4054	Nancy Creek near Kettle Falls.	SE $\frac{1}{4}$ sec.33, T.37 N., R.37 E., at U. S. Highway 395, 4.2 miles northwest of Kettle Falls.	11.9	1952, 1954-58	4-19-52 5-10-54 5-21-55 4-22-56 5-20-57 2-25-58	16.08 13.17 13.18 15.30 13.14 15.11	160 66.0 67.8 145 66.6 140
4076	Colville River tributary near Chewelah.	NW $\frac{1}{4}$ sec.8, T.32 N., R.41 E., at private road 100 ft east of Flowery Trail Road (County Road 623) and 2.5 miles north-east of Chewelah.	4.22	1954-58	4-17-54 4-22-55 4-22-56 5-20-57 2-25-58	.92 1.13 1.19 1.34 1.45	3.7 5.4 5.8 7.0 8.0

f No downstream elevation; discharge based on elevation from gage-height relationship curve.

g Culvert partially blocked; discharge based on elevation from gage-height relationship curve.

h Discharge not determined at this time.



## Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis-charge (cfs)
Streams tributary to Columbia River between Pend Oreille and Spokane Rivers, Wash.--Continued							
4082	Thomas Lake Tribu- tary near Tiger.	NW $\frac{1}{4}$ sec.9, T.36 N., R.42 E., at State Highway 6A, 6.0 miles southwest of Tiger.	1.65	1954-58	5-10-54 5-21-55 4-22-56 5-20-57 2-25-58	1.32 1.43 3.33 1.64 1.58	10.4 11 41 13.5 9.8
4084	Narcisse Creek near Colville.	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.23, T.35 N., R.40 E., at State Highway 6A, 8.0 miles east of Colville.	10.6	1954-58	5-10-54 5-21-55 4-22-56 5-20-57 2-25-58	1.80 1.90 3.00 2.94 1.99	25.0 28.0 61.8 60.2 30.0
4106	South Fork Harvey Creek near Cedonia.	NE $\frac{1}{4}$ sec.23, T.31 N., R.37 E., at county road up Harvey Creek, 3.0 miles northeast of Cedonia.	18.1	1954-58	5-10-54 4-20-55 4-22-56 5-20-57 2-25-58	2.04 1.71 2.72 2.11 2.06	26.4 17.3 41.0 26.0 24.6
4106.5	North Fork Harvey Creek near Cedonia.	SW $\frac{1}{4}$ sec.6, T.31 N., R.38 E., at Cedonia-Adity County road, 5.6 miles northeast of Cedonia.	6.96	1954-58	5-10-54 4-22-55 4-22-56 5-20-57 2-25-58	1.13 1.11 1.78 1.06 1.29	7.6 6.4 14.9 5.3 8.2

## Spokane River basin, Wash.

4239	Stevens Creek tributary near Moran.	NE $\frac{1}{4}$ sec.22, T.24 N., R.43 E., at Palouse Highway 2.8 miles south of Moran.	1.82	1954-58	8-20-54 2-8-55 12-22-55 2-26-57 2-12-58	2.76 1.39 3.08 3.26 .96	40.1 11.3 47.4 51.5 5.3
4298	Mud Creek near Deer Park.	On line between secs.24 and 25, T.28 N., R.21 E., at Staley Road, 8.1 miles west of U. S. Highway 395 and 5.3 miles southwest of Deer Park.	1.83	1954-58	5-10-54 4-22-55 4-22-56 2-24-57 2-25-58	1.29 1.21 2.73 3.68 1.80	6.1 8.0 19.2 27.4 11.1
4333	Spring Creek tributary near Reardan.	SW $\frac{1}{4}$ sec.14, T.26 N., R.39 E., at side road 50 feet east of Reardan-Crescent road, 5.3 miles north of Reardan.	1.14	1954-58	8-19-54 2-8-55 3-2-56 5-19-57 2-25-58	2.31 2.58 3.69 4.96 2.51	30 37.5 67.2 96.8 35.8

## Streams tributary to Columbia River between Spokane and Wenatchee Rivers, Wash.

4338	Granite Creek near Republic.	W $\frac{1}{2}$ sec.31, T.37 N., R.32 E., at State Highway 4, $\frac{1}{2}$ miles west of Republic.	4.25	1954-58	5-10-54 5-22-55 4-22-56 5-20-57 4-23-58	1.67 2.49 3.26 1.68 1.65	12.4 25.3 36.3 16.3 12.9
4345	Sanpoil River near Keller.	SE $\frac{1}{4}$ sec.7, T.30 N., R.33 E., 0.3 mile above Brush Creek and 2 $\frac{1}{2}$ miles north of Keller.	890	1953-55*, 1956-58	4-23-56 5-21-57 1958	10.02 6.85 6.76	3,920 1,420 1,350
4379.5	East Fork Foster Creek tributary near Bridgeport.	SE $\frac{1}{4}$ sec.1, T.28 N., R.25 E., at State Highway 10, $\frac{3}{4}$ miles southeast of Bridgeport.	4.75	1957-58	1957 1958	17.59 2.4	982 42
4458	Omak Creek tributary near Disautel.	NE $\frac{1}{4}$ sec.28, T.33 N., R.29 E., at State Highway 10A about 3.5 miles southeast of Disautel.	4.23	1956-58	4-22-56 5-20-57 5-20-58	1.25 1.50 .94	6.0 9.0 4.7
4474	Doe Creek near Winthrop.	NE $\frac{1}{4}$ sec.30, T.37 N., R.22 E., 14 miles north of Winthrop and 32 miles west of Tonasket.	4.19	1957-58	12-10-56 5-26-58	3.56 1.98	60.8 22.9
4499	Methow River tributary near Methow.	NE $\frac{1}{4}$ sec.30, T.30 N., R.23 E., at State Highway 16, 3.7 miles south of Methow and 4.8 miles west of Pateros.	1.17	1954-58	1954 1955 10-26-55 3-18-57 1958	- - 1.79 1.58 -	(1) (1) 18.5 15.9 (1)
4536	Columbia river tributary near Entiat.	SW $\frac{1}{4}$ sec.24, T.24 N., R.20 E., at U. S. Highway 97, 7.5 miles south of Entiat and 9.3 miles east of Cashmere.	1.57	1954-58	1954 1955 1956 1957 1958	- - - - -	j1 j1 j1.4 j1 (1)

## Wenatchee River basin, Wash.

4573	Skinney Creek at Winton.	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.28, T.26 N., R.17 E., at U. S. Highway 2, 0.7 mile south of Winton.	2.48	1954-58	4-18-54 4-8-55 4-22-56 4-14-57 2-25-58	1.91 1.50 2.97 1.53 1.45	36.6 23.8 75.0 24.5 21.3
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\* Operated as a continuous-record-gaging station.

1 No evidence of any flow during the water year.

j Peak flow too low to compute by indirect methods; discharge estimated as less than indicated figure.

Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
Wenatchee River basin, Wash.--Continued							
4589	Wenatchee River tributary near Leavenworth.	NW $\frac{1}{4}$ sec.8, T.24 N., R.18 E., at county road just east of Wenatchee River, 1.8 miles east of Leavenworth.	1.86	1954-58	2-24-54 1955 10-29-55 8-3-57 2-25-58	.97 - 1.00 1.03 1.18	5.3 j.3 5.6 5.5 7.5
4611	East Branch Mission Creek near Cashmere.	SW $\frac{1}{4}$ sec.20, T.22 N., R.19 E., at Forest Service road, 9.7 miles south of Cashmere.	15.8	1955-58	2-8-55 4-22-56 4-14-57 2-25-58	1.37 3.17 1.87 1.30	10.9 49.7 38.4 20.1
4612	East Branch Mission Creek tributary near Cashmere.	SW $\frac{1}{4}$ sec.20, T.22 N., R.19 E., at Forest Service road 9.7 miles south of Cashmere.	2.3	1955-58	2-8-55 4-22-56 4-14-57 2-25-58	.90 2.79 1.11 1.17	3.6 21.0 5.0 5.7
4615	Sand Creek near Cashmere.	SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.6, T.22 N., R.19 E., at U. S. Forest Service road 100 ft above mouth and 6.5 miles south of Cashmere.	18.8	1954, 1955-58, 1957-58	4-18-54 8-15-56 4-12-57 4-20-58	2.06 9.81 2.46 2.13	67.4 k325 112 68.5
Streams tributary to Columbia River between Wenatchee and Yakima Rivers, Wash.							
4627	Moses Creek at Waterville.	Near center of E $\frac{1}{2}$ sec.22, T.25 N., R.22 E., at U. S. Highway 2, 0.8 mile east of Waterville.	5.11	1954-58	2-25-54 3-29-55 1956 3-18-57 6-7-58	5.91 5.58 - 6.02 4.20	80 62.0 (1) 115 51.0
4628	Moses Creek at Douglas.	SW $\frac{1}{4}$ sec.31, T.25 N., R.23 E., at county road 0.3 mile southeast of Douglas.	18.4	1955, 1957-58	3-29-55 3-18-57 6-7-58	5.83 8.43 5.22	158 257 137
4630	Douglas Creek near Alstown.	S $\frac{1}{2}$ sec.12, T.24 N., R.22 E., 1 $\frac{1}{2}$ miles northwest of Alstown and 2.9 miles south of Douglas.	114	1950-55, 1956-58	8-25-56 3-18-57 6-7-58	m4.0 8.7 6.46	400 3,580 1,790
4646	Schnebley Coulee tributary near Vantage.	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.13, T.17 N., R.21 E., at U. S. Highway 10, 8.5 miles west of Vantage.	.82	1955-58	2-8-55 3-23-56 3-18-57 1958	.72 3.36 3.48 -	2.3 41.5 42 (1)
4646.5	South Fork Crab Creek tributary at Waukon.	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.26, T.24 N., R.39 E., at county road between Waukon and Edwall, 0.5 mile southwest of Waukon.	.68	1954-58	2-23-54 2-8-55 3-2-56 2-26-57 2-26-58	.66 2.39 2.12 3.90 1.42	4.8 29.3 23.6 111 11.3
4653	Broadax Draw tributary near Wilbur.	NW $\frac{1}{4}$ sec.16, T.27 N., R.32 E., at State Highway 4C, 7.5 miles northwest of Wilbur and 11 miles southeast of Grand Coulee.	1.12	1955-58	7-26-55 3-23-56 2-28-57 1958	9.02 3.29 3.84 2.50	205 58.5 76.7 36.6
4737	Scootenev Reservoir tributary near Cunningham.	On line between sec.33, T.16 N., and sec.4, T.15 N., R.31 E., 5.6 miles west of Cunningham on road to Othello.	6.06	1955-58	1955 2-21-56 1957 1958	- 4.59 - -	(1) 175 (1) (1)
Yakima River basin, Wash.							
4807	Hovey Creek near Cle Elum.	S $\frac{1}{2}$ sec.10, T.21 N., R.17 E., at U. S. Highway 97, 2 $\frac{1}{2}$ miles south of Blewett Pass and 14 $\frac{1}{2}$ miles northeast of Cle Elum.	3.38	1955-58	5-20-55 5-20-56 5-1-57 2-25-58	1.80 3.17 1.83 1.64	30 87.9 32.2 27.0
4833	South Fork Manastash Creek tributary near Ellensburg.	Near center sec.18, T.17 N., R.17 E., at county road, 10.5 miles west of Ellensburg.	2.28	1955-58	5-19-55 4-11-56 5-10-57 4-20-58	1.82 2.28 4.50 1.95	28.6 34.7 100 27.5
4846	McPherson Canyon Creek at Wymer.	Near center sec.33, T.16 N., R.19 E., at U. S. Highway 97, 0.5 mile northeast of Wymer.	5.48	1952, 1955-58	8-10-52 1955 3-23-56 3-18-57 4-20-58	7.63 - 3.27 2.82 2.29	304 (1) 88.0 70.4 52.7
4857	Selah Creek tributary near Yakima.	NE $\frac{1}{4}$ sec.25, R.14 N., R.19 E., at Yakima firing range road 7 miles northeast of Yakima.	.75	1955-58	1955 3-23-56 3-18-57 1958	- .57 .65 -	(1) 1.8 2.4 (1)
4883	American River tributary near Nile.	N $\frac{1}{2}$ sec.18, T.17 N., R.13 E., (unsurveyed), at U. S. Highway 410, 19 miles northwest of Nile.	1.03	1955-58	6-12-55 5-31-56 5-18-57 5-23-58	1.57 2.93 2.12 2.13	13.1 36.3 22.0 22.2

\* Operated as a continuous-record-gaging station.

1 No evidence of any flow during the water year.

j Peak flow too low to compute by indirect methods; discharge estimated as less than indicated figure.

k Discharge differs from that published for regular gaging station because of assumed pondage between recorder and crest-stage gages.

m Estimated by local resident.

## Annual maximum discharge at crest-stage partial-record stations--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
Yakima River basin, Wash.--Continued							
4917	Hause Creek near Rimrock.	NE $\frac{1}{4}$ sec.28, T.14 N., R.14 E., at State Highway 5, 0.1 mile west of Tieton ranger station and 2.5 miles east of Rimrock.	2.50	1955-58	2- 8-55 5-20-56 12-10-56 4-20-58	1.18 2.34 1.33 1.16	17.3 45.5 20.8 17.0
5073	Toppenish Creek tributary near Toppenish.	SE $\frac{1}{4}$ sec.6, T.9 N., R.20 E., at U. S. Highway 97, 6 miles south of Toppenish.	1.24	1955-58	1955 12-21-55 1957 1958	- 2.02 - -	(1) 32.6 (1) (1)
5076	Shenando Creek tributary near Goldendale.	SE $\frac{1}{4}$ sec.14, T.6 N., R.17 E., at U. S. Highway 97, 2 miles northeast of Satus Pass and 14 miles northeast of Goldendale.	.28	1955-58	1955 12-21-55 3-15-57 2-15-58	(e) 1.60 .88 .88	<3.4 11.0 4.6 4.6
5076.5	Shenando Creek near Goldendale.	Center of W $\frac{1}{2}$ sec.12, T.6 N., R.17 E., at U. S. Highway 97, 3 miles northeast of Satus Pass and 15 miles northeast of Goldendale.	7.9	1953, 1955-58	1- 9-53 4-13-55 12-21-55 3-15-57 2-15-58	8.76 1.59 8.58 4.45 2.68	287 35.3 281 148 71.7
5088	Yakima River tributary near Sunnyside.	SE $\frac{1}{4}$ sec.21, T.11 N., R.23 E., at Hanford Road 7 miles northeast of Sunnyside.	1.91	1954-58	8-20-54 1955 2-23-56 1957 1958	10.17 - 3.45 2.57 -	264 (1) 65.4 18 (1)
5106	Webber Canyon Creek near Kiona.	NE $\frac{1}{4}$ sec.17, T.8 N., R.27 E., at county road 4 $\frac{1}{2}$ miles south of Kiona.	3.33	1955-58	1955 2-21-56 2-26-57 1958	- 6.47 1.89 -	(1) 154 18.3 (1)
5107	Yakima River tributary near Kiona.	W $\frac{1}{2}$ sec.13, T.9 N., R.27 E., at U. S. Highway 410, 4.5 miles east of Kiona and 5 miles west of Richland.	3.35	1955-58	1955 1956 1957 1958	- - - -	(1) j2 j2 (1)
Esquatzel Coulee basin, Wash.							
5127	Hatton Coulee tributary near Hatton.	NE $\frac{1}{4}$ sec.28, T.15 N., R.32 E., 300 ft above mouth and 1 $\frac{1}{2}$ miles southeast of Hatton.	3.82	1956-58	2-21-56 2-24-57 1958	10.14 1.89 -	186 17 (1)

&lt; Less than.

e Peak stage did not reach bottom of gage.

i No evidence of any flow during the water year.

j Peak flow too low to compute by indirect methods; discharge estimated as less than indicated figure.

## Measurements at miscellaneous sites

Measurements of streamflow at points other than gaging stations or partial-record stations are given in the following table. Those that are measurements of base flow are designated by an asterisk (\*); measurements of peak flow by a dagger (†).

Discharge measurements made at miscellaneous sites during water year 1958

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Chehalis River basin, Wash.						
Chehalis River.	Grays Harbor.	Sec. 10, T. 12 N., R. 5 W., $\frac{1}{2}$ mile above Crim Creek and $2\frac{1}{2}$ miles south of Pe Ell.	56.2	1944-45	7- 9-58 7-22-58 8- 8-58	34.1 26.6 21.9
Rock Creek...	Chehalis River.	SW $\frac{1}{4}$ sec. 5, T. 12 N., R. 5 W., at former gaging station near Pe Ell.	414.0	1944†	7- 3-58 7-22-58 8- 8-58	8.32 3.02 2.37
McCormick Creek.	Rock Creek...	NE $\frac{1}{4}$ sec. 5, T. 12 N., R. 5 W., $\frac{1}{2}$ mile above mouth and $1\frac{1}{2}$ miles southwest of Pe Ell.	4.07	1944-45	8- 8-58	.0
Stowe Creek...	Chehalis River.	SW $\frac{1}{4}$ sec. 34, T. 13 N., R. 5 W., at bridge at Pe Ell.	5.58	1942-45	8- 8-58	.74
Elk Creek....	.....do.....	NW $\frac{1}{4}$ sec. 8, T. 13 N., R. 5 W., 300 ft above Eight Creek and $2\frac{1}{2}$ miles west of Doty.	36.5	1942-45	8- 7-58	10.9
Eight Creek...	Elk Creek....	NW $\frac{1}{4}$ sec. 8, T. 13 N., R. 5 W., 500 ft above mouth and $2\frac{1}{2}$ miles west of Doty.	6.54	1942-45	6-12-58	6.51
Elk Creek....	Chehalis River.	NW $\frac{1}{4}$ sec. 8, T. 13 N., R. 5 W., at road crossing just above Seven Creek.	43.2		6-12-58 7- 8-58 7-22-58 8- 8-58	50.4 22.8 17.4 12.7
Seven Creek..	Elk Creek....	NW $\frac{1}{4}$ sec. 8, T. 13 N., R. 5 W., at mouth $2\frac{1}{2}$ miles west of Doty.	3.64	1942-44	6-12-58 7- 8-58 7-22-58 8- 7-58	3.70 1.16 .89 .80
Nine Creek...	.....do.....	SW $\frac{1}{4}$ sec. 9, T. 13 N., R. 5 W., at railroad bridge at mouth, 2 miles west of Doty.	5.06	1942-45	8- 8-58	.43
Deer Creek...	.....do.....	NE $\frac{1}{4}$ sec. 9, T. 13 N., R. 5 W., at road crossing at mouth, $1\frac{1}{2}$ miles west of Doty.	3.84	1942-45	6-12-58 7- 7-58 7-22-58 8- 7-58	3.93 1.67 1.28 .88
Dunn Creek...	Chehalis River.	NE $\frac{1}{4}$ sec. 2, T. 13 N., R. 5 W., at road crossing $\frac{1}{2}$ mile above mouth and 1 mile northeast of Doty.	4.62	1942-45	6-11-58 7- 7-58 7-21-58 8- 5-58	4.75 2.15 1.55 1.36
Dell Creek...	.....do.....	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 5, T. 13 N., R. 4 W., at road crossing at mouth, $1\frac{1}{2}$ miles west of Meskill.	3.76	1942-45	6-11-58 7- 7-58 7-21-58 8- 5-58	1.98 .92 .44 .39
South Fork Chehalis River.	.....do.....	N $\frac{1}{2}$ sec. 17, T. 11 N., R. 3 W., at road crossing above Black Creek, $1\frac{1}{2}$ miles south of Wildwood.	23.0	1944-45	7- 9-58 7-22-58 8- 7-58	9.88 6.02 4.39
Do.....	.....do.....	NW $\frac{1}{4}$ sec. 12, T. 12 N., R. 4 W., at former gaging station at Boistfort.	a48.0	1942-50†, 1951-57b	6-13-58 7- 8-58 7-23-58 8- 6-58	28.5 10.1 4.97 4.33
Stillman Creek.	South Fork Chehalis River.	NW $\frac{1}{4}$ sec. 14, T. 12 N., R. 4 W., 150 ft above Halfway Creek and 1 mile southwest of Boistfort.	23.8	1942-45	6-13-58 7- 8-58 7-23-58 8- 7-58	31.8 20.5 17.0 14.0
Halfway Creek.	Stillman Creek.	NW $\frac{1}{4}$ sec. 14, T. 12 N., R. 4 W., at former gaging station near Boistfort.	13.4	1942-43, 1944†, 1945	6-13-58 7- 8-58 7-23-58 8- 6-58	6.34 2.82 1.83 1.61
Lost Creek...	.....do.....	SE $\frac{1}{4}$ sec. 2, T. 12 N., R. 4 W., at road crossing $\frac{1}{2}$ mile southwest of Klabin.	6.60	1942 1944-45	8- 6-58	.014
Lake Creek...	South Fork Chehalis River.	NW $\frac{1}{4}$ sec. 30, T. 13 N., R. 3 W., at Curtis, $\frac{1}{2}$ mile above mouth.	21.3	1942-45	8- 6-58	.05
Bunker Creek.	Chehalis River.	East line sec. 8, T. 14 N., R. 4 W., at road crossing 5 miles north of Meskill.	7.17	1944-45	8- 5-58	.02
Do.....	.....do.....	SW $\frac{1}{4}$ sec. 36, T. 14 N., R. 4 W., at former gaging station near Adna.	a20.6	1942-43, 1944-45†	6-11-58 7- 7-58 7-21-58 8- 5-58	6.47 1.18 .52 .08
Deep Creek...	Bunker Creek.	SW $\frac{1}{4}$ sec. 31, T. 14 N., R. 3 W., $\frac{1}{2}$ mile above mouth and 3 miles northwest of Adna.	11.2	1942-45	6-11-58 7- 7-58 7-21-58 8- 5-58	3.29 .35 .26 .09

† Operated as a continuous-record-gaging station.

a Revised.

b Operated as crest-stage gage; low-flow measurement made in 1951.

## Discharge measurements made at miscellaneous sites during water year 1958--Continued

Drainage measurements made at miscellaneous sites during water year 1950				Measurements		
Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Chehalis River basin, Wash.--Continued						
Mill Creek....	Chehalis River.	SE $\frac{1}{4}$ sec.3, T.13 N., R.3 W., at highway crossing 1 mile north-east of Adna.	6.17	1942 1944-45	8- 5-58	0
Stearns Creek. ....do.....		SW $\frac{1}{4}$ sec.32, T.13 N., R.2 W., at road crossing 3 miles west of Napavine.	8.24	1942-45	8- 6-58	1.41
Do.....do.....		SW $\frac{1}{4}$ sec.30, T.13 N., R.2 W., at former gaging station near Napavine.	a16.2	1945*, 1946	7- 3-58 7- 9-58 7-21-58 8- 6-58	3.73 3.04 2.41 2.24
Do.....do.....		NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.24, T.13 N., R.3 W., at former gaging station near Adna.	27.1	1942-43, 1944-45*	7- 3-58 7- 9-58 7-21-58 8- 5-58	2.97 2.99 2.49 2.33
Newaukum River.	....do.....	SW $\frac{1}{4}$ sec.13, T.13 N., R.1 E., at road crossing 0.1 mile above Kearney Creek and 5 miles northeast of Onalaska.	26.8	1944-45	7-30-58	29.3
Lucas Creek...	North Fork Newaukum River.	SE $\frac{1}{4}$ sec.2, T.13 N., R.1 W., at road crossing $\frac{1}{2}$ mile above mouth and 5 miles northeast of Forest.	12.8	1942-44	7-30-58	1.97
Middle Fork Newaukum River.	....do.....	North line sec.20, T.13 N., R.1 W., 300 ft above mouth and $1\frac{1}{2}$ miles east of Forest.	17.7	1942-45	7-30-58	.13
Dillenaugh Creek.	Chehalis River.	Center sec.9, T.13 N., R.2 W., 500 ft below Berwick Creek and 2 miles southeast of Chehalis.	12.4	1942-45	7- 3-58 7- 9-58 7-21-58 7-30-58	1.75 1.07 .96 .82
Coal Creek....	....do.....	SE $\frac{1}{4}$ sec.28, T.14 N., R.2 W., at road crossing 1 mile east of Chehalis.	2.69	1942 1944-45	7-30-58	.36
China Creek...	....do.....	SW $\frac{1}{4}$ sec.3, T.14 N., R.2 W., at road crossing 1 mile east of Centralia.	1.58	1944-45	6-10-58 7-10-58 7-23-58 7-30-58	1.20 0 0 0
Thompson Creek	Skookumchuck River.	SW $\frac{1}{4}$ sec.11, T.15 N., R.1 W., at road crossing $\frac{1}{2}$ mile above mouth and $4\frac{1}{2}$ miles east of Bucoda (revised).	6.86	1942 1944-45	7-31-58	0
Johnson Creek. ....do.....		Near center of sec.12, T.15 N., R.1 W., at road crossing $\frac{1}{2}$ mile above mouth and $5\frac{1}{2}$ miles east of Bucoda.	6.20	1942-45	7-31-58	0
Hanaford Creek. ....do.....		NE $\frac{1}{4}$ sec.28, T.15 N., R.1 W., at road crossing $\frac{1}{4}$ mile below Snyder Creek and 1 mile south-east of Tono.	19.9	1944-45	6- 9-58 7-10-58 7-23-58 7-31-58	11.8 4.54 3.62 2.52
South Hanaford Creek.	Hanaford Creek.	SW $\frac{1}{4}$ sec.17, T.14 N., R.1 W., 6 miles east of Centralia.	5.90	1944-45	7-31-58	.05
Skookumchuck River.	Chehalis River.	SW $\frac{1}{4}$ sec.12, T.15 N., R.2 W., at Bucoda.	105	1935	10- 3-58	29.7
Do.....do.....		NE $\frac{1}{4}$ sec.5, T.14 N., R.2 W., at bridge on Bucoda Road, at Centralia.	172	1942-45	7-31-58 10- 3-58	29.5 29.7
Scammon Creek. ....do.....		E $\frac{1}{2}$ sec.12, T.14 N., R.3 W., at road crossing 1 mile west of Centralia.	5.13	1942 1944-45	8- 5-58	0
North Fork Lincoln Creek.	Lincoln Creek	SE $\frac{1}{4}$ sec.31, T.15 N., R.4 W., at old railroad bridge $\frac{1}{4}$ mile above mouth and 7 miles south of Oakville.	6.56	1942-45	8- 4-58	.89
Lincoln Creek.	Chehalis River.	SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.34, T.15 N., R.4 W., at former gaging station near Rochester.	a19.3	1942-50*, 1951	6-10-58 7-10-58 7-23-58 8- 4-58	11.1 4.04 2.01 2.52
Do.....do.....		NE $\frac{1}{4}$ sec.33, T.15 N., R.3 W., at farm bridge $1\frac{1}{2}$ miles west of Galvin.	37.1	1944	6-10-58 7-10-58 7-23-58 8- 4-58	13.8 2.98 2.06 .78
Scatter Creek. ....do.....		NE $\frac{1}{4}$ sec.19, T.16 N., R.1 W., at highway crossing at Tenino.	13.3	1942-45	7-31-58	.39
Do.....do.....		SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.4, T.15 N., R.3 W., at county bridge 1 mile southeast of Rochester.	38.7	1942-45	8- 1-58	.12
Independence Creek.	....do.....	NE $\frac{1}{4}$ sec.21, T.15 N., R.4 W., at road crossing 2 miles southwest of Independence.	13.2	1942-45	8- 4-58	0
Dempsey Creek.	Black River.	NE $\frac{1}{4}$ sec.14, T.17 N., R.3 W., at road crossing 4 miles north of Little Rock.	6.40	1942 1944-45	8- 1-58	.24

\* Operated as a continuous-record-gaging station.  
a Revised.

Discharge measurements made at miscellaneous sites during water year 1958--Continued							
Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements		
					Date	Discharge (cfs)	
Chehalis River basin, Wash.--Continued							
Salmon Creek..	Black River..	SW $\frac{1}{2}$ sec.19, T.17 N., R.2 W., at highway crossing 2 miles north-east of Little Rock.	10.8	1920 1942-45	8- 1-58	1.48	
Wadell Creek..	.....do.....	SW $\frac{1}{2}$ sec.34, T.17 N., R.3 W., at former gaging station near Little Rock.	16.8	1942-43, 1944+, 1945	8- 1-58	4.39	
Beaver Creek..	.....do.....	NW $\frac{1}{2}$ sec.8, T.16 N., R.2 W., at road crossing $2\frac{1}{2}$ miles east of Little Rock.	15.8	1944-45	8- 1-58	0	
Do.....	.....do.....	SE $\frac{1}{2}$ sec.2, T.16 N., R.3 W., at highway crossing near mouth, $\frac{1}{2}$ mile south of Little Rock.	24.4	1920 1942-45	8- 1-58	3.95	
Mima Creek....	.....do.....	SE $\frac{1}{2}$ sec.17, T.16 N., R.3 W., at road crossing 4 miles south-west of Little Rock.	11.7	1920 1942-45	8- 4-58	1.54	
Roundtree Creek.	.....do.....	NE $\frac{1}{2}$ sec.32, T.16 N., R.4 W., at railroad crossing 1 mile east of Oakville.	1.51	1945	8-25-58	0	
Harris Creek..	Chehalis River.	SW $\frac{1}{2}$ sec.29, T.16 N., R.4 W., at State Highway crossing $\frac{1}{2}$ mile east of Oakville.	1.39	1945	8-25-58	0.02	
Garrard Creek. (formerly Garrod Creek)	.....do.....	NE $\frac{1}{2}$ sec.9, T.15 N., R.5 W., near road crossing 4 miles south-west of Oakville.	11.0	1942-45	8-25-58	.61	
Do.....	.....do.....	SE $\frac{1}{2}$ sec.1, T.15 N., R.5 W., at former gaging station near Oakville.	27.7	1942-43, 1944+, 1945	8-25-58	.96	
Williams Creek.	.....do.....	On south line sec.16, T.16 N., R.5 W., at road crossing at mouth, 3 miles northwest of Oakville.	9.59	1942-45	8-25-58	0	
Cedar Creek....	.....do.....	NW $\frac{1}{2}$ sec.14, T.16 N., R.5 W., at former gaging station near Oakville.	38.2	1942-43, 1944-45+	8-25-58	8.60	
Gibson Creek....	.....do.....	E $\frac{1}{2}$ sec.3, T.16 N., R.5 W., at railroad crossing $\frac{1}{2}$ mile above mouth and $2\frac{1}{2}$ miles south of Porter.	6.96	1942-45	8-26-58	1.27	
Mox Chehalis..	.....do.....	NW $\frac{1}{2}$ sec.4, T.17 N., R.5 W., at road crossing $\frac{1}{2}$ mile above Sand Creek and 2 miles north of Malone.	15.7	1942 1944-45	8-26-58	2.16	
Do.....	.....do.....	SE $\frac{1}{2}$ sec.17, T.17 N., R.5 W., at highway crossing near mouth, at Malone.	26.8	1942-45	8-26-58	2.34	
Delezenne Creek.	.....do.....	SW $\frac{1}{2}$ sec.12, T.17 N., R.6 W., at road crossing at mouth, $1\frac{1}{2}$ miles southeast of Elma.	14.2	1942-45	8-26-58	1.67	
East Fork Wildcat Creek.	Wildcat Creek	North line sec.14, T.18 N., R.5 W., at highway crossing $\frac{1}{2}$ mile west of McClary.	4.67	1944-45	8-26-58	.06	
Workman Creek.	Chehalis River.	NW $\frac{1}{2}$ sec.10, T.17 N., R.6 W., at road crossing 2 miles south of Elma.	10.6	1942-45	8-26-58	1.36	
Newman Creek..	.....do.....	SW $\frac{1}{2}$ sec.5, T.17 N., R.6 W., at road crossing near mouth, 3 miles west of South Elma.	22.9	1942-45	8-26-58	7.20	
Wynoochee River.	.....do.....	NW $\frac{1}{2}$ sec.35, T.18 N., R.8 W., at former gaging station below Black Creek, near Montesano.	178	1942-50+, 1950-57	3-25-58 6- 9-58 7-23-58 8-15-58 8-28-58	1,440 327 69.9 26.2 54.0	
Streams tributary to Hood Canal, Wash.							
Union River...	Hood Canal...	SW $\frac{1}{2}$ sec.3, T.23 N., R.1 W., at crossing at Old Navy Yard highway, 5 miles northeast of Belfair.	6.96	1942-43 1947	6-17-58 7-11-58 7-24-58 8-13-58	4.16 1.99 1.57 1.51	
Bear Creek....	Union River..	SE $\frac{1}{2}$ sec.9, T.23 N., R.1 W., at crossing at Old Navy Yard highway, 3 miles north of Belfair.	1.40	1947-48	6-17-58 7-11-58 7-18-58 7-24-58 8-12-58 8-29-58	1.39 1.19 1.09 1.19 1.04 1.01	
Unnamed tributary.	.....do.....	NW $\frac{1}{2}$ sec.16 (revised), T.23 N., R.1 W., at crossing of Old Navy Yard highway, 2 miles north of Belfair.	.20	1947	8-14-58	0	
Do.....	.....do.....	SE $\frac{1}{2}$ sec.17, T.23 N., R.1 W., at crossing of Old Navy Yard highway, $1\frac{1}{2}$ miles north of Belfair.	.23	1947	8-14-58	2.83	
Do.....	.....do.....	NE $\frac{1}{2}$ sec.29, T.23 N., R.1 W., at crossing of Old Navy Yard highway, $\frac{1}{2}$ mile north of Belfair.	1.25	1947	8-14-58	.83	

\* Operated as a continuous-record-gaging station.

a Revised.

c Estimated.

## Discharge measurements made at miscellaneous sites during water year 1958--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Hood Canal, Wash.--Continued						
Unnamed tributary.	Union River...	SE $\frac{1}{4}$ sec.29, T.23 N., R.1 W., at State highway crossing $\frac{1}{2}$ mile south of Belfair.	0.55	1947	8-14-58	0.89
Do.....	....do.....	About east line SE $\frac{1}{4}$ sec.30, T.23 N., R.1 W., at road crossing, $\frac{1}{2}$ mile above mouth, and $\frac{1}{2}$ mile west of Belfair.	.20	1947	8-14-58	.23
Mission Creek.	Hood Canal...	NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.32, T.24 N., R.1 W., at former gaging station near Bremerton.	a1.83	1945-53*, 1954	7- 2-58 7-14-58 7-24-58 8-13-58	0 0 0 0
Do.....	....do.....	NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.13, T.23 N., R.1 W., at former gaging station near Belfair.	a4.43	1946-53*	6-18-58 7-14-58 7-24-58 8-14-58	.73 .49 .26 .19
Do.....	....do.....	NE $\frac{1}{4}$ sec.36, T.23 N., R.2 W., at road crossing $\frac{1}{2}$ mile above mouth and 2 miles west of Belfair.	a13.1	1947	6-18-58 7-14-58 7-25-58 8-15-58	9.68 5.74 7.09 6.27
Little Mission Creek.	....do.....	NW $\frac{1}{4}$ sec.1, T.22 N., R.2 W., at road crossing $\frac{1}{2}$ mile above mouth and 3 miles southwest of Belfair.	1.51	1947	8-15-58	2.67
Unnamed tributary (formerly Little Mission Creek).	....do.....	About center of sec.2, T.22 N., R.2 W., at road crossing 500 ft above mouth and $3\frac{1}{2}$ miles southwest of Belfair.	.66	1947	8-18-58	.47
Stimson Creek (formerly unnamed stream).	....do.....	NW corner sec.11 (corrected), T.22 N., R.2 W., at road crossing 400 ft above mouth and $4\frac{1}{2}$ miles southwest of Belfair.	4.27	1947	8-15-58	.82
Unnamed tributary.	....do.....	SE $\frac{1}{4}$ sec.9, T.22 N., R.2 W., at road crossing 400 ft above mouth and 6 miles southwest of Belfair.	.30	1947	8-18-58	.77
Do.....	....do.....	NW $\frac{1}{4}$ sec.17, T.22 N., R.2 W., at road crossing at mouth, $7\frac{1}{2}$ miles southwest of Belfair.	.66	1947	8-15-58	.74
Shoofly Creek (formerly unnamed stream).	....do.....	SW $\frac{1}{4}$ sec.18, T.22 N., R.2 W., at road crossing 400 ft above mouth and $8\frac{1}{2}$ miles southwest of Belfair.	.88	1947	8-15-58	.03
Tahuya (Creek) River.	....do.....	SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.19, T.24 N., R.1 W., at former gaging station near Bremerton.	a5.99	1945-56*	7- 2-58 7-14-58 7-18-58 7-24-58 8-13-58	1.36 .65 .43 .46 .24
Panther Creek.	Tahuya (Creek) River.	NW $\frac{1}{4}$ sec.31, T.24 N., R.1 W., at former gaging station near Bremerton.	1.00	1945-53*	7- 2-58 7-14-58 7-24-58 8-13-58	0 0 0 0
Unnamed tributary	....do.....	W $\frac{1}{2}$ sec.2, T.23 N., R.2 W., at road crossing $\frac{1}{2}$ mile above mouth and $5\frac{1}{2}$ miles northwest of Belfair.	2.03	1947	8-15-58	0
Tahuya (Creek) River.	Hood Canal...	SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.10, T.23 N., R.2 W., at former gaging station near Belfair.	16.1	1945-56*	6-18-58 7-14-58 7-25-58 8-15-58	1.09 .45 .17 .11
Unnamed tributary.	Tahuya (Creek) River.	Near center of sec.33, T.23 N., R.2 W., 200 ft below road crossing, 1 mile above mouth, and 5 miles west of Belfair.	1.78	1947	8-15-58	0
Tahuya (Creek) River.	Hood Canal...	SW $\frac{1}{4}$ sec.12, T.22 N., R.3 W., at former gaging station near Tahuya.	a40.9	1947*	6-18-58 7-15-58 7-25-58 8-18-58	15.5 13.6 10.8 10.2
Unnamed tributary.	Tahuya (Creek) River.	SE $\frac{1}{4}$ sec.22, T.22 N., R.3 W., at road crossing 400 ft above mouth and $\frac{1}{2}$ mile northeast of Tahuya.	1.22		8-18-58	0
Dewatto Creek.	Hood Canal...	SE $\frac{1}{4}$ sec.32, T.24 N., R.2 W., at road crossing $2\frac{1}{2}$ miles south of Holly.	3.01	1947	8-19-58	.53
Lizzard Lake Creek.	Dewatto Creek.	Near center of sec.6, T.23 N., R.2 W., at road crossing $\frac{1}{2}$ mile above mouth and 3 miles south of Holly.	1.01	1947	8-19-58	0
Unnamed tributary.	....do.....	On north line sec.7, T.23 N., R.2 W., at road crossing 500 ft above mouth and $3\frac{1}{2}$ miles south of Holly.	.73	1947	8-19-58	.03

\* Operated as a continuous-record-gaging station.  
a Revised.

Discharge measurements made at miscellaneous sites during water year 1958--Continued						
Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Hood Canal, Wash.--Continued						
Unnamed tributary.	Dewatto Creek.	SE $\frac{1}{4}$ sec.27, T.23 N., R.3 W., at road crossing $\frac{1}{4}$ mile east of Dewatto.	1.78	1947-48	6-19-58 7-15-58 7-25-58 8-19-58	2.08 1.65 1.64 1.70
Thomas Creek..	Hood Canal...	NE $\frac{1}{4}$ sec.19, T.24 N., R.2 W., 200 ft above road crossing, 500 ft above mouth, and $\frac{1}{4}$ mile northwest of Holly.	.37	1947-48	6-19-58 7-15-58 7-29-58 8-19-58	2.64 2.41 2.42 2.32
Anderson Creek.	....do.....	S $\frac{1}{2}$ sec.17, T.24 N., R.2 W., at former gaging station near Holly.	5.17	1947*, 1951	6-19-58 7-15-58 7-29-58 8-19-58	6.95 5.64 5.64 6.05
Stavis Creek..	....do.....	SW $\frac{1}{4}$ sec.25, T.25 N., R.2 W., at former gaging station near Seabeck.	5.97	1947*, 1951	6-19-58 7-15-58 7-29-58 8-20-58	8.03 7.41 7.11 7.60
Seabeck Creek.	....do.....	NW $\frac{1}{4}$ sec.29, T.25 N., R.1 W., at road crossing $\frac{1}{4}$ mile above mouth at Seabeck.	4.79	1947	8-19-58	.27
Big Beef Creek.	....do.....	North line sec.8, T.24 N., R.1 W., at road crossing 3 miles south of Seabeck.	4.67	1947	8-20-58	.64
Do.....	....do.....	North line NE $\frac{1}{4}$ sec.22, T.25 N., R.1 W., about $\frac{1}{4}$ mile above mouth and 2 $\frac{1}{2}$ miles northeast of Seabeck.	12.9	1947	8-20-58	3.91
Unnamed tributary.	....do.....	NW $\frac{1}{4}$ sec.14, T.25 N., R.1 W., at road crossing near mouth, 3 miles northeast of Seabeck.	.76	1947	8-20-58	.29
Anderson Creek.	....do.....	NW $\frac{1}{4}$ sec.13, T.25 N., R.1 W., at road crossing $\frac{1}{4}$ mile above mouth and 4 miles northeast of Seabeck.	4.05	1947	7-15-58 8-20-58	4.71 2.53
Unnamed tributary.	Anderson Creek.	NW $\frac{1}{4}$ sec.14, T.25 N., R.1 W., at road crossing near mouth, 3 miles northeast of Seabeck.	.40	1947	8-20-58	.37
Unnamed tributary (south branch).	Hood Canal...	W $\frac{1}{2}$ sec.23, T.27 N., R.1 E., at road crossing 600 ft above north branch and $3\frac{1}{2}$ miles southwest of Port Gamble.	1.77	1947	8-27-58	.16
Unnamed tributary (north branch).	Unnamed tributary.	W $\frac{1}{2}$ sec.23, T.27 N., R.1 E., at road crossing 400 ft above mouth and $3\frac{1}{2}$ miles southwest of Port Gamble.	.86	1947	8-27-58	.19
Unnamed tributary.	Hood Canal...	NW $\frac{1}{4}$ sec.13, T.27 N., R.1 E., at road crossing $\frac{1}{4}$ mile above mouth and $2\frac{1}{4}$ miles southwest of Port Gamble.	.59	1947	8-27-58	1.75
Port Gamble Inlet.	Port Gamble Bay.	South line sec.29, T.27 N., R.2 E., at road crossing $1\frac{1}{2}$ miles above mouth and 4 miles south of Port Gamble.	5.22	1947	8-26-58	.69
Unnamed tributary.	Port Gamble Inlet.	SW $\frac{1}{4}$ sec.20, T.27 N., R.2 E., at road crossing 900 ft above mouth and 2 $\frac{1}{2}$ miles south of Port Gamble.	.86	1947	8-26-58	.10
Streams tributary to Puget Sound, Wash.						
Unnamed tributary (Formerly Buck Lake Outlet).	Puget Sound..	SW $\frac{1}{4}$ sec.16, T.28 N., R.2 E., at road crossing 600 ft above mouth and $\frac{1}{2}$ mile west of Hansville.	0.10	1947	8-26-58	0.01
Eglon Creek...	....do.....	NW $\frac{1}{4}$ sec.2, T.27 N., R.2 E., at road crossing at Eglon, 300 ft above mouth.	2.24	1947	8-26-58	.03
Unnamed tributary.	....do.....	NW $\frac{1}{4}$ sec.11, T.27 N., R.2 E., at road crossing $\frac{1}{4}$ mile above mouth and $\frac{1}{2}$ mile south of Eglon.	.95	1947	8-26-58	.04
Do.....	....do.....	SW $\frac{1}{4}$ sec.26, T.27 N., R.2 E., at road crossing at mouth (revised) $\frac{1}{2}$ mile west of Kingston.	2.35	1947	8-27-58	0
Grovers Creek.	Miller Bay...	NW $\frac{1}{4}$ sec.4, T.26 N., R.2 E., at road crossing $\frac{1}{2}$ mile above mouth and 2 $\frac{1}{2}$ miles northwest of Kitsap.	6.45	1947	8-27-58	.36
Unnamed tributary.	....do.....	NW $\frac{1}{4}$ sec.16, T.26 N., R.2 E., at road crossing 400 ft above mouth and $1\frac{1}{2}$ miles west of Kitsap.	.62	1947	8-27-58	.18
Do.....	Puget Sound..	S $\frac{1}{2}$ sec.29, T.26 N., R.2 E., at road crossing 600 ft above mouth and 2 miles east of Keyport.	2.35	1947	8-27-58	.14
Do.....	....do.....	NW corner sec.31, T.26 N., R.2 E. (revised), at road crossing 1,000 ft above mouth and $\frac{1}{2}$ mile northeast of Keyport.	1.64	1947	8-27-58	0

\* Operated as a continuous-record-gaging station.

a Revised.



Discharge measurements made at miscellaneous sites during water year 1958--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Puget Sound, Wash.--Continued						
Unnamed tributary.	Puget Sound..	SE $\frac{1}{4}$ sec.25, T.26 N., R.1 E., at road crossing 600 ft above mouth and $\frac{1}{2}$ mile north of Keyport.	1.44	1947	8-27-58	c0.01
West Fork Dogfish Creek.	Liberty Bay..	S $\frac{1}{2}$ sec.11, T.26 N., R.1 E., at road crossing 1,000 ft (revised) above East Fork and $\frac{1}{2}$ miles north of Poulsbo.	2.96	1947	8-26-58	1.62
Unnamed tributary.	Dogfish Creek.	NW $\frac{1}{4}$ sec.14 (corrected), T.26 N., R.1 E., at road crossing 1 mile north of Poulsbo.	1.15	1947	8-26-58	.18
Do.....	Liberty Bay..	NW $\frac{1}{4}$ sec.22, T.26 N., R.1 E., at highway crossing 800 ft above mouth and 1 mile west of Poulsbo.	2.56	1947	8-25-58	.84
Scandia Creek.	....do.....	SE $\frac{1}{4}$ sec.27 (revised), T.26 N., R.1 E., at road crossing $\frac{1}{2}$ mile (revised) above mouth, and 1 mile northwest of Keyport.	.41	1947	8-25-58	.10
Unnamed tributary.	....do.....	SW $\frac{1}{4}$ sec.35, T.26 N., R.1 E., at road crossing 600 ft above mouth and $\frac{1}{2}$ mile west of Keyport.	.27	1947	8-25-58	0
Do.....	....do.....	SE $\frac{1}{4}$ sec.35, T.26 N., R.1 E., at road crossing 600 ft above mouth and $\frac{1}{2}$ mile west of Keyport.	.08	1947	8-25-58	.05
Steele Creek..	Burke Bay (formerly Sinclair Inlet).	SE $\frac{1}{4}$ sec.14, T.25 N., R.1 E., 200 ft above road crossing and $\frac{1}{2}$ mile west of Brownsville.	4.75	1947	6-20-58 7-16-58 7-29-58 8-25-58	2.07 1.23 1.29 1.15
Illahee Creek.	Port Orchard (formerly Sinclair Inlet).	S $\frac{1}{2}$ sec.31, T.25 N., R.2 E., at mouth 2 $\frac{1}{2}$ miles northeast of Bremerton.	1.28	1947	8-22-58	.49
Unnamed tributary.	....do.....	SW $\frac{1}{4}$ sec.7, T.24 N., R.2 E., at road crossing 1,000 ft above mouth and 1 mile east of Bremerton.	.70	1947	8-22-58	.40
Do.....	Dyes Inlet...	NE $\frac{1}{4}$ sec.3, T.24 N., R.1 E., at road crossing $\frac{1}{2}$ mile above mouth and $\frac{1}{2}$ mile south of Tracyton.	.21		8-22-58	.05
Mosher Creek (formerly unnamed stream).	....do.....	NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.34, T.25 N., R.1 E., at road crossing 1/8 mile north of Tracyton and $\frac{1}{2}$ mile above mouth.	1.58	1947	8-22-58	.42
Moser Creek...	....do.....	NE $\frac{1}{4}$ sec.34, T.25 N., R.1 E., at road crossing 600 ft above mouth and $\frac{1}{2}$ mile north of Tracyton.	.42	1947	8-22-58	0
Unnamed tributary.	....do.....	NW $\frac{1}{4}$ sec.34 (corrected), T.25 N., R.1 E., at road crossing $\frac{1}{2}$ mile above mouth and 1 mile northwest of Tracyton.	.27	1947	8-22-58	.02
Baker Creek...	....do.....	SW $\frac{1}{4}$ sec.22, T.25 N., R.1 E., at road crossing 3/8 mile above mouth and 1 $\frac{1}{2}$ miles east of Silverdale.	4.02	1947	8-22-58	2.90
Unnamed tributary.	Clear Creek..	South line sec.9, T.25 N., R.1 E., at mouth just above highway crossing, 1 $\frac{1}{2}$ miles north of Silverdale.	3.68	1947	8-26-58	2.87
Clear Creek...	Dyes Inlet...	North line sec.16, T.25 N., R.1 E., at former gaging station near Silverdale.	a7.46	1947*, 1951	6-20-58 7-16-58 7-29-58 8-26-58	3.19 2.87 2.23 3.25
Unnamed tributary.	....do.....	SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.16, T.25 N., R.1 E., at highway crossing $\frac{1}{2}$ mile above mouth and $\frac{1}{2}$ mile north of Silverdale.	.44	1947	8-21-58	.07
Strawberry Creek.	....do.....	NE $\frac{1}{4}$ sec.20, T.25 N., R.1 E., at highway crossing at Silverdale, $\frac{1}{2}$ mile above mouth.	3.01	1947	8-21-58	1.24
Koch Creek....	....do.....	E $\frac{1}{2}$ sec.20, T.25 N., R.1 E., at highway crossing near mouth, 3/8 mile south of Silverdale.	.28	1947	8-21-58	0
Unnamed tributary.	....do.....	SE $\frac{1}{4}$ sec.20, T.25 N., R.1 E., at highway crossing near mouth, $\frac{1}{2}$ mile south of Silverdale.	.55	1947	8-21-58	.03
Do.....	....do.....	SW $\frac{1}{4}$ sec.29, T.25 N., R.1 E., at highway crossing near mouth, 1 $\frac{1}{2}$ miles south of Silverdale.	.40	1947	8-22-58	.20
Do.....	....do.....	NW $\frac{1}{4}$ sec.32, T.25 N., R.1 E., at highway crossing 800 ft above mouth and 1 $\frac{1}{2}$ miles south of Silverdale.	.17	1947	8-22-58	1.16

\* Operated as a continuous-record-gaging station.

a Revised.

c Estimated.

Discharge measurements made at miscellaneous sites during water year 1958--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Puget Sound, Wash.--Continued						
Unnamed tributary.	Dyes Inlet...	About center of $\frac{1}{2}$ sec.32, T.25 N., R.1 E., at highway crossing near mouth, 2 miles south of Silverdale.	0.05	1947	8-22-58	0.18
Do.....	....do.....	SW $\frac{1}{4}$ sec.32, T.25 N., R.1 E., at highway crossing near mouth, $\frac{3}{4}$ miles south of Silverdale.	.23	1947	8-22-58	.06
Do.....	....do.....	NW $\frac{1}{4}$ sec.5, T.24 N., R.1 E., at highway crossing near mouth, $\frac{1}{2}$ miles south of Silverdale.	.13	1947	8-21-58	.25
Wildcat Creek.	Chico Creek..	E $\frac{1}{2}$ sec.2, T.24 N., R.1 W., at lake outlet 5 miles west of Bremerton.	2.50	1947-50	8-20-58	.01
Dickerson Creek.	....do.....	W $\frac{1}{2}$ sec.8 (corrected), T.24 N., R.1 E., at lane crossing at mouth, 3 miles west of Bremerton.	2.19	1947	8-21-58	.06
Kitsap Creek (formerly Kitsap Lake Outlet).	....do.....	SW $\frac{1}{4}$ sec.8, T.24 N., R.1 E., at lake outlet 2 miles south of Chico.	3.35	1947-51	8-21-58	.08
Chico Creek...	Dyes Inlet...	North line sec.8, T.24 N., R.1 E., at former gaging station near Bremerton.	a15.9	1947-50*	6-20-58 7-16-58 7-29-58 8-21-58	3.95 1.31 .66 .24
Gorst Creek...	Sinclair Inlet.	NW $\frac{1}{4}$ sec.32, T.24 N., R.1 E., at road crossing 150 ft above Heinz Creek and $\frac{3}{4}$ miles southwest of Bremerton.	4.35	1947	8-19-58	8.02
Heins Creek (formerly Heinz Creek).	Gorst Creek..	West line sec.32, T.24 N., R.1 E., at road crossing 200 ft above mouth and $\frac{3}{4}$ miles southwest of Bremerton.	1.01	1947	8-19-58	.62
Parish Creek..	....do.....	W $\frac{1}{2}$ sec.32, T.24 N., R.1 E., at highway crossing $\frac{3}{4}$ miles southwest (revised) of Bremerton.	1.66	1947	8-19-58	.86
Unnamed tributary.	BlackJack Creek.	West line NW $\frac{1}{4}$ sec.23, T.23 N., R.1 E., at road crossing 0.2 mile above mouth and 4 miles south of Port Orchard.	1.41	1947	8-19-58	3.61
BlackJack Creek.	Sinclair Inlet.	NW $\frac{1}{4}$ sec.11, T.23 N., R.1 E., at road crossing 2 miles south of Port Orchard and 3 miles above mouth.	10.5	1947	8-19-58	5.00
Do.....	....do.....	SE $\frac{1}{4}$ sec.26, T.24 N., R.1 E., at former gaging station at Port Orchard.	a12.3	1947-50*	6-20-58 7-16-58 8-22-58	9.06 7.52 7.83
Annapolis Creek.	Port Orchard (formerly Sinclair Inlet).	NE $\frac{1}{4}$ sec.25, T.24 N., R.1 E., at road crossing at mouth, $\frac{1}{4}$ mile east of Port Orchard.	1.86	1947	8-21-58	1.56
Wilson Creek..	....do.....	NW $\frac{1}{4}$ sec.30, T.24 N., R.2 E., 300 ft above highway crossing and 1 mile east of Port Orchard.	.20	1947	8-21-58	.40
Unnamed tributary.	....do.....	NW $\frac{1}{4}$ sec.30, T.24 N., R.2 E., at highway crossing 1 mile east of Port Orchard.	.07		8-21-58	.17
Sullivan Creek.	....do.....	SW $\frac{1}{4}$ sec.19, T.24 N., R.2 E., 300 ft above highway crossing and $\frac{1}{2}$ miles northeast of Port Orchard.	1.00	1947	8-21-58	.36
Unnamed tributary.	....do.....	NE $\frac{1}{4}$ sec.19, T.24 N., R.2 E., at road crossing at mouth, 2 miles northeast of Port Orchard.	.25	1947	8-21-58	c.02
Do.....	....do.....	NE $\frac{1}{4}$ sec.17, T.24 N., R.2 E., at road crossing at mouth, $\frac{3}{4}$ miles northeast of Port Orchard.	.32	1947	8-21-58	0
Do.....	....do.....	South line sec.8, T.24 N., R.2 E., at road crossing $\frac{3}{8}$ mile upstream from mouth and 4 miles northeast of Port Orchard.	.40	1947	8-21-58	.10
Beaver Creek..	Clam Bay (formerly Puget Sound).	W $\frac{1}{2}$ sec.16, T.24 N., R.2 E., at highway crossing $\frac{1}{4}$ mile above mouth and 3 miles east of Bremerton.	1.61	1947	8-21-58	.62
Duncan Creek..	Puget Sound..	SW $\frac{1}{4}$ sec.22, T.24 N., R.2 E., at road crossing at Manchester, 500 ft above mouth.	.46	1947	8-21-58	c.05
Salmonberry Creek.	Long Lake....	South line sec.7, T.23 N., R.2 E., at road crossing $\frac{1}{2}$ mile above mouth and $\frac{3}{4}$ miles southeast of Port Orchard.	4.99	1947	8-21-58	1.29
Curley Creek (formerly published as Gurley Creek)	Puget Sound..	NE $\frac{1}{4}$ sec.8, T.23 N., R.2 E., 1 mile below Long Lake outlet and 4 miles southeast of Port Orchard.	11.6	1947 1951	6-20-58 7-16-58 7-28-58 8-21-58	6.72 5.15 3.13 4.29

\* Operated as a continuous-record-gaging station.

a Revised.

c Estimated.

Discharge measurements made at miscellaneous sites during water year 1956--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Puget Sound, Wash.--Continued						
Unnamed tributary.	Yukon Harbor (formerly Puget Sound).	SW $\frac{1}{4}$ sec.34, T.24 N., R.2 E., at highway crossing near mouth, 1 mile west of Harper.	0.21	1947	8-21-58	0.04
Do.....	.....do.....	SE $\frac{1}{4}$ sec.34, T.24 N., R.2 E., at highway crossing near mouth, $\frac{1}{2}$ mile west of Harper.	.05	1947	8-21-58	0
Do.....	.....do.....	S $\frac{1}{2}$ sec.34, T.24 N., R.2 E., at highway crossing at mouth, 5/8 mile west of Harper.	.96	1947	8-21-58	.09
Do.....	.....do.....	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.34, T.24 N., R.2 E., at highway crossing at mouth, $\frac{1}{2}$ mile west of Harper.	.42	1947	8-21-58	c.05
Do.....	Puget Sound..	NW $\frac{1}{4}$ sec.2, T.23 N., R.2 E., at highway crossing at mouth, 3/8 mile south of Harper.	43	1947	8-21-58	0
Olalla Creek..	Olalla Bay (formerly Puget Sound).	North line sec.5, T.22 N., R.2 E., at road crossing 1 $\frac{1}{2}$ miles above mouth and 2 miles west of Olalla.	3.88	1947	7- 2-58 7-17-58 7-28-58 8-18-58 8-29-58	3.99 3.73 3.03 4.01 4.78
Crescent Creek (formerly Crescent Lake Creek).	Gig Harbor...	N $\frac{1}{2}$ sec.32, T.22 N., R.2 E., at road crossing 1 mile above mouth and 1 $\frac{1}{2}$ miles north of Gig Harbor.	4.64	1947	7- 1-58 7-17-58 7-28-58 8-18-58	1.99 1.85 1.29 1.97
Sullivan Gulch Creek (formerly Unnamed Stream).	Wollochet Bay.	SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.28, T.21 N., R.2 E., at road crossing near mouth, 3 $\frac{1}{2}$ miles south of Gig Harbor.	1.61	1947	8-20-58	.08
Unnamed tributary.	.....do.....	SW $\frac{1}{4}$ sec.19, T.21 N., R.2 E., at road crossing at mouth, 3 miles south of Gig Harbor.	1.87	1947	8-20-58	c.03
Do.....	.....do.....	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.24, T.21 N., R.1 E., at road crossing 500 ft above mouth, 2 $\frac{1}{2}$ miles southwest of Gig Harbor.	2.52	1947	8-20-58	c.03
Artondale Creek.	.....do.....	North line sec.24 (corrected), T.21 N., R.1 E., at road crossing near mouth, 2 $\frac{1}{2}$ miles southwest of Gig Harbor.	2.64	1947	8-20-58	.76
Unnamed tributary.	Hale Passage.	SW $\frac{1}{4}$ sec.25, T.21 N., R.1 E., at road crossing at mouth, 4 miles southwest of Gig Harbor.	.10	1947	8-20-58	0
Do.....	.....do.....	NE $\frac{1}{4}$ sec.26, T.21 N., R.1 E., at road crossing at mouth, 4 miles southwest of Gig Harbor.	.19	1947	8-20-58	c.03
Warren Creek..	.....do.....	SE $\frac{1}{4}$ sec.22, T.21 N., R.1 E., just below source at spring, 4 $\frac{1}{2}$ miles southwest of Gig Harbor.	.83		8-20-58	.06
Unnamed tributary.	Henderson Bay.	SE $\frac{1}{4}$ sec.9, T.21 N., R.1 E., at road crossing near mouth, 1 $\frac{1}{2}$ miles southwest of Rosedale.	.14	1947	8-20-58	.06
Do.....	.....do.....	SE $\frac{1}{4}$ sec.10, T.21 N., R.1 E., 200 ft above road crossing, $\frac{1}{4}$ mile above mouth, and $\frac{1}{4}$ mile south of Rosedale.	2.03	1947	8-20-58	.64
Do.....	.....do.....	SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.2 (corrected), T.21 N., R.1 E., at road crossing at mouth, at Rosedale.	.69	1947	8-20-58	.96
Do.....	.....do.....	SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.2, T.21 N., R.1 E., at road crossing $\frac{1}{2}$ mile above mouth and $\frac{1}{4}$ mile north of Rosedale.	.52	1947	8-22-58	.08
McCormick Creek (formerly Unnamed stream).	.....do.....	NW $\frac{1}{4}$ sec.25, T.22 N., R.1 E., at road crossing 500 ft above mouth and 1 mile south of Purdy.	2.36	1947	8-18-58	.98
Unnamed tributary.	.....do.....	W $\frac{1}{2}$ sec.24, T.22 N., R.1 E., at road crossing 800 ft above mouth and $\frac{1}{4}$ mile south of Purdy.	1.55	1947	8-21-58	.02
Purdy Creek...	.....do.....	SW $\frac{1}{4}$ sec.13, T.22 N., R.1 E., at road crossing near mouth, $\frac{1}{4}$ mile north of Purdy.	3.44	1947	7- 1-58 7-17-58 7-28-58 8-11-58 8-29-58	2.56 1.94 1.85 2.51 2.48
Unnamed tributary.	Burley Creek.	About center sec.1, T.22 N., R.1 E., at road crossing $\frac{1}{2}$ mile above mouth and $\frac{1}{4}$ mile north of Burley.	.56	1947	8-18-58	.05
Do.....	.....do.....	E. line SE $\frac{1}{4}$ sec.2, T.22 N., R.1 E., at road crossing 300 ft above mouth and $\frac{1}{4}$ mile north of Burley.	1.51	1947	8-18-58	2.59
Do.....	.....do.....	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.11, T.22 N., R.1 E., at mouth $\frac{1}{4}$ mile northwest of Burley.	.51	1947	8-18-58	.38

\* Operated as a continuous-record-gaging station.

c Estimated.

## Discharge measurements made at miscellaneous sites during water year 1958--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Puget Sound, Wash.--Continued						
Burley Creek..	Henderson Bay	NE $\frac{1}{4}$ sec.11, T.22 N., R.1 E., at former gaging station at Burley.	10.2	1947-50*, 1951	7- 1-58 7-17-58 7-28-58 8-19-58 8-29-58	10.4 12.5 11.1 13.9 16.6
Minter Creek..	....do.....	SW $\frac{1}{4}$ sec.16, T.22 N., R.1 E., above road crossing $\frac{1}{2}$ mile above Huge Creek and 2 $\frac{1}{2}$ miles west of Wauna.	5.67	1947-48 1953	7- 1-58 7-17-58 8-11-58 8-29-58	6.52 5.30 6.25 6.51
Horseshoe Lake Outlet.	....do.....	About center of west line sec.21, T.22 N., R.1 E., at road crossing $\frac{1}{2}$ mile above mouth and 2 miles west of Wauna.	2.82	1947	8-11-58	0
Lackey Creek..	Carr Inlet (formerly Henderson Bay)	SW $\frac{1}{4}$ sec.30, T.22 N., R.1 E., at highway crossing 1 mile above mouth and 4 miles southwest of Wauna.	1.78	1947	8-11-58	0
Unnamed tributary.	....do.....	NW $\frac{1}{4}$ sec.35, T.21 N., R.1 W., at road crossing at Home, $\frac{1}{2}$ mile above mouth.	1.22	1947	8-13-58	.43
Do.....	....do.....	NW $\frac{1}{4}$ sec.35, T.21 N., R.1 W., at road crossing at Home, at mouth.	.63	1947	8-13-58	0
Dutcher Creek.	....do.....	S $\frac{1}{2}$ sec.11, T.21 N., R.1 W., 100 ft below highway crossing, $\frac{1}{2}$ mile above mouth, and 2 $\frac{1}{2}$ miles north of Home.	2.25	1947	8-11-58	.13
Unnamed tributary.	....do.....	NE $\frac{1}{4}$ sec.2, T.21 N., R.1 W., above road crossing 400 ft above mouth and 4 $\frac{1}{2}$ miles north of Home.	1.25		8-11-58	.21
Do.....	....do.....	NE $\frac{1}{4}$ sec.2, T.21 N., R.1 W., at road crossing at mouth at Vaughn, 4 $\frac{1}{2}$ miles north of Home.	2.44	1947	8-11-58	.05
Rocky Creek...	Case Inlet...	NE $\frac{1}{4}$ sec.27, T.27 N., R.1 W., at highway crossing 500 ft above mouth and 2 $\frac{1}{2}$ miles east of Allyn.	18.1	1947	6-16-58 7-11-58 7-18-58 8-13-58 8-29-58	5.34 5.12 4.42 3.98 4.80
Unnamed tributary.	Coulter Creek.	SW $\frac{1}{4}$ sec.4, T.22 N., R.1 W., at road crossing 0.2 mile above mouth and 2 $\frac{1}{2}$ miles south of Belfair.	2.71	1947	8-12-58	.50
Do.....	....do.....	NW $\frac{1}{4}$ sec.9, T.22 N., R.1 W., at road crossing at mouth, 2 $\frac{1}{2}$ miles south of Belfair.	.10	1947	8-12-58	1.44
Do.....	....do.....	SW $\frac{1}{4}$ sec.9, T.22 N., R.1 W., 50 ft above mouth and 3 miles south of Belfair.	1.23	1947	8-12-58	1.19
Coulter Creek.	Case Inlet...	SW $\frac{1}{4}$ sec.9 (corrected), T.22 N., R.1 W., 200 ft. above road crossing and mouth and 1 $\frac{1}{2}$ miles north of Allyn.	14.1	1947	6-16-58 7-11-58 7-18-58 8-12-58	18.7 18.8 18.4 19.0
Lake Washington basin, Wash.						
Coal Creek....	Lake Washington.	W $\frac{1}{2}$ sec.16, T.24 N., R.5 E., at high crossing near mouth, 3 miles south of Bellevue.	6.73	1945-56, 1955-56	8-20-58	1.68
Juanita Creek.	....do.....	SE $\frac{1}{4}$ sec.30, T.26 N., R.5 E., at former gaging station near Kirkland.	5.50	1945*, 1946 1955-56	8-20-58	1.53
Holder Creek.	Issaquah Creek.	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.31, T.23 N., R.7 E., at county road crossing 1 mile north of Hobart.	5.93	1945-46 1955-56	8-18-58	2.16
East Fork Issaquah Creek.	....do.....	SE $\frac{1}{4}$ sec.27, T.24 N., R.6 E., at former gaging station at Issaquah.	8.29	1945*, 1946 1955-56	8-18-58	1.60
Isaquah Creek.	Lake Sammamish.	W $\frac{1}{2}$ sec.21, T.24 N., R.6 E., at county road crossing 2 miles north of Issaquah.	54.1	1945 1955-56	8-18-58	26.6
Bear Creek....	Sammamish River.	E $\frac{1}{2}$ sec.8, T.26 N., R.6 E., at Highway 20 crossing 6 miles northeast of Redmond.	5.14	1946 1955-56	8-19-58	5.10
Do.....	....do.....	NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.29, T.26 N., R.6 E., at former gaging station near Redmond.	13.6	1945-50*	8-19-58	5.75
Swamp Creek...	....do.....	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.1, T.26 N., R.4 E., at former gaging station near Bothell.	21.1	1945*, 1955-56	8-19-58	3.32
Lyon Creek....	Lake Washington.	W $\frac{1}{2}$ sec.10, T.26 N., R.4 E., at highway crossing 3 $\frac{1}{2}$ miles west of Bothell.	3.58	1945-56 1955-56	8-19-58	.77
McAleer Creek.	....do.....	NE $\frac{1}{4}$ sec.9, T.26 N., R.4 E., at former gaging station near Bothell.	6.88	1945*, 1947-49*, 1955-56	8-19-58	3.60
Thornton Creek.	....do.....	SE $\frac{1}{4}$ sec.34, T.26 N., R.4 E., at former gaging station near Seattle.	12.1	1942-43, 1945-46*, 1955-56	8-18-58	4.76

\* Operated as a continuous-record-gaging station.  
a Revised.

## Discharge measurements made at miscellaneous sites during water year 1958--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Snohomish River basin, Wash.						
Raging River...	Snoqualmie River.	West line sec.27, T.24 N., R.7 E., at former gaging station near Fall City.	30.6	1945-50*, 1951d 1953-57d	8-18-58	7.13
Harris Creek...	.....do.....	SE $\frac{1}{4}$ sec.4, T.25 N., R.7 E., at former gaging station near Carnation.	8.34	1945*, 1957	8-18-58	1.80
Cherry Creek...	.....do.....	NW $\frac{1}{4}$ sec.17, T.26 N., R.7 E., at former gaging station near Duwall.	19.9	1945-49*, 1951 1955-57	8-18-58	1.46
Do.....	.....do.....	SE $\frac{1}{4}$ sec.6, T.26 N., R.7 E., 400 ft above State highway crossing and 2 miles northeast of Duwall.	28.3	1945, 1957	8-18-58	3.32
Skagit River basin, Wash.						
Bacon Creek...	Skagit River.	Line between secs.20 and 21, T.36 N., R.11 E., below highway bridge and at former gaging station near Marblemount.	50.9	1909, 1943-50*, 1951	8-19-58	151
Swift Creek...	.....do.....	NE $\frac{1}{4}$ sec.30, T.35 N., R.10 E., at road crossing $\frac{1}{2}$ mile above mouth and 2 miles east of Rockport.	1.43	1943-44	8-19-58	0
Jackman Creek...	.....do.....	NW $\frac{1}{4}$ sec.13, T.35 N., R.8 E., at former gaging station near Concrete.	23.9	1912, 1943-47*, 1951	8-18-58 8-19-58	9.43 9.06
Finney Creek...	.....do.....	NE $\frac{1}{4}$ sec.19, T.35 N., R.8 E., $\frac{1}{3}$ mile above mouth, 3 miles southwest of Concrete, and 1 mile below former gaging station.	55.4	1943-48*, 1951	8-19-58	7.20
Grandy Creek...	.....do.....	SE $\frac{1}{4}$ sec.10, T.35 N., R.7 E., at former gaging station near Concrete.	18.9	1943-44*, 1951, 1956	8-18-58	3.72
Mannser Creek...	.....do.....	NW $\frac{1}{4}$ sec.16, T.35 N., R.6 E., at railroad trestle just below road crossing, 1 mile east of Lyman.	1.95	1943-44	8-19-58	0
Jones Creek...	.....do.....	SW $\frac{1}{4}$ sec.9, T.35 N., R.6 E., at former gaging station near Lyman.	7.80	1943-44*	8-18-58	0
Wiseman Creek...	.....do.....	NW $\frac{1}{4}$ sec.14, T.35 N., R.5 E., at road crossing $\frac{3}{4}$ miles west of Lyman.	2.29	1943-44	8-18-58	0
Hansen Creek...	.....do.....	NW $\frac{1}{4}$ sec.20, T.35 N., R.5 E., at former gaging station near Sedro Woolley.	10.3	1943-45*, 1946	8-18-58	.75
East Fork Nookachamps Creek.	Nookachamps Creek.	NE $\frac{1}{4}$ sec.19, T.34 N., R.5 E., at former gaging station near Clear Lake.	20.5	1943-50*	8-18-58	.68
Cool Creek (formerly Coal Creek).	Skagit River.	S $\frac{1}{2}$ sec.10, T.35 N., R.5 E., at former gaging station near Sedro Woolley.	1.8	1947, 1948-50*, 1951	8-18-58	0
Samish River basin, Wash.						
Friday Creek...	Samish River.	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.31, T.36 N., R.4 E., at former gaging station near Burlington.	37.1	1943-48*	8-19-58	1.43
Smith Creek...	Lake Whatcom.	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.5, T.37 N., R.4 E., at road crossing at Sunnyside.	5.56	1948-49 1954-56	8-22-58	0
Nooksack River basin, Wash.						
Kendall Creek.	Nooksack River.	NW $\frac{1}{4}$ sec.34, T.40 N., R.5 E., at former gaging station at Kendall.	e24.0	1948-50*	8-20-58	0
Do.....	.....do.....	NE $\frac{1}{4}$ sec.3, T.39 N., R.5 E., at former gaging station near mouth, at Kendall.	e29.2	1954*, 1955-56	8-21-58	3.23
Coal Creek...	.....do.....	NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.1C, T.39 N., R.5 E., at former gaging station near Kendall.	4.57	1948*, 1949 1955-56	8-20-58	.25
Bells Creek...	.....do.....	SE $\frac{1}{4}$ sec.21, T.39 N., R.5 E., at Mount Baker Highway crossing $\frac{1}{2}$ miles northwest of Kulshan.	4.15	1948-49 1954-56	8-20-58	e.25
Canyon Creek...	Middle Fork Nooksack River.	SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.27, T.39 N., R.5 E., at former gaging station at Kulshan.	8.70	1948-55*, 1956	8-20-58	1.62
Anderson Creek.	Nooksack River.	NE $\frac{1}{4}$ sec.19, T.39 N., R.4 E., at former gaging station at Goshen.	12.9	1948*, 1949, 1954*, 1955-56	8-20-58	.08
Fishtrap Creek	.....do.....	NE $\frac{1}{4}$ sec.25, T.40 N., R.2 E., at alternate U. S. Highway 99 crossing 1 mile southwest of Lynden.	f29.1	1942-42 1948-49 1954-56	8-18-58	4.85

\* Operated as a continuous-record-gaging station.

c Estimated.

d Operated as crest-stage gage; low-flow measurements made in 1955 and 1957.

f Of which 19.4 sq mi is in Canada.

## Discharge measurements made at miscellaneous sites during water year 1958--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Nooksack River basin, Wash.--Continued						
Bertrand Creek.	Nooksack River.	SE $\frac{1}{4}$ sec.27, T.40 N., R.2 E., at former gaging station near Lynden.	640.3	1948*, 1949, 1951, 1954*, 1955-56	8-19-58	5.26
Wiser Creek....	.....do.....	SW $\frac{1}{4}$ sec.3, T.39 N., R.2 E., $\frac{1}{2}$ mile above mouth and 3 miles northeast of Ferndale.	6.23	1942-43, 1949, 1954-56	8-18-58	1.04
Tenmile Creek.	Barrett Lake.	NE $\frac{1}{4}$ sec.18, T.39 N., R.3 E., at road crossing 1 mile north-east of Laurel.	10.5	1942-43, 1948-49, 1954-56	8-18-58	.69
Do.....	.....do.....	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.22, T.39 N., R.2 E., at former gaging station near Ferndale.	22.7	1948*, 1949-51, 1954*, 1955-56	8-18-58	1.64
Deer Creek....	.....do.....	NE $\frac{1}{4}$ sec.27, T.39 N., R.2 E., at road crossing 2 miles east of Ferndale.	7.06	1943, 1948-49, 1954-56	8-18-58	.82
Terrell Creek basin, Wash.						
Terrell Creek.	Birch Bay....	East line sec.6, T.39 N., R.1 E., at road crossing 6 miles south of Blaine.	8.56	1954-56	8-19-58	0
California Creek basin, Wash.						
California Creek.	Drayton Harbor.	SE $\frac{1}{4}$ sec.27, T.40 N., R.1 E., at former gaging station near Custer.	6.85	1942-43, 1954*, 1955-56	8-19-58	0.33
Dakota Creek basin, Wash.						
North Fork Dakota Creek.	Dakota Creek.	SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.14, T.40 N., R.1 E., at road crossing 5 miles south-east of Blaine.	6.65	1948-49, 1954-56	8-19-58	0.62
Dakota Creek..	Drayton Har-bor.	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.14, T.40 N., R.1 E., at former gaging station near Blaine.	15.2	1948-53*, 1954-56	8-19-58	2.44
Fraser River basin, Wash.						
Dale Creek....	Sumas River..	North line sec.9, T.39 N., R.4 E., at road crossing 2 $\frac{1}{2}$ miles southeast of Nooksack.	2.57	1947-48, 1954-56	8-21-58	e0.1
Sumas River...	Vedder River.	South line sec.29, T.40 N., R.4 E., at road crossing at Nooksack.	16.9	1948-49, 1954-56	8-21-58	6.82
Beckenridge Creek.	Sumas River..	East line sec.28, T.40 N., R.4 E., at crossing of Goodwin Road, $\frac{1}{2}$ miles east of Nook-sack.	5.37	1947-49, 1954-56	8-21-58	.27
Sumas River...	Vedder River.	NE $\frac{1}{4}$ sec.11, T.40 N., R.4 E., at former gaging station near Sumas.	32.1	1948-50*, 1951, 1954*, 1955-56	8-19-58	7.96
Fangborn Lake Creek.	Johnson Creek	SW $\frac{1}{4}$ sec.5, T.40 N., R.4 E., at road crossing at Clearbrook.	2.74	1947-48, 1954-56	8-19-58	2.60
Johnson Creek.	Sumas River..	SW $\frac{1}{4}$ sec.35, T.41 N., R.4 E., at former gaging station at Sumas.	h23.0	1947-49, 1954*, 1955-56	8-21-58	9.32
Saar Creek....	.....do.....	North line sec.6, T.40 N., R.5 E., at former gaging station near Sumas.	9.76	1948, 1954*, 1955-56	8-19-58	0
Kootenai River basin						
Kootenay River.	Columbia River.	Lat 49°29'40", long 117°20'04", at Graham Narrows, 2 miles below Nelson, British Columbia; measurements referred to gage No. 10 at Nelson (station 8 N., J.9 of Water Resources Branch, Department of Northern Affairs and National Resources, Canada).	17,700	1932-57	12-18-57 3-31-58 6-2-58 7-18-58 7-19-58 9-23-58	6,680 17,240 114,500 38,650 39,160 11,450
Pend Oreille River basin						
Copper Creek..	Landers Fork.	SE $\frac{1}{4}$ sec.26, T.15 N., R.8 W., 1 mile above mouth and 7 miles northeast of Lincoln, Mont.	-	-	8-26-58	20.6
Landers Fork..	Blackfoot River.	S $\frac{1}{2}$ sec.36, T.15 N., R.8 W., 30 ft below Copper Creek and 7 miles northeast of Lincoln, Mont.	-	-	8-26-58	28.6
Do.....	.....do.....	S $\frac{1}{2}$ sec.12, T.14 N., R.8 W., 400 ft above bridge on State Highway 20 and 6 miles east of Lincoln, Mont.	-	-	8-26-58	61.4
Pack River....	Pend Oreille Lake.	Sec.14, T.59 N., R.2 W., at steel highway bridge above Caribou Creek, 5 miles north of Colburn, Idaho.	-	-	9-7-58	12.4

\* Operated as a continuous-record-gaging station.

c Estimated.

g Of which 23.1 sq mi is in Canada.

h Of which 6.6 sq mi is in Canada.

## Discharge measurements made at miscellaneous sites during water year 1958--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Pend Oreille River basin--Continued						
Grouse Creek..	Pack River...	Sec.2, T.58 N., R.1 W., 2 miles above mouth and 4 miles east of Colburn, Idaho.	-		9- 7-58	2.98
Rapid Light-ning Creek.	....do.....	Sec.24, T.58 N., R.1 W., 0.3 mile above mouth and 6 miles southeast of Colburn, Idaho.	-		9- 8-58	8.99
Kettle River basin, Wash.						
Curlew Creek...	Kettle River.	NW 1/4 sec.28, T.38 N., R.33 E., at former gaging station near Malo.	66.8	1951-54*	9-24-58	*5.84
Colville River basin, Wash.						
Grouse Creek...	Sheep Creek..	SE 1/4 sec.5, T.30 N., R.41 E., at relocated State Highway 395, 5 1/2 miles north of town of Loon Lake.	15.1		9-16-58	*3.38
Do.....	....do.....	SW 1/4 sec.6, T.30 N., R.41 E., at crossing of county road from State Highway 395 to Jumpoff Joe Lake, 5 miles northwest of Loon Lake.	16.6		9-16-58	*5.52
Cottonwood Creek.	Colville River.	On north line sec.1, T.31 N., R.40 E., at farm bridge 0.6 mile east of northwest corner of section and 4 miles south of Chewelah.	33.5		9-11-58	*6.63
North Fork Chewelah Creek.	....do.....	NE 1/4 sec.11, T.32 N., R.40 E., 1/2 mile above gaging station at Chewelah and 1 mile north of Chewelah.	a58.4	1957	10-29-57 11-27-57 1- 8-58 6- 5-58 7-10-58 8-21-58 9-22-58	7.56 7.78 7.55 29.2 18.0 *4.04 *6.37
South Fork Chewelah Creek.	....do.....	NW 1/4 sec.12, T.32 N., R.40 E., 1/2 mile above gaging station at Chewelah and 1 mile north of Chewelah.	a35.0	1957	10-29-57 11-27-57 1- 8-58 6- 5-58 7-10-58 8-21-58 9-22-58	4.47 4.49 3.30 6.49 3.13 *c.10 *1.28
East Branch South Fork Chewelah Creek.	....do.....	NW 1/4 sec.12, T.32 N., R.40 E., 1/2 mile above Chewelah Creek gaging station at Chewelah and 600 ft east of confluence of North and South Forks of Chewelah Creek (South Fork splits 1.5 miles upstream).	-	1957	10-29-57 11-27-57 1- 8-58 6- 5-58 7-10-58 8-21-58 9-22-58	.65 .95 1.27 6.43 4.74 .88 *1.88
Colville River.	Columbia River.	NW 1/4 sec.31, T.33 N., R.40 E., at former gaging station at Blue Creek.	435	1923-24*	9-22-58	*68.0
Stranger Creek.	Colville River.	NE 1/4 sec.11, T.33 N., R.39 E., below bridge 600 ft upstream from mouth and 1 1/2 miles north of Addy.	42.2		9-11-58	*.63
Mill Creek....	....do.....	SW 1/4 sec.16, T.36 N., R.40 E., below Forks at proposed stream-gaging site, 6 1/2 miles northeast of Colville.	67.9		8-26-58 9-23-58	*3.51 *4.23
Do.....	....do.....	NW 1/4 sec.17, T.36 N., R.39 E., just above Clugston Creek 5 miles northwest of Colville.	107		9-12-58	*12.7
Clugston Creek.	Mill Creek....	NW 1/4 sec.17, T.36 N., R.39 E., at mouth 5 miles northwest of Colville.	32.1		9-11-58	0
Mill Creek....	Colville River.	SW 1/4 sec.31, T.36 N., R.39 E., at State Highway 395 near mouth, 2 1/2 miles northwest of Colville.	146		9-12-58	*13.2
Hall Creek basin, Wash.						
Hall Creek....	Columbia River.	NW 1/4 sec.1, T.52 N., R.36 E., 1/2 mile above highway bridge, 1 mile above former gaging station at Inchellum, and 1 mile northwest of Inchellum.	a160		9-25-58	*15.7
Spokane River basin, Wash.						
Latah Creek...	Spokane River.	N 1/2 sec.23, T.20 N., R.45 E., at former gaging station at Tekoa.	1133	1904-5*	9-15-58	*1.61
North Fork Latah Creek.	Latah Creek..	S 1/2 sec.14, T.20 N., R.45 E., at former gaging station at Tekoa.	160	1904-5*	9-15-58	*.07
Unnamed tributary.	West Branch Dragoon Creek.	NW 1/4 sec.11, T.28 N., R.41 E., 20 ft below road crossing and 6 miles west of Deer Park.	6.87		9-12-58	*.10
Do.....	....do.....	NW 1/4 sec.12, T.28 N., R.41 E., 10 ft below road crossing, 5 miles west of Deer Park.	8.40		9-12-58	*.54
* Base flow.						

\* Base flow.

\* Operated as a continuous-record-gaging station.

a Revised.

c Estimated.

i Approximately.

## Discharge measurements made at miscellaneous sites during water year 1958--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Spokane River basin, Wash.--Continued						
Unnamed tributary.	West Branch Dragoon Creek.	SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.7, T.28 N., R.42 E., 100 ft below road crossing and 4 miles west of Deer Park.	13.8		9-12-58	*1.66
West Branch Dragoon Creek.	Dragoon Creek.	SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.7, T.28 N., R.42 E., 150 ft above road crossing and 3 miles southwest of Deer Park.	30.4		9-12-58	*2.72
Do.....	.....do.....	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.9, T.28 N., R.42 E., 100 ft downstream from section line and 2 miles southwest of Deer Park.	33.3		7- 9-58 8-18-58 9-12-58 9-25-58	*3.09 *2.33 *2.99 5.53
Little Creek.	Little Spokane River.	On line between secs.29 and 32, T.27 N., R.43 E., 20 ft below county highway bridge and 1 $\frac{1}{2}$ miles north of Dartford.	11.7		9-18-58	*1.85
Do.....	.....do.....	NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.32, T.27 N., R.43 E., 1 mile north of Dartford.	11.7		9-18-58	1.62
Chamokane Creek.	Spokane River.	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.11, T.27 N., R.39 E., $\frac{1}{2}$ mile above mouth, 50 ft above county highway bridge, and 1 $\frac{1}{2}$ miles northwest of Long Lake Dam.	176		9-16-58	*31.0
Sanpoil River basin, Wash.						
Sanpoil River.	Columbia River.	SE $\frac{1}{4}$ sec.7, T.30 N., R.33 E., at former gaging station near Keller.	890	1952-55†	9-24-58	*45.5
Okanogan River basin, Wash.						
Sinlahekin Creek above Cecil Creek.	Palmer Lake.	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.23, T.38 N., R.25 E., at former gaging station near Loomis.	86	1903-54	5-26-58 7- 5-58 7-27-58 8-27-58 9-27-58	173 34.4 22.4 *15.8 *15.2
Do.....	.....do.....	SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.13, T.38 N., R.25 E., 2 miles south of Loomis.	87.8		2-24-58 3-30-58 5- 3-58	13.2 14.5 56.8
Middle Fork Toats Coulee Creek.	Toats Coulee Creek.	SW $\frac{1}{4}$ sec.13, T.39 N., R.23 E., at Middle Fork bridge 12 $\frac{1}{2}$ miles northwest of Loomis.	17.7		5-25-58 7- 5-58 7-27-58 8-26-58 9-26-58	138 15.6 5.20 *1.15 *1.72
North Fork Toats Coulee Creek.	Toats Coulee Creek.	NW $\frac{1}{4}$ sec.24, T.39 N., R.24 E., at North Fork bridge 6 $\frac{1}{2}$ miles northwest of Loomis.	49.9		3-28-58 5- 2-58 5-25-58 7- 5-58 7-27-58 8-26-58 9-26-58	5.79 30.6 201 22.3 6.97 *4.34 *5.14
Do.....	.....do.....	NE $\frac{1}{4}$ sec.30, T.39 N., R.25 E., 300 ft above confluence of South and North Forks and 5 $\frac{1}{2}$ miles northwest of Loomis.	54.0		3-28-58	4.63
Bonaparte Creek.	Okanogan River.	SE $\frac{1}{4}$ sec.35, T.37 N., R.28 E., at former gaging station near Anglin.	110	1920-21†	9-22-58	*11.4
Methow River basin, Wash.						
Doe Creek.....	Chewack Creek.	NE $\frac{1}{4}$ sec.30, T.37 N., R.22 E., at crest-stage gage near Winthrop.	-		5-28-58	9.46
South Fork Beaver Creek.	Beaver Creek.	Three miles north of Summit Loup Loup Pass near Twisp.	2.3		9-28-58	*.94
Do.....	.....do.....	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.24, T.34 N., R.22 E., 1,000 ft above mouth and 7 miles northeast of Twisp.	26.8	1956-57	11-13-57 5-28-58 6-26-58 7-29-58 8-23-58 9-28-58	5.19 60.9 15.8 8.28 *4.12 *3.90
Beaver Creek..	Methow River.	NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.19, T.33 N., R.22 E., 1,500 ft above Forest Service bridge and 7 miles northeast of Twisp.	56.6		4-24-57 5-16-57 6-21-57 7-22-57 8-22-57 9-30-57 11-13-57 12-14-57 5-28-58 6-26-58 7-29-58 8-23-58 9-28-58	17.4 186 50.0 22.9 13.1 *8.99 10.0 10.3 207 44.5 21.2 *9.93 *8.81

\* Base flow.

† Operated as a continuous-record-gaging station.

1 Approximately.



## Discharge measurements made at miscellaneous sites during water year 1958--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Methow River basin, Wash.--Continued						
Beaver Creek.	Methow River.	SE 1/4 NE 1/4 sec.27, T.33 N., R.22 E., at mouth 4 miles southeast of Twisp.	1124		2-15-56 3-15-56 4-26-56 5-19-56 7-17-56 8- 4-56 9-12-56 4-25-57 5-16-57 7-22-57 6-27-58 9-28-58	15.5 11.2 102 320 4.86 .38 7.03 21.8 180 c1.0 30.7 14.7
Methow River.	Columbia River.	NW 1/4 NE 1/4 sec.28, T.30 N., R.23 E., at bridge on State Highway 16, 3 miles northwest of Pateros.	11,790	1956-57	11-12-57 12-13-57 1-24-58 2-25-58 5- 4-58 6-25-58 7-30-58 8-22-58 9-29-58	431 410 379 720 3,170 2,790 844 *362 *425
Pine Canyon Creek basin, Wash.						
Pine Canyon..	Columbia River.	SW 1/4 SW 1/4 sec.8, T.25 N., R.22 E., at former gaging station near Waterville.	11.1	1945-47*	9-16-58	*0.1
Wenatchee River basin, Wash.						
Nason Creek..	Wenatchee River.	NE 1/4 sec.11, T.26 N., R.16 E., at former gaging station near Nason.	88.7	1911*	9-14-58	*40.0
Chiwawa River.	.....do.....	SE 1/4 sec.13, T.27 N., R.17 E., at former gaging station near Plain.	170	1911-14*, 1936-49*, 1954-57*	9-11-58	*122
Chiwaukum Creek.	.....do.....	NW 1/4 sec.9, T.25 N., R.17 E., at former gaging station near Chiwaukum.	49.6	1911*	9-14-58	*17.7
Peshastin Creek.	.....do.....	NW 1/4 sec.12, T.22 N., R.17 E., at former gaging station at Blewett.	40.0	1911-12*	9-15-58	*2.25
Do.....	.....do.....	NE 1/4 sec.24, T.23 N., R.17 E., at former gaging station below Ingalls Creek, near Leavenworth.	101	1911-12*	9-15-58	*27.4
Sand Creek...	Mission Creek.	NW 1/4 sec.6, T.22 N., R.19 E., at former gaging station near Cashmere.	19.8	1954-56*	9-12-58	*.46
Douglas Creek basin, Wash.						
Douglas Creek.	Columbia River.	S 1/4 sec.12, T.24 N., R.22 E., at former gaging station near Alstown.	114	1949-55*	9-16-58	*.43
Crab Creek basin, Wash.						
Wilson Creek..	Crab Creek...	At bridge on county gravel road, 1.2 miles south of Govan.	-		9- 9-58	*0.95
Do.....	.....do.....	SW 1/4 sec.6, T.22 N., R.30 E., at former gaging station at Wilson Creek.	470	1951-57*	1-22-58	29.3
Crab Creek....	Columbia River.	Sec.24, T.22 N., R.27 E., 800 ft upstream from Great Northern Railway bridge at former gaging station at Adrian.	1,950	1909-12*	9-10-58	0
Park Creek....	Park Lake....	SE 1/4 sec.11, T.24 N., R.27 E., 2,000 ft upstream from Park Lake at former gaging station near Coulee City.	400	1942-45*	9- 9-58	*6.75
Blue Lake Outlet.	Alkali Lake..	At outlet of Blue Lake, about 5 miles southwest of Coulee City.	-		9- 9-58	*1.12
Yakima River basin, Wash.						
Cabin Creek...	Yakima River.	Sec.9, T.20 N., R.13 E., at Northern Pacific Railway bridge at former gaging station near Easton.	31.7	1909-11*	9-15-58	*15.9
Kittitas Canal.	.....do.....	Sec.11, T.20 N., R.13 E., at former gaging station at Easton.	-	1930-54*	6-14-55 6-20-56 6-11-57 10- 8-57 6-18-58	994 547 975 383 1,040
Teanaway River.	.....do.....	NW 1/4 sec.9, T.20 N., R.16 E., at former gaging station near Cle Elum.	174	1911-12*	9-15-58	*20.7
Do.....	.....do.....	SW 1/4 sec.25, T.20 N., R.16 E., at former gaging station near Cle Elum.	200	1909-14*, 1946-52*	9-15-58	*8.25

\* Base flow.

\* Operated as a continuous-record-gaging station.

c Estimated.

1 Approximately.

Discharge measurements made at miscellaneous sites during water year 1958--Continued						
Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Yakima River basin, Wash.--Continued						
Taneum Creek..	Yakima River.	Sec.1, T.18 N., R.16 E., at former gaging station near Thorp.	76.3	1909-10*	9-12-58	*6.52
Manastash Creek.	....do.....	Sec.15, T.17 N., R.17 E., at former gaging station near Ellensburg.	75.8	1909-14*	9-12-58	*9.64
Wenas Creek..	....do.....	SE $\frac{1}{4}$ sec.18, T.14 N., R.19 E., at former gaging station near Selah.	190	1909*, 1910-12	9-12-58	*2.46
North Fork Tieton River.	Tieton River.	Sec.12, T.13 N., R.12 E., at former gaging station below Clear Creek, near Naches.	61.5	1914-15*	9-11-58	*165
Ahtanum Creek.	Yakima River.	NE $\frac{1}{4}$ sec.15, T.12 N., R.16 E., at former gaging station at The Narrows, near Timpico.	121	1908-13*	11-20-57	*21.5
Main Ahtanum canal.	Ahtanum Creek.	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.14, T.12 N., R.16 E., at headworks 7 miles west of Wiley City.	-		6-15-57 6-15-57 10-13-57 6-13-58 7-2-58	78.5 30.3 9.9 80.1 34.5
Ahtanum Creek.	Yakima River.	NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.14, T.12 N., R.16 E., below Main Canal 7 miles west of Wiley City.	-		11-20-57	13.0
Hatton Creek..	Ahtanum Creek.	SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.18, T.12 N., R.17 E., below headworks 5 miles west of Wiley City.	-		4-15-57 4-16-57 4-16-57 4-16-57 4-16-57 4-16-57 6-15-57 6-18-57 7-2-57 8-16-57 9-18-57 10-13-57 10-21-57 11-20-57 4-18-58 6-12-58	48.4 40.5 27.9 23.5 19.5 15.6 6.59 15.1 19.1 22.8 11.8 7.65 6.66 3.98 7.66 45.8 38.0
Ahtanum Creek.	Yakima River.	SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.18, T.12 N., R.17 E., 200 ft below Hatton Creek diversion and 5 miles west of Wiley City.	-		10-21-57 11-20-57	3.22 4.85
Do.....	....do.....	NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.18, T.12 N., R.17 E., 100 ft below Lynch Road crossing above Batchelor Creek and $\frac{1}{2}$ miles west of Wiley City.	-		10-21-57	7.28
Batchelor Creek.	Ahtanum Creek.	SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.18, T.12 N., R.17 E., below headworks $\frac{1}{2}$ miles west of Wiley City.	-		4-16-57 4-16-57 4-16-57 6-18-57 6-18-57 6-18-57 8-16-57 9-18-57 10-13-57 11-20-57 4-18-58 6-12-58 7-2-58	79.8 66.4 44.2 33.3 37.0 24.1 40.6 3.76 5.10 3.98 1.57 28.0 46.6 13.1
Ahtanum Creek.	Yakima River.	SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.13, T.12 N., R.16 E., 150 ft below Batchelor Creek diversion and $\frac{1}{2}$ miles west of Wiley City.	-		11-20-57	11.9
Do.....	....do.....	Center sec.17, T.12 N., R.17 E., 200 ft below Carson Road crossing and $3\frac{1}{2}$ miles west of Wiley City.	-		10-21-57	6.10
Do.....	....do.....	SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.16, T.12 N., R.17 E., $\frac{1}{2}$ mile east of Carson Road and $\frac{1}{2}$ miles southwest of Wiley City.	-		10-21-57	6.59
Do.....	....do.....	500 ft north of E $\frac{1}{2}$ corner sec.16, T.12 N., R.17 E., and $2\frac{1}{2}$ miles southwest of Wiley City.	-		10-21-57	5.41
Do.....	....do.....	1,000 ft north of center sec.15, T.12 N., R.17 E., 50 ft above county road bridge and 2 miles southwest of Wiley City.	-		10-22-57	4.00
Do.....	....do.....	SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.14, T.12 N., R.17 E., $\frac{1}{2}$ miles southwest of Wiley City.	-		10-22-57	2.29
Do.....	....do.....	SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.13, T.12 N., R.17 E., 100 ft below county road bridge and 1 mile south of Wiley City.	-		10-22-57	2.56

\* Base flow.

† Operated as a continuous-record-gaging station.

Discharge measurements made at miscellaneous sites during water year 1958--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Yakima River basin, Wash.--Continued						
Lower Ahtanum canal.	Ahtanum Creek.	NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.7, T.12 N., R.17 E., 100 ft below headworks and $1\frac{1}{2}$ miles southeast of Wiley City.	-		9-18-58	1.6
Ahtanum Creek.	Yakima River.	SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.2, T.12 N., R.18 E., at South 16th Avenue bridge $2\frac{1}{2}$ miles south of Yakima.	-		6-18-57 6-13-58 8-11-58	20.3 90.2 1.71
Spring Creek..	Ahtanum Creek.	SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.1, T.12 N., R.18 E., at Ahtanum Road bridge 3 miles south of Yakima.	-		6-13-58 8-11-58	47.8 3.45

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