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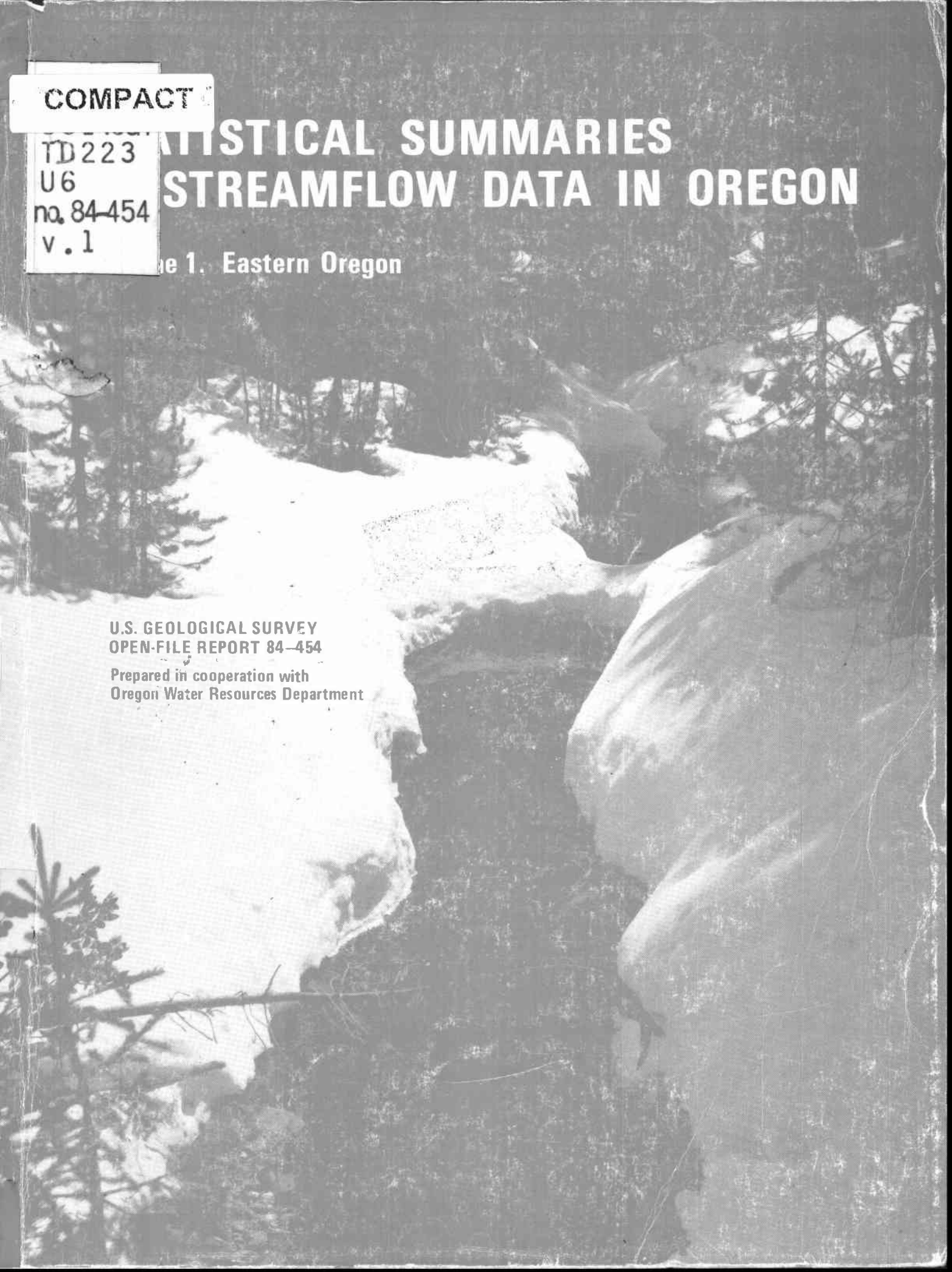
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STATISTICAL SUMMARIES STREAMFLOW DATA IN OREGON

Volume 1. Eastern Oregon

U.S. GEOLOGICAL SURVEY
OPEN-FILE REPORT 84-454

Prepared in cooperation with
Oregon Water Resources Department



STATISTICAL SUMMARIES OF STREAMFLOW DATA IN OREGON
VOLUME 1. EASTERN OREGON

By John Friday and Suzanne J. Miller

U.S. GEOLOGICAL SURVEY
OPEN-FILE REPORT 84-454

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Portland, Oregon
1984

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UNITED STATES DEPARTMENT OF THE INTERIOR

WILLIAM P. CLARK, Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

Cover photo: Thielsen Creek near Diamond Lake

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ILLUSTRATIONS

[Plate is in pocket]

Plate 1. Map showing location of streamflow gaging stations in eastern Oregon.

METRIC CONVERSION TABLE

To convert inch-pound units [in this report] to metric units, multiply by the following factors:

<u>Multiply inch-pound unit</u>	<u>By</u>	<u>To obtain metric unit</u>
acre	0.4047	hectometer (hm)
acre-foot per year (acre-ft/yr)	0.001233	cubic hectometers per year (hm ³ /yr)
cubic foot per second (ft ³ /s and CFS)	0.02832	cubic meter per second (m ³ /s)
foot (ft)	0.3048	meter (m)
inch per year (in/yr)	25.40	millimeter per year (mm/yr)
mile (mi)	1.609	kilometer (km)
square mile (mi ²)	2.590	square kilometer (km ²)

STATISTICAL SUMMARIES OF STREAMFLOW DATA IN OREGON

VOLUME 1. EASTERN OREGON

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By John Friday and Suzanne J. Miller

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ABSTRACT

Statistical summaries of streamflow data at 123 stream-gaging sites are presented in this report to aid in appraising the hydrology of river basins in Eastern Oregon. Records for 13 gaging stations were compiled into separate periods owing to changes in regulation during the period of data collection. The periods before and after regulation are presented for comparison.

A brief station description is given describing the physical and operational features for each gaging station. Following the station description are tables of monthly and annual flow statistics, flood frequency data, low-flow and high-flow frequency data, and flow-duration information.

INTRODUCTION

This is the first of two volumes of statistical summaries of streamflow data collected at gaging stations in Oregon. Volume 1 contains data from 123 gaging stations located in the area east of the divide of the Cascade Range. Volume 2 will cover the remainder of the State. It is anticipated these reports will be updated about every five years.

This report was prepared in cooperation with the Oregon Water Resources Department (OWRD). The purpose is to provide water-resource managers with a knowledge of streamflow characteristics based on historical data. For the purpose of this report, gaging-station records had to satisfy one of two criteria. The data had to be hydrologically transferable (for use in estimating streamflow in ungaged basins), or it had to be a significant indicator of flow availability. For example, a gage at the outlet of a natural lake would have little hydrologic transferability (due to storage of water in the lake), but the data would be a good indication of low-flow availability as well as flood events.

Stations on canals, reservoirs, or combined-flow stations, were not used in this report. Data for combined-flow stations include diverted flow which may or may not reenter the stream downstream from the gage. A map showing the location of gaging stations used in this report is enclosed in a packet in the back of the book.

STREAMFLOW RECORDS

Both active and discontinued gaging stations having a minimum of 10 years of daily-mean discharge values were used in this report. For active stations, the period of record extends to the end of the 1982 water year (ending on September 30). A brief station description showing the physical and operational features of the gaging station precedes the statistical summaries for each station. Except for paragraphs describing revised records and extremes for a specific year, the station descriptions are identical to the last-published version in the annual release "Water Resources Data - Oregon" (U.S. Geological Survey, 1983). A detailed explanation of the manuscript data and a definition of terms is given in that report.

Sometimes the natural flow of a stream may be altered by the construction of a dam, an irrigation diversion, or by the augmentation of flow by transbasin diversions. If this occurs during the operation of a gaging station, the statistical summaries must reflect both natural and altered states of flow, providing there are at least 10 years of data for each state. There are 13 such stations in this report.

STATISTICAL SUMMARIES

The tables of statistical data include monthly and annual mean discharges, magnitude and probability of annual low flows, magnitude and probability of annual high flows, magnitude and probability of instantaneous peak flows, and a duration table of daily mean flows. The statistics were generated by using computer programs available from the U.S. Geological Survey's "National Water Data Storage and Retrieval System" (WATSTORE).

Monthly and Annual Mean Discharges

This statistical summary is from computer program W4422 by Price and Meeks (1977). The period of record shown in the heading is the first and last water year for which daily-mean discharge values are available, and does not necessarily indicate a continuous period of record (see the PERIOD OF RECORD paragraph in the station description for fragmentary records).

The standard deviation shown in the table is a measure of the variability of flows occurring during a given month during the period of record. The value represents the spread in discharges (from the mean value) that could be expected to occur two-thirds of the time based on the distribution of data during the sampling period. The coefficient of variation is the ratio of the standard deviation to the mean.

The annual mean shown in the table will sometimes vary from the average discharge shown in the manuscript because the annual mean is based only on years for which daily-mean discharge values are available, while the average discharge includes years having estimated monthly values.

Magnitude and Probability of Annual Low Flows

This summary is from computer program A969 by Meeks (1977). The computation period is based on a climatic year which ends on March 31 thus assuring the low-flow season will be complete within a twelve-month period. The recurrence interval was generally extended to twice the period of record for stations having less than 40 years of record. If 40 or more years of record were available, the recurrence interval was extended to 100 years (a flow having a 1 percent chance of not being exceeded in any given year).

The table shows the amount of flow that probably would not be exceeded, during specified periods, for the indicated recurrence intervals. The recurrence intervals are also shown as nonexceedance probabilities which are expressed as a percent chance of the event not being exceeded in any given year. For example, the low flow during a 30-day period might not be exceeded on the average of once every 50 years, and would have a 2 percent chance of not being exceeded in any given year.

Magnitude and Probability of Annual High Flows

This summary is also from computer program A969 (Meeks, 1977). The period of record is based on water years having daily-mean discharge data. The recurrence intervals are extended in the same manner as the low-flow frequency. The table shows maximum flows that could be equalled or exceeded, during specified periods, for the indicated recurrence intervals. Occasionally, the values shown for a 1-day period will exceed the instantaneous peaks shown for the same recurrence intervals in the adjacent table. The reason for this is that different periods of record are involved. Quite often peak data are documented outside the period of systematic data collection.

Magnitude and Probability of Instantaneous Peak Flow

This summary is from computer program J407 by Kirby (1981). The period of record shows the first and last water years for which annual peak flows were documented. The table shows the magnitude of instantaneous peak flows for selected recurrence intervals as computed from a log-Pearson Type III probability distribution of gaging-station data. For stations having less than 25 years of record, the frequency curve was based on a generalized skew coefficient taken from the U.S. Water Resources Council Bulletin 17B (1981). For stations having more than 25 years of data, the skew coefficient was determined by weighing the generalized skew against the actual station skew as recommended by the Council. The skew used for a particular station is shown at the bottom of the table.

Flood-frequency data were not determined at gaging stations immediately downstream from dams and reservoirs. At stations where low-flow statistics are divided into two periods due to the construction of a bypass structure, the flood-frequency data are computed for the entire period of record.

Duration Table of Daily Mean Flow

This summary is from computer program A969 by Meeks (1977). The period of record indicates the first and last water year where daily-mean values of discharge were available for analysis. The table shows the amount of flow that was equalled or exceeded for the indicated percent of the time.

REFERENCES

- Kirby, William, 1981, Annual flood frequency analysis using U.S. Water Resources Council guidelines (Program J407), chapter I, section C of WATSTORE user's guide: U.S. Geological Survey Open-File Report 76-435, v. 4, p. C-1 to C-57.
- Meeks, W. C., 1977, Daily values statistics (Program A969), chapter IV, section G, of WATSTORE user's guide: U.S. Geological Survey Open-File Report 75-426, v. 1, p. G-1 to G-37.
- Price, W. E., Jr., and Meeks W. C., 1977, Daily values monthly and annual statistics (Program W4422), chapter IV, section F, of WATSTORE user's guide: U.S. Geological Survey Open-File Report 75-426, v. 1, p. F-1 to F-46.
- U.S. Geological Survey, 1983, Water resources data, Oregon, water year 1982, volume 1. Eastern Oregon; Portland, Oregon, U.S. Geological Survey Water-Data Report OR-82-1, 206 p.
- U.S. Water Resources Council, 1981, Guidelines for determining flood flow frequency [revised]: Hydrology Committee Bulletin 17B, 28 p.

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WARNER LAKES BASIN

10366000 TWENTYMILE CREEK NEAR ADEL, OR

LOCATION.--Lat 42°04'20", long 119°57'42", in SW¼NW¼ sec.25, T.40 S., R.23 E., Lake County, Hydrologic Unit 17120007, on left bank 1.5 mi downstream from Twelvemile Creek and 8 mi southwest of Adel.

DRAINAGE AREA.--194 mi², including 46 mi² in Cowhead Lake area.

PERIOD OF RECORD.-- March 1910 to July 1916, December 1917 to September 1919, and March 1921 to June 1922 (published as "near Warner Lake"), September 1940 to November 1944, March 1945 to September 1982.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 4,560.83 ft National Geodetic Vertical Datum of 1929. Prior to Sept. 21, 1940, nonrecording gage or water-stage recorder at sites within 1 mi downstream at various datums. Sept. 21, 1940, to Nov. 30, 1944, water-stage recorder at site 1.8 mi upstream at different datums. Mar. 12, 1945, to June 28, 1952, water-stage recorder at site 70 ft upstream at datum 0.88 ft higher.

REMARKS.--Some regulation by pumpage from Cowhead Lake. Diversions in Oregon for irrigation above station; considerable diversions for irrigation in Cowhead Lake area in California.

AVERAGE DISCHARGE.--47 years (water years 1911-15, 1919, 1941-44, 1946-82), 51.9 ft³/s, 37,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,670 ft³/s Dec. 23, 1964, gage height, 16.1 ft, from rating curve extended above 920 ft³/s on basis of contracted-opening measurement of 3,260 ft³/s; no flow at times.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1911-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	2.4	121	6.8	17	2.42	1.1
NOVEMBER	3.8	65	9.0	10	1.14	1.5
DECEMBER	3.1	349	32	62	1.93	5.3
JANUARY	2.8	330	52	82	1.58	8.5
FEBRUARY	3.3	383	73	92	1.26	12.0
MARCH	5.9	578	134	117	.87	22.0
APRIL	5.9	879	133	144	1.08	21.8
MAY	9.4	283	97	53	.54	15.9
JUNE	4.2	261	56	44	.78	9.3
JULY	1.5	34	9.6	7.4	.77	1.6
AUGUST	1.2	8.4	3.4	1.5	.43	.6
SEPTEMBER	2.1	6.3	3.5	1.0	.29	.6
ANNUAL	4.2	125	52	30	.58	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1912-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	2.1	1.2	.8	.6	.4	.3
3	2.2	1.3	1.0	.8	.6	.4
7	2.3	1.5	1.2	.9	.7	.6
14	2.5	1.7	1.4	1.1	.9	.8
30	2.8	2.0	1.6	1.4	1.1	1.0
60	3.0	2.3	2.0	1.8	1.6	1.4
90	3.3	2.6	2.3	2.1	1.9	1.8
120	3.8	3.0	2.6	2.4	2.2	2.1
183	5.0	3.8	3.5	3.3	3.2	3.1

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1911-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
716	1340	2310	2970	3800	4390	4960
WEIGHTED SKEW = -.508						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1911-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	913	1650	2080	2510	2770	2980
3	649	1240	1590	1970	2190	2380
7	455	873	1130	1420	1600	1750
15	318	594	762	943	1050	1150
30	228	411	516	626	690	743
60	165	281	343	404	438	465
90	141	227	269	307	328	343

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1911-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
205	125	89	67	48	33	15	7.8	6.0	4.7	4.3	3.9	3.4	3.0	2.4

10370000 CAMAS CREEK NEAR LAKEVIEW, OR

LOCATION.--Lat 42°12'59", long 120°06'05", in SE¼NE¼ sec.3, T.39 S., R.22 E., Lake County, Hydrologic Unit 17120007, on left bank 0.2 mi downstream from Blue Creek and 12 mi east of Lakeview.

DRAINAGE AREA.--63 mi², approximately.

PER100 OF RECORD.--September 1912 to November 1914, March to May 1915, December 1949 to September 1973.

GAGE.--Water-stage recorder. Datum of gage is 5,472.41 ft National Geodetic Vertical Datum of 1929 (State Highway Department bench mark). Sept. 11, 1912, to May 9, 1915, water-stage recorder or nonrecording gage at site 500 ft upstream at different datum.

REMARKS.--No regulation. Diversions for irrigation above station.

AVERAGE DISCHARGE.--25 years (water years 1913-14, 1951-73), 46.6 ft³/s, 33,760 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,190 ft³/s Dec. 23, 1964, gage height, 7.32 ft, from rating curve extended above 410 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.90 ft³/s Aug. 16, 1960.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1913-73

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	2.9	52	8.6	9.5	1.11	1.5
NOVEMBER	3.3	42	14	8.9	.65	2.4
DECEMBER	2.3	241	33	53	1.62	5.9
JANUARY	2.7	125	30	37	1.22	5.4
FEBRUARY	6.3	142	41	35	.85	7.3
MARCH	15	254	64	52	.81	11.4
APRIL	40	344	164	77	.47	29.3
MAY	19	339	144	87	.61	25.7
JUNE	7.3	114	42	28	.68	7.5
JULY	2.0	23	10	5.8	.57	1.8
AUGUST	1.9	10	5.2	2.3	.45	.9
SEPTEMBER	2.0	9.1	4.8	1.9	.40	.9
ANNUAL	17	89	47	21	.44	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1914-73

PERIOD (CON- SEC- UTIVE OAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3.4	2.1	1.6	1.2	.9	--
3	3.5	2.2	1.6	1.3	.9	--
7	3.6	2.2	1.7	1.3	1.0	--
14	3.8	2.4	1.8	1.4	1.1	--
30	4.0	2.6	2.0	1.6	1.2	--
60	4.4	2.9	2.3	1.8	1.4	--
90	4.9	3.2	2.5	2.1	1.6	--
120	5.6	3.7	2.9	2.3	1.8	--
183	8.4	5.3	4.0	3.2	2.4	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1913-73

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25	2	5	10	25	50	100
80%	50%	20%	10%	4%	2%	1%
293	472	821	1130	1630	2100	--
WEIGHTED SKEW = .525						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1913-73

PERIOD (CON- SEC- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	373	633	868	1250	1610	--
3	336	541	706	951	1160	--
7	292	440	544	683	791	--
15	243	348	416	497	556	--
30	204	290	341	398	436	--
60	157	224	264	309	339	--
90	127	180	211	245	267	--

URATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1913-73

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
215	140	95	67	50	38	20	13	8.8	6.9	6.3	5.6	4.7	3.8	2.6

WARNER LAKES BASIN

10371000 DRAKE CREEK NEAR ADEL, OR

LOCATION.--Lat 42°12'00", long 120°00'41", in NE¼SW¼ sec.9, T.39 S., R.23 E., Lake County, Hydrologic Unit 17120007, on right bank 800 ft downstream from highway bridge and Parsnip Creek, 1.0 mi upstream from mouth, and 6.5 mi west of Adel.

DRAINAGE AREA.--67 mi², approximately.

PERIOD OF RECORD.--March to May 1915, December 1922 to May 1923, December 1949 to December 1964, October 1965 to September 1973.

GAGE.--Water-stage recorder. Datum of gage is 5,075.94 ft National Geodetic Vertical Datum of 1929 (State High Department bench mark). Mar. 18 to May 10, 1915, and Dec. 21, 1922, to May 9, 1923, nonrecording gage at site 800 ft upstream at different datums. Dec. 16, 1949, to June 21, 1951, at site 1,300 ft upstream at different datum. June 22, 1951, to Dec. 23, 1964, at site 20 ft upstream at datum 0.48 ft higher.

REMARKS.--Some regulation by two reservoirs above station with combined capacity of 436 acre-ft. Diversions for irrigation above station.

AVERAGE DISCHARGE.--22 years (1951-64, 1966-73), 14.9 ft³/s, 10,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,210 ft³/s Dec. 23, 1964, gage height, 9.8 ft, result of slope-area measurement; minimum, 0.40 ft³/s Jan. 11, 1963, result of freezeup.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1951-73

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	3.1	12	6.5	2.1	.32	3.6
NOVEMBER	3.0	11	6.5	1.9	.29	3.6
DECEMBER	2.9	48	9.2	9.0	.99	5.1
JANUARY	2.4	88	17	21	1.25	9.3
FEBRUARY	4.1	91	27	29	1.09	14.8
MARCH	6.0	121	34	31	.90	19.2
APRIL	4.3	178	36	44	1.22	20.2
MAY	3.5	48	15	11	.74	8.3
JUNE	3.4	22	8.7	4.2	.48	4.8
JULY	3.5	14	7.0	2.5	.36	3.9
AUGUST	3.5	12	6.5	2.1	.33	3.6
SEPTEMBER	3.6	12	6.3	2.1	.33	3.5
ANNUAL	4.7	32	15	7.7	.52	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1952-73

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3.8	2.3	1.7	1.3	--	--
3	4.0	2.8	2.3	2.0	--	--
7	4.2	3.0	2.5	2.1	--	--
14	4.5	3.3	2.8	2.4	--	--
30	4.9	3.6	3.0	2.6	--	--
60	5.4	4.0	3.4	2.9	--	--
90	5.7	4.2	3.6	3.1	--	--
120	5.9	4.4	3.7	3.2	--	--
183	6.1	4.6	4.0	3.5	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1951-73DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
229	551	1380	2250	3860	--	--
WEIGHTED SKEW = .147						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1951-73DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	238	609	953	1490	--	--
3	170	411	619	924	--	--
7	117	272	403	593	--	--
15	78	178	264	390	--	--
30	52	112	162	237	--	--
60	36	70	96	132	--	--
90	30	55	74	100	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1951-73

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
45	21	14	12	10	8.8	7.9	7.0	6.4	5.7	5.3	4.9	4.5	4.0	3.4

WARNER LAKES BASIN

10371500 DEEP CREEK ABOVE ADEL, OR

LOCATION.-- Lat 42°11'21", long 120°00'02", in SW¼NW¼ sec.15, T.39 S., R.23 E., Lake County, Hydrologic Unit 17120007, on left bank 700 ft downstream from Drake Creek and 5 mi west of Adel.

DRAINAGE AREA.--249 mi².

PERIOD OF RECORD.--September 1922 to September 1923, October 1929 to September 1982. Monthly discharge only October 1929 to September 1932, published in WSP 1314.

GAGE.--Water-stage recorder. Datum of gage is 4,980.34 ft National Geodetic Vertical Datum of 1929 (State Highway Department bench mark). Sept. 8 to Dec. 20, 1922, nonrecording gage. Dec. 21, 1922, to Sept. 30, 1923, and Oct. 11, 1929, to Dec. 23, 1964, water-stage recorder at site 700 ft downstream at different datums. Jan. 20 to Sept. 30, 1965, nonrecording gage at site 2,000 ft downstream at different datum.

REMARKS.--No regulation. Diversions for irrigation above station.

AVERAGE DISCHARGE.--54 years, 130 ft³/s, 94,180 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,420 ft³/s Dec. 23, 1964, gage height, 10.64 ft, from floodmark, from rating curve extended above 1,100 ft³/s on basis of slope-area measurements at 7.3 ft and of peak flow; minimum, 1.7 ft³/s July 20, 27-29, 1934.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1923-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	5.2	179	24	24	1.00	1.5
NOVEMBER	10	197	40	36	.91	2.4
DECEMBER	8.5	605	82	121	1.48	5.1
JANUARY	7.0	451	86	109	1.27	5.3
FEBRUARY	8.0	713	115	130	1.13	7.1
MARCH	19	825	178	141	.79	11.0
APRIL	46	1072	398	222	.56	24.7
MAY	32	920	429	218	.51	26.6
JUNE	12	590	203	132	.65	12.6
JULY	2.4	115	34	27	.81	2.1
AUGUST	2.1	28	13	6.5	.51	.8
SEPTEMBER	2.9	32	15	7.0	.47	.9
ANNUAL	27	288	134	66	.49	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1934-82

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	9.0	5.3	3.9	3.0	2.2	1.8
3	9.2	5.4	4.0	3.0	2.2	1.8
7	9.4	5.5	4.1	3.1	2.3	1.8
14	9.6	5.7	4.2	3.3	2.4	1.9
30	10	6.1	4.6	3.5	2.6	2.1
60	12	7.0	5.2	4.1	3.0	2.4
90	13	8.1	6.2	4.8	3.6	2.9
120	16	10	7.7	6.0	4.4	3.6
183	24	15	12	9.3	7.2	6.1

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1923-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
605	1220	2480	3620	5440	7080	9000
WEIGHTED SKEW = .074						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1923-82

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1020	1960	2750	3930	4960	6110
3	875	1530	2000	2650	3150	3660
7	731	1170	1450	1780	2010	2230
15	616	928	1110	1300	1420	1520
30	524	778	918	1070	1160	1230
60	438	633	731	826	880	922
90	366	528	611	692	739	777

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1923-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
579	403	290	214	156	111	57	35	26	21	18	16	13	11	7.0

10378500 HONEY CREEK NEAR PLUSH, OR

LOCATION.--Lat 42°25'33", long 119°55'23", in SW¼SW¼ sec.20, T.35 S., R.24 E., Lake County, Hydrologic Unit 17120007, on right bank 700 ft upstream from mouth of canyon, 1.4 mi northwest of Plush, and 4 mi downstream from Twelvemile Creek.

DRAINAGE AREA.--170 mi², approximately.

PERIOD OF RECORD.--May 1909 to September 1914 (prior to January 1910, gage heights only), March to May 1915, March to September 1921, March to June 1922, May 1930 to September 1932. Monthly discharge only May 1930 to September 1949, published in WSP 1314.

GAGE.--Water-stage recorder. Datum of gage is 4,552.60 ft National Geodetic Vertical Datum of 1929. Dec. 24, 1964, to Sept. 30, 1965, nonrecording gage at site 100 ft downstream at different datums. See WSP 1927 for history of changes prior to Dec. 24, 1964.

REMARKS.--Slight regulation by five small reservoirs, combined capacity, 870 acre-ft. Diversions for irrigation above station.

AVERAGE DISCHARGE.--56 years (water years 1911-14, 1931-32), 30.0 ft³/s, 21,740 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,000 ft³/s Dec. 23, 1964, gage height, 13.4 ft from floodmark, from rating curve extended above 250 ft³/s on basis of slope-area measurements at gage height 10.46 ft and of peak flow; no flow at times.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1950-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	.1	39	3.5	6.2	1.76	.8
NOVEMBER	.9	32	7.2	7.1	.98	1.7
DECEMBER	1.0	253	22	46	2.05	5.4
JANUARY	1.1	107	22	29	1.29	5.4
FEBRUARY	4.0	181	30	38	1.27	7.2
MARCH	4.6	268	50	52	1.05	12.0
APRIL	10	264	96	58	.60	23.1
MAY	11	318	122	68	.56	29.4
JUNE	3.2	147	50	35	.69	12.1
JULY	.3	24	8.8	6.9	.78	2.1
AUGUST	.2	9.5	1.7	1.9	1.11	.4
SEPTEMBER	.2	7.7	1.3	1.3	1.05	.3
ANNUAL	3.9	79	34	20	.57	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1951-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.3	.2	.1	.1	.1	.1
3	.4	.2	.1	.1	.1	.1
7	.4	.2	.1	.1	.1	.1
14	.5	.2	.2	.1	.1	.1
30	.6	.3	.2	.1	.1	.1
60	.8	.4	.3	.2	.1	.1
90	1.1	.5	.4	.3	.2	.1
120	1.8	.9	.6	.4	.2	.2
183	3.8	2.1	1.4	1.1	.7	.6

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1911-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
171	450	1190	1980	3420	4860	6670
WEIGHTED SKEW = .027						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1950-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	327	728	1090	1650	2150	2710
3	267	532	734	1010	1210	1420
7	212	391	511	659	762	858
15	172	290	359	431	476	513
30	142	231	277	321	345	363
60	113	182	218	254	274	291
90	94	150	180	208	224	237

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1911-32

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
159	103	71	50	35	25	14	7.6	5.1	3.2	2.4	1.8	1.2	.7	.3

ABERT LAKE BASIN

10384000 CHEWAUCAN RIVER NEAR PAISLEY, OR

LOCATION.--Lat 42°41'05", long 120°34'08", in SW¼NW¼ sec.26, T.33 S., R.18 E., Lake County, Hydrologic Unit 17120006, on left bank 1.2 mi downstream from Mill Creek and 1.4 mi southwest of Paisley.

DRAINAGE AREA.--275 mi².

PERIOD OF RECORD.--April 1912 to September 1921 (fragmentary), May 1924 to September 1982. Published as "above Conn ditch, near Paisley" April to September 1912 and May 1924 to September 1955, as "above Mill Creek, near Paisley" October 1912 to December 1913; and as "at Chewaucan Land & Cattle Co.'s gage, near Paisley" January to September 1914.

GAGE.--Water-stage recorder. Datum of gage is 4,430 ft National Geodetic Vertical Datum of 1929 (river-profile survey). See WSP 1734 for history of changes prior to Oct. 6, 1956.

REMARKS.--No regulation. Diversions for irrigation above station.

AVERAGE DISCHARGE.--67 years, 144 ft³/s, 104,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,490 ft³/s Dec. 22, 1964, gage height, 8.35 ft, from rating curve extended above 900 ft³/s on basis of slope-area measurement of peak flow; no flow for part of each day Dec. 7, 1927, Dec. 12, 1932, result of freezeup.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1925-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	22	156	39	19	.47	2.2
NOVEMBER	21	205	54	34	.62	3.1
DECEMBER	10	657	88	115	1.30	5.1
JANUARY	17	395	88	86	.98	5.0
FEBRUARY	23	566	112	98	.87	6.4
MARCH	42	659	160	103	.64	9.2
APRIL	54	828	338	189	.56	19.3
MAY	57	1211	494	283	.57	28.3
JUNE	25	672	252	173	.69	14.4
JULY	14	168	62	38	.62	3.5
AUGUST	9.4	69	31	13	.41	1.8
SEPTEMBER	14	50	31	8.5	.28	1.7
ANNUAL	34	353	146	74	.51	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1926-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	19	13	10	8.5	6.7	5.6
3	21	14	11	9.1	7.1	6.0
7	22	15	12	10	8.0	6.8
14	23	16	13	11	8.9	7.6
30	25	18	14	12	9.6	8.2
60	27	20	17	14	12	10
90	30	22	19	16	13	12
120	33	25	21	18	15	13
183	40	29	25	21	18	16

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1925-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
573	957	1650	2210	3060	3800	4620
WEIGHTED SKEW = .222						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1925-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	788	1400	1870	2500	3000	3520
3	728	1240	1580	2000	2300	2600
7	663	1070	1310	1570	1740	1890
15	597	925	1100	1290	1400	1490
30	528	810	963	1120	1210	1290
60	428	664	799	946	1040	1120
90	352	544	657	782	863	934

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1925-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
608	403	284	209	158	121	77	56	45	37	34	31	28	24	20

MALHEUR AND HARNEY LAKES BASIN

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10393500 SILVIES RIVER NEAR BURNS, OR

LOCATION.-- Lat 43°42'55", long 119°10'35", in NW¼NW¼ sec.31, T.21 S., R.30 E., Harney County, Hydrologic Unit 17120002, on left bank 5 mi downstream from Emigrant Creek and 11 mi northwest of Burns.

DRAINAGE AREA.--934 mi².

PERIOD OF RECORD.--May 1903 to July 1906, December 1908 to December 1912, March 1913 to September 1917 (irrigation seasons only), March 1918 to October 1920, March 1921 to July 1922 (irrigation seasons only), October 1922 to September 1982.

GAGE.--Water-stage recorder. Datum of gage is 4,195 ft National Geodetic Vertical Datum of 1929 (river-profile survey). See WSP 1734 for history of changes prior to Oct. 4, 1951.

REMARKS.--No regulation. Diversions for Irrigation above station during periods of high flow only.

AVERAGE DISCHARGE.--69 years (water years 1904-5, 1910-12, 1918-21, 1923-82), 169 ft³/s, 122,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,960 ft³/s Apr. 6, 1952, gage height, 15.2 ft; no flow July 19 to Sept. 22, 1934.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1904-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	3.9	45	18	9.1	.50	.9
NOVEMBER	5.2	62	31	13	.42	1.5
DECEMBER	10	482	51	60	1.16	2.5
JANUARY	10	715	81	107	1.33	3.9
FEBRUARY	18	799	156	164	1.05	7.5
MARCH	30	1508	347	275	.79	16.7
APRIL	12	2716	757	530	.70	36.4
MAY	5.6	1535	447	351	.79	21.5
JUNE	2.2	473	134	115	.86	6.5
JULY	.5	152	31	26	.85	1.5
AUGUST	0.0	52	13	11	.86	.6
SEPTEMBER	.6	45	12	8.6	.73	.6
ANNUAL	15	412	166	98	.59	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1905-82

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	6.1	2.3	1.2	.7	.3	.2
3	6.4	2.5	1.3	.7	.4	.2
7	6.7	2.7	1.5	.9	.4	.3
14	7.1	3.1	1.9	1.2	.6	.4
30	7.5	3.7	2.4	1.7	1.1	.8
60	8.8	4.6	3.2	2.3	1.5	1.1
90	12	5.5	3.3	2.5	1.6	1.2
120	14	7.0	4.6	3.0	1.9	1.3
183	21	12	8.2	5.9	3.9	2.9

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1904-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
749	1280	2130	2750	3580	4230	4900

WEIGHTED SKEW = -.166

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1904-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECUTIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1240	2050	2480	2890	3120	3300
3	1170	1960	2390	2810	3050	3240
7	1050	1790	2200	2600	2840	3030
15	904	1560	1940	2330	2560	2750
30	757	1320	1640	1980	2190	2350
60	581	999	1240	1510	1670	1800
90	465	793	987	1200	1330	1440

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1904-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
834	514	326	218	143	98	57	40	28	20	17	13	10	7.4	4.7

10396000 DONNER UND BLITZEN RIVER NEAR FRENCHGLEN, OR

LOCATION.--Lat 42°47'28", long 118°52'00", in NW¼NW¼ sec.20, T.32 S., R.32-1/2 E., Harney County, Hydrologic Unit 17120003, Bureau of Land Management land, on left bank 1.5 mi upstream from upper diversions for Malheur Migratory Waterfowl Refuge, 2.0 mi downstream from Fish Creek, and 3.5 mi southeast of Frenchglen.

DRAINAGE AREA.--200 mi², approximately.

PERIOD OF RECORD.--March 1911 to September 1913, March 1914 to September 1916, April 1917 to September 1921, August to November 1929, April to September 1930, December 1937 to September 1982. Monthly discharge only for some periods, published in WSP 1314. Published as "near Diamond" 1911-21. Records of discharge for January 1909 to September 1910 (published in WSP 270, 290, and 370, for a nonequivalent site as "near Diamond") have been found to be unreliable and should not be used.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 4,254 ft National Geodetic Vertical Datum of 1929 (levels by Fish and Wildlife Service). Prior to December 1937, nonrecording gage at several sites within 2 mi downstream at different datums. Dec. 6, 1937, to Feb. 14, 1938, nonrecording gage at present site and datum.

REMARKS.--No regulation or diversion above station.

AVERAGE DISCHARGE.--52 years (water years 1912-13, 1915-16, 1918-21, 1939-82), 123 ft³/s, 89,110 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,270 ft³/s Apr. 26, 1978, gage height, 7.15 ft from floodmarks, from rating curve extended above 1,900 ft³/s on basis of slope-area measurement of peak flow; minimum, 4.2 ft³/s Dec. 9, 1972, result of freezeup.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1912-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	25	64	43	9.1	.21	2.8
NOVEMBER	25	93	47	13	.27	3.1
DECEMBER	25	181	55	32	.59	3.7
JANUARY	25	239	65	44	.67	4.3
FEBRUARY	28	310	91	67	.74	6.0
MARCH	41	374	138	73	.53	9.2
APRIL	61	666	221	108	.49	14.8
MAY	138	649	373	132	.35	24.9
JUNE	68	802	284	135	.48	19.0
JULY	29	196	95	43	.46	6.3
AUGUST	24	76	46	14	.30	3.1
SEPTEMBER	24	65	41	9.9	.24	2.8
ANNUAL	55	201	123	36	.29	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1913-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	23	17	15	13	11	10
3	26	20	18	16	13	12
7	30	23	20	18	16	14
14	32	26	24	22	19	18
30	35	29	26	24	22	20
60	36	30	27	25	23	21
90	38	32	29	26	24	22
120	39	33	30	27	25	23
183	43	36	32	30	27	26

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1912-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
809	1340	2120	2630	3280	3740	4200
WEIGHTED SKEW = -.361						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1912-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	831	1270	1560	1950	2240	2530
3	669	960	1140	1340	1480	1620
7	570	774	886	1010	1080	1150
15	477	638	724	815	872	921
30	410	550	627	711	765	812
60	343	450	507	565	601	632
90	294	383	430	477	506	531

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1912-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
433	316	244	188	144	111	72	56	49	43	41	38	35	32	28

10397000 BRIDGE CREEK NEAR FRENCHGLEN, OR

LOCATION.--Lat 42°50'38", long 118°50'57", in SE¼NW¼ sec.33, T.31 S., R.32-1/2 E., Harney County, Hydrologic Unit 17120003, on right bank at mouth of canyon, 3.5 mi northeast of Frenchglen.

DRAINAGE AREA.--30 mi², approximately.

PERIOD OF RECORD.--March to August 1911, January 1912 to September 1916, April to June 1930, December 1937 to September 1970. Monthly discharge only April to June 1930, published in WSP 1314. Published as "near Diamond" 1911-16.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 4,184.93 ft National Geodetic Vertical Datum of 1929 (levels by Fish and Wildlife Service). Prior to Dec. 21, 1937, nonrecording gage at sites within 1 mi upstream at different datums. Dec. 21, 1937, to May 17, 1938, nonrecording gage at site 1,000 ft downstream at different datum. May 18, 1938, to Aug. 22, 1939, nonrecording gage at present site and datum.

REMARKS.--No regulation or diversion above station. Low-water flow is sustained by large springs.

AVERAGE DISCHARGE.--36 years (water years 1913-16, 1939-70), 13.5 ft³/s, 9,780 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 301 ft³/s May 19, 1953, gage-height, 2.73 ft, from rating curve extended above 65 ft³/s; minimum, 4.2 ft³/s Feb. 25, 1962.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1913-70

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	6.6	15	12	2.1	.18	7.2
NOVEMBER	1.2	15	11	2.7	.24	7.0
DECEMBER	6.2	16	11	2.4	.21	7.0
JANUARY	5.7	17	11	2.7	.23	7.0
FEBRUARY	5.3	25	12	3.7	.31	7.5
MARCH	7.8	35	13	4.8	.36	8.3
APRIL	8.2	37	19	7.2	.38	11.7
MAY	8.5	44	22	9.9	.45	13.5
JUNE	8.4	25	14	4.2	.29	8.9
JULY	7.9	16	12	1.7	.14	7.3
AUGUST	8.2	16	12	1.7	.15	7.3
SEPTEMBER	7.7	16	12	1.9	.16	7.4
ANNUAL	8.3	19	14	2.5	.19	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1914-70

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	--	--	--	--	--	--
3	--	--	--	--	--	--
7	--	--	--	--	--	--
14	--	--	--	--	--	--
30	--	--	--	--	--	--
60	10	8.2	7.2	6.5	5.6	--
90	10	8.5	7.5	6.7	5.8	--
120	11	8.7	7.7	6.9	6.0	--
183	11	9.3	8.3	7.5	6.6	--

NOTE: SHORT-DURATION DATA UNCERTAIN DUE TO EXCESSIVE SKEW

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1913-70

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
43	91	179	247	342	418	--
WEIGHTED SKEW = -.357						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1913-70

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	45	77	101	133	159	--
3	34	57	74	99	120	--
7	29	45	57	74	88	--
15	26	38	45	55	62	--
30	24	33	39	46	52	--
60	20	27	32	38	43	--
90	18	24	28	32	36	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1913-70

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
26	20	17	15	15	14	13	13	12	11	11	10	9.7	8.6	7.7

MALHEUR AND HARNEY LAKES BASIN

10403000 SILVER CREEK NEAR RILEY, OR

LOCATION.--Lat 43°41'30", long 119°39'30", in E-1/2 sec.1, T.22 S., R.25 E., Harney County, Hydrologic Unit 17120004, on right bank 0.4 mi downstream from Rough Creek, 1.4 mi upstream from Nicoll Creek, and 14 mi northwest of Riley.

DRAINAGE AREA.--228 mi².

PERIOD OF RECORD.--June 1951 to September 1980.

GAGE.--Water-stage recorder. Datum of gage is 4,449.70 ft National Geodetic Vertical Datum of 1929.

REMARKS.--No regulation. Diversions for irrigation above station.

AVERAGE DISCHARGE.--29 years, 42.8 ft³/s, 31,010 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,810 ft³/s Dec. 22, 1964, gage height, 7.49 ft; no flow at times.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1952-80

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1.9	7.1	3.4	1.3	.37	.7
NOVEMBER	2.6	8.8	4.9	1.5	.30	.9
DECEMBER	1.5	202	14	37	2.60	2.7
JANUARY	1.3	121	21	30	1.38	4.2
FEBRUARY	1.7	169	44	49	1.11	8.6
MARCH	5.4	414	108	95	.88	20.9
APRIL	11	711	209	145	.69	40.5
MAY	6.5	209	79	57	.72	15.3
JUNE	2.6	79	21	14	.66	4.0
JULY	.4	15	6.1	3.5	.57	1.2
AUGUST	.2	8.0	2.6	1.8	.69	.5
SEPTEMBER	.9	4.9	2.3	1.0	.45	.4
ANNUAL	7.6	85	43	22	.52	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1953-80

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	--	--	--	--	--	--
3	--	--	--	--	--	--
7	--	--	--	--	--	--
14	1.6	.5	.2	.1	0.0	--
30	1.7	.7	.3	.2	.1	--
60	1.9	1.0	.7	.5	.3	--
90	2.3	1.4	1.0	.8	.6	--
120	2.7	1.8	1.4	1.2	.9	--
183	3.8	2.8	2.3	1.9	1.6	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1952-80

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT							
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%	
315	590	1040	1360	1790	2110	--	
WEIGHTED SKEW = -.376							

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1952-80

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	460	768	972	1220	1400	--
3	413	687	871	1100	1260	--
7	348	580	735	926	1060	--
15	285	486	619	780	894	--
30	226	386	487	601	677	--
60	167	280	345	415	457	--
90	131	216	264	314	344	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1952-80

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME															
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%	
233	128	77	47	30	21	11	6.6	4.8	3.7	3.3	2.9	2.4	1.9	1.3	

ALVORD LAKE BASIN

21

10406500 TROUT CREEK NEAR DENIO, NV

LOCATION.--Lat 42°09'20", long 118°27'30", in SW¼ sec.26, T.39 S., R.36 E., Harney County, Hydrologic Unit 17120009, on right bank 0.4 mi upstream from bridge at mouth of canyon, 5 mi east of Trout Creek Ranch, and 14 mi northeast of Denio.

DRAINAGE AREA.--88 mi², approximately.

PERIOD OF RECORD.--March 1911 to March 1912, April 1922 to November 1923, March 1925 to September 1931 (irrigation seasons only), April 1932 to September 1982. Prior to Oct. 1, 1961, published as "near Denio, Oreg."

GAGE.--Water-stage recorder. Datum of gage is 4,351.52 ft National Geodetic Vertical Datum of 1929. Mar. 25, 1911, to Mar. 31, 1912, nonrecording gage at bridge 0.4 mi downstream at different datum. Apr. 28, 1922, to June 14, 1932, water-stage recorder at site 10 ft upstream at datum 0.50 ft higher.

REMARKS.--No regulation. Diversions for irrigation above station.

AVERAGE DISCHARGE.--51 years (water years 1923, 1933-82), 15.7 ft³/s, 11,370 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 470 ft³/s Aug. 1, 1933, gage height, 5.26 ft, from rating curve extended above 230 ft³/s; minimum observed, 0.10 ft³/s Aug. 4, 1930, Aug. 1, Sept. 12, 28, 1934. Probably no flow at times Sept. 1-19, 1931.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 6.0 ft, caused by cloudburst, probably occurred in 1924 or 1925.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1933-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1.8	10	5.0	1.6	.32	2.6
NOVEMBER	3.0	9.7	6.2	1.7	.28	3.3
DECEMBER	2.9	13	6.4	2.2	.34	3.4
JANUARY	2.9	24	7.3	3.7	.51	3.8
FEBRUARY	3.4	29	8.8	5.0	.57	4.6
MARCH	4.5	69	14	11	.76	7.3
APRIL	7.7	105	33	20	.60	17.6
MAY	4.4	151	60	34	.56	31.4
JUNE	2.5	92	33	22	.68	17.1
JULY	1.0	41	9.7	6.8	.70	5.1
AUGUST	.1	9.1	3.7	1.9	.53	1.9
SEPTEMBER	.1	6.7	3.5	1.7	.47	1.9
ANNUAL	3.8	37	16	7.0	.44	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1934-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	2.1	1.0	.6	.4	.2	.1
3	2.2	1.0	.6	.4	.2	.1
7	2.4	1.1	.7	.4	.2	.2
14	2.6	1.3	.8	.5	.2	.2
30	3.0	1.5	.9	.6	.3	.2
60	3.5	1.9	1.1	.7	.3	.2
90	3.9	2.3	1.6	1.2	.7	.5
120	4.3	2.8	2.1	1.6	1.1	.9
183	5.0	3.6	2.9	2.4	1.9	1.6

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1933-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
66	115	195	257	343	413	488
WEIGHTED SKEW = -.147						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1933-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	93	155	200	257	301	346
3	90	147	183	226	255	282
7	84	134	162	191	209	224
15	75	117	140	164	177	188
30	64	100	120	141	153	163
60	50	78	94	111	121	130
90	40	63	75	89	98	106

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1933-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
67	43	29	21	15	12	8.3	6.8	5.8	5.0	4.5	4.0	3.5	2.8	2.0

CENTRAL VALLEY IN OREGON-CALIFORNIA

GOOSE LAKE BASIN

11339500 DREWS CREEK NEAR LAKEVIEW, OR

LOCATION.--Lat 42°07'10", long 120°34'45", in NW¼NE¼ sec.10, T.40 S., R.18 E., Lake county, Hydrologic Unit 18020001, on left bank 10 ft upstream from bridge, 2.0 mi downstream from Willow Creek, 2.7 mi downstream from Drews Dam, and 13 mi southwest of Lakeview.

DRAINAGE AREA.--212 mi².

PERIOD OF RECORD.--January 1909 to September 1930 (yearly estimate only for water year 1920), March 1931 to September 1936 (irrigation seasons only), April 1937 to September 1938, March 1939 to October 1941, February 1942, April 1942 to September 1952, February 1953 to September 1981. Monthly discharge only October 1921 to September 1925, published in WSP 1315-A. Published as "Drew Creek near Lakeview" October 1918 to September 1959.

GAGE.--Water-stage recorder. Datum of gage is 4,827.0 ft National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). See WSP 1931 for history of changes prior to July 4, 1953.

REMARKS.--Record herein, except average discharge, not adjusted for diversion by North Drews Canal. Since 1912, flow regulated by Drews Reservoir, capacity, 62,550 acre-ft. Diversion for irrigation above station, and since March 1914, North Drews Canal has diverted above station for irrigation of lands west of Lakeview. Records in files of Oregon Water Resources Department.

AVERAGE DISCHARGE.--50 years (water years 1913-30, 1938, 1940-41, 1947, 1954-81), 70.6 ft³/s, 51,150 acre-ft/yr, including diversion by North Drews Canal.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 3,000 ft³/s Mar. 1, 2, 1910, from rating curve extended above 1,200 ft³/s; no flow at times.

STATISTICAL SUMMARIES (RIVER DISCHARGE ONLY)

MONTHLY AND ANNUAL MEAN DISCHARGES 1913-81

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	0.0	25	3.2	4.6	1.46	.5
NOVEMBER	0.0	43	3.4	6.4	1.87	.6
DECEMBER	0.0	209	12	39	3.26	1.9
JANUARY	0.0	361	20	59	2.99	3.2
FEBRUARY	.5	395	41	85	2.05	6.7
MARCH	.7	589	94	128	1.37	15.2
APRIL	.6	922	160	210	1.31	26.0
MAY	6.9	531	114	117	1.03	18.5
JUNE	1.8	201	56	33	.60	9.1
JULY	.5	80	51	22	.44	8.2
AUGUST	0.0	84	40	22	.55	6.6
SEPTEMBER	0.0	63	21	15	.72	3.4
ANNUAL	3.9	172	52	42	.82	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1914-81

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.9	.4	.3	.2	.1	.1
3	.9	.4	.3	.2	.1	.1
7	1.0	.4	.3	.2	.1	.1
14	1.1	.5	.3	.2	.1	.1
30	1.3	.5	.3	.2	.1	.1
60	1.3	.7	.5	.4	.3	.3
90	1.8	.8	.5	.4	.3	.2
120	2.5	1.1	.7	.5	.3	.2
183	5.0	2.2	1.5	1.0	.7	.5

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1913-81

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	255	636	993	1560	2060	2620
3	250	616	951	1470	1920	2410
7	240	582	885	1340	1720	2140
15	215	509	767	1150	1470	1810
30	176	404	602	898	1150	1420
60	133	299	423	620	784	963
90	111	231	329	469	582	702

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1913-81

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
266	106	78	67	56	45	25	12	5.3	3.3	2.2	1.6	1.2	1.0	.6

11340500 COTTONWOOD CREEK NEAR LAKEVIEW, OR

LOCATION.--Lat 42°14'14", long 120°30'16", in SE1SW1 sec.29, T.38 S., R.19 E., Lake County, Hydrologic Unit 18020001, on right bank 0.5 mi downstream from Cottonwood Dam and 9 mi northwest of Lakeview.

DRAINAGE AREA.--32.9 mi².

PERIOD OF RECORD.--November 1908 to September 1919, May 1924 to November 1935, March to December 1936, April to December 1937, April 1938 to November 1942, March to November 1943, March to October 1944, February to November 1945, March 1946 to September 1981. Monthly discharge only May 1924 to September 1925, published in WSP 1315-A.

GAGE.--Water-stage recorder. Datum of gage is 4,949.37 ft National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to June 1, 1919, and May 1, 1924, to June 3, 1932, nonrecording gage at several sites within 0.6 mi upstream at different datums. June 1 to Sept. 30, 1919, and June 4, 1932, to Sept. 14, 1961, water-stage recorder at site 0.6 mi upstream at different datums.

REMARKS.--Flow regulated since 1923 by Cottonwood Reservoir, capacity, 7,540 acre-ft. Since October 1961, 240 acre-ft unregulated storage in Cottonwood Meadows, 9 mi upstream. Diversions for irrigation above station. Records in files of Oregon Water Resources Department.

AVERAGE DISCHARGE.--60 years (water years 1910-19, 1925-35, 1939-42, 1947-81), 21.1 ft³/s, 15,290 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, between 500 and 1,000 ft³/s during period Apr. 26 to May 1, 1927, when natural flow, estimated as 170 ft³/s, was augmented by water escaping from reservoir through break in outlet conduit near control gates; no flow at times.

STATISTICAL SUMMARIES (BEFORE THE CONSTRUCTION OF COTTONWOOD RESERVOIR)

MONTHLY AND ANNUAL MEAN DISCHARGES 1910-19

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	2.2	4.7	3.4	.9	.26	1.0
NOVEMBER	5.0	50	12	14	1.12	3.7
DECEMBER	3.7	34	11	9.9	.90	3.3
JANUARY	2.0	29	10	9.8	.95	3.1
FEBRUARY	3.4	41	14	13	.93	4.3
MARCH	8.6	130	61	40	.65	18.7
APRIL	39	156	94	40	.43	28.6
MAY	17	137	69	36	.52	21.1
JUNE	4.7	89	36	30	.83	11.0
JULY	1.7	18	9.6	5.9	.61	2.9
AUGUST	1.4	7.6	4.1	2.1	.51	1.3
SEPTEMBER	1.5	5.5	3.0	1.2	.40	.9
ANNUAL	13	40	27	9.4	.34	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1911-19

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	--	--	--	--	--	--
3	--	--	--	--	--	--
7	--	--	--	--	--	--
14	--	--	--	--	--	--
30	--	--	--	--	--	--
60	--	--	--	--	--	--
90	--	--	--	--	--	--
120	--	--	--	--	--	--
183	--	--	--	--	--	--

NOTE: LESS THAN 10 NON-ZERO EVENTS RECORDED.

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1910-19

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
185	239	304	343	--	--	--
WEIGHTED SKEW = -.188						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1910-19

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	225	297	340	--	--	--
3	198	247	273	--	--	--
7	166	208	234	--	--	--
15	139	176	198	--	--	--
30	121	151	166	--	--	--
60	98	128	143	--	--	--
90	80	108	123	--	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1910-19

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME															
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%	
122	90	65	42	31	20	12	7.7	5.7	4.3	3.8	3.4	3.1	2.3	2.0	

GOOSE LAKE BASIN

11340500 COTTONWOOD CREEK NEAR LAKEVIEW, OR--Continued

STATISTICAL SUMMARIES (AFTER THE COMPLETION OF COTTONWOOD RESERVOIR)

MONTHLY AND ANNUAL MEAN DISCHARGES 1925-81

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	.3	16	2.7	2.9	1.04	1.1
NOVEMBER	.1	26	3.2	4.1	1.26	1.3
DECEMBER	.1	46	5.5	9.5	1.72	2.3
JANUARY	0.0	62	5.5	12	2.13	2.3
FEBRUARY	0.0	100	7.8	16	2.03	3.3
MARCH	0.0	77	15	21	1.39	6.2
APRIL	.5	143	41	39	.96	17.1
MAY	1.1	153	55	35	.64	23.0
JUNE	3.0	100	44	21	.47	18.4
JULY	1.0	74	31	16	.53	12.9
AUGUST	0.0	61	20	17	.85	8.5
SEPTEMBER	.1	39	8.5	9.9	1.17	3.5
ANNUAL	2.2	56	20	11	.58	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1926-81

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.4	.2	.1	0.0	0.0	0.0
3	.4	.2	.1	.1	0.0	0.0
7	.5	.2	.1	.1	0.0	0.0
14	.5	.2	.1	.1	.1	0.0
30	.6	.3	.2	.1	.1	.1
60	1.1	.4	.2	.1	.1	.1
90	1.3	.5	.3	.2	.1	.1
120	1.6	.7	.4	.2	.1	.1
183	2.5	1.2	.8	.6	.4	.3

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORDDISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1925-81DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	111	195	253	328	382	435
3	103	178	229	295	343	390
7	91	152	193	245	284	321
15	78	124	155	193	220	246
30	63	102	128	160	184	207
60	53	85	105	130	148	164
90	47	75	91	110	123	134

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1925-81

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
84	60	47	37	29	22	10	4.3	2.7	1.8	1.4	1.1	.8	.5	.2

11493500 WILLIAMSON RIVER NEAR KLAMATH AGENCY, OR

LOCATION.--Lat 42°44'25", long 121°50'00", in NW¼SW¼ sec.1, T.33 S., R.7 E., Klamath County, Hydrologic Unit 18010201, on right bank 250 ft downstream from highway bridge, 0.6 mi southwest of railroad station at Kirk, 10 mi upstream from Spring Creek, and 10 mi northeast of Klamath Agency.

DRAINAGE AREA.--1,290 mi², approximately.

PERIOD OF RECORD.--March 1908 to January 1909, April 1909 to June 1910, October 1954 to September 1982. Monthly discharge only June 1910, published in WSP 1315-B.

GAGE.--Water-stage recorder. Datum of gage is 4,483.16 ft National Geodetic Vertical Datum of 1929. Mar. 25, 1908, to June 30, 1910, nonrecording gage or water-stage recorder at two sites about 0.5 mi upstream at different datums. Oct. 1, 1954, to Sept. 30, 1955, water-stage recorder at present site at datum 2.05 ft higher.

REMARKS.--Flow affected by natural storage in Klamath Marsh. Small diversions above station for irrigation in vicinity of marsh.

AVERAGE DISCHARGE.--28 years (water years 1955-82), 200 ft³/s, 144,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 1,590 ft³/s Mar. 13, 1910, gage height, 3.7 ft, site and datum then in use, from rating curve extended above 800 ft³/s; maximum gage height, 5.57 ft Mar. 3, 1958; no flow at times during 1960-74, 1977-81.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1955-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	0.0	255	45	71	1.57	1.9
NOVEMBER	0.0	391	127	114	.90	5.3
DECEMBER	56	580	245	126	.51	10.2
JANUARY	62	730	257	171	.67	10.7
FEBRUARY	60	799	335	184	.55	13.9
MARCH	128	1033	453	220	.49	18.8
APRIL	128	1080	470	230	.49	19.5
MAY	28	952	277	201	.73	11.5
JUNE	0.0	531	127	134	1.06	5.3
JULY	0.0	332	46	81	1.74	1.9
AUGUST	0.0	146	15	34	2.34	.6
SEPTEMBER	0.0	96	12	26	2.12	.5
ANNUAL	62	468	200	99	.50	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1956-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	--	--	--	--	--	--
3	--	--	--	--	--	--
7	--	--	--	--	--	--
14	--	--	--	--	--	--
30	--	--	--	--	--	--
60	--	--	--	--	--	--
90	--	--	--	--	--	--
120	--	--	--	--	--	--
183	34	6.0	1.8	.5	.1	--

NOTE: LOW-FLOW STATISTICS UNCERTAIN DUE TO EXCESSIVE ZERO EVENTS.

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1955-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
490	666	908	1070	1270	1420	--
WEIGHTED SKEW = .017						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1955-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	655	904	1050	1220	1340	--
3	650	899	1050	1220	1330	--
7	638	883	1030	1200	1310	--
15	616	850	990	1150	1260	--
30	571	783	910	1060	1160	--
60	492	684	807	956	1060	--
90	431	600	712	854	959	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1955-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
687	533	430	373	316	272	198	134	76	27	7.2	.1	0.0	0.0	0.0

KLAMATH RIVER BASIN

11497500 SPRAGUE RIVER NEAR BEATTY, OR

LOCATION.--Lat 42°26'50", long 121°14'15", in NW¼SE¼ sec.13, T.36 S., R.12 E., Klamath County, Hydrologic Unit 18010202, on right bank 1.6 mi east of Beatty, and 4.6 mi upstream from Sycan River.

DRAINAGE AREA.--513 mi².

PERIOD OF RECORD.--April to September 1912 and November 1912 to September 1913 (fragmentary), October 1913 to September 1915, February to November 1916, March 1917 to June 1918, May 1919 to October 1920, February 1921 to September 1926 (irrigation seasons only), October 1953 to September 1982. Monthly discharge only October 1913, published in WSP 1315-B. Prior to October 1917, published as "near Yainax."

GAGE.--Water-stage recorder. Datum of gage is 4,305.35 ft National Geodetic Vertical Datum of 1929. Apr. 19, 1912, to Feb. 19, 1914, nonrecording gage, Feb. 20, 1914, to Sept. 11, 1917, water-stage recorder; and Sept. 12, 1917, to Sept. 30, 1926, nonrecording gage, at site 2 mi upstream at different datum.

REMARKS.--No regulation. Diversions for irrigation above station in the vicinity of Bly.

AVERAGE DISCHARGE.--32 years (water years 1914-15, 1920, 1954-82), 309 ft³/s, 223,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,980 ft³/s Dec. 23, 1964, gage height, 12.19 ft; minimum, 50 ft³/s Aug. 25, 1981.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1954-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	122	422	169	56	.33	4.4
NOVEMBER	140	410	197	64	.32	5.1
DECEMBER	133	1157	289	218	.75	7.5
JANUARY	128	898	307	218	.71	8.0
FEBRUARY	151	1102	366	225	.61	9.5
MARCH	147	1217	435	221	.51	11.3
APRIL	131	1673	609	329	.54	15.9
MAY	163	1703	706	392	.56	18.4
JUNE	147	757	348	164	.47	9.1
JULY	89	313	164	55	.34	4.3
AUGUST	72	210	121	31	.25	3.2
SEPTEMBER	85	173	130	20	.15	3.4
ANNUAL	131	643	320	124	.39	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1955-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	97	78	69	62	54	--
3	98	80	71	64	56	--
7	101	82	73	65	58	--
14	104	84	75	68	60	--
30	110	90	80	73	65	--
60	118	99	91	84	77	--
90	126	108	100	93	87	--
120	134	117	110	104	98	--
183	154	137	129	123	117	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1914-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
680	1260	2330	3220	4550	5680	--
WEIGHTED SKEW = .010						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1954-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1390	2440	3220	4290	5130	--
3	1210	2130	2840	3810	4590	--
7	1030	1760	2300	3040	3620	--
15	906	1450	1820	2280	2610	--
30	784	1220	1500	1830	2070	--
60	659	1010	1230	1510	1700	--
90	585	882	1070	1310	1470	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1954-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
972	686	526	431	359	299	231	192	171	155	147	139	129	117	103

KLAMATH RIVER BASIN

27

11501000 SPRAGUE RIVER NEAR CHILOQUIN, OR

LOCATION.--Lat 42°35'05", long 121°50'55", in NE¼NW¼ sec.35, T.34 S., R.7 E., Klamath County, Hydrologic Unit 18010202, on right bank 1.0 mi northeast of Chiloquin, 4.6 mi upstream from Modoc Point Canal intake, and at mile 5.4.

DRAINAGE AREA.--1,580 mi², approximately.

PERIOD OF RECORD.--July to October 1920, March 1921 to September 1982. Monthly discharge only July 1920, published in WSP 1315-B. Prior to October 1931, published as "at McCready Ranch, near Chiloquin."

GAGE.--Water-stage recorder. Datum of gage is 4,202.43 ft National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1931, nonrecording gage at site 12 mi upstream at different datum.

REMARKS.--Minor regulation from irrigation diversions above station.

AVERAGE DISCHARGE.--61 years (water years 1922-82), 577 ft³/s, 418,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,900 ft³/s Dec. 26, 1964, gage height, 10.37 ft; minimum daily, 50 ft³/s May 26, 1926.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1922-82

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1923-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	183	848	295	93	.32	4.3
NOVEMBER	219	789	342	99	.29	4.9
DECEMBER	215	2853	481	395	.82	6.9
JANUARY	196	1961	519	407	.78	7.5
FEBRUARY	223	2764	665	497	.75	9.6
MARCH	288	2904	850	505	.59	12.3
APRIL	263	4250	1278	924	.72	18.4
MAY	184	3211	1156	724	.63	16.7
JUNE	169	1686	601	351	.58	8.7
JULY	141	552	283	103	.36	4.1
AUGUST	113	405	225	55	.25	3.2
SEPTEMBER	140	375	238	48	.20	3.4
ANNUAL	220	1395	577	264	.46	100

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	168	121	99	83	67	58
3	172	131	114	101	88	81
7	184	144	127	114	101	93
14	192	152	134	120	107	98
30	205	165	147	133	120	111
60	217	177	160	146	133	124
90	228	188	170	157	143	135
120	241	200	182	168	154	145
183	275	227	205	188	171	160

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1922-82

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1922-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1090	2040	3930	5590	8210	10600	13300
WEIGHTED SKEW = .144						

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1990	3850	5500	8110	10500	13200
3	1930	3690	5220	7610	9730	12200
7	1760	3290	4590	6530	8220	10100
15	1540	2790	3790	5240	6450	7760
30	1330	2350	3140	4260	5170	6150
60	1130	1940	2550	3390	4070	4790
90	1020	1680	2170	2850	3390	3960

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1922-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1780	1250	950	746	617	520	410	350	308	273	256	240	223	203	176

KLAMATH RIVER BASIN

11502500 WILLIAMSON RIVER BELOW SPRAGUE RIVER, NEAR CHILOQUIN, OR

LOCATION.--Lat 42°34'15", long 121°52'35", In NE¼NE¼ sec.4, T.35 S., R.7 E., Klamath County, Hydrologic Unit 18010202, on right bank 0.2 mi downstream from Sprague River and 0.8 mi southwest of Chiloquin.

DRAINAGE AREA.--3,000 mi², approximately.

PERIOD OF RECORD.--June 1917 to September 1982.

GAGE.--Water-stage recorder. Datum of gage is 4,155.55 ft National Geodetic Vertical Datum of 1929. Prior to Sept. 1, 1923, at different datum.

REMARKS.--Some regulation by diversion dams and logpond operations of Sprague River. Diversions for irrigation above station.

AVERAGE DISCHARGE.--65 years, 1,040 ft³/s, 753,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,100 ft³/s Dec. 26, 1964, gage height, 10.56 ft; minimum, 320 ft³/s Oct. 14, 1920.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1918-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	517	1237	658	143	.22	5.2
NOVEMBER	561	1345	759	186	.25	6.1
DECEMBER	554	3682	959	490	.51	7.6
JANUARY	524	3075	993	539	.54	7.9
FEBRUARY	547	3846	1222	659	.54	9.7
MARCH	669	4256	1528	713	.47	12.2
APRIL	595	5488	1990	1136	.57	15.9
MAY	472	4376	1686	909	.54	13.4
JUNE	458	2658	1003	475	.47	8.0
JULY	399	1278	619	174	.28	4.9
AUGUST	382	934	551	95	.17	4.4
SEPTEMBER	440	872	571	83	.15	4.6
ANNUAL	548	2187	1043	359	.34	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1919-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	477	419	395	378	361	352
3	483	425	401	384	368	359
7	492	436	414	398	383	375
14	501	448	427	412	399	391
30	512	461	443	430	419	413
60	525	474	456	443	433	428
90	538	486	468	456	447	442
120	556	500	482	470	460	456
183	610	542	518	503	490	483

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1917-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1800	2910	4920	6610	9180	11500	14100
WEIGHTED SKEW = .337						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1918-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SEC- UTIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2780	4790	6510	9160	11500	14300
3	2690	4610	6240	8730	11000	13500
7	2520	4230	5630	7750	9590	11700
15	2290	3730	4850	6460	7810	9300
30	2060	3250	4140	5390	6410	7510
60	1820	2780	3490	4450	5230	6050
90	1650	2460	3050	3850	4490	5160

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1918-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
2650	1940	1580	1340	1170	1050	874	749	662	611	587	564	542	514	482

KLAMATH RIVER BASIN

29

11504000 WOOD RIVER AT FORT KLAMATH, OR

LOCATION.--Lat 42°42'05", long 121°59'20", in sec.22, T.33 S., R.7-1/2., Klamath County, Hydrologic Unit 18010203, at highway bridge 0.2 mi east of Fort Klamath.

DRAINAGE AREA.--90 mi², approximately.

PERIOD OF RECORD.--April 1913 to September 1916, October 1918 to September 1919, October 1923 to September 1936.

GAGE.--Staff gage. Datum of gage is 4,166.65 ft National Geodetic Vertical Datum of 1929. Prior to Aug. 21, 1923, near described site at datum 0.19 ft lower. Aug. 21 to Sept. 30, 1923, 0.2 mi downstream at different datum. Oct. 1, 1923 to Sept. 30, 1925, at described site at datum 0.81 ft higher.

REMARKS.--Many diversions for irrigation above station. Regulation by diversion dams.

AVERAGE DISCHARGE.--17 years (water years 1914-16, 1919, 1924-36), 215 ft³/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 520 ft³/s Nov. 17, 1920, gage height, 2.41 ft, from rating curve extended above 350 ft³/s; minimum, 84 ft³/s in July, August, September, 1931.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1914-36

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1915-36

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- TION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	131	300	222	49	.22	8.6
NOVEMBER	143	310	230	49	.21	8.9
DECEMBER	143	308	226	49	.22	8.8
JANUARY	148	312	219	47	.22	8.5
FEBRUARY	145	323	225	47	.21	8.7
MARCH	176	338	236	50	.21	9.2
APRIL	160	363	237	54	.23	9.2
MAY	112	340	211	57	.27	8.2
JUNE	101	345	208	63	.30	8.1
JULY	93	325	189	65	.34	7.3
AUGUST	87	293	176	59	.34	6.8
SEPTEMBER	110	282	199	55	.27	7.7
ANNUAL	141	311	215	47	.22	100

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	141	109	96	87	--	--
3	144	111	98	89	--	--
7	148	114	99	89	--	--
14	151	116	102	92	--	--
30	155	119	104	93	--	--
60	160	123	107	96	--	--
90	167	128	112	100	--	--
120	174	133	116	103	--	--
183	182	144	127	114	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1914-36MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1914-36

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
318	371	435	475	522	--	--
WEIGHTED SKEW = .166						

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	351	407	435	464	--	--
3	320	366	390	415	--	--
7	296	342	367	396	--	--
15	277	322	348	380	--	--
30	260	305	332	366	--	--
60	248	292	319	351	--	--
90	243	287	314	346	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1914-36

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
315	296	280	270	258	248	231	214	196	179	170	164	153	141	126

KLAMATH RIVER BASIN

11509500 KLAMATH RIVER AT KENO, OR

LOCATION.--Lat 42°08'00", long 121°57'40", in NW¼ sec.35, T.39 S., R.7 E., Klamath County, Hydrologic Unit 18010206, on left bank 1.7 mi northwest of Keno and 4.5 mi upstream from Spencer Creek.

DRAINAGE AREA.--3,920 mi², approximately (not including Lost River or Lower Klamath Lake basins).

PERIOD OF RECORD.--June 1904 to December 1913, October 1929 to September 1982. Monthly discharge only October to December 1929, published in WSP 1315-B.

GAGE.--Water-stage recorder. Datum of gage is 3,961 ft National Geodetic Vertical Datum of 1929 (from river-profile survey). See WSP 1735 for history of changes prior to Nov. 6, 1954.

REMARKS.--Flow regulated since 1919 by Upper Klamath Lake. Diversions for irrigation above station.

AVERAGE DISCHARGE.--62 years, 1,668 ft³/s, 1,208,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,200 ft³/s Feb. 24, 1982, gage height, 12.74 ft, caused by regulation from Keno Dam 0.9 mi upstream; minimum, 26 ft³/s Sept. 23, 1956; minimum daily, 60 ft³/s May 19, 1934.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 15.3 ft, from floodmark (original datum), about May 10, 1904, discharge, 9,250 ft³/s.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1905-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	564	3055	1447	472	.33	7.2
NOVEMBER	290	3976	1678	691	.41	8.4
DECEMBER	391	3859	1909	867	.45	9.5
JANUARY	542	7702	2045	1261	.62	10.2
FEBRUARY	324	7564	2154	1412	.66	10.7
MARCH	229	8197	2452	1777	.72	12.2
APRIL	166	6594	2287	1669	.73	11.4
MAY	109	5258	1787	1292	.72	8.9
JUNE	98	3713	1141	927	.81	5.7
JULY	114	2748	898	590	.66	4.5
AUGUST	202	1898	1006	424	.42	5.0
SEPTEMBER	334	2214	1241	405	.33	6.2
ANNUAL	546	3582	1668	673	.40	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1906-82

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	300	155	110	84	61	50
3	371	200	144	110	80	65
7	409	226	165	127	95	78
14	443	248	182	140	105	86
30	500	293	221	174	133	111
60	569	347	266	213	165	139
90	690	434	332	263	200	165
120	811	521	399	313	233	189
183	1050	705	550	437	330	269

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1905-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
2810	4110	6120	7590	9610	11200	13000
WEIGHTED SKEW = .162						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1905-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECUTIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	3840	5830	7310	9340	11000	12700
3	3740	5730	7210	9260	10900	12700
7	3590	5570	7030	9040	10700	12400
15	3350	5210	6590	8490	10000	11600
30	3100	4770	6000	7660	8970	10400
60	2770	4220	5220	6520	7510	8500
90	2530	3850	4760	5930	6830	7730

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1905-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
4220	3150	2710	2480	2210	1970	1610	1330	1120	920	821	706	578	442	304

11510700 KLAMATH RIVER BELOW JOHN C. BOYLE POWERPLANT, NEAR KENO, OR

LOCATION.--Lat 42°05'05", long 122°04'20", in SE¼SE¼ sec.14, T.40 S., R.6 E., Klamath County, Hydrologic Unit 18010206, on right bank 0.7 mi downstream from John C. Boyle powerplant, 8 mi downstream from Spencer Creek, and 8.5 mi southwest of Keno.

DRAINAGE AREA.--4,080 mi², approximately (not including Lost River or Lower Klamath Lake basins).

PERIOD OF RECORD.-- January 1959 to September 1982. Prior to Oct. 1, 1961, published as "below Big Bend powerplant."

GAGE.--Water-stage recorder. Datum of gage is 3,274.82 ft National Geodetic Vertical Datum of 1929 (levels by Pacific Power & Light Co.).

REMARKS.--Flow regulated by Upper Klamath Lake. Large diurnal fluctuation caused by John C. Boyle powerplant and 2 powerplants below Upper Klamath Lake. Diversions for irrigation above station.

AVERAGE DISCHARGE.--23 years, 1,829 ft³/s, 1,325,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,000 ft³/s Mar. 5, 1972, gage height, 9.33 ft; minimum, 283 ft³/s Feb. 17, 1968; minimum daily, 317 ft³/s July 25, 1968.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1961-82

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1962-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	786	2568	1603	467	.29	7.2
NOVEMBER	897	3989	2060	772	.37	9.3
DECEMBER	1112	3895	2573	803	.31	11.6
JANUARY	1174	7905	2786	1454	.52	12.5
FEBRUARY	1091	7780	2631	1590	.60	11.8
MARCH	634	8755	2902	1916	.66	13.0
APRIL	723	5645	2448	1505	.61	11.0
MAY	591	3935	1680	956	.57	7.6
JUNE	550	1742	785	280	.36	3.5
JULY	501	1339	642	175	.27	2.9
AUGUST	590	1054	890	132	.15	4.0
SEPTEMBER	776	1876	1240	271	.22	5.6
ANNUAL	1080	2945	1850	531	.29	100

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	361	328	320	316	--	--
3	402	353	338	330	--	--
7	477	428	413	404	--	--
14	514	474	463	457	--	--
30	551	512	501	496	--	--
60	601	562	550	543	--	--
90	704	633	601	577	--	--
120	816	717	667	628	--	--
183	1030	855	779	723	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1961-82MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1961-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
3410	5130	7830	9830	12600	--	--
WEIGHTED SKEW = .163						

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	4920	7470	9320	11800	--	--
3	4830	7290	9070	11500	--	--
7	4640	6950	8650	11000	--	--
15	4190	6300	7890	10100	--	--
30	3770	5620	7030	9030	--	--
60	3290	4750	5800	7210	--	--
90	3000	4280	5190	6420	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1961-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
4380	3230	2910	2770	2580	2330	1710	1420	1190	985	885	771	688	623	530

11514500 KEENE CREEK NEAR ASHLAND, OR

LOCATION.--Lat 42°10'15", long 122°28'40", in NW¼ sec.21, T.39 S., R.3 E., Jackson County, Hydrologic Unit 18010206, on right bank 0.3 mi upstream from Burnt Creek, 0.6 mi downstream from Hyatt Dam, and 12 mi east of Ashland.

DRAINAGE AREA.--12.1 mi².

PERIOD OF RECORD.--April to July 1917, December 1917 to July 1920 (no low-flow records), October 1920 to June 1922, October 1948 to September 1965. Monthly discharge only October 1948, published in WSP 1315-B. Published as "at Hyatt Prairie, near Ashland" December 1917 to July 1920, October 1920 to June 1922, October 1948 to September 1958.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 4,706 ft National Geodetic Vertical Datum of 1929 (by stadia survey). Apr. 1, 1917, to June 30, 1922, at site 0.5 mi upstream at different datum.

REMARKS.--Flow regulated since December 1922 by Hyatt Reservoir. No diversion above station. Practically entire flow diverted below station by Green Springs powerplant diversion.

AVERAGE DISCHARGE.--17 years (water years 1949-65), 12.7 ft³/s, 9,190 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 751 ft³/s May 3, 1954, gage height, 5.33 ft, caused by failure of flashboards on spillway of Hyatt Dam, from rating curve extended above 50 ft³/s on basis of computation of peak flow over Columbus-type control; no flow at times.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1949-65

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	.1	21	2.3	5.5	2.36	1.5
NOVEMBER	.2	1.9	.4	.4	.98	.3
DECEMBER	.2	2.1	.6	.5	.82	.4
JANUARY	.2	32	2.4	7.6	3.18	1.6
FEBRUARY	.3	45	3.5	11	2.99	2.3
MARCH	.5	9.8	1.5	2.2	1.44	1.0
APRIL	.9	32	4.8	7.3	1.53	3.2
MAY	.6	38	13	12	.91	8.6
JUNE	.4	55	24	17	.71	15.7
JULY	6.0	81	39	22	.57	26.0
AUGUST	8.5	65	44	19	.44	28.8
SEPTEMBER	.5	37	16	11	.70	10.7
ANNUAL	2.8	17	13	3.8	.30	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1950-65

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.2	.2	.1	.1	--	--
3	.2	.2	.1	.1	--	--
7	.2	.2	.1	.1	--	--
14	.2	.2	.1	.1	--	--
30	.2	.2	.2	.2	--	--
60	.3	.2	.2	.2	--	--
90	.3	.2	.2	.2	--	--
120	.3	.3	.2	.2	--	--
183	.5	.3	.3	.3	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25	2	5	10	25	50	100
80%	50%	20%	10%	4%	2%	1%
---	---	---	---	---	---	---
WEIGHTED SKEW =			---			

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1949-65

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	71	90	112	154	--	--
3	70	88	102	122	--	--
7	69	81	86	91	--	--
15	65	79	84	87	--	--
30	59	75	80	83	--	--
60	50	65	70	74	--	--
90	42	55	60	64	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1949-65

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
64	52	39	28	17	7.8	1.8	.9	.6	.5	.4	.3	.3	.2	.2

LOCATION.--Lat 42°52'02", long 117°38'52", In SE¼NE¼ sec.14, T.31 S., R.41 E., Malheur County, Hydrologic Unit 17050107, on right bank 0.5 mi downstream from Jordan Creek, 2.6 mi north of Rome, and at mile 122.4.

GAGE.--Water-stage recorder. Datum of gage is 3,344.20 ft National Geodetic Vertical Datum of 1929. Prior to Feb 10, 1960, at datum 0.24 ft lower.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,500 ft³/s Dec. 24, 1964, gage height, 16.7 ft, from floodmark; minimum, 42 ft³/s Aug. 12, 1954, July 28, Aug. 5, 1961, July 31, 1968.

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
3850	2480	1740	1180	797	576	332	236	194	166	152	138	124	107	87

OWYHEE RIVER BASIN

131R2000 OWYHEE RIVER ABOVE LAKE OWYHEE, OR

LOCATION.--Lat 43°13'34", long 117°29'47", in SE¼ sec.7, T.27 S., R.43 E., Malheur County. Hydrologic Unit 17050110, on left bank 3 mi upstream from flow line of Lake Owyhee and 26 mi northeast of Rome.

DRAINAGE AREA.--10,400 mi², approximately.

PERIOD OF RECORD.--April 1929 to September 1951. Monthly discharge only for some periods, published in WSP 1317.

GAGE.--Water-stage recorder. Altitude of gage is 2,690 ft National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation).

REMARKS.--Flow regulated by Antelope Reservoir, Wild Horse Reservoir, and numerous small reservoirs. Diversions above station for irrigation.

AVERAGE DISCHARGE.--22 years (water years 1930-51), 851 ft³/s, 616,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,000 ft³/s Mar. 20, 1932, Apr. 19, 1936; maximum gage height, 12.95 ft Mar. 20, 1932; minimum discharge, 99 ft³/s Dec. 18, 1948, gage height, 3.45 ft.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1931-51

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	149	289	200	38	.19	1.9
NOVEMBER	159	450	252	73	.29	2.4
DECEMBER	161	959	335	211	.63	3.2
JANUARY	174	1885	389	375	.96	3.7
FEBRUARY	197	3554	889	889	1.00	8.4
MARCH	336	4052	1841	1195	.65	17.5
APRIL	384	7309	3507	2050	.58	33.2
MAY	171	4000	1657	1065	.64	15.7
JUNE	137	2270	861	566	.66	8.2
JULY	115	482	261	91	.35	2.5
AUGUST	116	238	180	39	.21	1.7
SEPTEMBER	132	223	177	33	.18	1.7
ANNUAL	212	1529	875	372	.43	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1932-51

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	155	130	118	109	--	--
3	158	132	119	109	--	--
7	161	133	120	109	--	--
14	164	135	121	110	--	--
30	168	138	124	112	--	--
60	173	143	128	117	--	--
90	181	149	134	122	--	--
120	190	157	141	128	--	--
183	214	174	155	142	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1931-51

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%

4310 7610 12800 16600 21400 -- --

WEIGHTED SKEW = -.308

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1931-51

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%

1	7570	12100	14400	16700	--	--
3	6440	10500	12800	15100	--	--
7	5330	9090	11500	14200	--	--
15	4500	7760	9820	12200	--	--
30	3770	6210	7560	8950	--	--
60	2970	4600	5380	6080	--	--
90	2500	3780	4380	4890	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1931-51

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
3720	2460	1750	1230	797	541	335	264	230	206	196	185	172	160	138

13183000 OWYHEE RIVER BELOW OWYHEE DAM, OR

LOCATION.--Lat 43°39'17", long 117°15'16", in SE¼ sec.18, T.22 S., R.45 E., Malheur County, Hydrologic Unit 17050110, on left bank 0.8 mi downstream from Owyhee Dam, 20 mi southwest of Nyssa, and at mile 27.3.

DRAINAGE AREA.--11,160 mi², approximately.

PERIOD OF RECORD.--February 1929 to September 1982.

GAGE.--Water-stage recorder. Datum of gage is 2,343.67 ft National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation).

REMARKS.--Flow regulated since October 1932 by Lake Owyhee, and by many smaller reservoirs. Diversion of 429,100 acre-ft from Lake Owyhee during the year for irrigation of lands below station and outside the basin. Many smaller diversions above Lake Owyhee for irrigation above station.

COOPERATION.--Water-stage recorder inspected by irrigation district employees.

AVERAGE DISCHARGE.--50 years (water years 1933-82), 356 ft³/s, 257,900 acre-ft/yr, not adjusted for storage or diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,900 ft³/s Apr. 15, 1952, gage height, 15.70 ft; no flow for part of Aug. 8, 9, 1932, when temporary diversion tunnel at Owyhee Dam was closed.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1933-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	2.8	112	36	29	.81	.8
NOVEMBER	1.0	196	8.6	27	3.17	.2
DECEMBER	1.7	51	5.4	7.0	1.29	.1
JANUARY	1.5	2751	112	458	4.09	2.6
FEBRUARY	1.8	4468	287	893	3.11	6.7
MARCH	2.0	7799	826	1496	1.81	19.3
APRIL	28	12560	1620	2296	1.42	37.8
MAY	40	4864	725	1035	1.43	16.9
JUNE	46	1413	269	320	1.19	6.3
JULY	44	618	160	85	.53	3.7
AUGUST	22	312	137	60	.44	3.2
SEPTEMBER	8.0	248	103	48	.46	2.4
ANNUAL	22	1610	356	370	1.04	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1934-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3.2	2.1	1.6	1.4	1.1	1.0
3	3.3	2.1	1.7	1.4	1.2	1.0
7	3.3	2.1	1.7	1.4	1.2	1.0
14	3.4	2.2	1.7	1.4	1.2	1.0
30	3.5	2.2	1.8	1.5	1.2	1.1
60	3.5	2.4	2.0	1.7	1.5	1.4
90	3.8	2.5	2.1	1.8	1.6	1.5
120	4.0	2.6	2.2	2.0	1.8	1.7
183	13	5.9	4.0	2.9	2.0	1.6

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1933-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SEC- UTIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1290	6060	13400	30700	52200	83800
3	1220	5670	12500	28800	49100	78900
7	1110	5070	11100	25500	43300	69700
15	979	4350	9400	21200	35800	57200
30	793	3290	6890	15100	25100	39600
60	617	2320	4650	9780	15800	24400
90	523	1810	3480	6990	11000	16500

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1933-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
2090	428	220	194	168	148	104	57	8.3	5.2	4.2	3.6	3.2	2.8	2.3

OWYHEE RIVER BASIN

13184000 OWYHEE RIVER AT OWYHEE, OR

LOCATION.--Lat 43°46'57", long 117°03'30", in SE¼SE¼ sec.35, T.20 S., R.46 E., Malheur County, Hydrologic Unit 17050110, on left bank 0.3 mi upstream from State Highway 201 bridge, 0.9 mi southwest of Owyhee, and at mile 3.1.

DRAINAGE AREA.--11,300 mi², approximately.

PERIOD OF RECORD.--March 1890 to June 1891, February to June 1892, February to July, October to December 1893, January 1895 to May 1897, August 1903 to September 1916, May 1920 to July 1929, July 1979 to September 1982. Monthly discharge only for some periods published in WSP 1317. Published as "at Rigsby", 1890-93; "at Nyssa", 1895-96; and as "at Owyhee" in WSP 370. Records for September, October 1903, May to October 1904, March, April 1905, published in WSP 135 in conjunction with records for Owyhee River near Owyhee and in WSP 370, have been found in error and should not be used.

GAGE.--Water-stage recorder. Altitude of gage is 2,190 ft, from topographic map.

REMARKS.--Flow regulated since October 1932 by Lake Owyhee, and smaller reservoirs. Diversions from Lake Owyhee for irrigation of lands above station and outside the basin. Many smaller diversions above Lake Owyhee for irrigation.

AVERAGE DISCHARGE.--20 years (water years 1896, 1904-16, 1922-27), 1,048 ft³/s, 759,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,000 ft³/s Mar. 2, 1910, gage height, 12.9 ft site and datum then in use, from rating curve extended above 14,000 ft³/s; no flow July 7, 19, Aug. 14-16, 1924, July 5, 6, 1926. Maximum discharge recorded since construction of Owyhee Dam in 1932, 7,790 ft³/s Feb. 23, 1982, gage height, 11.91 ft.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1896-28

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	32	162	86	42	.49	.7
NOVEMBER	70	362	173	80	.46	1.4
DECEMBER	135	864	278	159	.57	2.2
JANUARY	141	4740	704	1039	1.48	5.6
FEBRUARY	247	5559	1416	1358	.96	11.4
MARCH	487	12460	3053	2950	.97	24.5
APRIL	616	7256	3425	1942	.57	27.5
MAY	114	6075	2159	1625	.75	17.3
JUNE	5.6	2636	980	761	.78	7.9
JULY	3.2	498	130	141	1.08	1.0
AUGUST	2.5	170	29	37	1.28	.2
SEPTEMBER	2.5	174	38	38	.99	.3
ANNUAL	301	1828	1014	498	.49	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1905-27

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3.8	1.6	1.0	.7	.5	--
3	4.0	1.6	1.0	.7	.5	--
7	5.1	1.8	1.1	.8	.6	--
14	6.0	2.2	1.2	.8	.6	--
30	7.6	3.8	2.8	2.2	1.8	--
60	13	5.9	4.0	2.8	2.0	--
90	20	9.4	6.3	4.6	3.2	--
120	39	19	13	9.1	5.9	--
183	92	54	39	29	21	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1896-27DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
5570	9410	15800	20700	27600	33200	--

WEIGHTED SKEW = -.035

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1896-27DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	9030	14500	18200	23000	26600	--
3	7700	12500	15700	19600	22400	--
7	6570	10600	13000	15900	17800	--
15	5310	8450	10400	12600	14100	--
30	4190	7010	8870	11100	12800	--
60	3250	5540	7050	8880	10200	--
90	2800	4620	5810	7260	8280	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1896-27

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
5010	3240	2110	1450	1020	726	402	257	171	104	69	43	25	11	5.6

13214000 MALHEUR RIVER NEAR OREWSEY, OR

LOCATION.--Lat 43°47'05", long 118°19'50", in NE¼SE¼ sec.31, T.20 S., R.36 E., Harney County, Hydrologic Unit 17050116, on left bank 300 ft downstream from bridge on U.S. Highway 20, 0.5 mi downstream from Cottonwood Creek, 3.0 mi southeast of Orewsey, and at mile 129.0.

DRAINAGE AREA.--910 mi², approximately.

PERIOD OF RECORD.--June 1920 to September 1921, November, December 1921, March, April 1922, April to September 1923, June 1926 to September 1927. Monthly discharge only for some periods, published in WSP 1317. March to September 1914 at site 13 mi (21 km) upstream; records not equivalent owing to inflow from several creeks.

GAGE.--Water-stage recorder. Datum of gage is 3,479.13 ft National Geodetic Vertical Datum of 1929. Prior to Apr. 27, 1923, water-stage recorder or nonrecording gage at site 0.5 mi downstream at different datum. Apr. 27, 1923, to June 6, 1939, water-stage recorder at site 7 mi downstream at different datum.

REMARKS.--Slight regulation by small reservoirs above station. Diversions for irrigation above station.

AVERAGE DISCHARGE.--56 years (water years 1927-82), 184 ft³/s, 133,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s Dec. 23, 1964, gage height, 13.50 ft, from rating curve extended above 4,500 ft³/s, on basis of contracted-opening measurement at gage height 13.20 ft; no flow at times.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1927-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	5.3	73	38	17	.44	1.7
NOVEMBER	5.1	178	66	26	.40	3.0
DECEMBER	9.0	739	104	105	1.01	4.7
JANUARY	20	817	146	174	1.19	6.6
FEBRUARY	20	1124	258	223	.86	11.7
MARCH	55	1314	419	273	.65	19.0
APRIL	44	2290	653	425	.65	29.5
MAY	18	1136	345	249	.72	15.6
JUNE	8.0	436	134	100	.75	6.1
JULY	1.9	158	26	27	1.05	1.2
AUGUST	0.0	60	9.5	11	1.12	.4
SEPTEMBER	0.0	59	12	11	.89	.6
ANNUAL	34	423	183	98	.53	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1928-82

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	--	--	--	--	--	--
3	--	--	--	--	--	--
7	--	--	--	--	--	--
14	--	--	--	--	--	--
30	--	--	--	--	--	--
60	--	--	--	--	--	--
90	10	3.7	1.8	1.0	.4	.2
120	16	7.7	4.9	3.3	2.0	1.4
183	33	20	14	10	7.1	5.3

NOTE: LOW-FLOW STATISTICS UNCERTAIN DUE TO EXCESSIVE ZERO EVENTS.

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1927-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1020	1980	3850	5440	7890	10000	12500
WEIGHTED SKEW = .038						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1927-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECUTIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1530	2870	3830	5060	5970	6860
3	1300	2380	3110	4020	4660	5280
7	1070	1870	2370	2960	3350	3700
15	880	1470	1820	2190	2420	2610
30	707	1180	1470	1780	1990	2160
60	552	912	1140	1390	1560	1710
90	467	756	932	1130	1270	1380

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1927-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
789	508	358	259	189	142	90	67	50	32	24	17	11	6.0	2.7

LOCATION.--Lat 43°34'29", long 118°12'31", on line between NW¼SW¼ and SW¼NW¼ sec.17, T.23 S., R.37 E., Malheur County, Hydrologic Unit 17050116, on left bank 0.9 mi downstream from Warm Springs Dam, 3.0 mi upstream from South Fork, 4.0 mi northwest of Riverside, and at mile 113.0.

PERIOD OF RECORD.--January 1906 to March 1907 and December 1908 (gage heights only), January 1909 to September 1910, December 1914 to July 1917, March 1919 to September 1982. Monthly discharge only for some periods, published in WSP 1317. Figures of discharge for January 1906 to March 1907, published in WSP 272 and 370, have been found to be unreliable and should not be used. Published as "Middle Fork of Malheur River at Riverside" 1906-7; as "Middle Fork of Malheur River above South Fork, at Riverside" 1909-10; as "Malheur River above South Fork, at Riverside" in WSP 370, 1906-10; and as "Malheur River at Warm Springs reservoir site, near Riverside" 1914-17.

REMARKS.--Flow completely regulated since November 1919 by Warm Springs Reservoir. Diversions for irrigation above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 7,200 ft³/s Mar. 1, 1910, gage height, 10.7 ft, site and datum then in use, from rating curve extended above 820 ft³/s; no flow at times.

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1921-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	--	--	--	--	--	--
3	--	--	--	--	--	--
7	--	--	--	--	--	--
14	--	--	--	--	--	--
30	--	--	--	--	--	--
60	--	--	--	--	--	--
90	--	--	--	--	--	--
120	--	--	--	--	--	--
183	--	--	--	--	--	--

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1920-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	677	1110	1520	2190	2840	3640
3	669	1090	1480	2120	2740	3490
7	648	1050	1410	2000	2570	3260
15	604	943	1240	1720	2160	2690
30	550	815	1030	1360	1640	1970
60	491	672	793	945	1060	1170
90	451	595	682	784	855	922

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
582	511	450	389	341	294	160	3.3	1.1	.5	.2	.1	.1	.1	0.0

13216500 NORTH FORK MALHEUR RIVER ABOVE BEULAH RESERVOIR, NEAR BEULAH, OR

LOCATION.--Lat 43°57'01", long 118°10'28", in NW¼NE¼ sec.4, T.19 S., R.37 E., Malheur County, Hydrologic Unit 17050116, on left bank 500 ft upstream from Beulah Reservoir, 2.5 mi upstream from Warm Springs Creek, 3.5 mi northwest of Beulah, and at mile 18.0.

DRAINAGE AREA.--355 mi².

PERIOD OF RECORD.--January to September 1914 (published as "at Scott's Ranch, near Beulah"), June 1936 to September 1982. Published as "above Agency Valley Reservoir, near Beulah", June 1936 to September 1968.

GAGE.--Water-stage recorder. Datum of gage is 3,349.4 ft National Geodetic Vertical Datum of 1929. Jan. 1 to Sept. 30, 1914, nonrecording gage and June 10, 1936, to Oct. 14, 1958, water-stage recorder at site 0.5 mi upstream at different datums. Oct. 15, 1958, to Oct. 8, 1975, water-stage recorder at present site at datum 1.6 ft higher.

REMARKS.--No regulation. Diversions for irrigation above station.

AVERAGE DISCHARGE.--46 years (water years 1937-82), 132 ft³/s, 95,630 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,970 ft³/s Dec. 23, 1964, gage height, 9.90 ft, present datum, from floodmark, from rating curve extended above 1,300 ft³/s, on basis of slope-area measurement of peak flow; maximum gage height, 11.0 ft, present datum, sometime during period Dec. 17-23, 1964 (icejam); minimum discharge, 8.5 ft³/s Dec. 13, 1967, result of freezeup.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1937-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	32	66	51	7.8	.15	3.2
NOVEMBER	37	98	57	10	.18	3.6
DECEMBER	38	346	69	46	.67	4.4
JANUARY	32	280	78	56	.71	4.9
FEBRUARY	51	518	120	85	.71	7.5
MARCH	58	451	198	97	.49	12.4
APRIL	111	906	373	189	.51	23.4
MAY	92	726	319	157	.49	20.1
JUNE	55	397	167	89	.53	10.5
JULY	34	190	67	29	.43	4.2
AUGUST	24	74	46	11	.24	2.9
SEPTEMBER	30	74	46	8.3	.18	2.9
ANNUAL	60	272	132	49	.37	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1938-82

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	30	25	22	20	18	16
3	32	26	23	21	18	17
7	35	29	26	23	20	18
14	37	31	28	26	23	21
30	40	34	31	29	26	24
60	44	37	34	31	28	26
90	46	39	36	33	30	28
120	48	41	38	35	32	30
183	52	46	42	40	37	35

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1937-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
575	904	1440	1850	2430	2910	3420
WEIGHTED SKEW = .110						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1937-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECUTIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	661	1050	1360	1810	2190	2610
3	601	934	1170	1500	1750	2020
7	543	813	988	1200	1360	1500
15	475	698	839	1010	1130	1240
30	408	604	732	891	1010	1120
60	341	498	601	730	824	917
90	294	424	508	610	683	755

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1937-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
457	325	247	191	151	120	79	64	56	51	48	46	43	40	36

MALHEUR RIVER BASIN

13217500 NORTH FORK MALHEUR RIVER AT BEULAH, OR

LOCATION.--Lat 43°54'28", long 118°09'08", in NW¼NE¼ sec.22, T.19 S., R.37 E., Malheur County, Hydrologic Unit 17050116, on left bank at Beulah, 0.3 mi downstream from Agency Valley Dam, 12 mi northwest of Juntura, and at mile 14.5.

DRAINAGE AREA.--440 mi², approximately.

PERIOD OF RECORD.--June 1926 to September 1982. Published as "near Beulah" June 1926 to September 1935.

GAGE.--Water-stage recorder. Datum of gage is 3,261.20 ft National Geodetic Vertical Datum of 1929. Prior to Apr. 25, 1926, water-stage recorder at site 1 mi downstream at different datum. Apr. 25, 1936, to Sept. 30, 1949, nonrecording gage at site 20 ft downstream at datum 1.0 ft higher. Oct. 1, 1949, to June 30, 1964, at present site at datum 1.0 ft higher.

REMARKS.--Flow regulated since 1935 by Beulah Reservoir. Diversions for irrigation above station.

AVERAGE DISCHARGE.--47 years (water years 1936-82), 142 ft³/s, 102,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,000 ft³/s May 7, 1942, gage height, 9.4 ft, present datum, from floodmark, caused by failure of gates at Agency Valley Dam, from rating curve extended above 1,100 ft³/s on basis of computation of peak flow over dam; no flow at times.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1936-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	.1	134	36	32	.89	2.1
NOVEMBER	0.0	36	1.3	5.1	4.05	.1
DECEMBER	0.0	63	2.3	9.6	4.27	.1
JANUARY	0.0	287	7.0	42	6.03	.4
FEBRUARY	0.0	478	25	98	3.92	1.5
MARCH	0.0	518	55	113	2.06	3.2
APRIL	2.3	856	289	230	.80	17.0
MAY	120	793	351	160	.46	20.7
JUNE	54	510	279	106	.38	16.4
JULY	58	402	282	83	.29	16.6
AUGUST	43	399	223	95	.43	13.1
SEPTEMBER	32	341	148	82	.56	8.7
ANNUAL	55	301	141	55	.39	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1937-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	--	--	--	--	--	--
3	--	--	--	--	--	--
7	--	--	--	--	--	--
14	--	--	--	--	--	--
30	--	--	--	--	--	--
60	--	--	--	--	--	--
90	--	--	--	--	--	--
120	--	--	--	--	--	--
183	7.7	2.4	1.3	.7	.3	.2

NOTE: LOW-FLOW STATISTICS UNCERTAIN DUE TO EXCESSIVE
ZERO EVENTS

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1936-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SEC- UTIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	561	974	1370	2060	2730	3590
3	552	919	1240	1770	2260	2840
7	522	811	1040	1390	1680	2010
15	475	700	868	1100	1300	1500
30	424	608	742	924	1070	1220
60	368	510	607	736	834	936
90	336	455	529	618	681	742

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1936-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
486	378	340	302	264	227	138	45	1.3	.5	.4	.2	.2	.1	.1

MALHEUR RIVER BASIN

41

13220000 MALHEUR RIVER AT LITTLE VALLEY, NEAR HOPE, OR

LOCATION.--Lat 43°53'58", long 117°30'25", in SE¼SE¼ sec.24, T.19 S., R.42 E., Malheur County, Hydrologic Unit 17050117, on right bank 500 ft downstream from highway bridge at Little Valley, 8 mi southwest of Hope, 14 mi southwest of Vale, and at mile 45.6.

DRAINAGE AREA.--3,010 mi², approximately.

PERIOD OF RECORD.--April 1949 to September 1979.

GAGE.--Water-stage recorder. Datum of gage is 2,424.03 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated by Warm Springs and Beulah Reservoirs. Since 1930, Vale-Oregon Canal has diverted flow above station at Namorf in sec.31, T.20 S., R.41 E., for supplying Bully Creek Reservoir and for irrigation. Many small diversions for irrigation above station.

AVERAGE DISCHARGE.--30 years, 192 ft³/s, 139,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,300 ft³/s Feb. 24, 1957, gage height, 11.5 ft, from floodmark, from rating curve extended above 5,500 ft³/s on basis of slope-area measurement of peak flow; minimum, 1.6 ft³/s Dec. 21, 1977, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--The two greatest floods occurred March 1894 and March 1910, on basis of records for former station near Namorf.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1950-79

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	18	93	50	17	.33	2.1
NOVEMBER	14	72	42	13	.31	1.8
DECEMBER	10	407	58	68	1.17	2.5
JANUARY	27	1119	168	250	1.49	7.3
FEBRUARY	39	887	269	264	.98	11.6
MARCH	11	1053	268	274	1.02	11.6
APRIL	32	2143	449	570	1.27	19.4
MAY	108	1478	347	337	.97	15.0
JUNE	101	767	195	116	.59	8.4
JULY	125	297	218	40	.18	9.4
AUGUST	34	225	156	47	.30	6.7
SEPTEMBER	22	159	97	36	.37	4.2
ANNUAL	61	476	192	115	.60	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1951-79

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	21	14	11	9.3	7.4	--
3	22	15	12	9.5	7.5	--
7	23	16	12	10	7.9	--
14	27	18	14	11	8.7	--
30	33	21	16	13	9.1	--
60	38	26	20	15	11	--
90	41	30	25	20	16	--
120	45	34	29	24	20	--
183	67	48	39	33	26	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1950-79

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1590	3810	5830	8970	11700	--
3	1270	2980	4550	7020	9200	--
7	934	2090	3140	4810	6300	--
15	653	1430	2160	3380	4520	--
30	495	1030	1550	2430	3280	--
60	375	752	1120	1770	2410	--
90	318	601	869	1330	1770	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1950-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
695	308	247	213	193	175	141	101	70	54	48	44	39	33	21

MALHEUR RIVER BASIN

13220500 MALHEUR RIVER NEAR HOPE, OR

LOCATION.--Lat 43°56'40", long 117°28'50", in SW¼ sec.5, T.19 S., R.43 E., Malheur County, Hydrologic Unit 17050117, 0.5 mi upstream from intake of Vines Canal. 5.5 mi west of Hope, and 12 mi west of Vale.

DRAINAGE AREA.--3,030 mi², approximately.

PERIOD OF RECORD.--March 1922 to September 1949.

GAGE.--Water-stage recorder. Altitude of gage is 2,370 ft (from topographic map).

REMARKS.--Since March 1930, Vale-Oregon Canal has diverted at Namorf for irrigation above and below station. Many small diversions for irrigation above station. Flow regulated by Warnsprings Reservoir and, since December 1935, by Agency Valley Reservoir.

AVERAGE DISCHARGE.--19 years (water years 1930-49). 187 ft³/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge. 8,100 ft³/s Feb. 5, 1925, gage height. 8.1 ft. from rating curve extended above 2,800 ft³/s; minimum, 3.5 ft³/s Sept. 2, 1919.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1931-49

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	9.5	89	48	21	.44	2.1
NOVEMBER	12	95	53	20	.38	2.3
DECEMBER	15	329	75	72	.97	3.3
JANUARY	20	722	102	153	1.50	4.5
FEBRUARY	30	768	236	205	.87	10.4
MARCH	23	1493	385	382	.99	17.0
APRIL	54	2040	496	565	1.14	22.0
MAY	156	652	271	120	.44	12.0
JUNE	105	242	167	41	.24	7.4
JULY	90	264	186	50	.27	8.2
AUGUST	18	196	139	46	.33	6.2
SEPTEMBER	10	158	102	47	.46	4.5
ANNUAL	72	520	188	114	.61	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1932-49

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS. FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	22	14	11	8.7	--	--
3	24	15	11	8.7	--	--
7	25	15	11	8.8	--	--
14	28	17	12	9.2	--	--
30	33	19	13	10.0	--	--
60	42	25	18	13	--	--
90	45	28	20	15	--	--
120	52	32	24	18	--	--
183	69	45	35	28	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORDDISCHARGE, IN CFS. FOR INDICATED RECURRENCE INTERVAL. IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1931-49DISCHARGE, IN CFS. FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1370	2910	4150	5910	--	--
3	1030	2050	2860	4020	--	--
7	746	1440	2030	2940	--	--
15	576	1150	1710	2660	--	--
30	443	897	1360	2190	--	--
60	359	709	1060	1680	--	--
90	317	593	863	1330	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1931-49

DISCHARGE, IN CFS. WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
617	337	265	226	201	178	141	104	77	61	54	48	40	33	21

13226500 BULLY CREEK AT WARMSPRINGS, NEAR VALE, OR

LOCATION.--Lat 44°01'10", long 117°27'35", in SE¼NW¼ sec.9, T.18 S., R.43 E., Malheur County, Hydrologic Unit 17050118, on left bank 400 ft downstream from Cottonwood Creek, 4.7 mi upstream from Bully Creek Dam, 11.4 mi northwest of Vale, and at mile 17.2.

DRAINAGE AREA.--539 mi².

PERIOD OF RECORD.--September 1903 to February 1904, February 1905 to March 1907, February 1910, January 1911 to May 1917, March 1922 to June 1923, October 1963 to September 1982. Monthly discharge only for some periods, published in WSP 1317. Published as "near Vale" 1903, 1907, and as "above Vale" 1904-6, 1910.

GAGE.--Water-stage recorder. Datum of gage is 2,527.21 ft National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark). Prior to July 1, 1923, nonrecording gages within 0.5 mi downstream at different datums.

REMARKS.--No regulation. Many diversions for irrigation above station.

AVERAGE DISCHARGE.--25 years (water years 1906, 1912-16, 1964-82), 46.0 ft³/s, 33,330 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,800 ft³/s Dec. 22, 1964, gage height, 8.68 ft, from rating curve extended above 200 ft³/s on basis of slope-area measurement of peak flow; no flow at times.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1964-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	.6	11	4.1	2.3	.55	.8
NOVEMBER	2.9	12	6.7	2.4	.36	1.2
DECEMBER	3.6	331	35	77	2.16	6.5
JANUARY	6.6	330	87	106	1.22	16.0
FEBRUARY	7.7	708	135	164	1.21	24.8
MARCH	.8	340	126	98	.78	23.2
APRIL	.5	367	97	110	1.14	17.8
MAY	.9	105	26	32	1.23	4.8
JUNE	1.9	70	14	16	1.16	2.6
JULY	.3	51	7.9	14	1.77	1.4
AUGUST	.3	6.7	2.4	1.9	.79	.4
SEPTEMBER	.1	17	3.0	3.6	1.19	.6
ANNUAL	3.4	138	45	34	.75	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1965-82

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.5	.2	.2	.1	--	--
3	.5	.3	.2	.2	--	--
7	.6	.3	.2	.2	--	--
14	.7	.3	.2	.2	--	--
30	1.0	.4	.3	.2	--	--
60	1.5	.7	.5	.3	--	--
90	1.9	1.0	.6	.4	--	--
120	2.6	1.4	.9	.6	--	--
183	4.0	2.3	1.7	1.2	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1964-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
922	2270	5310	8110	12500	--	--
WEIGHTED SKEW = -.161						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1964-82

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1080	2230	2960	3750	--	--
3	762	1520	1950	2370	--	--
7	540	1060	1320	1550	--	--
15	350	669	827	964	--	--
30	223	427	540	647	--	--
60	154	300	387	476	--	--
90	124	244	319	399	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1964-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
204	107	64	42	26	18	11	7.3	5.1	3.6	2.9	2.3	1.7	1.1	.6

MALHEUR RIVER BASIN

13227000 BULLY CREEK NEAR VALE, OR

LOCATION.--Lat 43°57'30", long 117°20'30", In SW¼ sec.33, T.18 S., R.44 E., Malheur County, Hydrologic Unit 17050118, on right bank 5 mi southwest of Vale and 7 mi upstream from mouth.

DRAINAGE AREA.--570 mi², approximately.

PERIOD OF RECORD.--May 1933 to September 1934, November 1934, March 1935, March, April 1936, June 1937 to September 1962. Monthly discharge only for some periods, published in WSP 1317.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 2,313 ft (by levels to reference point furnished by Union Pacific Railroad). Prior to Mar. 15, 1937, water-stage recorder or staff gage at site 2 mi upstream at different datum. Mar. 15, 1937, to Jan. 1, 1940, water-stage recorder at present site at datum 0.38 ft higher.

REMARKS.--Occasional fluctuations caused by releases from Vale-Oregon Canal which diverts water from Malheur River for irrigation of lands west of Vale; considerable return flow at times enters Bully Creek above station. Diversions for irrigation of about 7,000 acres above station.

AVERAGE DISCHARGE.--26 years (water years 1934, 1938-62), 40.4 ft³/s, 29,250 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,980 ft³/s Feb. 24, 1957, gage height, 10.5 ft, from floodmarks, from rating curve extended above 2,000 ft³/s on basis of slope-area measurement of peak flow; no flow at times.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1934-62

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1.7	54	14	10	.73	2.9
NOVEMBER	2.0	46	12	8.9	.75	2.4
DECEMBER	2.2	55	17	15	.88	3.4
JANUARY	2.4	166	27	41	1.51	5.6
FEBRUARY	1.8	374	95	105	1.10	19.5
MARCH	1.0	519	142	134	.94	29.0
APRIL	1.1	426	86	104	1.21	17.5
MAY	1.9	74	23	18	.79	4.7
JUNE	3.8	207	29	39	1.35	5.9
JULY	1.0	30	15	7.1	.47	3.1
AUGUST	1.0	38	15	8.0	.55	3.0
SEPTEMBER	1.0	32	15	7.9	.52	3.1
ANNUAL	2.3	101	40	29	.72	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1939-62

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	4.7	2.7	1.9	1.5	1.1	--
3	5.3	2.9	2.1	1.5	1.1	--
7	6.1	3.4	2.4	1.7	1.2	--
14	6.7	3.7	2.6	1.8	1.2	--
30	7.8	4.3	2.9	2.0	1.3	--
60	8.8	4.8	3.3	2.3	1.4	--
90	9.5	5.3	3.6	2.6	1.6	--
120	10	5.9	4.1	3.0	1.9	--
183	12	7.1	5.0	3.6	2.4	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1934-62

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
279	843	2340	3850	6400	8760	--
WEIGHTED SKEW = -.290						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1934-62

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	447	1160	1760	2600	3240	--
3	327	897	1410	2170	2800	--
7	237	649	1020	1560	2000	--
15	186	496	766	1150	1460	--
30	136	353	543	817	1040	--
60	97	250	384	576	730	--
90	75	187	282	417	524	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1934-62

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
185	82	48	31	25	21	17	15	12	9.7	8.3	7.1	5.5	3.6	2.2

MALEHUR RIVER BASIN

45

13228000 MALHEUR RIVER AT VALE, OR

LOCATION.--Lat 43°58'50", long 117°14'20", in NW¼ sec.29, T.18 S., R.45 E., Malheur County, Hydrologic Unit 17050117, at road bridge at Vale and 0.2 mi downstream from Bully Creek.

DRAINAGE AREA.--3,880 mi², approximately.

PERIOD OF RECORD.--April 1890 to September 1891, January 1895 to September 1896, June 1903 to September 1906, June 1908 to September 1914.

GAGE.--Staff gage. Altitude of gage is 2,230 ft (from topographic map). Prior to Mar. 20, 1919, staff or chain gages at different datums.

REMARKS.--Many diversions above station for irrigation above and below station. Flow slightly regulated since 1915 by Vale-Oregon Irrigation Co. dam on Bully Creek.

AVERAGE DISCHARGE.--11 years (water years 1896, 1904-1906, 1909-1914), 541 ft³/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,800 ft³/s Mar. 2, 1910, gage height, 19.5 ft, datum then in use, from floodmark, from rating curve extended above 3,600 ft³/s; minimum, 4 ft³/s July 19-21, 1895, Aug. 23, 1906.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1891-1914

BASED ON PERIOD OF RECORD 1896-1914

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- TION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF	PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
								2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
OCTOBER	41	144	90	36	.40	1.5	1	--	--	--	--	--	--
NOVEMBER	89	192	145	38	.26	2.4	3	--	--	--	--	--	--
DECEMBER	72	242	139	47	.34	2.3	7	--	--	--	--	--	--
JANUARY	87	1775	384	440	1.15	6.3	14	--	--	--	--	--	--
FEBRUARY	264	2245	785	679	.86	12.9	30	--	--	--	--	--	--
MARCH	397	3461	1423	978	.69	23.4	60	--	--	--	--	--	--
APRIL	511	5698	1700	1655	.97	28.0	90	--	--	--	--	--	--
MAY	211	2319	790	694	.88	13.0	120	--	--	--	--	--	--
JUNE	22	1161	373	304	.82	6.1	183	--	--	--	--	--	--
JULY	13	517	121	140	1.16	2.0							
AUGUST	8.5	516	69	142	2.05	1.1							
SEPTEMBER	19	133	54	34	.64	.9							
ANNUAL	185	1232	516	288	.56	100							

NOTE: LESS THAN 10 NON-ZERO EVENTS RECORDED.

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1891-14

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1891-14

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT							PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%		2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
3880	7500	14300	19800	28100	--	--							
WEIGHTED SKEW = -.087							1	4420	7950	11200	16500	--	--
							3	3420	6040	8430	12400	--	--
							7	2760	5050	7050	10200	--	--
							15	2370	4300	5980	8630	--	--
							30	1880	3350	4690	6890	--	--
							60	1460	2490	3440	5010	--	--
							90	1210	2070	2860	4170	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1891-14

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
2160	1300	933	662	483	365	235	164	127	98	81	62	43	30	19

BURNT RIVER BASIN

13269300 NORTH FORK BURNT RIVER NEAR WHITNEY, OR

LOCATION.--Lat 44°36'00", long 118°15'10", in NE¼ sec.23, T.11 S., R.36 E., Baker County, Hydrologic Unit 17050202, Wallowa Whitman National Forest, on right bank 950 ft upstream from Petticoat Creek, 1.0 mi downstream from U.S. Bureau of Reclamation damsite, 4.5 mi southeast of Whitney, and 11.5 mi northwest of Unity.

DRAINAGE AREA.--110 mi², approximately.

PERIOD OF RECORD.--June 1964 to June 1978, January 1979 to June 1980, January to June only, each year.

GAGE.--Water-stage recorder. Altitude of gage is 4,000 ft, from topographic map.

REMARKS.--Some regulations from irrigation and mining operations upstream. A transmountain diversion from headwaters of Middle Fork John Day River delivers as much as 12 ft³/s to North Fork Burnt River above station.

AVERAGE DISCHARGE.--13 years (water years 1965-77), 49.8 ft³/s, 36,080 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,190 ft³/s Apr. 6, 1971, gage height, 4.31 ft; maximum gage height, 4.95 ft Jan. 29, 1965 (ice jam); minimum discharge, 0.14 ft³/s Aug. 15, 1977, but may have been less when stage fell below inlets July 19 to Aug. 17, 1966.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1965-77

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1.1	5.2	2.9	1.1	.38	.5
NOVEMBER	3.0	26	7.4	6.6	.88	1.2
DECEMBER	3.6	51	12	14	1.11	2.0
JANUARY	3.9	95	27	32	1.19	4.5
FEBRUARY	5.3	93	36	34	.97	5.9
MARCH	8.9	322	99	86	.87	16.5
APRIL	22	414	215	133	.62	35.9
MAY	9.7	370	153	105	.69	25.5
JUNE	9.2	69	34	19	.55	5.7
JULY	1.0	17	8.4	5.5	.66	1.4
AUGUST	.3	8.5	2.7	2.7	1.00	.5
SEPTEMBER	.4	4.8	1.6	1.3	.77	.3
ANNUAL	6.2	99	50	27	.55	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1966-77

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.6	.3	.2	.2	--	--
3	.6	.3	.3	.2	--	--
7	.7	.4	.3	.2	--	--
14	.8	.4	.3	.2	--	--
30	1.0	.5	.4	.3	--	--
60	1.3	.7	.5	.4	--	--
90	1.9	1.0	.7	.5	--	--
120	2.5	1.6	1.2	.9	--	--
183	4.5	3.2	2.7	2.2	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1965-77

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
409	661	1010	1230	1490	--	--
WEIGHTED SKEW = -.468						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1965-77

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	546	800	887	942	--	--
3	488	697	762	801	--	--
7	420	611	674	714	--	--
15	346	500	547	575	--	--
30	279	429	484	520	--	--
60	212	330	374	404	--	--
90	162	253	289	316	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1965-77

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
276	158	91	60	41	28	15	9.0	6.1	4.0	3.3	2.5	1.7	1.3	.7

BURNT RIVER BASIN

47

13270800 SOUTH FORK BURNT RIVER ABOVE BARNEY CREEK, NEAR UNITY, OR

LOCATION.--Lat 44°24'25", long 118°18'01", in NW¼SE¼ sec.28, T.13 S., R.36 E., Baker County, Hydrologic Unit 17050202, Wallowa Whitman National Forest, on right bank 84 ft upstream from Barney Creek and 6 mi southwest of Unity.

DRAINAGE AREA.--38.5 mi².

PERIOD OF RECORD.--March 1963 to September 1981.

GAGE.--Water-stage recorder. Datum of gage is 4,341.75 ft National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to July 18, 1963, nonrecording gage at site 220 ft upstream at datum 5.47 ft higher, July 18, 1963, to July 18, 1979, at site 215 ft upstream at datum 5.31 ft higher.

REMARKS.--No regulation or diversion above station.

AVERAGE DISCHARGE.--18 years, 27.2 ft³/s, 19,710 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 186 ft³/s Apr. 29, 1965, gage height, 1.98 ft, site and datum then in use; maximum gage height, 3.57 ft Jan. 10, 1974 (backwater from ice), site and datum then in use; minimum discharge, 11 ft³/s Feb. 12, 1978, but may have been less during period of no gage-height record Nov. 20 to Dec. 5, 1977.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1964-81

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	19	25	22	2.2	.10	6.7
NOVEMBER	18	27	22	2.3	.11	6.6
DECEMBER	18	28	21	2.8	.13	6.5
JANUARY	16	29	21	2.8	.13	6.4
FEBRUARY	16	31	21	3.0	.14	6.5
MARCH	20	39	24	4.5	.18	7.4
APRIL	23	86	36	15	.42	11.1
MAY	23	84	52	19	.36	16.0
JUNE	21	68	37	13	.36	11.3
JULY	19	32	25	3.8	.15	7.7
AUGUST	19	30	23	3.0	.13	7.0
SEPTEMBER	18	27	22	2.5	.11	6.7
ANNUAL	21	39	27	4.7	.17	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1965-81

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	16	14	13	12	--	--
3	17	15	14	13	--	--
7	18	16	14	13	--	--
14	19	17	16	15	--	--
30	19	17	17	16	--	--
60	20	18	18	17	--	--
90	20	19	18	18	--	--
120	21	19	18	18	--	--
183	21	20	19	18	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1964-81

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
49	74	110	135	166	--	--
WEIGHTED SKEW = -.146						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1964-81

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	71	106	129	158	--	--
3	68	102	125	153	--	--
7	65	96	116	140	--	--
15	60	87	104	127	--	--
30	53	75	89	106	--	--
60	46	62	73	86	--	--
90	41	53	62	72	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1964-81

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
56	42	34	30	27	26	25	23	22	21	21	20	20	19	18

BURNT RIVER BASIN

13273000 BURNT RIVER NEAR HEREFORD, OR

LOCATION.--Lat 44°30'14", long 118°10'35", in SE¼ sec.21, T.12 S., R.37 E., Baker County, Hydrologic Unit 17050202, on left bank 800 ft downstream from Unity Dam, 0.4 mi upstream from Van Cleve ditch, 7 mi west of Hereford, and at mile 63.5.

DRAINAGE AREA.--309 mi².

PERIOD OF RECORD.--March to September 1915, April to September 1916, October 1928 to September 1982. Monthly discharge only for some periods, published in WSP 1317.

GAGE.--Water-stage recorder. Datum of gage is 3,758.19 ft National Geodetic Vertical Datum of 1929. Oct. 1, 1943, to Oct. 31, 1966, water-stage recorder at site 450 ft downstream at datum 1.44 ft lower. See WSP 1317 or 1737 for history of changes prior to Oct. 1, 1943.

REMARKS.--Flow regulated since 1938 by Unity Reservoir. Diversions for irrigation above station.

AVERAGE DISCHARGE.--54 years (water years 1929-82), 84.6 ft³/s, 61,290 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,220 ft³/s Apr. 17, 1943, gage height, 5.91 ft, site and datum then in use, from rating curve extended above 1,300 ft³/s; maximum gage height, 9.07 ft Apr. 8, 1971; no flow at times; minimum discharge before construction of Unity Dam, 1.6 ft³/s Aug. 31, 1935.

STATISTICAL SUMMARIES (BEFORE THE CONSTRUCTION OF UNITY RESERVOIR)

MONTHLY AND ANNUAL MEAN DISCHARGES 1929-38

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	6.5	19	12	3.9	.33	1.7
NOVEMBER	5.0	34	21	8.7	.42	2.0
DECEMBER	15	73	32	18	.56	4.5
JANUARY	14	58	29	13	.44	4.1
FEBRUARY	24	62	39	14	.36	5.4
MARCH	55	169	99	40	.41	13.8
APRIL	41	567	288	180	.63	40.1
MAY	19	316	119	95	.80	16.6
JUNE	16	70	32	16	.50	4.4
JULY	8.1	47	18	11	.65	2.4
AUGUST	6.1	67	16	18	1.09	2.3
SEPTEMBER	6.1	43	13	11	.84	1.8
ANNUAL	31	94	60	22	.37	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1930-38

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	--	--	--	--	--	--
3	--	--	--	--	--	--
7	--	--	--	--	--	--
14	--	--	--	--	--	--
30	--	--	--	--	--	--
60	--	--	--	--	--	--
90	--	--	--	--	--	--
120	--	--	--	--	--	--
183	--	--	--	--	--	--

NOTE: LESS THAN 10 YEARS OF DATA AVAILABLE FOR ANALYSIS.

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1929-38

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
441	651	967	1190	--	--	--
WEIGHTED SKEW = .061						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1929-38

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	586	882	1030	--	--	--
3	498	794	964	--	--	--
7	428	706	884	--	--	--
15	364	586	724	--	--	--
30	293	464	569	--	--	--
60	213	330	406	--	--	--
90	161	241	295	--	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1929-38

DISCHARGE, IN CFS, WHICH WAS EQUALLED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
281	141	89	67	51	42	32	24	19	15	13	11	10	8.3	5.7

BURNT RIVER BASIN

49

13273000 BURNT RIVER NEAR HEREFORD, OR--Continued

STATISTICAL SUMMARIES (AFTER THE COMPLETION OF UNITY RESERVOIR)

MONTHLY AND ANNUAL MEAN DISCHARGES 1939-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	.2	93	27	24	.88	2.5
NOVEMBER	.5	63	15	16	1.09	1.4
DECEMBER	.7	66	18	18	1.01	1.6
JANUARY	1.7	87	23	23	1.02	2.1
FEBRUARY	0.0	287	39	51	1.28	3.6
MARCH	1.4	379	94	94	1.00	8.6
APRIL	.2	618	257	173	.67	23.7
MAY	87	484	200	94	.47	18.4
JUNE	42	326	125	46	.37	11.5
JULY	60	134	102	19	.19	9.4
AUGUST	47	148	107	20	.19	9.9
SEPTEMBER	.2	128	78	29	.38	7.2
ANNUAL	32	166	91	36	.39	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1940-82

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	1.4	.3	.1	.1	0.0	0.0
3	1.4	.4	.2	.1	0.0	0.0
7	1.8	.4	.2	.1	0.0	0.0
14	2.1	.6	.3	.2	.1	.1
30	3.3	.8	.4	.2	.1	.1
60	4.6	1.5	.8	.5	.3	.2
90	6.9	2.3	1.3	.7	.4	.3
120	10	3.8	2.2	1.3	.7	.5
183	24	11	7.2	4.7	2.8	1.9

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORDDISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1940-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECUTIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	444	729	932	1200	1400	1600
3	431	706	901	1160	1350	1540
7	400	648	821	1040	1210	1380
15	344	549	696	889	1040	1190
30	285	446	560	712	829	949
60	227	341	419	518	592	666
90	194	283	343	419	476	534

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1940-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
298	193	149	138	126	115	93	70	42	22	12	7.9	5.0	2.9	1.4

BURNT RIVER BASIN

13274200 BURNT RIVER NEAR BRIDGEPORT, OR

LOCATION.--Lat 44°32'27", long 117°41'10", in NW¼NW¼ sec.10, T.12 S., R.41 E., Baker County, Hydrologic Unit 17050202, on left bank 0.5 mi downstream from Dark Canyon, 4.6 mi upstream from Deer Creek, 5.0 mi northeast of Bridgeport, and at mile 37.1.

DRAINAGE AREA.--650 mi², approximately.

PERIOD OF RECORD.--October 1956 to September 1980.

GAGE.--Water-stage recorder. Datum of gage is 3,223.22 ft National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation).

REMARKS.--Flow regulated since 1938 by Unity Reservoir. Many diversions for irrigation above station.

AVERAGE DISCHARGE.--24 years, 105 ft³/s, 76,070 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,600 ft³/s Apr. 9, 1971, gage height, 6.40 ft; minimum, 5.2 ft³/s Dec. 5, 1972.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1957-80

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	11	77	45	16	.36	3.6
NOVEMBER	11	63	28	10	.37	2.3
DECEMBER	15	65	31	13	.43	2.5
JANUARY	14	146	44	34	.78	3.5
FEBRUARY	17	354	83	76	.92	6.6
MARCH	17	490	134	114	.85	10.7
APRIL	21	797	311	223	.72	24.8
MAY	38	678	237	168	.71	18.9
JUNE	27	200	117	52	.44	9.3
JULY	29	124	81	26	.32	6.5
AUGUST	26	107	75	22	.29	6.0
SEPTEMBER	12	108	71	25	.37	5.6
ANNUAL	26	209	105	53	.50	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1958-80

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	15	10	8.3	6.9	--	--
3	16	11	9.0	7.6	--	--
7	17	12	9.9	8.3	--	--
14	18	14	11	10	--	--
30	21	16	14	12	--	--
60	24	18	15	13	--	--
90	26	19	16	14	--	--
120	29	22	18	16	--	--
183	40	30	25	21	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1957-80

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	533	988	1310	1720	--	--
3	501	928	1230	1610	--	--
7	448	826	1100	1440	--	--
15	387	703	929	1220	--	--
30	324	590	781	1030	--	--
60	250	446	584	758	--	--
90	208	365	472	605	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1957-80

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
363	225	167	131	108	95	78	63	48	37	32	28	25	22	18

1705000 BURNT RIVER AT HUNTINGTON, OR

LOCATION.--Lat 44°21'30", long 117°16'20", in NE 1/4 sec. 13, T.14 S., R.44 E., Baker County, Hydrologic Unit 17050202, on right bank 0.5 mi northwest of Huntington and at mile 2.0.

DRAINAGE AREA.--1,093 mi².

PERIOD OF RECORD.--September 1928 to September 1932, October 1956 to September 1959, June 1962 to September 1980.

GAGE.--Water-stage recorder. Datum of gage is 0.142 ft National Geodetic Vertical Datum of 1929. Sept. 13, 1928, to Sept. 30, 1932, nonrecording gage at site 200 ft upstream at different datum. Oct. 1, 1956, to Sept. 30, 1959, water-stage recorder and Oct. 1, 1959, to Aug. 20, 1962, crest-stage gage.

REMARKS.--Flow regulated since 1938 by Unity Reservoir. Diversions for Irrigation above station.

AVERAGE DISCHARGE.--25 years, 132 ft³/s, 95,630 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,220 ft³/s Dec. 22, 1964, gage height, 5.94 ft; maximum gage height, 6.80 ft Feb. 3, 1963 (ice jam); no flow at times.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1929-80

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	0.0	92	55	27	.50	3.4
NOVEMBER	2.9	96	52	20	.39	3.3
DECEMBER	19	112	60	22	.37	3.7
JANUARY	20	262	83	56	.66	5.2
FEBRUARY	33	447	145	105	.72	9.1
MARCH	35	688	224	149	.67	14.1
APRIL	21	1069	399	298	.75	25.0
MAY	8.0	820	270	221	.82	17.0
JUNE	6.1	271	121	77	.64	7.6
JULY	1.0	133	65	41	.63	4.1
AUGUST	0.0	106	57	34	.59	3.6
SEPTEMBER	0.0	122	63	40	.63	4.0
ANNUAL	35	280	132	73	.55	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1930-80

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	27	9.4	4.0	1.7	.5	--
3	29	10	4.4	1.8	.5	--
7	33	12	5.4	2.3	.7	--
14	37	15	7.0	3.1	1.0	--
30	44	19	8.8	4.0	1.3	--
60	49	23	12	6.4	2.6	--
90	--	--	--	--	--	--
120	--	--	--	--	--	--
183	--	--	--	--	--	--

NOTE: LONG-DURATION STATISTICS UNCERTAIN DUE TO EXCESSIVE SKEW.

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1929-80

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1929-80

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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1	731	1310	1720	2230	2610	--
3	671	1190	1550	2010	2340	--
7	573	1010	1330	1750	2060	--
15	471	847	1130	1510	1800	--
30	394	723	974	1320	1600	--
60	308	559	752	1020	1240	--
90	259	466	624	844	1020	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1929-80

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
492	311	230	172	133	112	85	74	61	51	46	40	31	19	5.1

LOCATION.--Lat 44°40'20", long 117°59'40", in NE¼NE¼ sec.25, T.10 S., R.38 E., Baker County, Hydrologic Unit 17050203, Wallowa Whitman National Forest, on left bank 1,200 ft downstream from Mason Dam, 1.4 mi upstream from California Gulch, 11.4 mi southeast of Sumpter, and at mile 123.2.

PERIOD OF RECORD.--April 1965 to September 1982.

REMARKS.--Flow completely regulated since Oct. 31, 1967, by Phillips Lake, active capacity, 90,540 acre-ft. Many small diversions for irrigation above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 971 ft³/s Apr. 30, 1965, gage height, 4.43 ft; no flow Nov. 12, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 1,600 ft³/s, approximately, Mar. 20, 1910, based on comparison with records for station downstream, near Baker.

MONTHLY AND ANNUAL MEAN DISCHARGES 1968-82

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1969-82

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1968-82

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1968-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
428	323	270	234	202	168	97	17	11	9.0	7.9	6.8	5.6	3.9	2.0

13275500 POWDER RIVER NEAR BAKER, OR

LOCATION.--Lat 44°39'20", long 117°52'30", in NE¼ sec.36, T.10 S., R.39 E., Baker County, Hydrologic Unit 17050203, on right bank 700 ft downstream from Stices Gulch, 8.5 mi south of Baker, and at mile 116.2.

DRAINAGE AREA.--219 mi².

PERIOD OF RECORD.--December 1903 to August 1914, July 1926 to September 1968. Monthly discharge only for some periods, published in WSP 1317. Published as "near Baker City" December 1903 to December 1905, and as "at Salisbury" January 1906 to August 1914, October 1928 to September 1951.

GAGE.--Water-stage recorder and concrete-filled bag control. Datum of gage is 3,632.31 ft National Geodetic Vertical Datum of 1929. Dec. 20, 1903, to Feb. 29, 1912, staff gage at site 400 ft upstream at different datum. Mar. 1, 1912, to Aug. 1, 1914, and June 16, 1926, to Oct. 15, 1933, staff gage at site 0.4 mi downstream at different datum. Oct. 16, 1933, to Sept. 3, 1965, graphic water-stage recorder at present site and datum.

REMARKS.--Flow regulated since Oct. 31, 1967, by Phillips Lake (active capacity, 90,540 acre-ft). Many small diversions for irrigation above station. At times Auburn ditch diverts water into basin above station.

AVERAGE DISCHARGE.--51 years (water years 1905-13, 1927-68), 110 ft³/s, 79,640 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,820 ft³/s Mar. 20, 1910, gage height, 7.05 ft. site and datum then in use; no flow Aug. 31, 1909, Sept. 7, 1931.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1905-67

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1.9	40	15	9.2	.60	1.2
NOVEMBER	5.6	111	27	17	.65	2.0
DECEMBER	10	114	36	25	.69	2.7
JANUARY	8.5	161	38	26	.68	2.8
FEBRUARY	12	237	60	45	.75	4.5
MARCH	28	671	153	101	.66	11.5
APRIL	88	658	344	162	.47	25.9
MAY	52	833	356	143	.42	26.8
JUNE	22	574	231	126	.55	17.4
JULY	3.9	157	46	31	.67	3.5
AUGUST	.5	49	13	9.8	.75	1.0
SEPTEMBER	.3	41	8.5	7.1	.83	.6
ANNUAL	40	192	110	40	.36	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1906-67

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	4.2	1.0	.5	.2	.1	.1
3	4.5	1.3	.6	.3	.1	.1
7	5.0	1.6	.7	.3	.1	.1
14	5.6	1.9	.9	.4	.2	.1
30	6.2	2.3	1.2	.6	.3	.1
60	8.1	3.6	2.1	1.2	.6	.4
90	10	5.1	3.2	2.1	1.2	.8
120	13	7.2	5.0	3.5	2.3	1.7
183	19	12	9.2	7.2	5.3	4.3

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1905-67

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
479	725	1050	1250	1480	1640	1800

WEIGHTED SKEW = -.431

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1905-67

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	675	952	1110	1290	1410	1510
3	641	893	1030	1180	1270	1350
7	589	810	925	1040	1110	1170
15	525	717	813	908	964	1010
30	447	609	684	752	836	881
60	373	512	591	677	732	782
90	320	436	504	575	622	662

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1905-67

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
493	337	252	183	134	96	55	36	26	18	15	12	9.5	7.1	4.2

POWDER RIVER BASIN

13286700 POWDER RIVER NEAR RICHLAND, OR

LOCATION.--Lat 44°46'40", long 117°17'30", in SE¼ sec.14, T.9 S., R.44 E., Baker County, Hydrologic Unit 17050203, on left bank 0.4 mi upstream from Upper Timber Canyon, 6.0 mi west of Richland, and at mile 20.3.

DRAINAGE AREA.--1,310 mi², approximately.

PERIOD OF RECORD.--October 1957 to September 1982.

GAGE.--Water-stage recorder. Datum of gage is 2,277.42 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Regulation by several reservoirs, the largest being Phillips Lake since Oct. 31, 1967, active capacity, 90,540 acre-ft, Thief Valley Reservoir, capacity, 17,400 acre-ft, and since April 1975, Wolf Creek Reservoir, capacity, 10,400 acre-ft. Diversions for irrigation above and below station.

AVERAGE DISCHARGE.--25 years, 255 ft³/s, 184,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,090 ft³/s Feb. 21, 1982, gage height, 7.50 ft, from floodmark; maximum gage height, 9.29 ft Jan. 15, 1974 (ice jam); minimum discharge, 0.80 ft³/s Aug. 11, 12, 1966.

STATISTICAL SUMMARIES (BEFORE THE CONSTRUCTION OF PHILLIPS LAKE)

MONTHLY AND ANNUAL MEAN DISCHARGES 1958-67

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	12	76	42	20	.46	1.6
NOVEMBER	38	72	56	10	.18	2.1
DECEMBER	33	198	104	54	.52	3.8
JANUARY	28	557	173	165	.95	6.3
FEBRUARY	87	1081	370	319	.86	13.6
MARCH	177	909	405	229	.57	14.9
APRIL	174	1092	591	347	.59	21.7
MAY	40	1533	425	452	1.06	15.6
JUNE	52	917	401	328	.82	14.7
JULY	33	128	66	32	.49	2.4
AUGUST	7.7	85	48	20	.40	1.8
SEPTEMBER	10	83	44	25	.55	1.6
ANNUAL	116	455	225	126	.56	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1959-67

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	22	8.4	3.7	1.6	--	--
3	23	11	6.2	3.5	--	--
7	25	13	7.7	4.7	--	--
14	28	14	8.6	5.3	--	--
30	31	17	11	7.6	--	--
60	37	21	14	10.0	--	--
90	43	25	17	12	--	--
120	45	28	20	15	--	--
183	53	36	29	24	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1958-67

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
803	1290	2080	2680	--	--	--
WEIGHTED SKEW = .046						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1958-67

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1120	1840	2480	--	--	--
3	1070	1770	2380	--	--	--
7	1000	1620	2140	--	--	--
15	894	1400	1800	--	--	--
30	736	1140	1460	--	--	--
60	541	836	1090	--	--	--
90	467	738	971	--	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1958-67

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
863	618	435	341	271	200	124	86	65	53	48	42	37	31	23

POWDER RIVER BASIN

13288200 EAGLE CREEK ABOVE SKULL CREEK, NEAR NEW BRIDGE, OR

LOCATION.--Lat 44°52'50", long 117°15'10", in SE¼ sec.7, T.8 S., R.45 E., Baker County, Hydrologic Unit 17050203, Willowa-Whitman National Forest, on left bank 0.5 mi upstream from Skull Creek, 6.5 mi northwest of New Bridge, and at mile 10.5.

DRAINAGE AREA.--156 mi².

PERIOD OF RECORD.--October 1957 to September 1982.

GAGE.--Water-stage recorder. Altitude of gage is 2,800 ft, from topographic map.

REMARKS.--No regulation. Some diversions above station for irrigation and one small interbasin diversion for irrigation supply. All diversions are small compared to flow at station during irrigation season.

AVERAGE DISCHARGE.--25 years, 322 ft³/s, 233,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,310 ft³/s July 12, 1975, gage height, 5.06 ft, from rating curve extended above 2,500 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 6.88 ft Jan. 25, 1962 (ice jam); minimum daily discharge, 30 ft³/s Nov. 28, 1976.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1958-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	69	323	113	53	.47	2.9
NOVEMBER	78	264	128	45	.35	3.3
DECEMBER	72	211	120	38	.32	3.1
JANUARY	59	191	114	31	.27	3.0
FEBRUARY	72	230	128	42	.32	3.3
MARCH	65	306	170	60	.35	4.4
APRIL	191	649	392	138	.35	10.2
MAY	252	1747	941	276	.29	24.4
JUNE	276	2134	1069	389	.36	27.7
JULY	84	1011	426	231	.54	11.0
AUGUST	63	252	148	42	.28	3.8
SEPTEMBER	66	172	109	26	.24	2.8
ANNUAL	118	519	322	79	.25	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1959-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	63	50	44	39	33	--
3	65	56	52	49	46	--
7	70	59	55	52	48	--
14	74	64	59	55	51	--
30	81	70	65	61	57	--
60	88	76	70	65	60	--
90	93	79	73	68	64	--
120	98	83	78	73	69	--
183	107	91	84	79	75	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1958-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1570	2040	2730	3220	3870	4380	--
WEIGHTED SKEW = .376						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1958-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1830	2270	2470	2670	2790	--
3	1720	2160	2370	2590	2710	--
7	1590	2000	2180	2360	2450	--
15	1450	1800	1950	2070	2130	--
30	1300	1570	1660	1720	1750	--
60	1080	1310	1390	1450	1470	--
90	901	1080	1140	1190	1200	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1958-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1230	885	659	480	352	259	180	145	124	109	102	96	89	81	73

POWDER RIVER BASIN

57

13289500 POWDER RIVER NEAR ROBINETTE, OR

LOCATION.--Lat 44°46'10", long 117°04'10", in E-1/2 sec.22, T.9 S., R.46 E., Baker County, Hydrologic Unit 17050203, on left bank 2.2 mi northwest of Robinette and 2.5 mi upstream from mouth.

DRAINAGE AREA.--1,660 mi², approximately.

PERIOD OF RECORD.--September 1928 to September 1957.

GAGE.--Water-stage recorder. Datum of gage is 1,937.10 ft National Geodetic Vertical Datum of 1929. Prior to Aug. 24, 1936, staff gage at site 0.5 mi upstream at different datum. Aug. 24, 1936, to Oct. 31, 1948, staff gage at site 50 ft upstream at present datum.

REMARKS.--Flow partly regulated by several reservoirs, the largest being Thief Valley Reservoir (capacity, 17,000 acre-ft). Many diversions for irrigation above station. One canal with capacity of about 5 ft³/s diverts around station on left bank.

AVERAGE DISCHARGE.--29 years (water years 1929-57), 534 ft³/s, 386,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,500 ft³/s May 27, 1956, gage height, 6.38 ft; minimum observed, 18 ft³/s Sept. 2-10, 1931.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1929-57

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	35	253	139	62	.45	2.2
NOVEMBER	70	416	184	75	.41	2.9
DECEMBER	80	755	229	140	.61	3.6
JANUARY	58	711	240	142	.59	3.7
FEBRUARY	86	769	377	213	.56	5.9
MARCH	174	1302	719	352	.49	11.2
APRIL	379	2978	1254	656	.52	19.6
MAY	490	2824	1452	656	.45	22.6
JUNE	235	2971	1245	719	.58	19.4
JULY	48	1106	358	260	.73	5.6
AUGUST	26	253	109	53	.49	1.7
SEPTEMBER	22	215	107	52	.48	1.7
ANNUAL	216	916	534	212	.40	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1930-57

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	66	39	29	22	16	--
3	69	42	31	23	17	--
7	73	44	33	25	18	--
14	78	47	34	26	19	--
30	84	50	37	28	20	--
60	95	57	42	32	23	--
90	107	65	48	36	26	--
120	122	77	58	44	32	--
183	150	101	81	66	52	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1929-57DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1660	2630	3960	4800	5810	6520	--
WEIGHTED SKEW = -.439						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1929-57DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2510	3680	4360	5130	5630	--
3	2370	3480	4130	4860	5340	--
7	2190	3280	3930	4670	5170	--
15	1980	2980	3590	4280	4750	--
30	1700	2540	3070	3680	4100	--
60	1480	2150	2560	3020	3330	--
90	1290	1870	2230	2640	2930	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1929-57

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1990	1470	1120	867	683	548	344	232	180	148	133	117	101	81	54

IMNAHA RIVER BASIN

13292000 IMNAHA RIVER AT IMNAHA, OR

LOCATION.--Lat 45°33'45", long 116°50'00", in SW¼ sec.16, T.1 N., R.48 E., Wallowa County, Hydrologic Unit 17060102, on left bank at Imnaha, 0.3 mi downstream from Big Sheep Creek, and at mile 19.3.

DRAINAGE AREA.--622 mi².

PERIOD OF RECORD.--June 1928 to September 1982.

GAGE.--Water-stage recorder. Datum of gage is 1,941.14 ft National Geodetic Vertical Datum of 1929. Prior to Aug. 6, 1934, nonrecording gage at site 0.25 mi upstream at different datum. Aug. 6-31, 1934, nonrecording gage at present site and datum.

REMARKS.--No regulation. Diversions for irrigation above station. Water is diverted from Big Sheep Creek and tributaries above station for irrigation in Wallowa River basin.

AVERAGE DISCHARGE.--54 years, 517 ft³/s, 374,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,100 ft³/s Jan. 17, 1974, gage height, 7.86 ft, from rating curve extended above 3,500 ft³/s; minimum observed, 16 ft³/s Nov. 22, 1931, result of freezeup; minimum daily, 25 ft³/s Nov. 22, 23, 1931.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1929-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	82	501	159	63	.40	2.6
NOVEMBER	80	625	187	91	.49	3.0
DECEMBER	89	806	219	136	.62	3.5
JANUARY	69	393	193	84	.43	3.1
FEBRUARY	82	569	236	112	.47	3.8
MARCH	114	869	377	162	.43	6.1
APRIL	345	1760	942	345	.37	15.2
MAY	445	2804	1603	535	.33	25.9
JUNE	423	2612	1365	529	.39	22.1
JULY	123	1348	567	308	.54	9.2
AUGUST	79	380	193	70	.36	3.1
SEPTEMBER	83	256	143	39	.27	2.3
ANNUAL	184	829	516	150	.29	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1930-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	70	48	39	33	27	23
3	84	61	51	44	36	32
7	98	76	66	59	51	46
14	108	88	79	71	64	59
30	119	98	88	80	71	66
60	128	105	94	85	76	71
90	136	111	99	91	81	75
120	144	116	104	95	85	80
183	165	128	111	100	88	81

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1929-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1840	2710	4090	5110	6540	7690	8930
WEIGHTED SKEW = .199						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1929-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2470	3460	4090	4870	5430	5970
3	2300	3170	3710	4350	4810	5240
7	2130	2880	3330	3840	4190	4520
15	1930	2570	2950	3370	3660	3920
30	1740	2290	2580	2910	3110	3290
60	1550	2000	2230	2460	2610	2730
90	1350	1720	1910	2100	2210	2300

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1929-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1860	1420	1120	861	653	496	310	230	188	158	147	137	126	113	94

GRANDE RONDE RIVER BASIN

59

13318500 GRANDE RONDE RIVER NEAR HILGARD, OR

LOCATION.--Lat 45°19'06", long 118°16'15", near center of sec.11, T.3 S., R.36 E., Union County, Hydrologic Unit 17060104, on right bank 0.5 mi upstream from lower reservoir site of Bureau of Reclamation, 0.8 mi upstream from Spring Creek, and 3 mi southwest of Hilgard.

DRAINAGE AREA.--505 mi².

PERIOD OF RECORD.--January 1938 to September 1956. Monthly discharge only prior to October 1945, published in WSP 1317.

GAGE.--Water-stage recorder. Datum of gage is 3,058.05 ft National Geodetic Vertical Datum of 1929. Prior to Sept. 16, 1946, water-stage recorder at site 800 ft upstream at different datum.

REMARKS.--Several small diversions for irrigation above station. Since 1909, city of La Grande has diverted about 3 ft³/s for municipal use at Beaver Creek Reservoir (capacity, about 900 acre-ft).

AVERAGE DISCHARGE.--18 years (water years 1939-56), 274 ft³/s, 198,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,060 ft³/s May 8, 1956, gage height, 6.48 ft, from rating curve extended above 3,100 ft³/s; minimum, 6 ft³/s Aug. 10, 12-29, Sept. 1-4, 1940.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1938-56

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	18	128	35	24	.68	1.1
NOVEMBER	20	323	73	71	.98	2.2
DECEMBER	17	467	145	139	.96	4.4
JANUARY	25	301	118	89	.76	3.6
FEBRUARY	29	493	200	134	.67	6.1
MARCH	72	841	455	200	.44	13.9
APRIL	387	1590	878	322	.37	26.9
MAY	230	1922	788	423	.54	24.1
JUNE	48	1096	420	282	.67	12.9
JULY	13	246	98	65	.66	3.0
AUGUST	7.0	55	28	14	.50	.9
SEPTEMBER	14	71	25	12	.49	.8
ANNUAL	129	478	272	100	.37	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1939-56

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	14	9.7	8.0	6.9	--	--
3	14	9.9	8.2	7.0	--	--
7	15	11	8.5	7.1	--	--
14	17	11	9.1	7.5	--	--
30	18	12	9.8	8.1	--	--
60	21	15	12	11	--	--
90	23	17	15	14	--	--
120	26	21	19	18	--	--
183	42	27	23	20	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1938-56

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1620	2190	3010	3590	4340	--	--
WEIGHTED SKEW = .187						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1938-56

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1700	2310	2720	3250	--	--
3	1500	2060	2470	3020	--	--
7	1320	1820	2190	2690	--	--
15	1150	1580	1870	2230	--	--
30	981	1350	1610	1960	--	--
60	860	1170	1390	1670	--	--
90	731	991	1170	1390	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1938-56

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME													
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	95%
1110	803	627	488	361	268	156	83	52	37	32	28	24	17

GRANDE RONDE RIVER BASIN

13318800 GRANDE RONDE RIVER AT HILGARD, OR

LOCATION.--Lat 45°20'21", long 118°14'35", in NE¼NE¼ sec.1, T.3 S., R.36 E., Union County, Hydrologic Unit 17060104, on left bank 8.8 mi northwest of La Grande, 1.6 mi upstream from Fivepoint Creek, and at mile 171.3.

DRAINAGE AREA.--555 mi².

PERIOD OF RECORD.--October 1966 to September 1982.

GAGE.--Water-stage recorder. Datum of gage is 2,993.62 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Slight regulation by city of La Grande reservoir on Beaver Creek, capacity, about 900 acre-ft. Diversions for irrigation above station. Since 1909, city of La Grande has diverted about 3 ft³/s from Beaver Creek above station for domestic water supply.

AVERAGE DISCHARGE.--16 years, 299 ft³/s, 216,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,740 ft³/s Mar. 13, 1972, gage height, 7.18 ft; maximum gage height, 12.25 ft Jan. 15, 1974 (ice jam); minimum discharge, 9.6 ft³/s Aug. 17, 18, 23, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 30, 1965, reached a stage of about 9 ft, from floodmark, discharge not determined.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1967-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	25	56	36	8.6	.24	1.0
NOVEMBER	31	236	71	56	.79	2.0
DECEMBER	33	481	159	143	.90	4.4
JANUARY	27	681	272	197	.72	7.5
FEBRUARY	49	521	288	133	.46	7.9
MARCH	75	1668	544	374	.69	15.0
APRIL	181	1481	787	389	.49	21.7
MAY	256	1340	882	333	.38	24.3
JUNE	85	825	421	229	.54	11.6
JULY	22	253	101	59	.58	2.8
AUGUST	12	81	36	17	.47	1.0
SEPTEMBER	17	51	31	10.0	.32	.9
ANNUAL	122	454	302	99	.33	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1968-81

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	18	14	12	11	--	--
3	19	15	13	11	--	--
7	21	16	13	11	--	--
14	22	17	14	12	--	--
30	24	19	16	14	--	--
60	29	22	19	16	--	--
90	31	24	21	18	--	--
120	33	26	23	21	--	--
183	52	40	35	32	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1967-81

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT							
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%	
1730	2360	3220	3790	4520	--	--	
WEIGHTED SKEW = .040							

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1967-81

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2000	2650	3110	3720	--	--
3	1790	2330	2690	3130	--	--
7	1500	1970	2290	2700	--	--
15	1260	1690	1960	2290	--	--
30	1080	1450	1650	1870	--	--
60	914	1230	1380	1540	--	--
90	801	1080	1210	1340	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1967-81

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1200	903	683	524	394	317	202	114	65	45	39	34	30	26	21

GRANDE RONDE RIVER BASIN

61

13319000 GRANDE RONDE RIVER AT LA GRANDE, OR

LOCATION.--Lat 45°20'47", long 118°07'26", in NW¼SE¼ sec.36, T.2 S., R.37 E., Union County, Hydrologic Unit 17060104, on right bank 1.8 mi northwest of La Grande, 5.7 mi downstream from Flvepoint Creek, and at mile 164.0.

DRAINAGE AREA.--678 mi².

PERIOD OF RECORD.--October 1903 to September 1915, February 1918 to September 1923, October 1925 to September 1982. Monthly discharge only for some periods, published in WSP 1317. Published as "at Hilgard" 1903-15.

GAGE.--Water-stage recorder. Datum of gage is 2,826.25 ft National Geodetic Vertical Datum of 1929. Nov. 6, 1903, to Sept. 30, 1915, nonrecording gage at site 5.5 mi upstream at various datums. Feb. 16, 1918, to June 28, 1923, and Oct. 1, 1925, to Nov. 23, 1931, nonrecording gage at site 0.7 mi downstream at various datums. Nov. 24, 1931, to Oct. 8, 1965, water-stage recorder at site 0.3 mi upstream at datum 4.61 ft higher.

REMARKS.--Since 1915, slight regulation by city of La Grande reservoir on Beaver Creek, capacity, about 900 acre-ft. Diversions for irrigation above station. Since 1909, city of La Grande has diverted about 3 ft³/s from Beaver Creek above station for domestic water supply.

AVERAGE DISCHARGE.--74 years, 384 ft³/s, 278,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,100 ft³/s Jan. 30, 1965, gage height, 11.44 ft, site and datum then in use, from rating curve extended above 7,200 ft³/s; minimum, 3.9 ft³/s Aug. 26, 1940.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1904-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	16	145	42	24	.57	.9
NOVEMBER	22	700	93	105	1.13	2.0
DECEMBER	20	669	178	178	1.00	3.9
JANUARY	12	1295	218	237	1.09	4.7
FEBRUARY	25	1379	334	302	.90	7.3
MARCH	83	3700	757	521	.69	16.4
APRIL	237	3372	1291	589	.46	28.0
MAY	118	2675	1068	551	.52	23.2
JUNE	58	1328	459	285	.62	10.0
JULY	18	600	104	90	.86	2.3
AUGUST	7.0	88	31	17	.54	.7
SEPTEMBER	8.8	82	30	14	.47	.6
ANNUAL	141	706	381	145	.38	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1905-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	15	9.8	7.3	5.7	4.1	3.2
3	16	10	7.7	5.9	4.3	3.4
7	17	11	8.7	6.8	5.1	4.1
14	19	12	9.7	7.8	5.9	4.9
30	21	14	11	9.2	7.2	6.0
60	25	18	15	12	9.9	8.6
90	28	21	17	15	13	11
120	32	24	21	19	17	16
183	52	34	28	24	20	18

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1904-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
2150	3180	4800	6000	7660	8990	10400
WEIGHTED SKEW = .174						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1904-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2720	4120	5110	6440	7480	8560
3	2380	3520	4320	5370	6180	7010
7	2040	2920	3490	4200	4720	5240
15	1710	2420	2870	3430	3830	4220
30	1440	2050	2450	2950	3310	3670
60	1220	1720	2040	2420	2690	2960
90	1050	1460	1720	2020	2240	2440

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1904-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1650	1150	852	650	495	365	193	103	62	43	38	33	28	23	18

GRANDE RONDE RIVER BASIN

13320000 CATHERINE CREEK NEAR UNION, OR

LOCATION.--Lat 45°09'20", long 117°46'26", in NW¼SE¼ sec.2, T.5 S., R.40 E., Union County, Hydrologic Unit 17060104, on right bank 3.0 mi downstream from Little Catherine Creek, 5.5 mi southeast of Union, and at mile 25.4.

DRAINAGE AREA.--105 mi².

PERIOD OF RECORD.--May 1906 to May 1907 (gage heights only), August 1911 to December 1912, March to September 1915, February 1918 to September 1919, October 1925 to September 1982. Monthly discharge only for some periods, published in WSP 1317.

GAGE.--Water-stage recorder. Datum of gage is 3,081.76 ft National Geodetic Vertical Datum of 1929 (Oregon State Highway Department bench mark). Prior to Nov. 28, 1938, nonrecording gage at several sites within 1.8 mi of present site at various datums. Nov. 28, 1938, to May 16, 1939, water-stage recorder at site 400 ft downstream at datum 4.29 ft lower.

REMARKS.--No regulation. Several small diversions for irrigation above station. Since 1937, diversion to Big Creek in Powder River basin provides a small part of the water used for irrigation in that basin.

AVERAGE DISCHARGE.--59 years (water years 1912, 1919, 1926-82), 118 ft³/s, 85,490 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,740 ft³/s May 27, 1948, gage height, 4.57 ft; minimum, 6.5 ft³/s Feb. 4, 1955, result of freezeup; minimum daily, 8 ft³/s Nov. 7, 1925.

STATISTICAL SUMMARIES (BEFORE CONSTRUCTION OF BIG CREEK DIVERSION)

MONTHLY AND ANNUAL MEAN DISCHARGES 1912-36

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	21	103	34	21	.60	2.4
NOVEMBER	14	157	41	35	.86	2.9
DECEMBER	13	105	37	23	.62	2.6
JANUARY	12	95	38	22	.59	2.7
FEBRUARY	22	74	42	18	.42	3.0
MARCH	51	203	95	48	.50	6.7
APRIL	158	375	268	60	.23	19.0
MAY	139	776	440	194	.44	31.1
JUNE	66	632	289	194	.67	20.4
JULY	26	145	76	44	.58	5.4
AUGUST	11	63	29	13	.44	2.1
SEPTEMBER	16	50	26	9.4	.37	1.8
ANNUAL	67	185	116	39	.34	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1919-36

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	17	13	11	10	--	--
3	17	13	11	10	--	--
7	18	13	12	10	--	--
14	18	14	12	10	--	--
30	20	15	13	11	--	--
60	22	17	15	14	--	--
90	22	18	16	15	--	--
120	24	20	18	18	--	--
183	27	21	19	18	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1912-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
563	757	1000	1160	1340	1470	1590
WEIGHTED SKEW = -.191						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1912-36

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	799	1090	1230	1380	--	--
3	755	1050	1190	1340	--	--
7	683	954	1100	1240	--	--
15	582	809	938	1080	--	--
30	500	692	808	943	--	--
60	405	550	635	732	--	--
90	326	441	511	596	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1912-36

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
496	332	229	168	119	92	57	41	33	28	26	24	22	21	17

GRANDE RONDE RIVER BASIN

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13320000 CATHERINE CREEK NEAR UNION, OR--Continued

STATISTICAL SUMMARIES (AFTER COMPLETION OF BIG CREEK DIVERSION)

MONTHLY AND ANNUAL MEAN DISCHARGES 1938-82

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1939-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	20	138	33	17	.52	2.3
NOVEMBER	22	100	39	15	.39	2.7
DECEMBER	20	125	48	24	.51	3.3
JANUARY	23	101	48	20	.42	3.4
FEBRUARY	23	135	60	27	.45	4.1
MARCH	28	213	90	40	.44	6.3
APRIL	83	445	230	93	.40	16.0
MAY	121	742	412	126	.31	28.7
JUNE	86	686	313	138	.44	21.8
JULY	34	226	96	44	.45	6.7
AUGUST	19	62	38	9.6	.25	2.7
SEPTEMBER	18	58	31	7.5	.24	2.1
ANNUAL	49	180	120	29	.24	100

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	19	15	14	12	11	11
3	20	17	16	15	14	13
7	22	18	17	16	15	14
14	23	20	18	17	16	16
30	25	21	20	19	18	18
60	27	23	22	21	20	20
90	28	24	23	22	21	21
120	30	26	24	23	22	22
183	35	29	27	26	25	24

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1938-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	676	888	1020	1170	1270	1370
3	647	849	965	1100	1190	1270
7	598	787	894	1010	1090	1160
15	532	695	784	880	941	996
30	466	604	677	752	798	838
60	397	498	546	591	616	636
90	334	410	443	473	489	501

WEIGHTED SKEW = --

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1938-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
455	334	258	191	136	105	68	51	42	35	32	30	28	26	23

GRANDE RONDE RIVER BASIN

13323500 GRANDE RONDE RIVER NEAR ELGIN, OR

LOCATION.--Lat 45°30'45", long 117°55'35", in NW¼NW¼ sec.3, T.1 S., R.39 E., Union County, Hydrologic Unit 17060104, on right bank 700 ft upstream from abandoned highway bridge, 1.5 mi downstream from Willow Creek, 3.6 mi south of Elgin, and at mile 104.2.

DRAINAGE AREA.--1,250 mi², approximately.

PERIOD OF RECORD.--August 1955 to September 1981.

GAGE.--Water-stage recorder. Datum of gage is 2,660.31 ft National Geodetic Vertical Datum of 1929.

REMARKS.--No regulation. Many diversions for irrigation above station.

AVERAGE DISCHARGE.--26 years, 668 ft³/s, 484,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,480 ft³/s Feb. 2, 1965, gage height, 13.79 ft; no flow Aug. 20-24, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Outstanding floods occurred in 1894 and 1917, based on Corps of Engineers flood profiles. Flood in May 1948 reached an elevation of 2,672.9 ft on Corps of Engineers gage at bridge 700 ft downstream, discharge, 5,690 ft³/s, result of discharge measurement.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1956-81

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	31	325	87	55	.63	1.1
NOVEMBER	65	469	164	97	.59	2.0
DECEMBER	86	1176	398	333	.84	5.0
JANUARY	90	1438	559	408	.73	7.0
FEBRUARY	106	2760	822	584	.71	10.2
MARCH	171	3605	1108	687	.62	13.8
APRIL	487	3395	1764	782	.44	22.0
MAY	439	3393	1879	792	.42	23.4
JUNE	144	1927	997	475	.48	12.4
JULY	11	629	175	136	.78	2.2
AUGUST	1.7	140	40	32	.80	.5
SEPTEMBER	6.9	117	43	30	.69	.5
ANNUAL	211	1100	668	254	.38	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1957-81

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	--	--	--	--	--	--
3	--	--	--	--	--	--
7	--	--	--	--	--	--
14	21	6.0	2.1	.7	.2	--
30	26	9.5	4.6	2.2	.8	--
60	33	15	8.9	5.5	2.9	--
90	43	22	15	10	6.5	--
120	57	35	26	20	15	--
183	109	75	62	53	44	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1956-81

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
2450	3370	4550	5280	6140	6760	--
WEIGHTED SKEW = -.234						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1956-81

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	3360	4540	5230	5900	6310	--
3	3230	4410	5040	5680	6070	--
7	2920	4060	4690	5370	5810	--
15	2550	3510	4040	4600	4960	--
30	2210	3030	3460	3920	4200	--
60	1890	2620	3000	3410	3660	--
90	1690	2340	2680	3020	3220	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1956-81

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
2610	1950	1580	1250	963	790	480	255	144	98	82	64	45	30	15

GRANDE RONDE RIVER BASIN

65

13323600 INDIAN CREEK NEAR IMBLER, OR

LOCATION.--Lat 45°26'00", long 117°49'20", S-1/2 sec.33, T.1 S., R.40 E., Union County, Hydrologic Unit 17060104, 600 ft upstream from North Fork and 7 mi southeast of Imbler.

DRAINAGE AREA.--22 mi², approximately.

PERIOD OF RECORD.--March 1938 to September 1950.

GAGE.--Water-stage recorder. Altitude of gage is 3,800 ft, from topographic map.

REMARKS.--No diversion or regulation above station.

COOPERATION.--Records for 1938-45 furnished by Oregon Water Resources Department.

AVERAGE DISCHARGE.--12 years (water years 1939-50), 41.5 ft³/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 818 ft³/s May 27, 1948, from rating curve extended above 400 ft³/s; maximum gage height, 4.09 ft sometime during period Jan. 4-7, 1947 (ice jam); minimum observed, 0.1 ft³/s Nov. 15, 1939.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1939-50

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1940-50

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	3.1	14	5.6	3.0	.54	1.1
NOVEMBER	1.7	20	7.7	4.9	.63	1.6
DECEMBER	2.1	39	11	10	.93	2.2
JANUARY	3.5	30	8.5	7.4	.86	1.7
FEBRUARY	4.0	35	9.9	8.4	.84	2.0
MARCH	6.0	29	15	7.5	.49	3.1
APRIL	19	140	66	35	.53	13.2
MAY	107	316	189	60	.32	38.1
JUNE	27	269	140	78	.56	28.2
JULY	6.3	95	32	24	.73	6.5
AUGUST	3.3	10	6.9	2.2	.32	1.4
SEPTEMBER	2.8	11	4.8	2.1	.43	1.0
ANNUAL	23	56	42	11	.27	100

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	2.8	1.8	1.4	1.2	--	--
3	2.9	1.9	1.5	1.2	--	--
7	3.1	2.0	1.5	1.2	--	--
14	3.4	2.2	1.7	1.3	--	--
30	3.6	2.3	1.8	1.4	--	--
60	3.9	2.8	2.4	2.1	--	--
90	4.2	3.2	2.9	2.6	--	--
120	4.7	3.5	3.1	2.8	--	--
183	6.1	4.2	3.6	3.2	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1939-50MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1939-50

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
304	424	589	698	--	--	--

WEIGHTED SKEW = -.042

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	369	501	591	--	--	--
3	350	465	538	--	--	--
7	314	406	457	--	--	--
15	266	347	393	--	--	--
30	227	298	339	--	--	--
60	178	222	243	--	--	--
90	138	170	186	--	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1939-50

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
216	131	93	54	37	27	14	9.3	6.8	5.7	5.1	4.6	4.3	3.8	3.0

GRANDE RONDE RIVER BASIN

13327500 WALLOWA RIVER AT JOSEPH, OR

LOCATION.--Lat 45°20'15", long 117°13'35", in NW¼ sec.5, T.3 S., R.45 E., Wallowa County, Hydrologic Unit 17060105, on left bank 0.2 mi downstream from Wallowa Lake dam, 1.1 mi south of Joseph, and at mile 50.0.

DRAINAGE AREA.--50.9 mi².

PERIOD OF RECORD.--November 1903 to August 1907, June 1908 to March 1914, May to September 1915, December 1926 to September 1982. Monthly discharge only for some periods, published in WSP 1317. Published as "near Joseph" 1911.

GAGE.--Water-stage recorder. Datum of gage is 4,326.86 ft National Geodetic Vertical Datum of 1929. Nov. 12, 1903, to Sept. 25, 1915, nonrecording gage at several sites at lake outlet or near present site at different datums.

REMARKS.--Monthly discharge adjusted for storage in Wallowa Lake and diversion from Wallowa Lake by Silver Lake ditch. Silver Lake ditch diverts at Wallowa Lake dam for irrigation northeast of Joseph. City of Joseph diverts less than 1.0 ft³/s from Wallowa Lake for municipal use.

AVERAGE DISCHARGE.--55 years (water years 1928-82), 134 ft³/s, 35.75 in/yr, 97,080 acre-ft/yr, adjusted for storage and diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,550 ft³/s June 10, 1969, gage height, 5.15 ft; no flow at times in some years.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1905-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	5.2	89	36	21	.59	2.6
NOVEMBER	6.7	159	33	27	.83	2.4
DECEMBER	5.4	135	31	26	.83	2.3
JANUARY	6.1	99	28	19	.68	2.0
FEBRUARY	5.0	61	25	16	.63	1.9
MARCH	2.8	109	27	21	.80	2.0
APRIL	3.1	173	34	34	1.01	2.5
MAY	16	354	168	79	.47	12.3
JUNE	159	567	376	111	.30	27.6
JULY	91	614	343	100	.29	25.2
AUGUST	22	397	202	86	.43	14.8
SEPTEMBER	9.0	151	59	34	.58	4.3
ANNUAL	51	172	112	31	.28	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1906-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	11	5.3	3.5	2.5	1.7	1.3
3	12	5.6	3.7	2.6	1.8	1.3
7	12	6.1	4.2	3.0	2.1	1.6
14	13	6.9	4.8	3.6	2.5	2.0
30	15	7.8	5.6	4.2	3.0	2.4
60	19	10	7.6	5.8	4.2	3.4
90	20	11	8.4	6.5	4.9	4.1
120	21	12	9.4	7.6	6.0	5.1
183	24	15	11	8.8	6.8	5.7

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1905-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	559	728	855	1030	1180	1340
3	552	708	821	975	1100	1230
7	527	661	755	878	973	1070
15	484	590	657	739	799	858
30	421	513	567	628	669	709
60	365	439	480	525	554	580
90	330	394	429	465	488	508

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1905-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
446	365	296	214	140	100	56	35	28	23	21	17	13	11	7.4

13329500 HURRICANE CREEK NEAR JOSEPH, OR

LOCATION.--Lat 45°20'15", long 117°17'30", in NE¼ sec.3, T.3 S., R.44 E., Wallowa County, Hydrologic Unit 17060105, on left bank 350 ft upstream from intake of Moonshine ditch, 3.5 mi southwest of Joseph, and at mile 7.5.

DRAINAGE AREA.--29.6 mi².

PERIOD OF RECORD.--April to September 1915, April 1924 to September 1978. Monthly discharge only for some periods, published in WSP 1317.

GAGE.--Water-stage recorder. Altitude of gage is 4,500 ft, by barometer. Apr. 27 to Sept. 3, 1915, nonrecording gage at site 250 ft downstream at different datum. Apr. 23, 1924, to June 13, 1933, water-stage recorder at site 150 ft downstream at different datum.

REMARKS.--No regulation or diversion above station.

AVERAGE DISCHARGE.--54 years, 74.3 ft³/s, 34.09 in/yr, 53,830 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,110 ft³/s June 9, 1948, gage height, 3.55 ft; maximum gage height, 6.94 ft June 4, 1977, backwater from debris; minimum discharge, 2.8 ft³/s Mar. 2, 1955, result of ice jam upstream; minimum daily, 6.0 ft³/s Jan. 6, Apr. 13, 1945.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1925-78

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	16	96	33	14	.44	3.7
NOVEMBER	13	69	31	13	.41	3.5
DECEMBER	11	67	27	11	.42	3.0
JANUARY	10	44	22	7.7	.35	2.5
FEBRUARY	10	37	20	6.9	.34	2.3
MARCH	9.0	42	20	6.4	.33	2.2
APRIL	14	111	46	23	.49	5.2
MAY	64	292	165	57	.34	18.6
JUNE	116	439	266	79	.30	29.9
JULY	41	355	164	72	.44	18.4
AUGUST	25	113	60	22	.36	6.7
SEPTEMBER	20	62	36	9.5	.27	4.0
ANNUAL	37	103	74	16	.21	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1926-78

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	13	9.9	8.4	7.2	6.0	5.3
3	14	10	8.9	7.7	6.5	5.8
7	14	11	9.3	8.1	6.9	6.1
14	15	11	9.8	8.5	7.2	6.4
30	16	13	11	9.7	8.4	7.6
60	18	14	12	11	9.3	8.5
90	19	15	13	11	9.9	9.0
120	21	16	14	12	11	9.7
183	24	19	16	15	13	12

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1925-78

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
402	548	738	858	1010	1110	1220
WEIGHTED SKEW = -.129						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1925-78

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	436	561	635	722	782	838
3	407	522	590	669	724	775
7	369	474	535	606	655	701
15	327	418	471	530	571	608
30	293	365	403	443	469	492
60	247	301	328	355	372	386
90	204	246	267	287	298	308

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1925-78

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
285	210	157	113	81	61	42	33	28	24	23	21	19	16	14

GRANDE RONDE RIVER BASIN

13330000 LOSTINE RIVER NEAR LOSTINE, OR

LOCATION.--Lat 45°26'20", long 117°25'35", in NW¼ sec.34, T.1 S., R.43 E., Wallowa County, Hydrologic Unit 17060105, on left bank 3.5 mi south of Lostine and at mile 10.0.

DRAINAGE AREA.--70.9 mi².

PERIOD OF RECORD.--August 1912 to March 1914, April to September 1915, July 1925 to September 1982. Monthly discharge only for some periods, published in WSP 1317.

GAGE.--Water-stage recorder. Altitude of gage is 3,650 ft, by barometer. See WSP 1317 or 1737 for history of changes prior to Dec. 16, 1953. Dec. 16, 1953, to Aug. 23, 1977, at datum 1.04 ft higher.

REMARKS.--Minam Lake, capacity 440 acre-ft, has stored and diverted flow from Minam River since 1917 for irrigation in Lostine River basin. Diversions for irrigation above station.

AVERAGE DISCHARGE.--58 years (water years 1913, 1926-82), 196 ft³/s, 142,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,550 ft³/s June 16, 1974, gage height, 8.59 ft, present datum; minimum, 7.5 ft³/s Mar. 2, 1966, result of freezeup; minimum daily, 10 ft³/s Nov. 28-30, 1936.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1913-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- TION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	18	291	58	45	.77	2.5
NOVEMBER	15	226	64	45	.70	2.7
DECEMBER	15	212	60	39	.65	2.6
JANUARY	15	158	49	27	.54	2.1
FEBRUARY	15	117	46	22	.47	2.0
MARCH	16	155	53	23	.44	2.2
APRIL	36	393	158	79	.50	6.8
MAY	203	909	525	162	.31	22.4
JUNE	332	1427	805	258	.32	34.4
JULY	60	913	385	207	.54	16.5
AUGUST	31	180	85	39	.45	3.7
SEPTEMBER	23	104	50	19	.38	2.1
ANNUAL	91	288	196	43	.22	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1914-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	23	18	15	14	12	11
3	24	19	16	14	12	11
7	26	20	17	15	13	12
14	27	21	18	16	14	13
30	30	23	20	17	15	14
60	34	25	22	19	17	15
90	37	27	23	20	17	15
120	41	29	24	20	17	15
183	47	32	27	23	20	18

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1913-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1280	1570	1930	2150	2400	2580	2750
WEIGHTED SKEW = -.055						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1913-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SEC- UTIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1360	1700	1890	2120	2280	2430
3	1280	1600	1780	1990	2130	2260
7	1150	1460	1640	1860	2010	2150
15	1010	1290	1460	1660	1810	1950
30	903	1130	1250	1400	1490	1580
60	738	893	975	1060	1120	1160
90	596	715	774	836	871	902

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1913-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
866	614	439	295	196	138	85	64	52	43	40	36	32	28	24

GRANDE RONDE RIVER BASIN

69

13330500 BEAR CREEK NEAR WALLOWA, OR

LOCATION.--Lat 45°31'37", long 117°33'05", in NW1/4 sec.34, T.1 N., R.42 E., Wallowa County, Hydrologic Unit 17060105, on right bank 30 ft downstream from road bridge, 3.0 mi southwest of Wallowa, and at mile 4.4.

DRAINAGE AREA.--68 mi², approximately.

PERIOD OF RECORD.--April to September 1915, April 1924 to September 1982. Monthly discharge only for some periods, published in WSP 1317.

GAGE.--Water-stage recorder. Altitude of gage is 3,250 ft, by barometer. Apr. 13 to Sept. 16, 1915, nonrecording gage at site 1.0 mi upstream at different datum. Apr. 22, 1924, to Nov. 2, 1931, water-stage recorder at site 1.5 mi upstream at different datum.

REMARKS.--No regulation. Diversions for irrigation above station. Water for irrigation in Lostine River basin diverted from Little Bear Creek, a tributary above station, in sec.32, T.1 S., R.43 E.

AVERAGE DISCHARGE.--58 years (water years 1925-82), 114 ft³/s, 82,590 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,730 ft³/s June 15, 1974; maximum gage height, 3.82 ft Apr. 22, 1936 (from floodmark); minimum daily discharge, 3 ft³/s Jan. 20, Feb. 1, 1937.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1925-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	7.6	160	25	29	1.13	1.9
NOVEMBER	8.2	220	40	37	.92	2.9
DECEMBER	7.3	194	50	41	.82	3.7
JANUARY	5.2	136	43	30	.70	3.1
FEBRUARY	4.5	147	47	31	.66	3.4
MARCH	11	186	65	33	.51	4.7
APRIL	50	422	171	74	.43	12.5
MAY	138	682	374	102	.27	27.3
JUNE	112	869	402	160	.40	29.4
JULY	19	388	116	80	.69	8.5
AUGUST	8.1	38	19	8.0	.42	1.4
SEPTEMBER	6.3	44	16	8.5	.55	1.1
ANNUAL	46	178	114	27	.24	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1926-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	9.3	7.0	6.0	5.1	4.3	3.8
3	9.3	7.2	6.2	5.5	4.7	4.2
7	9.6	7.4	6.4	5.7	4.9	4.5
14	10	7.8	6.7	5.9	5.1	4.6
30	11	8.4	7.3	6.5	5.6	5.1
60	12	9.2	8.0	7.1	6.2	5.7
90	14	10	9.0	8.1	7.2	6.8
120	17	12	10	8.8	7.6	7.0
183	25	16	13	10	8.3	7.2

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1925-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
685	907	1200	1380	1610	1780	1950
WEIGHTED SKEW = -.022						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1925-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	750	982	1130	1330	1470	1610
3	693	898	1030	1210	1340	1470
7	621	805	929	1090	1210	1330
15	540	696	799	929	1030	1130
30	484	610	686	776	839	899
60	407	495	542	592	625	653
90	336	403	435	467	486	503

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1925-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME															
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%	
477	352	259	187	133	96	60	42	29	21	18	16	13	11	9.0	

GRANDE RONDE RIVER BASIN

13331500 MINAM RIVER AT MINAM, OR

LOCATION.--Lat 45°37'12", long 117°43'32", in SW¼SW¼ sec.29, T.2 N., R.41 E., Wallowa County, Hydrologic Unit 17060105, on left bank 2.3 mi downstream from Squaw Creek, 0.3 mi west of Minam, and at mile 0.3.

DRAINAGE AREA.--240 mi², approximately.

PERIOD OF RECORD.--June 1912 to March 1914, September 1965 to September 1982. Monthly discharge only for some periods, published in WSP 1317.

GAGE.--Water-stage recorder. Datum of gage is 2,540.48 ft National Geodetic Vertical Datum of 1929. June 1912 to March 1914, nonrecording gage at approximately same site at different datum.

REMARKS.--No regulation or diversion above station.

AVERAGE DISCHARGE.--18 years, 476 ft³/s, 26.93 in/yr, 344,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,260 ft³/s June 16, 1974, gage height, 6.89 ft; maximum gage height, 7.3 ft May 28, 1913, datum then in use; minimum discharge, 10 ft³/s Dec. 6, 1972, Jan. 10, 1973, result of freezeup.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1966-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	65	173	96	28	.29	1.7
NOVEMBER	62	493	155	115	.74	2.8
DECEMBER	62	604	215	155	.72	3.8
JANUARY	60	412	228	116	.51	4.1
FEBRUARY	57	504	246	131	.53	4.4
MARCH	67	672	297	132	.46	5.1
APRIL	235	862	464	182	.39	8.3
MAY	484	2016	1289	342	.27	23.0
JUNE	668	3125	1702	666	.39	30.3
JULY	125	1392	680	371	.55	12.1
AUGUST	73	257	154	61	.40	2.7
SEPTEMBER	53	180	99	31	.31	1.8
ANNUAL	189	713	468	134	.29	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1967-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	52	32	23	16	--	--
3	57	37	27	20	--	--
7	62	42	32	24	--	--
14	63	48	41	36	--	--
30	69	57	53	50	--	--
60	77	63	58	55	--	--
90	84	68	62	58	--	--
120	94	74	67	61	--	--
183	135	100	86	75	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1966-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
2400	3190	4260	4970	5860	--	--
WEIGHTED SKEW = .083						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1966-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SEC- UTIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2750	3650	4260	5040	--	--
3	2570	3420	4020	4820	--	--
7	2350	3140	3680	4400	--	--
15	2060	2760	3210	3760	--	--
30	1890	2420	2700	2990	--	--
60	1600	2000	2190	2360	--	--
90	1300	1620	1750	1870	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1966-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1860	1350	991	713	529	417	285	210	156	117	103	91	81	72	61

GRANDE RONDE RIVER BASIN

71

13332500 GRANDE RONDE RIVER AT RONDOWA, OR

LOCATION.--Lat 45°43'36", long 117°46'59", in SW¼NW¼ sec.23, T.3 N., R.40 E., Wallowa County, Hydrologic Unit 17060106, on right bank at Rondowa, 500 ft downstream from Wallowa River, 13 mi northeast of Elgin, and at mile 81.4.

DRAINAGE AREA.--2,555 mi².

PERIOD OF RECORD.--October 1926 to September 1982.

GAGE.--Water-stage recorder. Datum of gage is 2,281.87 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Flow slightly regulated by Wallowa Lake and small reservoirs. Diversions for irrigation above station, chiefly in vicinity of La Grande, Enterprise, and Wallowa; one transbasin diversion from Sheep Creek in Imnaha River basin for irrigation in Wallowa Valley.

AVERAGE DISCHARGE.--56 years, 2,158 ft³/s, 1,563,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,700 ft³/s Jan. 30, 1965, gage height, 10.93 ft; minimum, 179 ft³/s Aug. 24, 1977.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1927-82

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1928-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	343	1978	641	266	.41	2.5
NOVEMBER	342	3346	858	491	.57	3.3
DECEMBER	358	3942	1256	858	.68	4.8
JANUARY	298	3554	1326	845	.64	5.1
FEBRUARY	395	5029	1791	1055	.59	6.9
MARCH	611	7600	2674	1215	.45	10.3
APRIL	1498	8089	4274	1540	.36	16.5
MAY	1965	10010	5576	1795	.32	21.5
JUNE	1561	9662	4709	1914	.41	18.1
JULY	345	4692	1712	933	.54	6.6
AUGUST	269	1098	589	210	.36	2.3
SEPTEMBER	318	933	543	151	.28	2.1
ANNUAL	855	3416	2160	608	.28	100

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	378	306	269	240	209	190
3	391	318	280	250	217	197
7	408	331	291	258	223	201
14	428	348	306	271	234	210
30	455	368	323	286	248	223
60	490	398	353	318	281	257
90	524	426	382	348	314	293
120	561	455	410	378	346	327
183	720	544	472	421	371	341

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1927-82MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1927-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
7080	9650	13000	15100	17700	19500	21400

WEIGHTED SKEW = -.138

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	9060	12300	14300	16800	18500	20100
3	8520	11400	13200	15300	16700	18100
7	7890	10400	11900	13600	14700	15700
15	7060	9220	10500	11800	12700	13500
30	6280	8170	9230	10400	11200	11900
60	5650	7190	7990	8820	9330	9770
90	5020	6350	7030	7720	8140	8500

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1927-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
7000	5490	4430	3710	3110	2540	1700	1140	811	651	597	552	508	456	388

GRANDE RONDE RIVER BASIN

13333000 GRANDE RONDE RIVER AT TROY, OR

LOCATION.--Lat 45°56'47", long 117°26'54", in NE¼NW¼ sec.4, T.5 N., R.43 E., Wallowa County, Hydrologic Unit 17060106, on left bank 500 ft downstream from bridge at Troy, 600 ft downstream from Wenaha River, and at mile 45.2.

DRAINAGE AREA.--3,275 mi².

PERIOD OF RECORD.--August 1944 to September 1982. Monthly discharge only August 1944, published in WSP 1317.

GAGE.--Water-stage recorder. Datum of gage is 1,585.98 ft National Geodetic Vertical Datum of 1929. Aug. 17, 1944, to Sept. 30, 1949, nonrecording gage at site 500 ft upstream at datum 10.85 ft lower. Oct. 1, 1949, to Sept. 5, 1963, water-stage recorder at site 500 ft upstream at datum 1.15 ft higher.

REMARKS.--Flow slightly regulated by Wallowa Lake and small reservoirs. Diversions for irrigation above station, chiefly in vicinity of La Grande, Enterprise, and Wallowa; one transbasin diversion from Big Sheep Creek and tributaries in Imnaha River basin for irrigation in Wallowa Valley.

AVERAGE DISCHARGE.--38 years, 3,125 ft³/s, 2,264,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,200 ft³/s Dec. 23, 1964, gage height, 11.25 ft; minimum, 344 ft³/s Aug. 19-21, 23, 1977.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1945-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	603	2559	915	320	.35	2.4
NOVEMBER	688	3023	1239	519	.42	3.3
DECEMBER	685	6295	2158	1544	.72	5.7
JANUARY	702	6280	2273	1363	.60	6.1
FEBRUARY	769	7386	3095	1612	.52	8.2
MARCH	888	11520	3893	1855	.48	10.4
APRIL	2257	10780	6335	2251	.36	16.9
MAY	2368	13820	7656	2496	.33	20.4
JUNE	2159	11610	6035	2112	.35	16.1
JULY	520	4951	2291	990	.43	6.1
AUGUST	448	1375	873	219	.25	2.3
SEPTEMBER	574	1190	798	140	.18	2.1
ANNUAL	1136	4912	3125	816	.26	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1946-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	617	527	475	431	382	--
3	634	542	488	443	391	--
7	654	562	506	458	403	--
14	677	582	526	478	423	--
30	707	607	548	499	443	--
60	756	656	601	556	504	--
90	789	691	644	608	569	--
120	833	734	695	670	646	--
183	1110	911	827	767	706	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1945-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%

10600 15200 21500 25700 30800 34600 --

WEIGHTED SKEW = -.141

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1945-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%

1	13900	19500	23100	27400	30600	--
3	12700	17100	19800	22900	25100	--
7	11400	14800	16700	18600	19800	--
15	9940	12500	13700	14900	15700	--
30	8650	10900	12000	13100	13700	--
60	7720	9740	10700	11600	12100	--
90	7020	8800	9600	10300	10700	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1945-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
9480	7650	6380	5410	4570	3750	2560	1740	1220	971	892	834	777	720	652

LOWER COLUMBIA RIVER BASIN

73

WALLA WALLA RIVER BASIN

14010000 SOUTH FORK WALLA WALLA RIVER NEAR MILTON, OR

LOCATION.--Lat 45°49'48", long 118°10'08", in NE¼NE¼ sec.15, T.4 N., R.37 E., Umatilla County, Hydrologic Unit 17070102, on right bank 1.0 mi downstream from Elbow Creek, 13 mi southeast of Milton, and at mile 59.1.

DRAINAGE AREA.--63 mi², approximately.

PERIOD OF RECORD.--February to October 1903, August 1906 to November 1917, May 1931 to September 1982. Monthly discharge only for some periods, published in WSP 1318. Published as "12 mi above Milton" 1903 and as "above Pacific Power & Light Co.'s intake near Milton" 1907-10.

GAGE.--Water-stage recorder. Altitude of gage is 2,050 ft, from river-profile map. Prior to Mar. 23, 1934, water-stage recorder or nonrecording gage at several sites within 1.5 mi of present site at various datums.

REMARKS.--No regulation or diversion above station.

AVERAGE DISCHARGE.--61 years (water years 1908-17, 1932-82), 178 ft³/s, 38.37 in/yr, 129,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,530 ft³/s Jan. 29, 1965, gage height, 5.60 ft; minimum, 72 ft³/s Feb 14, 1932.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage about 6 ft Mar. 31, 1931, present site and datum.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1907-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	84	180	111	19	.17	5.2
NOVEMBER	89	245	135	34	.25	6.3
DECEMBER	93	376	171	66	.38	8.0
JANUARY	92	378	175	60	.34	8.2
FEBRUARY	102	326	188	54	.29	8.8
MARCH	111	399	213	52	.24	10.0
APRIL	147	458	282	60	.21	13.3
MAY	123	569	306	86	.28	14.4
JUNE	110	484	206	77	.37	9.7
JULY	85	193	124	22	.17	5.8
AUGUST	81	143	108	14	.13	5.1
SEPTEMBER	82	151	107	14	.13	5.0
ANNUAL	123	255	177	28	.16	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1908-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	98	89	84	81	78	76
3	99	89	85	82	78	76
7	99	90	86	83	79	77
14	100	91	86	83	80	78
30	102	92	88	84	81	79
60	103	94	89	86	82	80
90	105	95	90	87	83	81
120	107	97	92	89	86	83
183	117	105	100	96	93	90

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1908-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
550	802	1220	1540	2000	2380	2800
WEIGHTED SKEW = .357						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1908-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	627	886	1090	1380	1620	1890
3	539	715	841	1010	1140	1280
7	455	580	661	764	840	916
15	392	481	533	594	636	676
30	347	421	465	516	551	584
60	311	373	408	448	476	501
90	284	336	365	398	421	441

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1908-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
385	310	269	237	213	193	161	141	126	116	111	107	102	98	92

WALLA WALLA RIVER BASIN

14010500 SOUTH FORK WALLA WALLA RIVER BELOW PACIFIC POWER & LIGHT CO.'S PLANT, NEAR MILTON, OR

LOCATION.--Lat 45°53'00", long 118°16'25", in SE¼NW¼ sec.26, T.5 N., R.36 E., Umatilla County, Hydrologic Unit 17070102, 800 ft downstream from Pacific Power & Light Co. powerplant, 1.2 mi upstream from intake of Milton city powerplant, 2 mi upstream from confluence with North Fork, and 5.8 mi southeast of Milton.

DRAINAGE AREA.--80 mi², approximately. At site 1903-6, 1929-38, 81 mi², approximately.

PERIOD OF RECORD.--October 1904 to May 1906, January 1930 to September 1945.

GAGE.--Water-stage recorder. Datum of gage is 1,490.30 ft National Geodetic Vertical Datum of 1929 (Pacific Power & Light Co. benchmark). Nov. 1, 1903, to May 29, 1906, staff gage and Dec. 18, 1929, to May 26, 1938, water-stage recorder at several sites within 1.2 mi of described site at various datums.

REMARKS.--Small diversions for irrigation of about 300 acres above station. Since 1905, some diurnal fluctuation caused by powerplant above station.

COOPERATION.--Records for 1929-40, furnished by the Oregon Water Resources Department.

AVERAGE DISCHARGE.--16 years (water years 1905, 1931-45), 169 ft³/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge not determined, probably occurred during floods of May 30, 31, 1906, or Mar. 31, 1931; maximum daily discharge, 3,000 ft³/s (estimated) May 30, 1906, and Mar. 31, 1931; minimum, 1 ft³/s (regulated) June 23, 1940; minimum daily, 57 ft³/s July 22, 1930.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1904-45

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	81	180	101	23	.23	5.0
NOVEMBER	85	239	126	39	.31	6.2
DECEMBER	100	335	160	63	.39	7.9
JANUARY	92	283	158	45	.29	7.8
FEBRUARY	105	290	169	45	.27	8.4
MARCH	149	360	237	56	.24	11.7
APRIL	152	547	316	96	.30	15.6
MAY	123	447	289	90	.31	14.3
JUNE	97	349	180	64	.36	8.9
JULY	78	143	104	19	.18	5.2
AUGUST	74	119	89	11	.13	4.4
SEPTEMBER	75	114	90	11	.12	4.5
ANNUAL	129	230	169	26	.16	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1905-45

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	82	72	67	63	--	--
3	82	73	69	66	--	--
7	83	75	71	69	--	--
14	84	77	74	71	--	--
30	86	78	75	72	--	--
60	87	80	76	74	--	--
90	89	81	78	75	--	--
120	91	83	80	77	--	--
183	103	92	87	83	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1904-45

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
535	759	1090	1330	1640	--	--
WEIGHTED SKEW = .124						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1904-45

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	637	1040	1450	2220	--	--
3	561	817	1040	1400	--	--
7	486	663	788	952	--	--
15	423	551	631	726	--	--
30	373	464	515	572	--	--
60	332	398	431	466	--	--
90	300	356	385	415	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1904-45

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
386	314	270	235	206	183	148	128	113	101	97	93	90	86	80

14010800 NORTH FORK WALLA WALLA RIVER NEAR MILTON-FREEWATER, OR

LOCATION.--Lat 45°53'06", long 118°11'06", in SE¼NW¼ sec.28, T.5 N., R.37 E., Umatilla County, Hydrologic Unit 17070102, on right bank 2.8 mi downstream from Little Meadow Canyon, 8.9 mi southeast of Milton-Freewater, and at mile 5.6.

DRAINAGE AREA.--34.4 mi².

PERIOD OF RECORD.--October 1969 to September 1982.

GAGE.--Water-stage recorder. Altitude of gage is 1,940 ft, from topographic map.

REMARKS.--No regulation or diversion above station.

AVERAGE DISCHARGE.--13 years, 54.3 ft³/s, 21.44 in/yr, 39,340 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,040 ft³/s Jan. 25, 1975, gage height, 6.58 ft, from rating curve extended above 400 ft³/s on basis of discharge measurement at gage height 5.67 ft and slope-area measurement at gage height 6.30 ft; minimum, 3.9 ft³/s July 19-21, 1979.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1970-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	6.3	16	9.4	2.5	.26	1.4
NOVEMBER	8.3	86	26	24	.92	4.0
DECEMBER	11	170	62	47	.75	9.5
JANUARY	12	175	82	51	.62	12.5
FEBRUARY	15	181	85	41	.49	12.9
MARCH	43	236	96	52	.54	14.6
APRIL	55	222	119	42	.35	18.2
MAY	26	198	102	56	.55	15.6
JUNE	11	136	45	41	.91	6.8
JULY	6.7	21	13	4.7	.36	2.0
AUGUST	5.8	11	9.3	1.8	.21	1.3
SEPTEMBER	4.7	10	7.7	1.7	.22	1.2
ANNUAL	22	95	54	19	.35	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1971-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	6.4	5.2	4.6	4.2	--	--
3	6.5	5.2	4.6	4.2	--	--
7	6.5	5.3	4.8	4.3	--	--
14	6.6	5.5	4.9	4.5	--	--
30	6.9	5.7	5.1	4.7	--	--
60	7.4	6.1	5.5	5.0	--	--
90	7.9	6.6	5.9	5.4	--	--
120	8.7	7.3	6.6	6.1	--	--
183	13	9.9	8.8	8.1	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1970-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
349	536	795	956	1180	--	--
WEIGHTED SKEW = -.285						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1970-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	393	549	645	761	--	--
3	338	441	496	555	--	--
7	278	360	402	445	--	--
15	223	288	318	344	--	--
30	161	214	244	276	--	--
60	128	171	195	219	--	--
90	116	158	181	207	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1970-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
202	147	113	92	74	59	39	26	16	11	9.6	8.6	7.9	7.2	6.4

WALLA WALLA RIVER BASIN

14011000 NORTH FORK WALLA WALLA RIVER NEAR MILTON, OR

LOCATION.--Lat 45°54'08", long 118°16'55", in NE¼NW¼ sec.23, T.5 N., R.36 E., Umatilla County, Hydrologic Unit 17070102, on right bank 5 mi southeast of Milton, and at mile 1.2.

DRAINAGE AREA.--43.8 mi².

PERIOD OF RECORD.--January 1930 to October 1969. Monthly discharge only for some periods, published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 1,467 ft National Geodetic Vertical Datum of 1929 (levels by U.S.G.S. National Mapping Division). Prior to Oct. 23, 1948, at several sites 0.7 mi downstream at various datums. Oct. 23, 1948 to Mar. 4, 1968, at site 200 ft downstream at same datum.

REMARKS.--No regulation. Diversions above station for irrigation.

AVERAGE DISCHARGE.--39 years, 47.3 ft³/s, 34,270 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,050 ft³/s Jan. 30, 1965, gage height, 8.05 ft; minimum, 0.90 ft³/s Aug. 17, 1955, Aug. 28, 29, 1961.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1931-69

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	5.2	38	11	7.6	.70	1.9
NOVEMBER	7.2	107	27	20	.76	4.7
DECEMBER	9.0	195	52	42	.82	9.1
JANUARY	6.9	171	57	38	.66	10.0
FEBRUARY	13	143	66	34	.52	11.6
MARCH	25	230	82	38	.47	14.4
APRIL	24	204	120	39	.32	21.1
MAY	9.6	249	97	49	.51	17.1
JUNE	4.4	170	41	35	.85	7.2
JULY	2.3	28	7.9	6.0	.77	1.4
AUGUST	1.9	7.8	3.5	1.4	.40	.6
SEPTEMBER	2.1	26	5.3	3.8	.71	.9
ANNUAL	25	87	47	14	.29	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1932-69

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	2.1	1.5	1.2	1.0	.8	--
3	2.2	1.6	1.3	1.1	1.0	--
7	2.5	1.8	1.5	1.3	1.1	--
14	2.7	2.0	1.7	1.5	1.4	--
30	2.9	2.2	1.9	1.8	1.6	--
60	3.4	2.6	2.2	2.0	1.7	--
90	4.2	3.1	2.6	2.3	1.9	--
120	5.4	4.0	3.5	3.1	2.7	--
183	11	7.2	5.8	4.9	4.1	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1931-69

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
309	492	814	1080	1470	1800	--
WEIGHTED SKEW = .282						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1931-69

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	368	596	811	1180	1530	--
3	292	448	600	867	1140	--
7	223	318	406	554	695	--
15	180	243	290	356	410	--
30	150	194	222	258	284	--
60	127	160	180	202	216	--
90	110	139	155	173	185	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1931-69

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
169	124	99	81	67	54	35	23	14	8.4	6.8	5.8	4.6	3.5	2.6

UMATILLA RIVER BASIN

77

14020000 UMATILLA RIVER ABOVE MEACHAM CREEK, NEAR GIBBON, OR

LOCATION.--Lat 45°43'11", long 118°19'20", in SE¼SW¼ sec.21, T.3 N., R.36 E., Umatilla County, Hydrologic Unit 17070103, Umatilla Indian Reservation, on right bank 0.8 mi downstream from Ryan Creek, 2.2 mi upstream from Meacham Creek, 2.5 mi northeast of Gibbon, and at mile 83.1.

DRAINAGE AREA.--131 mi².

PERIOD OF RECORD.--April 1933 to September 1982.

GAGE.--Water-stage recorder. Datum of gage is 1,854.81 ft National Geodetic Vertical Datum of 1929. Prior to June 27, 1939, at site 1 mi downstream at datum 43.94 ft lower.

REMARKS.--No regulation or diversion above station.

AVERAGE DISCHARGE.--49 years, 227 ft³/s, 23.53 in/yr, 164,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,930 ft³/s Jan. 25, 1975, gage height, 9.18 ft, from rating curve extended above 3,500 ft³/s; maximum gage height, 9.50 ft Jan. 29, 1965; minimum discharge, 16 ft³/s Nov. 9, 1965, momentary regulation from unknown source.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1934-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- TION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	39	169	59	25	.42	2.2
NOVEMBER	40	405	125	81	.64	4.6
DECEMBER	44	716	250	175	.70	9.1
JANUARY	46	656	267	163	.61	9.8
FEBRUARY	72	910	316	170	.54	11.5
MARCH	189	989	370	149	.40	13.5
APRIL	162	885	540	177	.33	19.7
MAY	67	1135	450	205	.46	16.4
JUNE	54	591	197	114	.58	7.2
JULY	40	110	66	19	.28	2.4
AUGUST	37	63	48	6.1	.13	1.8
SEPTEMBER	35	82	48	8.3	.17	1.7
ANNUAL	114	415	227	59	.26	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1935-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	42	37	34	32	29	27
3	42	37	35	32	30	28
7	42	38	35	33	31	29
14	43	39	37	35	32	31
30	44	40	38	36	34	32
60	46	42	40	38	35	34
90	48	43	41	39	37	36
120	51	45	43	41	39	37
183	71	56	50	45	41	38

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1934-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1400	2000	2910	3570	4480	5210	5970
WEIGHTED SKEW = .221						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1934-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1640	2410	3010	3870	4600	5390
3	1340	1860	2240	2750	3150	3580
7	1040	1420	1680	2020	2280	2550
15	852	1090	1220	1350	1440	1520
30	687	865	963	1070	1140	1200
60	570	706	773	839	878	911
90	502	617	673	728	760	787

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1934-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
756	556	441	366	306	252	175	123	78	58	53	50	48	46	42

14021000 UMATILLA RIVER AT PENDLETON, OR

LOCATION.--Lat 45°40'20", long 118°47'30", in NW¼NE¼ sec.10, T.2 N., R.32 E., Umatilla County, Hydrologic Unit 17070103, on wingwall 0.3 mi downstream from Main Street bridge at Pendleton, 1.5 mi downstream from Wildhorse Creek, 2.8 mi upstream from McKay Creek, and at mile 55.2.

DRAINAGE AREA.--637 mi².

PERIOD OF RECORD.--February 1891 to July 1892, May 1903 to June 1905 (gage heights and discharge measurements only June to December 1904), October 1934 to September 1982. Monthly discharge only February 1891 to July 1992, published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 1,054.3 ft National Geodetic Vertical Datum of 1929 (levels by Oregon Department of Transportation). Apr. 24 to Aug. 26, 1959, nonrecording gage and Aug. 27, 1959, to Feb. 4, 1965, water-stage recorder at 8th Street Bridge 0.7 mi upstream at 1,067.01 ft National Geodetic Vertical Datum of 1929. Feb. 5 to Nov. 18, 1965, nonrecording gage at Main Street Bridge 1,600 ft upstream at different datum. Nov. 19, 1965, to Sept. 30, 1969, water-stage recorder at 8th Street Bridge 0.7 mi upstream at 1,067.60 ft National Geodetic Vertical Datum of 1929. Nov. 19, 1965, to Mar. 28, 1967, and Mar. 29, 1967, to Sept. 30, 1969 at 1,064.02 ft National Geodetic Vertical Datum of 1929. See WSP 1738 for history of changes prior to Apr. 24, 1959.

REMARKS.--No regulation. Many diversions for irrigation above station.

AVERAGE DISCHARGE.--48 years (water years 1935-82), 503 ft³/s, 364,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,500 ft³/s Jan. 30, 1965, gage height, 9.40 ft, datum then in use; minimum, 10 ft³/s July 13-16, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 17,000 ft³/s Dec. 14, 1882 (date and discharge from data furnished by Corps of Engineers). Flood of May 30, 31, 1906, reached a stage of 11.0 ft, 1934-58 site and datum, but before channel was improved, discharge, 15,500 ft³/s, estimated by Corps of Engineers.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1935-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	37	246	74	42	.58	1.2
NOVEMBER	52	845	227	182	.80	3.7
DECEMBER	69	1786	581	456	.78	9.6
JANUARY	70	2088	658	477	.72	10.9
FEBRUARY	107	2375	843	455	.54	13.9
MARCH	410	2672	1003	465	.46	16.6
APRIL	299	2347	1321	469	.36	21.8
MAY	198	2519	876	458	.52	14.5
JUNE	64	892	319	199	.62	5.3
JULY	19	189	76	36	.48	1.2
AUGUST	17	76	38	12	.31	.6
SEPTEMBER	23	85	45	12	.28	.7
ANNUAL	190	934	503	157	.31	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1936-82

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	27	21	17	15	13	11
3	29	22	18	16	13	11
7	30	24	20	18	15	13
14	32	25	22	19	16	15
30	33	27	23	21	19	17
60	38	30	26	23	20	18
90	43	34	30	27	24	22
120	50	40	36	33	29	27
183	95	66	54	46	39	35

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1935-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
3430	5350	8510	10900	14400	17300	20400
WEIGHTED SKEW = .167						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1935-82

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	4240	6480	8200	10600	12700	14900
3	3420	4940	6040	7550	8750	10000
7	2610	3670	4420	5430	6210	7030
15	2070	2770	3200	3710	4060	4390
30	1680	2190	2470	2770	2960	3130
60	1380	1780	1980	2180	2310	2410
90	1200	1540	1710	1880	1990	2070

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1935-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1840	1330	1050	861	709	577	370	224	116	70	61	53	45	39	31

UMATILLA RIVER BASIN

79

14022000 UMATILLA RIVER ABOVE MCKAY CREEK, NEAR PENDLETON, OR

LOCATION.--Lat 45°40'20", long 118°50'00", in NE¼ sec.8, T.2 N., R.32 E., Umatilla County, Hydrologic Unit 17070103, 0.2 mi upstream from McKay Creek and 2 mi west of Pendleton.

DRAINAGE AREA.--700 mi², approximately.

PERIOD OF RECORD.--January 1923 to September 1934.

GAGE.--Water-stage recorder. Datum of gage is 997.68 ft National Geodetic Vertical Datum of 1929. May 8 to Oct. 12, 1921, staff gage, and Oct. 13, 1921, to Mar. 3, 1923, water-stage recorder, 200 ft downstream at different datum. Mar. 6, 1923, to Sept. 30, 1930, at about described datum, and Oct. 1, 1930, to Mar. 31, 1931, at datum about 2.0 ft higher.

REMARKS.--Many diversions for irrigation above station. Slight regulation caused by mills upstream.

AVERAGE DISCHARGE.--11 years (water years 1924-34), 451 ft³/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,500 ft³/s (estimated), Apr. 1, 1931; minimum, 7 ft³/s Aug. 14, 1924, gage height, 1.87 ft.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1924-34

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1925-34

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	47	451	100	119	1.19	1.8
NOVEMBER	57	1466	293	406	1.39	5.4
DECEMBER	79	886	413	280	.68	7.6
JANUARY	85	1532	564	433	.77	10.3
FEBRUARY	164	1494	767	416	.54	14.1
MARCH	510	2470	1125	497	.44	20.6
APRIL	452	2022	1199	516	.43	22.0
MAY	104	1680	660	494	.75	12.1
JUNE	50	631	223	179	.80	4.1
JULY	23	77	44	19	.43	.8
AUGUST	14	32	24	5.5	.23	.4
SEPTEMBER	27	129	46	29	.63	.8
ANNUAL	293	746	453	154	.34	100

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	18	15	13	11	--	--
3	19	16	14	13	--	--
7	20	17	15	14	--	--
14	22	18	16	14	--	--
30	24	20	17	15	--	--
60	28	23	20	18	--	--
90	33	27	25	23	--	--
120	38	33	32	32	--	--
183	66	50	46	44	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1924-34MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1924-34

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
3470	5190	9050	10300	--	--	--
WEIGHTED SKEW = .310						

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	3640	5110	6440	--	--	--
3	3110	4230	5210	--	--	--
7	2590	3360	3890	--	--	--
15	1970	2560	2960	--	--	--
30	1470	1930	2290	--	--	--
60	1200	1560	1850	--	--	--
90	1080	1370	1620	--	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1924-34

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1740	1250	960	787	636	502	312	155	91	60	51	43	34	27	22

14022500 MCKAY CREEK NEAR PILOT ROCK, OR

LOCATION.--Lat 45°32'57", long 118°46'24", in NW¼SE¼ sec.23, T.1 N., R.32 E., Umatilla County, Hydrologic Unit 17070103, on left bank 500 ft upstream from county road bridge, 5.5 mi northeast of Pilot Rock, and at mile 8.2.

DRAINAGE AREA.--180 mi².

PERIOD OF RECORD.--May to August 1921, October 1926 to June 1928, December 1928 to July 1929, October 1929 to September 1982.
Monthly discharge only for some periods, published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 1,343.60 ft National Geodetic Vertical Datum of 1929. See WSP 1318 or 1738 for history of changes prior to Apr. 9, 1941. Apr. 9, 1941, to July 24, 1963, at site 1,000 ft downstream at datum 7.92 ft lower.

REMARKS.--No regulation. Many small diversions for irrigation above station.

AVERAGE DISCHARGE.--54 years (water years 1927, 1930-82), 101 ft³/s, 73,170 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,400 ft³/s Jan. 30, 1965, gage height, 8.40 ft; no flow at times.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1927-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	0.0	97	7.2	17	2.32	.6
NOVEMBER	.5	257	40	53	1.33	3.3
DECEMBER	3.8	460	119	109	.92	9.7
JANUARY	5.0	716	161	140	.87	13.2
FEBRUARY	11	502	192	113	.59	15.7
MARCH	67	757	261	130	.50	21.3
APRIL	42	782	278	135	.49	22.7
MAY	8.4	500	121	97	.80	9.9
JUNE	1.0	173	37	46	1.26	3.0
JULY	0.0	45	4.6	7.1	1.55	.4
AUGUST	0.0	3.7	.7	.9	1.27	.1
SEPTEMBER	0.0	28	1.8	4.1	2.25	.1
ANNUAL	27	188	101	40	.39	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1928-82

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	.3	.1	.1	0.0	0.0	0.0
3	.3	.1	.1	.1	0.0	0.0
7	.3	.1	.1	.1	.1	0.0
14	.4	.2	.1	.1	.1	.1
30	.4	.2	.1	.1	.1	.1
60	.6	.3	.2	.1	.1	.1
90	1.0	.4	.3	.2	.1	.1
120	1.5	.5	.4	.3	.1	.1
183	7.0	2.5	1.4	.8	.4	.3

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1927-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25	2	5	10	25	50	100
80%	50%	20%	10%	4%	2%	1%
775	1350	2380	3210	4440	5480	6630
WEIGHTED SKEW =		.071				

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1927-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	1040	1700	2190	2880	3440	4030
3	829	1330	1720	2300	2790	3330
7	630	958	1200	1530	1800	2080
15	477	697	846	1040	1180	1320
30	382	535	627	731	802	868
60	313	430	494	559	600	635
90	268	364	415	467	498	525

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1927-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
434	302	225	172	134	103	58	25	9.2	3.6	2.2	1.2	.6	.2	0.0

UMATILLA RIVER BASIN

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14025000 BIRCH CREEK AT RIETH, OR

LOCATION.--Lat 45°39'10", long 118°52'45", in SE¼ sec.13, T.2 N., R.31 E., Umatilla County, Hydrologic Unit 17070103, on right bank 600 ft downstream from road bridge, 0.3 mi southwest of Rieth, and at mile 0.2.

DRAINAGE AREA.--291 mi².

PERIOD OF RECORD.--May to August 1921, March to July 1922, April to September 1923, April to September 1927, January to June 1928, November 1928 to August 1929, October 1929 to September 1976. Monthly discharge only for some periods, published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 951.04 ft National Geodetic Vertical Datum of 1929. See WSP 1738 for history of changes prior to July 24, 1957.

REMARKS.--No regulation. Many diversions for irrigation above station.

AVERAGE DISCHARGE.--47 years (water years 1930-76), 48.9 ft³/s, 35,430 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,200 ft³/s Jan. 30, 1965, gage height, 6.40 ft; no flow at times.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1930-76

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	0.0	48	3.6	7.6	2.14	.6
NOVEMBER	0.0	96	15	19	1.28	2.5
DECEMBER	0.0	172	44	48	1.08	7.5
FEBRUARY	12	268	79	58	.74	13.3
MARCH	18	355	106	61	.57	18.0
APRIL	3.3	315	155	76	.49	26.3
MAY	.1	434	97	88	.91	16.4
JUNE	0.0	161	25	33	1.31	4.3
JULY	0.0	27	1.6	4.2	2.60	.3
AUGUST	0.0	5.4	.3	.8	2.67	.1
SEPTEMBER	0.0	9.5	.7	2.0	2.93	.1
ANNUAL	11	109	49	26	.54	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1931-76

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	0.0	0.0	0.0	0.0	0.0	0.0
3	.1	.1	0.0	0.0	0.0	0.0
7	.1	.1	.1	0.0	0.0	0.0
30	.1	.1	.1	.1	0.0	0.0
60	.1	.1	.1	.1	.1	0.0
90	.2	.1	.1	.1	.1	.1
120	.5	.2	.1	.1	.1	.1
183	3.3	.8	.3	.1	.1	.1

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1930-76

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
293	536	976	1330	1850	2290	2780

WEIGHTED SKEW = -.029

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1930-76

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SEC- UTIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	412	692	906	1210	1450	1710
3	351	559	710	914	1070	1240
7	294	457	570	719	832	948
15	238	357	436	535	608	680
30	192	281	334	397	439	478
60	152	222	262	307	337	364
90	128	188	223	261	287	309

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1930-76

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
216	152	113	87	66	48	23	13	3.1	.3	.2	.1	.1	0.0	0.0

UMATILLA RIVER BASIN

14026000 UMATILLA RIVER AT YOAKUM, OR

LOCATION.--Lat 45°40'38", long 119°02'09", in SW¼SW¼ sec.2, T.2 N., R.30 E., Umatilla County, Hydrologic Unit 17070103, at left bank on downstream side of highway bridge, 0.5 mi northeast of Yoakum, 2.5 mi downstream from abandoned Furnish Reservoir, 12.0 mi downstream from Birch Creek, and at mile 37.7.

DRAINAGE AREA.--1,280 mi², approximately.

PERIOD OF RECORD.--May 1903 to September 1982. Records published as "above Furnish Reservoir, near Yoakum" October 1916 to September 1934 are equivalent.

GAGE.--Water-stage recorder. Datum of gage is 768.21 ft National Geodetic Vertical Datum of 1929. See WSP 1318 or 1738 for history of changes prior to Oct. 21, 1948.

REMARKS.--Slight regulation by Furnish Reservoir 1910-34, capacity, 3,900 acre-ft prior to filling with silt. Flow regulated to some extent since 1927 by McKay Reservoir. Many diversions for irrigation above station.

AVERAGE DISCHARGE.--79 years, 675 ft³/s, 489,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft³/s May 30, 1906, gage height, about 15.0 ft, site and datum then in use, from floodmarks, from rating curve extended above 6,600 ft³/s; minimum, 12 ft³/s Aug. 10-12, 1908, Aug. 4, 1910.

STATISTICAL SUMMARIES (BEFORE THE CONSTRUCTION OF MCKAY RESERVOIR)

MONTHLY AND ANNUAL MEAN DISCHARGES 1904-26

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	40	224	91	50	.55	1.1
NOVEMBER	58	827	263	210	.80	3.1
DECEMBER	107	1362	580	425	.73	6.8
JANUARY	123	2761	772	621	.80	9.1
FEBRUARY	273	2878	1154	785	.68	13.5
MARCH	450	3581	1640	828	.50	19.2
APRIL	843	4636	2177	1074	.49	25.5
MAY	230	4786	1266	1027	.81	14.8
JUNE	48	1622	411	413	1.00	4.8
JULY	20	255	85	60	.70	1.0
AUGUST	19	109	40	22	.54	.5
SEPTEMBER	30	92	49	16	.31	.6
ANNUAL	340	1140	707	242	.34	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1905-26

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	25	18	15	13	--	--
3	26	19	16	14	--	--
7	27	20	17	14	--	--
14	28	21	18	16	--	--
30	31	23	20	18	--	--
60	37	29	26	23	--	--
90	44	35	31	29	--	--
120	54	42	37	34	--	--
183	102	72	61	53	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1904-26

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
4150	6470	10100	12800	16500	--	--
WEIGHTED SKEW = .038						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1904-26

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	5790	8990	11400	14700	--	--
3	4950	7260	8830	10900	--	--
7	4160	5670	6570	7600	--	--
15	3340	4480	5100	5770	--	--
30	2690	3710	4350	5110	--	--
60	2120	2970	3530	4230	--	--
90	1840	2500	2920	3440	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1904-26

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
2970	2060	1510	1160	889	695	415	241	134	87	68	56	46	38	28

UMATILLA RIVER BASIN

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14026000 UMATILLA RIVER AT YOAKUM, OR--Continued

STATISTICAL SUMMARIES (AFTER THE COMPLETION OF MCKAY RESERVOIR)

MONTHLY AND ANNUAL MEAN DISCHARGES 1928-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	44	455	97	72	.74	1.2
NOVEMBER	59	1539	265	256	.97	3.3
DECEMBER	76	2054	628	512	.82	7.9
JANUARY	82	2284	755	559	.74	9.5
FEBRUARY	115	3057	956	573	.60	12.0
MARCH	413	3654	1249	627	.50	15.6
APRIL	358	3334	1661	678	.41	20.8
MAY	256	3445	1072	600	.56	13.4
JUNE	244	1220	485	195	.40	6.1
JULY	211	456	352	64	.18	4.4
AUGUST	123	416	304	74	.24	3.8
SEPTEMBER	22	305	163	75	.46	2.0
ANNUAL	248	1237	664	218	.33	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1929-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	47	33	27	23	18	16
3	48	35	28	23	19	16
7	51	36	30	25	20	17
14	54	38	31	26	21	18
30	62	44	37	31	25	22
60	83	58	48	41	34	30
90	117	81	66	56	45	39
120	156	109	88	73	58	50
183	223	168	143	125	106	95

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1928-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	4750	7110	8890	11400	13400	15700
3	3880	5610	6910	8720	10200	11800
7	3050	4350	5290	6560	7580	8650
15	2500	3420	3990	4680	5160	5630
30	2000	2740	3180	3710	4070	4420
60	1660	2240	2580	2940	3190	3400
90	1450	1920	2190	2470	2650	2810

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1928-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
2300	1640	1280	1020	819	651	454	376	316	248	202	146	103	79	58

UMATILLA RIVER BASIN

14032000 BUTTER CREEK NEAR PINE CITY, OR

LOCATION.--Lat 45°32'48", long 119°18'14", in SE¼SW¼ sec.22, T.1 N., R.28 E., Morrow County, Hydrologic Unit 17070103, on right bank 0.3 mi downstream from Mattlock Canyon, 6.0 mi southeast of Pine City, 15 mi southwest of Echo, and at mile 28.4.

DRAINAGE AREA.--291 mi².

PERIOD OF RECORD.--April to June 1928, November 1928 to June 1929, October 1929 to September 1930, January 1931 to September 1932, February to June 1933, October 1933 to September 1941, January to June 1942, October 1942 to September 1982. Prior to October 1945, monthly discharge only, published in WSP 1318.

GAGE.--Water-stage recorder. Altitude of gage is 1,400 ft, by barometer. Prior to Oct. 1, 1944, at datum 1.1 ft higher and Oct. 1, 1944, to Sept. 6, 1949, at datum 1.0 ft higher.

REMARKS.--No regulation. Several small diversions for irrigation above station. Water is diverted into headwaters of Butter Creek from Fivemile Creek, a tributary of Camas Creek in John Day River basin, for irrigation below station.

AVERAGE DISCHARGE.--50 years (water years 1930, 1932, 1934-41, 1943-82), 26.4 ft³/s, 19,130 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,800 ft³/s Feb. 21, 1949, gage height, 12.4 ft, present datum, from floodmark, from rating curve extended above 440 ft³/s on basis of computation of peak flow over dam; no flow at times.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1930-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	0.0	6.8	2.1	1.9	.91	.7
NOVEMBER	0.0	48	6.9	8.6	1.24	2.2
DECEMBER	0.0	142	22	31	1.38	7.0
JANUARY	0.0	259	36	46	1.28	11.3
FEBRUARY	3.0	148	50	41	.81	15.8
MARCH	7.8	151	65	36	.54	20.5
APRIL	4.5	148	73	34	.47	22.9
MAY	.9	128	45	30	.66	14.0
JUNE	0.0	54	14	11	.83	4.3
JULY	0.0	13	2.7	3.1	1.15	.9
AUGUST	0.0	5.1	.7	1.1	1.55	.2
SEPTEMBER	0.0	6.7	.9	1.4	1.50	.3
ANNUAL	5.1	64	26	15	.56	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1932-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.4	.1	0.0	0.0	0.0	0.0
3	.4	.1	.1	0.0	0.0	0.0
7	.4	.1	.1	.1	0.0	0.0
14	.4	.1	.1	.1	.1	0.0
30	.5	.2	.1	.1	.1	0.0
60	.6	.2	.1	.1	.1	.1
90	.8	.3	.1	.1	.1	.1
120	1.4	.5	.2	.1	.1	.1
183	3.8	1.4	.6	.3	.1	.1

NOTE: LOW-FLOW STATISTICS UNCERTAIN DUE TO EXCESSIVE ZERO EVENTS.

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1930-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
182	310	578	830	1260	1670	2190
WEIGHTED SKEW = .544						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1930-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	207	376	541	833	1130	1500
3	169	302	426	632	830	1070
7	138	237	317	437	540	654
15	114	184	233	297	346	395
30	94	145	178	217	244	269
60	78	120	146	175	194	212
90	66	103	126	152	170	186

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1930-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
112	81	61	47	35	25	13	7.3	4.5	2.0	1.0	.5	.1	0.0	0.0

UMATILLA RIVER BASIN

85

14033500 UMATILLA RIVER NEAR UMATILLA, OR

LOCATION.--Lat 45°54'11", long 119°19'33", in SW¼NW¼ sec.21, T.5 N., R.28 E., Umatilla County, Hydrologic Unit 17070103, on left bank 1.6 mi downstream from West Division main canal of Umatilla project, 1.2 mi southeast of Umatilla, and at mile 2.1.

DRAINAGE AREA.--2,290 mi², approximately.

PERIOD OF RECORD.--November 1903 to September 1982.

GAGE.--Water-stage recorder. Datum of gage is 330.47 ft National Geodetic Vertical Datum of 1929. Oct. 21, 1903 to Jan. 25, 1931, nonrecording gage.

REMARKS.--Some regulation since 1927 by McKay Reservoir. Many diversions above station for irrigation of lands above and below station; Brownell Canal diverts below station. Diversions since 1908 to Cold Springs Reservoir, an off-channel reservoir, capacity, 52,380 acre-ft.

AVERAGE DISCHARGE.--55 years (water years 1928-82), 451 ft³/s, 326,700 acre-ft/yr. Water years prior to 1928 not included in computation of average discharge owing to increased regulation and diversion since 1927.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,800 ft³/s Jan. 30, 1965, gage height, 10.75 ft; no flow at times.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1929-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	4.2	331	77	65	.85	1.4
NOVEMBER	40	878	226	157	.69	4.2
DECEMBER	79	1948	551	472	.86	10.3
JANUARY	89	2366	689	562	.82	12.9
FEBRUARY	87	2994	898	612	.68	16.8
MARCH	154	3678	1028	645	.63	19.2
APRIL	4.6	3056	1134	698	.62	21.2
MAY	1.6	3362	560	581	1.04	10.5
JUNE	1.3	805	111	167	1.50	2.1
JULY	1.3	149	21	21	.99	.4
AUGUST	1.3	68	23	17	.75	.4
SEPTEMBER	1.3	124	35	29	.85	.6
ANNUAL	78	981	443	210	.47	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW BASED ON PERIOD OF RECORD 1930-82

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3.5	1.4	.8	.5	.3	.2
3	3.8	1.5	.9	.6	.3	.2
7	5.2	2.2	1.3	.8	.5	.3
14	6.8	2.9	1.7	1.0	.5	.3
30	9.5	4.2	2.6	1.7	1.0	.6
60	14	6.3	3.9	2.5	1.5	1.0
90	19	9.0	5.6	3.7	2.1	1.5
120	23	11	6.6	4.2	2.4	1.6
183	52	21	12	7.1	3.7	2.3

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW BASED ON PERIOD OF RECORD 1929-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
2930	4460	7200	9500	13000	16100	19700
WEIGHTED SKEW = .488						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW BASED ON PERIOD OF RECORD 1929-82

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	4190	6620	8550	11400	13700	16400
3	3510	5390	6830	8880	10600	12400
7	2760	4160	5180	6540	7610	8730
15	2140	3150	3810	4600	5170	5720
30	1690	2440	2860	3310	3600	3860
60	1320	1910	2240	2600	2830	3030
90	1130	1630	1900	2200	2380	2540

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1929-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1960	1280	947	729	552	409	218	133	69	25	17	13	9.6	7.1	4.1

WILLOW CREEK BASIN

14034500 WILLOW CREEK AT HEPPNER, OR

LOCATION.--Lat 45°21'02", long 119°32'56", in SE¼NW¼ sec.35, T.2 S., R.26 E., Morrow County, Hydrologic Unit 17070104, on right bank at Heppner, 100 ft upstream from Court Street bridge, 800 ft southeast of Morrow County courthouse, 0.3 mi downstream from Balm Fork and at mile 52.2.

DRAINAGE AREA.--96.8 mi², revised.

PERIOD OF RECORD.--May 1951 to September 1982.

GAGE.--Water-stage recorder. Datum of gage is 1,952.73 ft National Geodetic Vertical Datum of 1929.

REMARKS.--No regulation. Many diversions for irrigation above station. Part of flow of Ditch Creek (John Day River basin) is diverted to Willow Creek above station.

AVERAGE DISCHARGE.--31 years, 19.1 ft³/s, 13,840 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 812 ft³/s May 10, 1957, gage height, 6.15 ft, from rating curve extended above 230 ft³/s; maximum gage height, 6.46 ft May 25, 1971, backwater from Shobe Canyon; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, about 36,000 ft³/s June 14, 1903, result of slope-area measurement (see WSP 96). Discharge for flood of Feb. 22, 1949, was 1,700 ft³/s, result of slope-area measurement.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1952-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	0.0	8.3	1.6	1.6	1.04	.7
NOVEMBER	1.4	27	5.8	4.5	.78	2.5
DECEMBER	2.0	82	18	20	1.11	8.0
JANUARY	1.7	102	29	27	.96	12.4
FEBRUARY	1.2	89	32	23	.72	13.9
MARCH	6.6	83	38	23	.60	16.7
APRIL	3.6	127	49	28	.56	21.3
MAY	1.0	120	40	26	.66	17.5
JUNE	.9	41	13	9.6	.73	5.7
JULY	.1	7.0	2.3	1.8	.80	1.0
AUGUST	0.0	1.2	.3	.2	.86	.1
SEPTEMBER	0.0	3.6	.4	.7	1.66	.2
ANNUAL	2.6	37	19	9.8	.51	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1953-82

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.1	0.0	0.0	0.0	0.0	--
3	.1	0.0	0.0	0.0	0.0	--
7	.1	0.0	0.0	0.0	0.0	--
14	.1	0.0	0.0	0.0	0.0	--
30	.1	0.0	0.0	0.0	0.0	--
60	.2	.1	0.0	0.0	0.0	--
90	.3	.1	.1	0.0	0.0	--
120	.7	.3	.2	.1	0.0	--
183	2.3	1.2	.8	.6	.4	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1952-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
85	185	385	556	810	1030	--
WEIGHTED SKEW = -.216						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1952-82

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	151	268	344	434	495	--
3	132	229	290	361	407	--
7	106	179	222	271	303	--
15	82	134	165	199	220	--
30	66	103	123	144	156	--
60	54	84	99	114	122	--
90	47	72	84	96	102	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1952-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
77	55	42	34	27	20	11	6.6	4.1	1.8	.9	.5	.3	.1	.1

WILLOW CREEK BASIN

87

14034800 RHEA CREEK NEAR HEPPNER, OR

LOCATION.--Lat 45°15'41", long 119°37'02", in NE¼SE¼ sec.31, T.3 S., R.26 E., Morrow County, Hydrologic Unit 17070104, on right bank 1.0 mi downstream from Sanford Canyon, 8 mi southwest of Heppner, and at mile 25.4.

DRAINAGE AREA.--120 mi², approximately.

PERIOD OF RECORD.--August 1960 to September 1982.

GAGE.--Water-stage recorder. Altitude of gage is 2,320 ft, from topographic map. Prior to May 28, 1976, at site 0.4 mi downstream at different datum.

REMARKS.--No regulation. Many diversions for irrigation above station.

AVERAGE DISCHARGE.--22 years, 19.8 ft³/s, 14,350 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,280 ft³/s June 10, 1969, gage height, 7.05 ft, site and datum then in use, from rating curve extended above 130 ft³/s on basis of slope-area measurement at gage height 6.72 ft; maximum gage height, 7.41 ft Dec. 22, 1964, site and datum then in use; no flow at times.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1961-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	.8	5.0	2.5	1.1	.43	1.0
NOVEMBER	2.5	49	7.5	9.6	1.28	3.1
DECEMBER	2.9	87	22	24	1.10	9.3
JANUARY	3.2	124	39	35	.92	16.1
FEBRUARY	3.2	116	42	32	.76	17.4
MARCH	7.2	104	43	28	.64	18.1
APRIL	4.7	138	43	32	.76	17.9
MAY	2.4	77	27	22	.81	11.4
JUNE	.7	37	9.1	8.2	.90	3.8
JULY	.1	6.9	2.3	2.0	.89	.9
AUGUST	0.0	2.9	.9	.9	.96	.4
SEPTEMBER	.2	3.7	1.3	1.0	.73	.5
ANNUAL	3.6	41	20	11	.56	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1962-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	--	--	--	--	--	--
3	--	--	--	--	--	--
7	.2	0.0	0.0	0.0	--	--
14	.2	.1	0.0	0.0	--	--
30	.4	.2	.1	.1	--	--
60	.6	.2	.1	.1	--	--
90	.9	.3	.2	.1	--	--
120	1.3	.7	.5	.3	--	--
183	2.2	1.4	1.1	1.0	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1961-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
113	283	666	1020	1560	--	--

WEIGHTED SKEW = -.266

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1961-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SEC- UTIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	208	415	567	762	--	--
3	170	327	439	581	--	--
7	127	242	326	436	--	--
15	93	168	219	281	--	--
30	69	121	154	192	--	--
60	53	92	117	147	--	--
90	46	80	101	125	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1961-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
82	55	40	30	23	18	10	6.1	3.9	2.6	2.0	1.5	1.0	.5	.1

WILLOW CREEK BASIN

14036000 WILLOW CREEK NEAR ARLINGTON, OR

LOCATION.--Lat 45°45'12", long 120°00'35", In NE¼SW¼ sec.12, T.3 N., R.22 E., Gilliam County, Hydrologic Unit 17070104, on right bank at bridge on abandoned highway, 3.8 mi downstream from Eightmile Canyon, 10 mi east of Arlington, and at mile 3.7.

DRAINAGE AREA.--850 mi², approximately.

PERIOD OF RECORD.--March to July 1906, August 1960 to September 1979. Records for March to August 1905 at site just upstream from Eightmile Canyon not equivalent owing to diversions and inflow.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 291.26 ft National Geodetic Vertical Datum of 1929. Mar. 1 to July 21, 1906, nonrecording gage at site 2.6 mi upstream at different datum. Aug. 24, 1960 to July 1, 1964, water-stage recorder at site 430 ft downstream at same datum.

REMARKS.--No regulation. Many diversions for irrigation above station.

AVERAGE DISCHARGE.--19 years, 31.3 ft³/s, 22,680 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,900 ft³/s probably occurred Jan. 14, 1974, gage height, 11.18 ft, from floodmark, from rating curve extended above 1,900 ft³/s on basis of slope-area measurement at gage height 11.05 ft; maximum gage height, 13.50 ft Feb. 7, 1979, from floodmarks; no flow at times.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1961-79

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	0.0	2.8	.7	.7	.99	.2
NOVEMBER	.1	86	6.6	19	2.94	1.7
DECEMBER	.6	311	41	82	1.99	10.9
JANUARY	.7	478	84	124	1.47	22.3
FEBRUARY	.5	430	73	103	1.41	19.3
MARCH	.1	130	50	50	1.02	13.1
APRIL	0.0	211	63	65	1.04	16.5
MAY	0.0	194	47	57	1.22	12.3
JUNE	0.0	76	10	18	1.75	2.7
JULY	0.0	10	1.3	2.4	1.84	.3
AUGUST	0.0	12	1.7	3.5	2.01	.5
SEPTEMBER	0.0	3.3	.7	.9	1.33	.2
ANNUAL	.4	93	31	29	.92	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1962-79

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	--	--	--	--	--	--
3	--	--	--	--	--	--
7	--	--	--	--	--	--
14	0.0	0.0	0.0	0.0	--	--
30	.1	.1	0.0	0.0	--	--
60	.2	.1	0.0	0.0	--	--
90	.3	.1	.1	0.0	--	--
120	.4	.2	.1	.1	--	--
183	.9	.4	.2	.2	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1961-79

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
204	986	4510	9760	21900	--	--
WEIGHTED SKEW = -.130						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1961-79

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	357	1610	3160	5970	--	--
3	262	995	1750	2910	--	--
7	194	663	1090	1680	--	--
15	148	460	702	990	--	--
30	107	303	444	600	--	--
60	78	218	319	432	--	--
90	61	172	256	353	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1961-79

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME													
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	95%
147	82	55	37	24	13	3.9	1.6	.7	.3	.2	.1	0.0	0.0

JOHN DAY RIVER BASIN

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14037500 STRAWBERRY CREEK ABOVE SLIDE CREEK, NEAR PRAIRIE CITY, OR

LOCATION.--Lat 44°20'30", long 118°39'20", in SE¼NW¼ sec.20, T.14 S., R.34 E., Grant County, Hydrologic Unit 17070201, on left bank 100 ft upstream from Slide Creek, 8.5 mi south of Prairie City, and at mile 9.0.

DRAINAGE AREA.--7.00 mi².

PERIOD OF RECORD.--October 1930 to September 1982. Prior to October 1944, published as "above South Fork, near Prairie City."

GAGE.--Water-stage recorder and log control. Datum of gage is 4,909.57 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Flow affected by natural storage in Strawberry Lake. No diversion above station.

AVERAGE DISCHARGE.--52 years, 12.8 ft³/s, 24.83 in/yr, 9,270 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 274 ft³/s June 14, 1974, gage height, 2.20 ft, from rating curve extended above 190 ft³/s; maximum gage height, 3.23 ft May 24, 1956 (backwater from logs); minimum discharge, 1.0 ft³/s Mar. 20, 1955.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1931-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1.4	7.0	3.2	1.0	.32	2.1
NOVEMBER	1.7	11	3.6	1.7	.47	2.3
DECEMBER	1.6	14	4.2	2.6	.62	2.7
JANUARY	1.7	8.4	3.7	1.7	.47	2.4
FEBRUARY	1.5	13	3.5	2.1	.59	2.3
MARCH	1.3	7.9	3.5	1.5	.43	2.3
APRIL	1.9	23	9.1	4.7	.52	5.9
MAY	9.6	71	37	14	.38	24.0
JUNE	16	130	54	21	.40	34.9
JULY	6.7	55	21	11	.54	13.7
AUGUST	2.8	15	7.3	2.4	.32	4.8
SEPTEMBER	1.6	7.0	4.0	1.1	.27	2.6
ANNUAL	4.8	22	13	3.4	.27	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1932-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	2.0	1.6	1.4	1.3	1.2	1.1
3	2.0	1.6	1.5	1.3	1.2	1.1
7	2.1	1.6	1.5	1.3	1.2	1.1
14	2.1	1.7	1.5	1.4	1.3	1.2
30	2.3	1.8	1.6	1.5	1.3	1.3
60	2.5	2.0	1.8	1.6	1.5	1.4
90	2.7	2.1	1.9	1.7	1.6	1.5
120	2.9	2.3	2.0	1.8	1.7	1.6
183	3.2	2.5	2.2	2.0	1.8	1.6

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1931-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
61	87	125	151	184	209	235

WEIGHTED SKEW = -.017

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1931-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	83	114	135	160	178	195
3	80	109	127	150	166	181
7	74	101	117	138	152	166
15	67	90	104	121	133	144
30	59	78	89	101	109	117
60	48	61	68	74	79	82
90	38	48	53	58	61	64

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1931-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
57	39	27	18	13	9.0	6.1	4.5	3.8	3.3	3.0	2.8	2.5	2.3	1.9

14038500 JOHN DAY RIVER AT PRAIRIE CITY, OR

LOCATION.--Lat 44°27'15", long 118°43'00", in SE¼NE¼ sec.10, T.13 S., R.33 E., Grant County, Hydrologic Unit 17070201, on right bank 600 ft upstream from outlet of Prairie power canal, 0.3 mi downstream from Oixie Creek, 0.8 mi southwest of Prairie City, and at mile 262.0.

DRAINAGE AREA.--231 mi².

PERIOD OF RECORD.--October 1916 to September 1917 (gage heights only), March 1925 to September 1968. Monthly discharge only March 1925 published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 3,494.59 ft National Geodetic Vertical Datum of 1929. Prior to Mar. 30, 1926, staff gage at site 600 ft downstream, just below outlet of Prairie power canal, at different datum. Mar. 30, 1926, to Aug. 23, 1943, staff gage at various sites and datums just above outlet of Prairie power canal. Aug. 24, 1943, to Sept. 22, 1965, water-stage recorder at datum 2.07 ft higher. Sept. 23, 1965, to July 27, 1966, water-stage recorder at present site and datum.

REMARKS.--No regulation. Several diversions upstream including Prairie power canal (not used for power since February 1952) which diverts above station in SE¼ sec.7, T.13 S., R.34 E., for irrigation above and below station.

AVERAGE DISCHARGE.--27 years (water years 1926-52), 113 ft³/s, including flow of Prairie power canal, 81,810 acre-ft/yr; 15 years (water years 1953-68), 114 ft³/s, river only, 82,530 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,400 ft³/s Dec. 22, 1964, gage height, 8.07 ft, present datum, from rating curve extended above 1,400 ft³/s; minimum, 2 ft³/s Dec. 8, 21, 22, 1932, Aug. 10, 1934.

STATISTICAL SUMMARIES (RIVER DISCHARGE ONLY DURING POWER CANAL DIVERSION)

MONTHLY AND ANNUAL MEAN DISCHARGES 1926-52

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	8.7	108	43	27	.62	4.0
NOVEMBER	6.5	124	51	29	.57	4.8
DECEMBER	8.4	163	65	38	.58	6.2
JANUARY	13	220	65	45	.70	6.2
FEBRUARY	12	174	85	43	.51	8.0
MARCH	27	310	139	74	.53	13.1
APRIL	45	377	188	82	.44	17.8
MAY	39	531	203	115	.57	19.2
JUNE	22	392	136	98	.72	12.9
JULY	9.5	87	34	19	.57	3.2
AUGUST	4.0	48	20	12	.59	1.9
SEPTEMBER	11	77	29	18	.63	2.7
ANNUAL	42	162	90	34	.37	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1927-52

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	8.5	5.2	4.1	3.5	2.9	--
3	9.3	5.6	4.4	3.7	3.1	--
7	9.8	5.9	4.7	3.9	3.3	--
14	11	6.6	5.2	4.3	3.5	--
30	13	7.9	6.2	5.2	4.3	--
60	17	11	8.4	7.0	5.7	--
90	20	12	9.8	8.1	6.7	--
120	23	14	11	8.7	6.9	--
183	33	20	15	12	9.1	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1926-52

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT							
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%	
329	540	921	1240	1720	2140	--	
WEIGHTED SKEW = .276							

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1926-52

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	461	744	975	1320	1620	--
3	375	606	796	1080	1330	--
7	327	512	659	871	1050	--
15	287	431	535	676	787	--
30	250	364	439	533	601	--
60	217	310	370	443	496	--
90	189	269	320	383	428	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1926-52

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
287	219	174	139	115	96	74	60	46	32	25	20	16	13	9.5

JOHN DAY RIVER BASIN

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14038500 JOHN DAY RIVER AT PRAIRIE CITY, OR--Continued

STATISTICAL SUMMARIES (POWER CANAL ABANDONED)

MONTHLY AND ANNUAL MEAN DISCHARGES 1953-68

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	45	102	68	14	.20	5.0
NOVEMBER	62	90	75	8.0	.11	5.4
DECEMBER	62	274	103	55	.53	7.5
JANUARY	64	316	109	64	.58	7.9
FEBRUARY	65	264	137	64	.47	10.0
MARCH	82	293	144	57	.39	10.5
APRIL	79	359	199	80	.40	14.5
MAY	65	438	223	112	.50	16.2
JUNE	72	315	185	67	.36	13.5
JULY	24	105	59	24	.41	4.3
AUGUST	19	81	34	15	.43	2.5
SEPTEMBER	27	67	39	10	.26	2.9
ANNUAL	73	192	114	35	.31	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1954-68

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	15	10	8.7	7.4	--	--
3	16	11	9.4	8.1	--	--
7	17	13	11	10	--	--
14	20	15	13	12	--	--
30	26	20	17	16	--	--
60	32	27	25	23	--	--
90	39	32	29	27	--	--
120	48	40	36	33	--	--
183	59	51	47	44	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORDDISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1953-68DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	434	683	908	1280	--	--
3	393	596	774	1060	--	--
7	366	520	634	794	--	--
15	310	425	506	613	--	--
30	264	361	424	503	--	--
60	226	310	364	432	--	--
90	205	277	324	381	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1953-68

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
322	239	188	158	137	120	97	82	73	64	60	51	41	32	24

JOHN DAY RIVER BASIN

14038530 JOHN DAY RIVER NEAR JOHN DAY, OR

LOCATION.--Lat 44°25'07", long 118°54'19", in SW¼SE¼ sec.19, T.13 S., R.32 E., Grant County, Hydrologic Unit 17070201, on left bank 1,200 ft downstream from Dog Creek, 2.5 mi east of John Day, and at mile 250.8.

DRAINAGE AREA.--386 mi².

PERIOD OF RECORD.--October 1968 to September 1982.

GAGE.--Water-stage recorder. Datum of gage is 3,130.56 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Some regulation from irrigation ditches upstream. Many diversions above station for irrigation.

AVERAGE DISCHARGE.--14 years, 207 ft³/s, 150,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,830 ft³/s June 9, 1969, gage height, 10.80 ft, from floodmark; minimum, 3.5 ft³/s Aug. 26-28, 1969.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1969-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- TION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	73	112	88	12	.13	3.5
NOVEMBER	88	244	123	42	.34	4.9
DECEMBER	92	385	167	81	.48	6.7
JANUARY	88	514	235	117	.50	9.5
FEBRUARY	89	689	245	142	.58	9.9
MARCH	89	531	279	121	.43	11.2
APRIL	88	516	317	113	.36	12.8
MAY	108	741	443	161	.36	17.8
JUNE	74	810	381	209	.55	15.3
JULY	26	314	115	75	.65	4.6
AUGUST	10	116	41	30	.71	1.7
SEPTEMBER	26	101	51	20	.39	2.1
ANNUAL	74	370	207	71	.34	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1970-82

PERIOD (CON- SEC- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	11	6.7	4.9	3.7	--	--
3	12	7.4	5.5	4.2	--	--
7	13	8.1	6.1	4.7	--	--
14	15	9.0	6.8	5.4	--	--
30	22	14	10	7.9	--	--
60	37	26	21	18	--	--
90	51	37	29	24	--	--
120	62	49	42	36	--	--
183	83	70	64	59	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1969-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1010	1670	2860	3840	5320	--	--
WEIGHTED SKEW = .231						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1969-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SEC- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1230	1800	2030	2210	--	--
3	998	1450	1640	1790	--	--
7	790	1130	1270	1380	--	--
15	649	860	932	979	--	--
30	561	721	768	796	--	--
60	468	608	653	682	--	--
90	419	550	596	628	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1969-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
626	469	387	325	276	234	174	132	108	90	82	73	60	39	23

JOHN DAY RIVER BASIN

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14040500 JOHN DAY RIVER AT PICTURE GORGE, NEAR DAYVILLE, OR

LOCATION.--Lat 44°31'15", long 119°37'30", in SW¼ sec.17, T.12 S., R.26 E., Grant County, Hydrologic Unit 17070201, on right bank 0.7 mi upstream from Rock Creek, 5.5 mi northwest of Dayville, and at mile 205.1.

DRAINAGE AREA.--1,680 mi², approximately.

PERIOD OF RECORD.--April 1926 to September 1982. Monthly discharge only April 1926, published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 2,229.84 ft National Geodetic Vertical Datum of 1929. Prior to Oct. 11, 1926, nonrecording gage and Oct. 11, 1926, to Sept. 30, 1930, water-stage recorder at same site at datum 2.50 ft higher. Oct. 1, 1930, to Aug. 28, 1970, at datum 2.00 ft higher.

REMARKS.--No regulation. Many diversions for irrigation above station.

AVERAGE DISCHARGE.--56 years, 478 ft³/s, 346,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,170 ft³/s Dec. 22, 1964, gage height, 14.97 ft; minimum, 1.0 ft³/s for several days in August and September 1930, Aug. 8, 9, 1936, Sept. 9, 1966.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1927-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	15	282	135	58	.43	2.3
NOVEMBER	75	561	220	83	.38	3.8
DECEMBER	105	1377	366	258	.70	6.4
JANUARY	97	1706	467	368	.79	8.1
FEBRUARY	136	2493	638	450	.71	11.1
MARCH	196	2380	882	450	.51	15.3
APRIL	146	3310	1204	596	.50	20.9
MAY	79	2955	1034	570	.55	18.0
JUNE	78	1899	591	371	.63	10.3
JULY	7.2	577	125	113	.90	2.2
AUGUST	1.6	213	43	45	1.06	.7
SEPTEMBER	2.6	210	56	46	.84	1.0
ANNUAL	124	1043	478	210	.44	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1928-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	13	4.5	2.5	1.5	.8	.5
3	14	4.9	2.7	1.6	.9	.6
7	15	5.4	3.1	1.8	1.0	.7
14	16	6.0	3.4	2.0	1.1	.7
30	20	7.3	4.1	2.4	1.3	.9
60	28	10	5.5	3.2	1.7	1.1
90	42	16	9.0	5.3	2.8	1.7
120	71	33	20	13	7.0	4.6
183	130	82	61	46	33	26

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1927-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1650	2680	4360	5610	7340	8720	10200
WEIGHTED SKEW = -.018						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1927-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2390	3860	4880	6200	7200	8200
3	2210	3500	4330	5320	6010	6660
7	1970	3070	3740	4500	5010	5460
15	1720	2590	3060	3560	3870	4120
30	1460	2160	2540	2940	3180	3380
60	1220	1800	2130	2470	2680	2860
90	1080	1580	1860	2150	2330	2480

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1927-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1670	1250	994	804	653	531	348	247	188	136	109	77	46	25	10

JOHN DAY RIVER BASIN

14041500 NORTH FORK JOHN DAY RIVER NEAR DALE, OR

LOCATION.--Lat 44°59'55", long 118°56'25", in SE¼SE¼ sec.35, T.6 S., R.31 E., Grant County, Hydrologic Unit 17070202, on right bank 0.2 mi downstream from Desolation Creek and 0.8 mi northeast of Dale.

DRAINAGE AREA.--525 mi².

PERIOD OF RECORD.--October 1929 to September 1958.

GAGE.--Water-stage recorder. Datum of gage is 2,775.63 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated by Olive Lake (capacity, about 5,500 acre-ft) and Upper Reservoir on Lake Creek (capacity, about 700 acre-ft). Some diurnal fluctuation at low flow caused by logging operations above station. Several small diversions for irrigation and mining above station. Since 1865 water has been diverted above station at times to North Fork Burnt River.

AVERAGE DISCHARGE.--29 years (water years 1929-58), 404 ft³/s, 292,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,170 ft³/s May 26, 1948, gage height, 10.48 ft; minimum, 6 ft³/s Nov. 3, 1936, gage height, 1.40 ft, result of freezeup; minimum daily, 10 ft³/s Nov. 11, Nov. 29 to Dec. 1, 1936, Jan. 7, 8, 1937.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1930-58

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	39	147	71	28	.39	1.5
NOVEMBER	31	274	96	48	.50	2.0
DECEMBER	37	463	145	111	.77	3.0
JANUARY	29	343	130	65	.50	2.7
FEBRUARY	35	496	178	97	.54	3.7
MARCH	83	593	276	128	.46	5.7
APRIL	198	2052	1009	457	.45	20.8
MAY	253	3296	1708	766	.45	35.2
JUNE	212	2589	906	557	.61	18.7
JULY	60	544	206	120	.58	4.2
AUGUST	28	131	69	28	.41	1.4
SEPTEMBER	31	117	56	19	.34	1.1
ANNUAL	191	682	405	139	.34	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1931-58

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	33	21	16	13	9.6	--
3	37	24	18	14	11	--
7	40	27	22	18	15	--
14	42	32	27	24	20	--
30	47	35	31	27	24	--
60	52	39	34	31	27	--
90	58	44	37	33	29	--
120	64	49	42	37	32	--
183	83	59	50	43	37	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1930-58

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT							
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%	
2030	3080	4500	5410	6530	7330	--	
WEIGHTED SKEW = -.309							

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1930-58

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2850	4090	4840	5720	6330	--
3	2690	3830	4510	5280	5800	--
7	2480	3520	4130	4800	5240	--
15	2190	3110	3640	4230	4620	--
30	1900	2670	3110	3600	3930	--
60	1520	2080	2400	2740	2970	--
90	1200	1630	1880	2160	2340	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1930-58

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1910	1210	816	575	383	278	182	128	100	78	69	61	53	46	38

14042000 CAMAS CREEK NEAR LEHMAN, OR

LOCATION.--Lat 45°10'16", Long 118°43'53", in SW 1/4 sec.33, T.4 S., R.33 E., Umatilla County, Hydrologic Unit 17070202, on left bank 2.1 mi downstream from Bowman Creek, 3.5 mi northwest of Lehman, and at mile 25.5.

DRAINAGE AREA.--60.7 mi².

PERIOD OF RECORD.--October 1950 to September 1970.

GAGE.--Water-stage recorder. Datum of gage is 3,969.53 ft National Geodetic Vertical Datum of 1929 (levels by State Highway Department).

REMARKS.--No regulation. A few small diversions for irrigation above station.

AVERAGE DISCHARGE.--20 years, 43.3 ft³/s, 31,370 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,880 ft³/s Dec. 21, 1955, gage height, 4.56 ft, from rating curve extended above 900 ft³/s; minimum, 0.23 ft³/s Aug. 24, 1966.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1951-70

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1.2	11	3.2	2.5	.78	.6
NOVEMBER	1.8	36	11	11	.99	2.0
DECEMBER	1.9	155	34	39	1.13	6.5
JANUARY	2.7	156	42	44	1.05	8.0
FEBRUARY	2.5	207	62	54	.86	11.9
MARCH	5.9	196	81	47	.58	15.5
APRIL	27	269	167	72	.43	32.0
MAY	13	203	91	51	.56	17.5
JUNE	6.4	76	23	19	.81	4.5
JULY	1.4	11	4.3	2.7	.62	.8
AUGUST	.5	2.2	1.4	.5	.32	.3
SEPTEMBER	.8	2.7	1.5	.5	.32	.3
ANNUAL	18	81	43	16	.36	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1952-70

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.8	.6	.5	.4	--	--
3	.9	.6	.5	.4	--	--
7	.9	.6	.5	.4	--	--
14	1.0	.7	.6	.5	--	--
30	1.1	.8	.7	.6	--	--
60	1.3	1.0	.9	.8	--	--
90	1.5	1.2	1.1	1.0	--	--
120	1.9	1.5	1.4	1.3	--	--
183	4.1	2.7	2.1	1.7	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1951-70

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
418	634	994	1280	1680	--	--
WEIGHTED SKEW = .279						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1951-70

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	449	690	891	1200	--	--
3	381	549	680	869	--	--
7	312	419	488	574	--	--
15	252	329	372	421	--	--
30	192	254	290	330	--	--
60	145	195	224	259	--	--
90	122	164	190	220	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1951-70

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
201	129	92	67	49	36	19	9.5	4.5	2.8	2.3	1.9	1.6	1.3	1.1

JOHN DAY RIVER BASIN

14042500 CAMAS CREEK NEAR UKIAH, OR

LOCATION.--Lat 45°09'25", long 118°49'10", in SE¼SE¼ sec.3, T.5 S., R.32 E., Umatilla County, Hydrologic Unit 17070202, on right bank 1.2 mi upstream from Cable Creek, 5.8 mi east of Ukiah, and at mile 18.7.

DRAINAGE AREA.--121 mi².

PERIOD OF RECORD.--May 1914 to September 1917, November 1919 to July 1920, November 1920 to June 1924, March 1932 to June 1940 (fragmentary), November 1940 to September 1982. Monthly discharge only for some periods, published in WSP 1318. Published as "above Cable Creek, near Ukiah" 1914-17, 1919-24.

GAGE.--Water-stage recorder. Datum of gage is 3,588.61 ft National Geodetic Vertical Datum of 1929 (levels by State Highway Department). May 1, 1914, to June 30, 1924, nonrecording gage and Mar. 1, 1932, to July 2, 1940, water-stage recorder at site 1.2 mi downstream at different datum.

REMARKS.--No regulation. Diversions for irrigation above station.

AVERAGE DISCHARGE.--46 years (water years 1915-17, 1922-23, 1942-82), 95.9 ft³/s, 69,480 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,840 ft³/s Jan. 30, 1965, gage height, 5.21 ft; maximum gage height, 5.92 ft Jan. 24, 1982 (ice jam); minimum discharge recorded, 1.0 ft³/s Aug. 9, 1932, June 24 to July 2, 1940.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1915-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	3.4	39	8.8	6.0	.68	.8
NOVEMBER	4.4	140	28	30	1.10	2.4
DECEMBER	4.7	263	67	64	.95	5.8
JANUARY	3.5	338	74	80	1.08	6.4
FEBRUARY	5.0	384	111	102	.92	9.6
MARCH	5.0	575	178	121	.68	15.4
APRIL	53	658	337	140	.42	29.2
MAY	19	925	246	162	.66	21.3
JUNE	4.9	314	80	66	.83	6.9
JULY	3.1	77	15	13	.84	1.3
AUGUST	2.2	11	5.0	1.9	.38	.4
SEPTEMBER	2.4	14	5.3	2.2	.41	.5
ANNUAL	36	171	96	34	.36	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1916-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	2.8	2.2	1.9	1.7	1.5	1.4
3	2.9	2.2	1.9	1.7	1.5	1.4
7	3.1	2.4	2.1	1.8	1.6	1.5
14	3.2	2.6	2.3	2.1	1.9	1.7
30	3.6	2.9	2.5	2.3	2.1	1.9
60	4.3	3.4	3.0	2.7	2.4	2.2
90	4.9	4.0	3.6	3.4	3.1	3.0
120	5.8	4.7	4.3	4.1	3.9	3.8
183	12	7.3	5.9	4.9	4.0	3.6

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1915-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
695	1040	1590	2010	2580	3050	3560
WEIGHTED SKEW = .184						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1915-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	819	1210	1500	1930	2290	2680
3	706	1010	1240	1550	1800	2070
7	600	831	978	1160	1280	1410
15	498	675	774	881	950	1010
30	398	553	646	755	829	899
60	316	441	517	607	670	729
90	267	369	428	496	541	583

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1915-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
434	287	210	157	116	85	46	23	13	8.1	6.8	5.8	4.9	4.1	3.3

JOHN DAY RIVER BASIN

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14044000 MIDDLE FORK JOHN DAY RIVER AT RITTER, OR

LOCATION.--Lat 44°53'20", long 119°08'25", in SW¼NW¼ sec.8, T.8 S., R.30 E., Grant County, Hydrologic Unit 17070203, on left bank 0.2 mi south of Ritter, 0.8 mi downstream from Twelvemile Creek, and at mile 14.9.

DRAINAGE AREA.--515 mi².

PERIOD OF RECORD.--October 1929 to September 1982.

GAGE.--Water-stage recorder. Datum of gage is 2,544.56 ft National Geodetic Vertical Datum of 1929.

REMARKS.--No regulation. Diversions for irrigation above station.

AVERAGE DISCHARGE.--53 years, 247 ft³/s, 179,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,730 ft³/s Jan. 30, 1965, gage height, 8.39 ft, from rating curve extended above 2,200 ft³/s; maximum gage height, 9.13 ft Feb. 1, 1963, ice jam; minimum discharge, 0.90 ft³/s Aug. 19, 20, 1966.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1930-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	17	92	42	15	.35	1.4
NOVEMBER	20	231	70	43	.61	2.4
DECEMBER	29	482	128	105	.82	4.3
JANUARY	23	580	160	141	.88	5.4
FEBRUARY	31	707	232	157	.68	7.8
MARCH	70	1214	416	212	.51	14.0
APRIL	175	1413	736	311	.42	24.8
MAY	79	1417	694	312	.45	23.4
JUNE	80	1066	353	217	.61	11.9
JULY	17	237	76	47	.61	2.6
AUGUST	3.8	74	29	17	.58	1.0
SEPTEMBER	10	71	29	12	.42	1.0
ANNUAL	85	452	247	95	.38	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1931-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	12	6.2	4.1	2.8	1.7	1.2
3	14	7.2	4.7	3.2	1.9	1.3
7	16	8.1	5.2	3.4	2.0	1.4
14	18	9.6	6.5	4.5	2.8	2.0
30	20	12	8.4	6.2	4.2	3.2
60	24	16	12	9.7	7.4	6.1
90	29	20	16	14	11	9.4
120	34	25	21	18	14	13
183	51	36	29	25	20	17

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1930-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1080	1600	2370	2900	3580	4110	4640
WEIGHTED SKEW = -.062						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1930-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1430	2120	2560	3090	3470	3830
3	1300	1880	2220	2610	2880	3120
7	1150	1610	1850	2100	2260	2390
15	1010	1410	1620	1840	1970	2080
30	878	1220	1400	1580	1700	1790
60	743	1040	1200	1370	1490	1580
90	644	885	1020	1160	1250	1320

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1930-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
972	714	545	421	327	254	154	89	60	46	40	34	29	24	17

JOHN DAY RIVER BASIN

14044500 FOX CREEK AT GORGE, NEAR FOX, OR

LOCATION.--Lat 44°37'30", long 119°15'10", in SW¼ sec.8, T.11 S., R.29 E., Grant County, Hydrologic Unit 17070202, on left bank 0.5 mi upstream from head of gorge and 6 mi southwest of Fox.

DRAINAGE AREA.--90.2 mi²; at site used prior to June 12, 1952, 91.5 mi².

PERIOD OF RECORD.--October 1930 to September 1958.

GAGE.--Water-stage recorder. Altitude of gage is 4,240 ft National Geodetic Vertical Datum of 1929 (from topographic map). Prior to June 12, 1952, at site 0.5 mi downstream at different datum.

REMARKS.--Diversions for irrigation of 4,800 acres above station.

AVERAGE DISCHARGE.--28 years (water years 1931-58), 25.9 ft³/s, 18,750 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,860 ft³/s Mar. 25, 1952, gage height, 5.85 ft, former site and datum, from rating curve extended above 200 ft³/s on basis of slope-area measurement of peak flow; no flow at times in each year.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1931-58

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	0.0	3.1	.6	.9	1.68	.2
NOVEMBER	0.0	13	2.2	3.0	1.35	.7
DECEMBER	0.0	61	10.0	15	1.45	3.2
JANUARY	.1	95	16	26	1.56	5.2
FEBRUARY	.1	130	35	34	.98	11.1
MARCH	3.0	232	75	55	.73	24.0
APRIL	1.8	180	87	44	.51	27.8
MAY	.3	293	65	59	.91	21.0
JUNE	.1	141	19	29	1.53	6.0
JULY	0.0	15	1.9	3.0	1.56	.6
AUGUST	0.0	3.1	.2	.6	2.57	.1
SEPTEMBER	0.0	1.8	.2	.5	2.29	.1
ANNUAL	1.8	67	26	16	.61	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1932-58

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	--	--	--	--	--	--
3	--	--	--	--	--	--
7	--	--	--	--	--	--
14	--	--	--	--	--	--
30	--	--	--	--	--	--
60	.1	0.0	0.0	0.0	0.0	--
90	.1	0.0	0.0	0.0	0.0	--
120	.2	.1	0.0	0.0	0.0	--
183	.7	.1	.1	0.0	0.0	--

NOTE: LOW-FLOW STATISTICS UNCERTAIN DUE TO EXCESSIVE ZERO EVENTS.

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1931-58

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
217	410	798	1140	1700	2200	--
WEIGHTED SKEW = .171						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1931-58

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	294	549	739	994	1190	--
3	238	451	613	832	1000	--
7	186	334	430	544	621	--
15	149	249	300	345	370	--
30	123	190	216	234	242	--
60	100	154	176	192	199	--
90	84	128	145	158	163	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1931-58

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
132	87	58	39	26	15	5.2	2.4	.9	.2	.1	.1	0.0	0.0	0.0

14046000 NORTH FORK JOHN DAY RIVER AT MONUMENT, OR

LOCATION.--Lat 44°48'50", long 119°25'50", in SE¼ sec.2, T.9 S., R.27 E., Grant County, Hydrologic Unit 17070202, on right bank just downstream from entrance to canyon, 0.7 mi downstream from Cottonwood Creek, 0.8 mi west of Monument, and at mile 15.3.

DRAINAGE AREA.--2,520 mi², approximately.

PERIOD OF RECORD.--March 1925 to September 1982. Monthly discharge only for some periods, published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 1,959.64 ft National Geodetic Vertical Datum of 1929. Prior to Nov. 24, 1925, nonrecording gage and Nov. 24, 1925, to Oct. 16, 1928, water-stage recorder at datum 1.10 ft higher. Oct. 17, 1928, to Sept. 30, 1930, water-stage recorder at datum 1.00 ft higher.

REMARKS.--Very slight regulation by small reservoirs upstream. Many small diversions for irrigation above station.

AVERAGE DISCHARGE.--57 years, 1,248 ft³/s, 904,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,400 ft³/s Jan. 30, 1965, gage height, 18.45 ft, from rating curve extended above 17,000 ft³/s; minimum, 6 ft³/s sometime during period Nov. 2-13, 1936 (result of freezeup); minimum daily, 17 ft³/s Dec. 12, 1932.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1929-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	59	348	154	63	.41	1.0
NOVEMBER	65	1621	305	268	.88	2.0
DECEMBER	97	3374	726	747	1.03	4.8
JANUARY	76	4126	931	913	.98	6.2
FEBRUARY	134	4970	1340	1031	.77	8.9
MARCH	345	6023	2142	1096	.51	14.2
APRIL	822	6695	3533	1426	.40	23.5
MAY	378	8794	3582	1662	.46	23.8
JUNE	326	5227	1710	993	.58	11.4
JULY	97	1211	376	235	.63	2.5
AUGUST	37	322	124	65	.52	.8
SEPTEMBER	45	278	114	49	.43	.8
ANNUAL	441	2290	1250	500	.40	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1930-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	62	39	30	24	18	15
3	65	43	34	28	22	19
7	72	50	40	33	27	23
14	79	56	45	38	30	26
30	87	61	50	42	34	29
60	100	71	59	50	41	36
90	114	83	69	59	49	43
120	132	96	80	69	58	51
183	216	140	111	91	73	63

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1929-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
5720	8930	14200	18200	23800	28400	33400
WEIGHTED SKEW = .129						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1929-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	7340	11400	14400	18600	21900	25500
3	6630	9980	12300	15300	17600	19900
7	5810	8440	10100	12100	13500	14800
15	5080	7080	8190	9390	10100	10800
30	4370	6010	6900	7830	8410	8910
60	3710	5110	5880	6680	7190	7630
90	3220	4420	5080	5790	6230	6620

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1929-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
4970	3670	2800	2190	1720	1340	812	412	251	178	152	131	111	93	71

JOHN DAY RIVER BASIN

14046500 JOHN DAY RIVER AT SERVICE CREEK, OR

LOCATION.--Lat 44°47'38", long 120°00'20", 1n NW¼NE¼ sec.18, T.9 S., R.23 E., Wheeler County, Hydrologic Unit 17070204, on left bank 0.2 mi downstream from bridge on State Highway 207, 0.8 mi downstream from Service Creek, 0.5 mi southwest of town of Service Creek, and at mile 156.7.

DRAINAGE AREA.--5,090 mi², approximately.

PERIOD OF RECORD.--March 1925 to September 1926, October 1929 to September 1982. Monthly discharge only March 1925 to September 1926, published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 1,632.42 ft National Geodetic Vertical Datum of 1929. See WSP 1738 for history of changes prior to Feb. 24, 1957.

REMARKS.--Very slight regulation by several small reservoirs above station. Many small diversions for irrigation above station.

AVERAGE DISCHARGE.--53 years, 1,863 ft³/s, 1,350,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,200 ft³/s Dec. 23, 1964, gage height, 17.85 ft, from rating curve extended above 14,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 6.0 ft³/s Aug. 23, 24, 1973.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1930-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	71	636	302	132	.44	1.3
NOVEMBER	152	2284	566	364	.64	2.5
DECEMBER	216	5540	1211	1125	.93	5.4
JANUARY	195	6335	1564	1420	.91	6.9
FEBRUARY	358	7930	2241	1625	.73	9.9
MARCH	597	9383	3331	1778	.53	14.7
APRIL	1010	9812	5136	2159	.42	22.7
MAY	491	12050	4909	2353	.48	21.7
JUNE	416	8327	2460	1485	.60	10.9
JULY	91	1850	548	382	.70	2.4
AUGUST	15	545	166	120	.72	.7
SEPTEMBER	31	492	165	99	.60	.7
ANNUAL	619	3485	1878	779	.41	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1931-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	84	43	28	19	12	8.4
3	85	44	29	20	12	8.8
7	88	46	31	21	14	10.0
14	91	49	34	24	16	12
30	102	56	39	29	20	15
60	128	73	53	40	29	23
90	167	100	74	56	41	33
120	221	140	106	83	61	50
183	385	247	190	150	113	93

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1930-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
7410	11900	19100	24200	31200	36600	42300
WEIGHTED SKEW = -.081						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1930-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	10600	16700	21100	26900	31400	36000
3	9650	15000	18700	23300	26600	30000
7	8490	12700	15400	18500	20700	22700
15	7330	10500	12200	14100	15300	16300
30	6310	8870	10200	11600	12400	13100
60	5330	7510	8680	9890	10600	11300
90	4650	6520	7530	8590	9240	9800

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1930-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
7130	5320	4110	3260	2560	2050	1280	724	482	346	288	231	176	127	78

14048000 JOHN OAY RIVER AT McDONALD FERRY, OR

LOCATION.--Lat 45°35'16", long 120°24'30", in NE¼NW¼ sec.11, T.1 N., R.19 E., Sherman County, Hydrologic Unit 17070204, on left bank at McDonald Ferry, 0.8 mi downstream from Rock Creek, 10 mi east of Klondike, and at mile 20.9.

DRAINAGE AREA.--7,580 mi², approximately.

PERIOD OF RECORD.--December 1904 to September 1982. Prior to Oct. 1, 1930, published as "at McDonald."

GAGE.--Water-stage recorder. Datum of gage is 392.27 ft National Geodetic Vertical Datum of 1929. Prior to Aug. 30, 1930, nonrecording gage at same site and datum.

REMARKS.--No regulation. Many diversions for irrigation above station.

AVERAGE DISCHARGE.--77 years (water years 1906-82), 2,036 ft³/s, 1,475,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,800 ft³/s Dec. 24, 1964, gage height, 13.59 ft, from floodmark, from rating curve extended above 11,000 ft³/s on basis of slope-area measurement of peak flow; no flow for part of Sept. 2, 1966, Aug. 15 to Sept. 16, 1973, Aug. 13, 14, 19-25, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1894 reached a stage of 12.8 ft, from floodmarks, discharge, 39,100 ft³/s, from rating curve extended above 22,000 ft³/s.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1906-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	60	657	309	131	.42	1.3
NOVEMBER	157	2310	587	375	.64	2.4
DECEMBER	221	7030	1199	1177	.98	4.9
JANUARY	217	6402	1664	1452	.87	6.8
FEBRUARY	374	8882	2549	1945	.76	10.4
MARCH	557	10260	3685	2037	.55	15.0
APRIL	964	10560	5621	2327	.41	22.9
MAY	533	13180	5176	2697	.52	21.1
JUNE	376	9531	2727	1710	.63	11.1
JULY	88	2101	644	450	.70	2.6
AUGUST	5.7	588	183	135	.74	.7
SEPTEMBER	24	523	171	107	.63	.7
ANNUAL	603	3850	2036	841	.41	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1907-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	88	40	24	15	8.2	5.4
3	89	42	26	17	10	6.9
7	93	45	28	19	11	7.8
14	111	47	30	21	12	8.2
30	113	54	34	22	13	8.5
60	144	73	47	32	19	14
90	179	103	73	54	38	29
120	233	146	110	85	63	51
183	398	262	207	169	133	112

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1906-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
7800	12100	18600	23100	28900	33300	37800
WEIGHTED SKEW = -.138						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1906-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	11200	17000	20900	25900	29500	33200
3	10300	15400	18600	22600	25300	28000
7	8980	13200	15800	18700	20700	22600
15	7820	11100	12900	14800	15900	17000
30	6710	9470	11000	12500	13500	14400
60	5730	8120	9450	10900	11700	12500
90	5040	7120	8270	9510	10300	11000

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1906-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
7890	5860	4590	3560	2850	2250	1370	776	516	376	314	254	195	137	84

DESCHUTES RIVER BASIN

14050000 DESCHUTES RIVER BELOW SNOW CREEK, NEAR LA PINE, OR

LOCATION.--Lat 43°48'51", long 121°46'33", in NW¼ sec.28, T.20 S., R.8 E., Deschutes County, Hydrologic Unit 17070301, in Deschutes National Forest, on left bank at flow line of Crane Prairie Reservoir, 20 ft downstream from Snow Creek, 300 ft upstream from highway bridge, and 17 mi northwest of La Pine.

DRAINAGE AREA.--132 mi², including Sparks, Elk, and Mud Lake basins, which have no surface outflow to Deschutes River; hydrologic drainage boundary uncertain owing to ground-water exchange.

PERIOD OF RECORD.--October 1937 to September 1982. Monthly discharge only October 1937, published in WSP 1318. Published as "near Lapine" 1937-64.

GAGE.--Water-stage recorder. Altitude of gage is 4,445 ft, from elevation of Crane Prairie Reservoir when slack water extended to gage. Prior to Sept. 10, 1938, nonrecording gage at site 450 ft downstream at different datum.

REMARKS.--No regulation. Crater Creek Canal diverts water to Tumalo Creek basin from tributaries of Soda Creek. Stream is spring fed and peak discharge may occur several months after the precipitation which caused it.

AVERAGE DISCHARGE.--45 years, 149 ft³/s, 108,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 480 ft³/s Aug. 19, 1974, gage height, 3.17 ft; maximum gage height, 4.12 ft Jan. 21, 1943 (ice jam); minimum discharge, 40 ft³/s sometime during period Dec. 22, 1959, to Mar. 2, 1960, result of freezeup; minimum daily, 55 ft³/s for many days April to June 1941.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1938-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	64	315	173	69	.40	9.7
NOVEMBER	62	236	146	51	.35	8.2
DECEMBER	62	205	131	42	.32	7.3
JANUARY	60	192	117	34	.29	6.5
FEBRUARY	61	173	106	28	.26	5.9
MARCH	59	166	99	24	.24	5.5
APRIL	59	195	103	28	.27	5.8
MAY	58	267	135	51	.38	7.5
JUNE	56	331	161	69	.43	9.0
JULY	58	419	183	87	.47	10.2
AUGUST	60	457	225	109	.48	12.6
SEPTEMBER	63	408	212	94	.44	11.8
ANNUAL	66	243	149	46	.31	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1939-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	82	71	66	61	56	53
3	83	71	66	62	57	54
7	84	72	67	63	58	54
14	85	73	68	64	59	54
30	86	75	69	65	60	54
60	94	78	71	65	60	55
90	100	81	72	66	60	55
120	106	84	74	67	60	55
183	123	93	79	70	60	55

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1938-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
178	261	355	413	481	527	570
WEIGHTED SKEW = -.440						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1938-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	261	354	402	452	482	507
3	259	352	401	451	482	508
7	257	350	399	450	481	507
15	253	346	396	448	480	508
30	246	338	389	442	475	504
60	231	320	369	424	459	490
90	213	295	343	395	430	462

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1938-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
307	260	231	209	190	173	147	126	108	95	91	88	84	81	76

DESCHUTES RIVER BASIN

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14050500 CULTUS RIVER ABOVE CULTUS CREEK, NEAR LA PINE, OR

LOCATION.--Lat 43°49'06", long 121°47'40", near line between secs.20 and 29, T.20 S., R.8 E., Deschutes County, Hydrologic Unit 17070301, Deschutes National Forest, on left bank at highway culvert, 2 mi upstream from Cultus Creek, and 18 mi northwest of La Pine.

DRAINAGE AREA.--16.5 mi², hydrologic drainage boundry uncertain owing to ground-water exchange.

PERIOD OF RECORD.--October 1922 to September 1925, October 1937 to September 1982. Monthly discharge only October 1937, published in WSP 1318. Prior to Oct. 1, 1964, published as "near Lapine."

GAGE.--Water-stage recorder and cement bag control. Altitude of gage is 4,450 ft, by barometer. Oct 1, 1922, to Sept. 30, 1925, nonrecording gage at site 0.5 mi upstream at different datum.

REMARKS.--No regulation or diversions above station.

AVERAGE DISCHARGE.--48 years, 62.3 ft³/s, 45,140 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 178 ft³/s May 31, 1956, gage height, 1.04 ft; maximum gage height, 1.32 ft May 16, 1972 (backwater from Crane Prairie Reservoir); minimum discharge, 26 ft³/s May 26-31, Nov. 23 to Dec. 4, 1959.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1923-82

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1924-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	32	93	63	18	.28	8.5
NOVEMBER	31	91	60	16	.27	8.0
DECEMBER	34	88	56	15	.26	7.5
JANUARY	32	86	53	13	.24	7.1
FEBRUARY	30	84	50	11	.22	6.7
MARCH	32	81	50	11	.21	6.7
APRIL	31	96	54	13	.24	7.2
MAY	36	142	71	24	.34	9.5
JUNE	34	136	74	23	.31	9.8
JULY	37	126	75	21	.28	10.0
AUGUST	38	117	74	20	.28	9.8
SEPTEMBER	34	103	68	18	.27	9.1
ANNUAL	36	97	62	14	.22	100

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	42	36	32	30	27	25
3	43	36	33	30	27	26
7	43	36	33	30	28	26
14	44	37	33	31	28	26
30	45	38	35	32	29	28
60	47	40	36	33	30	28
90	49	40	36	34	31	29
120	50	41	37	34	31	29
183	54	44	39	36	32	30

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1923-82

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1923-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
68	88	113	129	148	161	174
WEIGHTED SKEW = -.050						

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	87	111	126	144	157	169
3	86	110	124	142	154	166
7	85	108	122	138	150	161
15	83	105	118	133	144	154
30	81	102	114	127	137	146
60	79	97	108	120	129	136
90	77	95	106	118	126	134

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1923-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
99	92	88	82	75	70	64	59	54	50	48	46	43	41	38

DESCHUTES RIVER BASIN

14051000 CULTUS CREEK ABOVE CRANE PRAIRIE RESERVOIR, NEAR LA PINE, OR

LOCATION.--Lat 43°49'17", long 121°49'22", in SW¼ sec.19, T.20 S., R.8 E., Deschutes County, Hydrologic Unit 17070301, on left bank 1,000 ft upstream from highway bridge, 1.0 mi downstream from Cultus Lake, and 19 mi northwest of La Pine.

DRAINAGE AREA.--33.2 mi², hydrologic drainage boundary uncertain owing to ground-water exchange.

PERIOD OF RECORD.--March to September 1924 (published as "above Crane Prairie, near Lapine"), October 1937 to September 1982. Monthly discharge only October 1937 to September 1949, published in WSP 1318. Records for October 1923 to February 1924, published in WSP 594, have been found to be unreliable and should not be used. Published as "near Lapine" 1937-64.

GAGE.--Water-stage recorder. Altitude of gage is 4,545 ft, by barometer. Mar. 1 to Sept. 30, 1924, nonrecording gage at site 100 ft upstream at different datum.

REMARKS.--Some regulation by fish screens at Cultus Lake since 1962. No diversion above station.

AVERAGE DISCHARGE.--45 years (water years 1938-82), 22.6 ft³/s, 16,370 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 336 ft³/s Dec. 25, 1964, gage height, 4.15 ft, from floodmark, from rating curve extended above 90 ft³/s; no flow at times.

STATISTICAL SUMMARIES (BEFORE THE INSTALLATION OF FISH SCREENS)

MONTHLY AND ANNUAL MEAN DISCHARGES 1924-62

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	0.0	9.0	1.2	2.0	1.71	.4
NOVEMBER	0.0	49	6.0	9.8	1.64	2.2
DECEMBER	0.0	52	17	17	.99	6.4
JANUARY	0.0	68	19	17	.89	6.9
FEBRUARY	2.4	57	20	13	.65	7.3
MARCH	2.7	37	18	8.7	.49	6.4
APRIL	5.6	52	22	11	.48	8.2
MAY	15	127	63	31	.50	23.0
JUNE	18	143	73	37	.50	26.7
JULY	3.9	66	27	17	.63	9.9
AUGUST	.2	16	5.8	4.3	.75	2.1
SEPTEMBER	0.0	6.0	1.5	1.8	1.20	.5
ANNUAL	5.1	44	23	9.9	.43	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1939-62

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	--	--	--	--	--	--
3	--	--	--	--	--	--
7	--	--	--	--	--	--
14	--	--	--	--	--	--
30	--	--	--	--	--	--
60	.5	.2	.1	.1	0.0	--
90	.9	.3	.2	.1	.1	--
120	2.0	.7	.4	.2	.1	--
183	5.7	1.1	.4	.2	.1	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1924-62

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
60	101	164	209	268	313	--
WEIGHTED SKEW = -.211						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1924-62

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	101	154	187	224	250	--
3	100	153	185	222	248	--
7	97	147	177	213	237	--
15	91	136	164	194	215	--
30	82	122	145	171	188	--
60	67	99	117	138	151	--
90	55	80	94	110	120	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1924-62

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
90	63	47	37	30	25	18	13	8.2	3.8	2.4	1.3	.5	.2	.1

DESCHUTES RIVER BASIN

14051000 CULTUS CREEK ABOVE CRANE PRAIRIE RESERVOIR, NEAR LA PINE, OR--Continued

STATISTICAL SUMMARIES (AFTER THE INSTALLATION OF FISH SCREENS)

MONTHLY AND ANNUAL MEAN DISCHARGES 1963-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	0.0	6.2	.6	1.4	2.24	.2
NOVEMBER	.2	16	3.8	4.6	1.22	1.4
DECEMBER	.4	80	21	22	1.04	8.1
JANUARY	.1	76	27	19	.70	10.2
FEBRUARY	0.0	55	23	13	.54	8.9
MARCH	0.0	68	21	15	.73	7.8
APRIL	1.8	46	17	9.6	.57	6.5
MAY	13	83	45	21	.46	17.1
JUNE	18	176	71	49	.69	27.2
JULY	2.5	71	27	22	.83	10.1
AUGUST	0.0	15	5.3	5.2	1.00	2.0
SEPTEMBER	0.0	6.1	1.1	1.6	1.44	.4
ANNUAL	3.0	38	22	11	.50	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1964-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	--	--	--	--	--	--
3	--	--	--	--	--	--
7	--	--	--	--	--	--
14	--	--	--	--	--	--
30	--	--	--	--	--	--
60	.1	0.0	0.0	0.0	--	--
90	.3	.1	0.0	0.0	--	--
120	.9	.3	.2	.1	--	--
183	5.4	2.4	1.4	.8	--	--

NOTE: LOW-FLOW STATISTICS UNCERTAIN DUE TO EXCESSIVE
ZERO EVENTS.MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORDDISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1963-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SEC- UTIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	97	165	217	287	--	--
3	95	162	210	276	--	--
7	91	153	198	257	--	--
15	85	140	178	227	--	--
30	75	122	154	194	--	--
60	58	94	117	147	--	--
90	46	73	90	110	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1963-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
82	57	41	32	28	24	18	13	8.3	3.3	1.8	.8	.3	.1	0.0

14052000 DEER CREEK ABOVE CRANE PRAIRIE RESERVOIR, NEAR LA PINE, OR

LOCATION.--Lat 43°48'48", long 121°50'18", in SE¼SW¼ sec.25, T.20 S., R.7 E., Deschutes County, Hydrologic Unit 17070301, on right bank 150 ft downstream from highway bridge, 1.2 mi downstream from Little Cultus Lake, and 19 mi northwest of La Pine.

DRAINAGE AREA.--21.5 mi², hydrologic drainage boundary uncertain owing to ground-water exchange.

PERIOD OF RECORD.--February to September 1924 (published as "above Crane Prairie, near Lapine"). October 1937 to September 1982. Monthly discharge only October 1937 to September 1949, published in WSP 1318. Records for October 1923 to January 1924, published in WSP 594, have been found to be unreliable and should not be used. Published as "near Lapine" 1937-64.

GAGE.--Water-stage recorder and sharp-crested weir control. Altitude of gage is 4,520 ft, by barometer. Feb. 1 to Sept. 30, 1924, nonrecording gage at site 75 ft upstream at various datums. Oct. 1, 1937, to Sept. 30, 1938, water-stage recorder at bridge 150 ft upstream at different datum. Oct. 1, 1938, to Aug. 13, 1968, water-stage recorder and wooden weir control at present site and datum 0.60 ft higher.

REMARKS.--No regulation or diversion above station.

AVERAGE DISCHARGE.--45 years (water years 1938-82), 7.48 ft³/s, 5,420 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 200 ft³/s, estimated, Dec. 25, 1964; no flow at times.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1938-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	0.0	2.0	.3	.4	1.21	.4
NOVEMBER	0.0	14	2.1	2.6	1.24	2.3
DECEMBER	.1	30	7.1	7.4	1.04	7.9
JANUARY	.1	21	6.7	5.6	.84	7.5
FEBRUARY	.1	24	6.5	5.1	.78	7.3
MARCH	.6	32	6.0	4.8	.81	6.7
APRIL	1.4	33	12	6.1	.52	12.9
MAY	6.1	55	29	14	.47	32.2
JUNE	.6	61	18	15	.86	19.5
JULY	0.0	7.4	2.4	2.1	.89	2.6
AUGUST	0.0	1.2	.4	.3	.73	.4
SEPTEMBER	0.0	.7	.2	.2	.80	.2
ANNUAL	1.2	15	7.5	3.5	.46	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1939-82

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	--	--	--	--	--	--
3	--	--	--	--	--	--
7	--	--	--	--	--	--
14	--	--	--	--	--	--
30	--	--	--	--	--	--
60	--	--	--	--	--	--
90	.2	.1	.1	.1	0.0	0.0
120	.4	.1	.1	.1	.1	0.0
183	1.2	.5	.3	.2	.1	.1

NOTE: LOW-FLOW STATISTICS UNCERTAIN DUE TO EXCESSIVE ZERO EVENTS.

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1938-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
32	51	80	101	128	148	169
WEIGHTED SKEW = -.162						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1938-82

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	51	74	86	97	104	109
3	50	71	81	90	96	100
7	46	65	74	82	87	90
15	40	57	66	74	79	82
30	34	49	58	66	71	75
60	25	37	44	51	55	58
90	19	28	33	38	41	44

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1938-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
36	22	15	11	8.6	7.0	4.6	2.8	1.4	.6	.4	.2	.2	.1	0.0

DESCHUTES RIVER BASIN

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14052500 QUINN RIVER NEAR LA PINE, OR

LOCATION.--Lat 43°47'03", long 121°50'06", in SW¼NW¼ sec.1, T.21 S., R.7 E., Deschutes County, Hydrologic Unit 17070302, Deschutes National Forest, on left bank at flow line of Crane Prairie Reservoir, 150 ft downstream from springs at head of river, and 18 mi northwest of La Pine.

DRAINAGE AREA.--Indeterminate, normal flow is entirely from springs 150 ft upstream.

PERIOD OF RECORD.--June 1922 to September 1925, October 1937 to September 1982. Published as "above Crane Prairie Reservoir near Lapine" 1922-25, and as "near Lapine" 1937-64. Monthly discharge only October 1937, published in WSP 1318.

GAGE.--Water-stage recorder and log control. Datum of gage is 4,442.1 ft National Geodetic Vertical Datum of 1929, based on elevation of Crane Prairie Reservoir when slack water reached station. June 1, 1922, to Sept. 30, 1925, nonrecording gage at site 150 ft downstream at different datum.

REMARKS.--No regulation or diversion above station.

AVERAGE DISCHARGE.--48 years, 23.8 ft³/s, 17,240 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59 ft³/s July 4, 1949, gage height, 1.97 ft; maximum gage height, 3.92 ft June 25, 1943 (backwater from Crane Prairie Reservoir); practically no flow Nov. 14, 1941.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1938-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1.8	39	22	10	.47	7.5
NOVEMBER	.8	36	19	9.0	.48	6.6
DECEMBER	2.2	31	18	7.7	.42	6.4
JANUARY	4.0	32	19	7.3	.38	6.6
FEBRUARY	4.0	37	20	7.5	.38	6.8
MARCH	5.0	38	20	7.6	.37	7.0
APRIL	5.4	42	22	8.2	.37	7.7
MAY	6.4	49	27	9.8	.37	9.2
JUNE	7.3	53	32	12	.36	11.0
JULY	7.0	54	33	12	.37	11.4
AUGUST	4.7	51	31	12	.39	10.7
SEPTEMBER	3.5	44	27	11	.41	9.2
ANNUAL	5.0	41	24	8.0	.33	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1939-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	--	--	--	--	--	--
3	--	--	--	--	--	--
7	--	--	--	--	--	--
14	16	8.9	5.3	3.1	1.5	.9
30	16	9.2	5.8	3.6	1.9	1.2
60	17	9.7	6.3	4.1	2.3	1.5
90	18	10	6.9	4.7	2.8	1.9
120	18	11	7.4	5.2	3.3	2.3
183	19	12	8.6	6.3	4.2	3.1

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1938-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
28	38	48	54	61	66	71
WEIGHTED SKEW = -.243						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1938-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	38	48	53	56	58	60
3	38	48	52	55	57	57
7	38	48	52	55	56	57
15	38	47	51	54	56	57
30	37	46	50	53	55	56
60	36	45	49	52	53	54
90	35	44	47	50	52	53

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1938-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
46	41	37	34	32	30	26	24	20	18	16	15	13	11	8.4

DESCHUTES RIVER BASIN

14054000 DESCHUTES RIVER BELOW CRANE PRAIRIE RESERVOIR, NEAR LA PINE, OR

LOCATION.--Lat 43°45'13", long 121°46'57", in SW¼NW¼ sec.16, T.21 S., R.8 E., Deschutes County, Hydrologic Unit 17070301, Deschutes National Forest, on left bank 0.1 mi downstream from Crane Prairie Dam, 15 mi northwest of La Pine, and at mile 238.2.

DRAINAGE AREA.--254 mi², hydrologic drainage boundary uncertain owing to ground-water exchange.

PERIOD OF RECORD.--August 1907 to November 1908 and August 1912 to September 1913 (fragmentary), October 1913 to September 1917, February 1922 to September 1982. Monthly discharge only for some periods, published in WSP 1318. Prior to October 1949, published as "at Crane Prairie, near Lapine." Published as "near Lapine" 1949-64.

GAGE.--Water-stage recorder. Datum of gage is 4,419.78 ft National Geodetic Vertical Datum of 1929 (Pacific Power & Light Co. bench mark). Aug. 15, 1907, to Sept. 30, 1917, and Feb. 23 to June 8, 1922, nonrecording gage at site 0.5 mi upstream at different datums. June 9, 1922, to May 9, 1932, nonrecording gage or water-stage recorder at present site and datum.

REMARKS.--Flow regulated since 1922 by Crane Prairie Reservoir. No diversion above station.

AVERAGE DISCHARGE.--64 years, 211 ft³/s, 152,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,170 ft³/s July 28, 1947, gage height, 3.34 ft; no flow Nov. 15, 1978, when gates in Crane Prairie Dam were closed.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1923-82

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1924-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	13	675	206	117	.57	8.4
NOVEMBER	5.2	700	145	159	1.10	5.9
DECEMBER	3.3	489	105	94	.89	4.3
JANUARY	3.4	334	97	72	.74	3.9
FEBRUARY	5.6	380	102	77	.76	4.1
MARCH	5.0	270	97	70	.72	3.9
APRIL	7.7	370	130	83	.64	5.3
MAY	14	750	251	124	.49	10.2
JUNE	107	782	333	126	.38	13.5
JULY	119	647	362	128	.35	14.7
AUGUST	109	709	343	130	.38	13.9
SEPTEMBER	19	635	290	139	.48	11.8
ANNUAL	101	323	206	56	.27	100

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2	5	10	20	50	100
	50%	20%	10%	5%	2%	1%
1	27	9.1	4.7	2.6	1.3	.8
3	28	9.8	5.2	2.9	1.4	.9
7	30	11	5.6	3.2	1.6	.9
14	33	13	7.3	4.4	2.4	1.6
30	35	15	8.8	5.7	3.4	2.4
60	44	18	11	7.0	4.0	2.8
90	57	23	14	8.3	4.6	3.0
120	70	29	16	9.7	5.1	3.2
183	117	62	41	28	18	12

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1923-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25	2	5	10	25	50	100
80%	50%	20%	10%	4%	2%	1%

WEIGHTED SKEW =

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	512	669	778	924	1040	1150
3	507	663	771	914	1020	1140
7	501	645	740	861	952	1040
15	481	618	709	826	915	1000
30	447	571	655	763	845	928
60	395	497	565	650	714	778
90	358	454	520	605	671	738

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1923-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
522	435	379	338	300	270	220	174	139	97	71	51	38	23	12

DESCHUTES RIVER BASIN

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14054500 BROWN CREEK NEAR LA PINE, OR

LOCATION.--Lat 43°42'57", long 121°48'10", in NE¼SW¼ sec.29, T.21 S., R.8 E., Deschutes County, Hydrologic Unit 17070301, in Deschutes National Forest, on right bank at highway crossing and 15 mi northwest of La Pine.

DRAINAGE AREA.--21 mi², approximately, hydrologic drainage boundary uncertain owing to ground-water exchange.

PERIOD OF RECORD.--June 1922 to September 1925, July 1938 to September 1982. Monthly discharge only July 1938 to September 1949, published in WSP 1318. Prior to Oct. 1, 1964, published as "near Lapine."

GAGE.--Water-stage recorder. Altitude of gage is 4,370 ft, from topographic map. May 24, 1922, to Sept. 30, 1925, nonrecording gage, and July 1, 1938, to Nov. 1, 1945, water-stage recorder at site 0.4 mi downstream at different datums. Nov. 2, 1945, to Aug. 25, 1971, water-stage recorder at site 0.8 mi upstream at datum of 4,372.94 ft National Geodetic Vertical Datum of 1929.

REMARKS.--No regulation. No diversion above station.

AVERAGE DISCHARGE.--47 years, 38.3 ft³/s, 27,750 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 104 ft³/s Aug. 4, 1956, gage height, 1.64 ft; maximum gage height, 3.50 ft Jan. 30, 1980, backwater from ice; minimum discharge, 16 ft³/s July 22-25, 1941, and at times December 1941 to March 1942.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1923-82

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1924-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	18	71	42	13	.31	9.0
NOVEMBER	18	66	40	12	.31	8.7
DECEMBER	17	62	38	11	.30	8.2
JANUARY	16	55	36	9.7	.27	7.7
FEBRUARY	16	53	34	8.9	.26	7.5
MARCH	17	54	34	8.9	.26	7.4
APRIL	17	56	37	9.8	.27	7.9
MAY	18	69	37	12	.32	8.1
JUNE	17	71	38	13	.33	8.3
JULY	17	75	39	13	.33	8.5
AUGUST	18	77	42	14	.34	9.2
SEPTEMBER	17	70	43	14	.32	9.3
ANNUAL	18	59	38	10	.26	100

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	29	23	20	18	16	15
3	29	23	20	18	16	15
7	29	23	20	18	16	15
14	30	23	21	18	16	15
30	30	24	21	19	17	15
60	31	24	21	19	17	15
90	32	25	22	19	17	15
120	33	26	22	20	17	16
183	35	27	23	21	18	16

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1923-82

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1923-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
40	52	67	76	87	96	104

WEIGHTED SKEW = -.046

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	50	63	71	79	84	89
3	49	61	69	76	81	86
7	48	61	68	75	80	85
15	48	61	68	75	80	85
30	48	60	67	74	79	83
60	47	59	66	73	78	82
90	45	57	64	71	76	80

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1923-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
61	56	53	50	47	45	41	37	34	31	29	28	27	25	23

DESCHUTES RIVER BASIN

14055500 ODELL CREEK NEAR CRESCENT, OR

LOCATION.--Lat 43°32'51", long 121°57'41", in SW¼SW¼ sec.25, T.23 S., R.6 E., Klamath County, Hydrologic Unit 17070301, on left bank 1,000 ft downstream from Odell Lake, 3 mi north of town of Crescent Lake, and 14 mi northwest of Crescent.

DRAINAGE AREA.--39.0 mi².

PERIOD OF RECORD.--August, September 1911, August, September 1912, January, February, May to November 1913, April to August 1914, December 1923 to June 1924, May 1933 to September 1976. Gage heights and discharge measurements only August, September 1911, January 1913. Published as Odell Lake outlet near Crescent 1911-12. Records for January to July 1912, published in WSP 332, have been found to be unreliable and should not be used.

GAGE.--Water-stage recorder. Datum of gage is 4,799.05 ft National Geodetic Vertical Datum of 1929. Prior to June 7, 1924, nonrecording gage at several sites within 700 ft of present site at various datums.

REMARKS.--Flow affected occasionally in winter by ice jams at outlet of Odell Lake, and slightly affected at times by seiches in Odell Lake. No diversion above station.

AVERAGE DISCHARGE.--43 years (water years 1933-76), 82.5 ft³/s, 28.73 in/yr, 59,770 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,100 ft³/s Dec. 25, 1964, gage height, 2.60 ft, from rating curve extended above 250 ft³/s; minimum, 9 ft³/s sometime during period Sept. 7-30, 1934.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1934-76

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	21	112	52	20	.38	5.3
NOVEMBER	30	185	83	29	.36	8.3
DECEMBER	42	337	102	52	.51	10.3
JANUARY	47	218	103	38	.37	10.4
FEBRUARY	46	160	90	25	.28	9.1
MARCH	38	177	79	24	.31	8.0
APRIL	46	111	80	17	.21	8.1
MAY	62	180	113	28	.24	11.4
JUNE	48	220	129	44	.34	13.0
JULY	27	139	75	31	.41	7.6
AUGUST	20	78	44	19	.42	4.5
SEPTEMBER	17	69	41	15	.36	4.1
ANNUAL	47	120	83	20	.25	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1935-76

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	27	19	15	13	11	9.6
3	29	20	16	14	11	9.9
7	31	21	17	15	12	11
14	32	23	19	16	13	12
30	35	24	20	17	14	13
60	37	27	22	19	16	14
90	41	29	25	21	18	16
120	46	34	28	25	21	19
183	59	45	39	34	30	27

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1933-76

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
171	236	345	430	556	662	781
WEIGHTED SKEW = .574						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1934-76

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	209	310	400	546	682	845
3	201	297	383	520	648	802
7	187	271	345	461	568	694
15	166	232	285	366	437	517
30	148	195	228	274	310	348
60	128	163	186	217	240	263
90	115	143	162	185	201	218

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1934-76

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
166	142	126	113	104	96	83	74	65	57	52	47	41	34	27

LOCATION.--Lat 43°41'10", long 121°41'13", in NW¼NE¼ sec.7, T.22 S., R.9 E., Deschutes County, Hydrologic Unit 17070301, on left bank 1,000 ft downstream from Wickiup Dam, 9 mi west of La Pine, and at mile 226.4.

PERIOD OF RECORD.--June 1938 to September 1982. Monthly discharge only June 1938, published in WSP 1318. Published as "near Lapine" 1938-64.

REMARKS.--Flow regulated by Crane Prairie Reservoir, and since 1942 by Wickiup Reservoir. Some leakage from Crane Prairie and Wickiup Reservoirs does not pass station. Some spill bypassed station in 1955. Crater Creek canal diverts water above station to Tumalo Creek basin.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 2,280 ft³/s July 28 to Aug. 1, 1956, July 31, Aug. 1, 2, 1962; minimum, 1.9 ft³/s Nov. 10, 1973; minimum daily, 10 ft³/s Jan. 17, 1952.

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1944-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	29	15	11	9.2	7.6	--
3	30	16	12	9.9	8.3	--
7	36	18	13	11	8.8	--
14	38	19	14	11	8.8	--
30	43	20	15	11	9.0	--
60	47	22	15	12	9.2	--
90	53	23	15	12	9.4	--
120	65	26	17	12	10	--
183	185	98	71	55	41	--

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1943-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	1930	2120	2190	2250	2280	--
3	1920	2110	2180	2240	2270	--
7	1890	2090	2170	2240	2280	--
15	1850	2060	2150	2230	2270	--
30	1780	2000	2090	2170	2220	--
60	1690	1900	1990	2080	2120	--
90	1610	1810	1890	1970	2010	--

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1880	1700	1540	1420	1280	1140	874	645	449	183	78	36	29	25	22

DESCHUTES RIVER BASIN

14057000 DESCHUTES RIVER AT PRINGLE FALLS, NEAR LAPINE, OR

LOCATION.--Lat 43°44'20", long 121°36'50", in SW¼ sec.23, T.21 S., R.9 E., Deschutes County, Hydrologic Unit 17070301, on left bank 0.5 mi upstream from bridge at Pringle Falls, 7 mi northwest of Lapine, and at mile 217.

DRAINAGE AREA.--507 mi², hydrologic drainage boundary uncertain owing to ground-water exchange.

PERIOD OF RECORD.--October 1915 to September 1917, June 1922 to September 1952. Monthly discharge only for some periods, published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 4,243.26 ft National Geodetic Vertical Datum of 1929 (Forest Service bench mark). Prior to June 6, 1922, staff gage at practically same site at datum 3.09 ft higher. June 6, 1922, to Nov. 9, 1947, water-stage recorder at present site at datum 2.00 ft higher.

REMARKS.--Flow regulated since 1922 by Crane Prairie Reservoir, and since 1942 by Wickiup Reservoir. Crater Creek Canal diverts water above station to Tumalo Creek basin.

AVERAGE DISCHARGE.--32 years (water years 1916-17, 1923-52), 727 ft³/s, 526,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,160 ft³/s Sept. 4, 8, 1951, gage height, 5.94 ft; minimum, 27 ft³/s Jan. 19, 1952.

STATISTICAL SUMMARIES (BEFORE THE CONSTRUCTION OF WICKIUP RESERVOIR)

MONTHLY AND ANNUAL MEAN DISCHARGES 1923-41

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	527	947	715	132	.18	8.4
NOVEMBER	473	861	657	128	.19	7.7
DECEMBER	469	883	629	118	.19	7.4
JANUARY	433	882	616	114	.19	7.2
FEBRUARY	427	929	636	132	.21	7.5
MARCH	419	836	626	116	.19	7.3
APRIL	448	881	637	115	.18	7.5
MAY	545	871	701	93	.13	8.2
JUNE	687	988	811	94	.12	9.5
JULY	660	1169	866	142	.16	10.2
AUGUST	589	1222	864	176	.20	10.1
SEPTEMBER	533	1085	773	154	.20	9.1
ANNUAL	542	872	711	88	.12	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1924-41

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	543	473	436	405	--	--
3	544	473	436	405	--	--
7	550	477	439	407	--	--
14	554	482	445	415	--	--
30	560	492	458	431	--	--
60	570	501	466	438	--	--
90	585	510	471	440	--	--
120	596	517	479	448	--	--
183	632	547	506	474	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1917-41DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
891	1000	1130	1190	1270	--	--
WEIGHTED SKEW = -.151						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1923-41DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	989	1100	1150	1210	--	--
3	987	1090	1150	1200	--	--
7	983	1090	1140	1200	--	--
15	971	1080	1130	1190	--	--
30	955	1060	1120	1170	--	--
60	919	1020	1070	1130	--	--
90	888	987	1040	1090	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1923-41

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
998	948	897	857	817	785	732	692	646	610	592	572	550	527	466

STATISTICAL SUMMARIES (AFTER THE COMPLETION OF WICKIUP RESERVOIR)

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1944-52

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	85	39	27	19	---	---
3	88	42	29	21	---	---
7	92	46	33	25	---	---
14	97	50	36	28	---	---
30	115	59	43	34	---	---
60	127	63	45	35	---	---
90	140	70	50	39	---	---
120	188	101	75	59	---	---
183	346	238	199	174	---	---

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1943-52

PERIOD (CON- SEC- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	1660	1990	2180	--	--	--
3	1640	1970	2160	--	--	--
7	1590	1930	2140	--	--	--
15	1540	1910	2130	--	--	--
30	1500	1870	2100	--	--	--
60	1440	1810	2050	--	--	--
90	1390	1740	1970	--	--	--

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1910	1540	1350	1210	1110	978	838	679	523	374	314	244	174	70	56

DESCHUTES RIVER BASIN

14057500 FALL RIVER NEAR LA PINE, OR

LOCATION.--Lat 43°47'48", long 121°34'18", in NW¼SE¼ sec.31, T.20 S., R.10 E., Deschutes County, Hydrologic Unit 17070301, on left bank 50 ft downstream from pond spillway at State fish hatchery, 9 mi northwest of La Pine, and at mile 4.8.

DRAINAGE AREA.--45.1 mi², hydrologic drainage boundary uncertain owing to ground-water exchange.

PERIOD OF RECORD.--July 1938 to September 1982. Records for May to September 1912 at site 3 mi downstream not equivalent owing to difference in drainage area. Prior to Oct. 1, 1964, published as "near Lapine."

GAGE.--Water-stage recorder. Altitude of gage is 4,220 ft, by barometer.

REMARKS.--Diversion only to ponds at fish hatchery 50 ft above station, from which water returns to river above station. Stream is spring fed and momentary extremes are caused by operation of fish hatchery.

AVERAGE DISCHARGE.--44 years, 149 ft³/s, 108,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 254 ft³/s June 5, 1965, gage height, 2.02 ft; minimum, 67 ft³/s sometime during period Sept. 20-30, 1969.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1939-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	83	207	147	31	.21	8.2
NOVEMBER	81	199	145	30	.21	8.1
DECEMBER	79	198	143	30	.21	8.0
JANUARY	78	191	142	29	.20	7.9
FEBRUARY	78	187	142	29	.21	7.9
MARCH	78	193	144	30	.21	8.0
APRIL	80	218	152	33	.21	8.5
MAY	80	233	159	37	.23	8.9
JUNE	82	233	157	36	.23	8.8
JULY	87	224	156	34	.22	8.7
AUGUST	86	218	153	32	.21	8.5
SEPTEMBER	86	208	150	32	.22	8.4
ANNUAL	82	202	149	30	.20	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1940-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	132	109	97	89	79	73
3	132	109	98	89	79	73
7	133	109	98	89	79	73
14	134	110	98	89	80	73
30	136	111	99	90	80	73
60	138	113	101	91	81	74
90	139	114	102	92	81	75
120	140	115	103	93	82	75
183	142	117	104	94	83	76

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORDDISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1939-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	168	200	216	234	244	254
3	168	200	216	233	243	253
7	167	199	215	233	243	253
15	166	198	214	231	242	252
30	165	196	212	228	238	247
60	163	193	209	225	235	244
90	162	192	207	222	232	241

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1939-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
204	191	184	178	174	169	159	149	141	131	125	119	114	108	99

14060000 CRESCENT CREEK AT CRESCENT LAKE, NEAR CRESCENT, OR

LOCATION.--Lat 43°30'11", long 121°58'20", in SE1SW1/4 sec.11, T.24 S., R.6 E., Klamath County, Hydrologic Unit 17070302, Deschutes National Forest, on left bank 400 ft downstream from Crescent Lake Dam, 0.5 mi south of town of Crescent Lake, 14 mi west of Crescent, and at mile 29.9.

DRAINAGE AREA.--60.7 mi², hydrologic drainage boundary uncertain owing to ground-water exchange.

PERIOD OF RECORD.--January to September 1911 (gage heights and discharge measurements only), January 1912 to July 1915, July to September 1927, May 1928 to September 1982. Published as Crescent Lake outlet near Crescent January 1911 to September 1912, and as Crescent Creek at outlet of Crescent Lake, near Crescent October 1913 to July 1915.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 4,819.96 ft National Geodetic Vertical Datum of 1929. See WSP 1935 for history of changes prior to Sept. 11, 1956.

REMARKS.--Flow regulated since 1922 by Crescent Lake. No diversion above station.

AVERAGE DISCHARGE.--56 years (water years 1913-14, 1929-82), 56.9 ft³/s, 41,220 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 313 ft³/s July 9, 1929, Aug. 9, 1936; no flow at times.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1929-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	0.0	233	22	47	2.12	3.3
NOVEMBER	0.0	135	14	28	2.06	2.0
DECEMBER	0.0	146	14	32	2.30	2.1
JANUARY	0.0	148	16	33	2.09	2.3
FEBRUARY	0.0	147	18	34	1.85	2.7
MARCH	0.0	166	23	41	1.76	3.4
APRIL	0.0	148	24	36	1.49	3.6
MAY	0.0	173	56	55	.99	8.3
JUNE	0.0	261	104	76	.73	15.4
JULY	14	287	163	63	.39	24.2
AUGUST	11	276	151	66	.44	22.4
SEPTEMBER	0.0	250	69	68	.98	10.3
ANNUAL	8.2	148	57	33	.57	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1930-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	--	--	--	--	--	--
3	--	--	--	--	--	--
7	--	--	--	--	--	--
14	--	--	--	--	--	--
30	--	--	--	--	--	--
60	--	--	--	--	--	--
90	--	--	--	--	--	--
120	--	--	--	--	--	--
183	--	--	--	--	--	--

NOTE: LOW-FLOW STATISTICS UNCERTAIN DUE TO EXCESSIVE ZERO EVENTS.

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1929-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SEC- UTIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	231	270	281	288	290	291
3	229	267	278	285	287	288
7	224	262	273	280	282	284
15	214	255	269	278	282	284
30	203	246	262	272	277	280
60	179	227	245	259	265	269
90	153	206	229	250	260	268

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1929-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
226	187	156	134	102	79	30	8.2	4.9	2.6	1.2	.2	.1	.1	.1

OESCHUTES RIVER BASIN

14061000 BIG MARSH CREEK AT HOEY RANCH, NEAR CRESCENT, OR

LOCATION.--Lat 43°28'40", long 121°54'50", NW¼SW¼ In sec.20, T.24 S., R.7 E., Klamath County, Hydrologic Unit 17070302, about 0.5 mi upstream from mouth, 2 mi east of Crescent Lake, and 11 mi west of Crescent.

DRAINAGE AREA.--51.5 mi², hydrologic drainage boundary uncertain owing to ground-water exchange.

PERIOD OF RECORD.--April 1912 to December 1914, May 1928 to September 1930, May 1931 to September 1958.

GAGE.--Water-stage recorder. Altitude of gage is about 4,630 ft (from topographic map). Prior to Sept. 8, 1939, staff gages or water-stage recorder at several sites within 0.2 mi of present site at various datums.

REMARKS.--No diversion or regulation above station.

COOPERATION.--Records for 1924, 1928-50, furnished by Oregon Water Resources Department.

AVERAGE DISCHARGE.--21 years (water years 1913, 1930, 1932-50), 64.8 ft³/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 581 ft³/s Apr. 20, 1943, gage height, 3.79 ft; maximum gage height, 4.56 ft Dec. 28, 30, 31, 1945 (backwater from ice); no flow Mar. 27, 1935, result of unusual regulation, but cause unknown.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1913-58

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	11	68	26	13	.49	3.0
NOVEMBER	10	133	43	28	.64	5.1
DECEMBER	12	243	65	55	.85	7.6
JANUARY	4.7	180	52	41	.79	6.1
FEBRUARY	10	162	53	39	.73	6.3
MARCH	26	280	72	47	.65	8.5
APRIL	41	336	142	62	.44	16.7
MAY	56	329	180	81	.45	21.2
JUNE	31	249	119	63	.53	14.0
JULY	15	94	49	25	.50	5.8
AUGUST	10	47	27	12	.43	3.2
SEPTEMBER	8.5	34	21	7.9	.37	2.5
ANNUAL	31	133	72	27	.37	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1930-58

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	15	9.0	6.2	4.3	2.7	--
3	15	9.9	7.5	5.8	4.3	--
7	16	11	8.2	6.4	4.7	--
14	17	11	8.5	6.6	4.8	--
30	19	12	9.2	7.1	5.1	--
60	20	13	11	9.0	7.1	--
90	21	15	12	10	8.2	--
120	24	16	13	11	9.5	--
183	30	21	18	15	13	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1913-58

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
193	276	397	482	594	680	--
WEIGHTED SKEW = .060						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1913-58

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	267	371	437	517	573	--
3	260	363	426	502	555	--
7	245	340	395	459	502	--
15	222	311	364	425	466	--
30	204	287	335	388	423	--
60	179	249	288	331	357	--
90	152	208	240	274	296	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1913-58

DISCHARGE, IN CFS, WHICH WAS EQUALLED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
240	180	140	115	94	77	56	43	34	28	25	21	19	16	13

14063000 LITTLE DESCHUTES RIVER NEAR LA PINE, OR

LOCATION.--Lat 43°41'21", long 121°30'06", in SW¼SW¼ sec.2, T.22 S., R.10 E., Deschutes County, Hydrologic Unit 17070302, on right bank 10 ft downstream from highway bridge, 1.1 mi north of La Pine, and at mile 26.8.

DRAINAGE AREA.--859 mi², hydrologic drainage boundary uncertain owing to ground-water exchange.

PERIOD OF RECORD.--September 1910 to January 1911, March, April, August 1911, March to September 1912, June to October 1913, June to November 1918, August to October 1920, May 1924 to September 1982. Monthly discharge only for some periods, published in WSP 1318. Published as "Deschutes River near Lapine" 1910-12, as "East Fork Deschutes River near Lapine" 1913-20, and as "Little Deschutes River near Lapine" 1924-64.

GAGE.--Water-stage recorder. Datum of gage is 4,192.81 ft National Geodetic Vertical Datum of 1929. Sept. 1, 1910, to Aug. 31, 1911, nonrecording gage at present site at different datum. Mar. 1 to Sept. 30, 1912, nonrecording gage at site 1.2 mi downstream at different datum. June 1, 1913, to Sept. 28, 1928, nonrecording gage and Sept. 29, 1928, to Sept. 30, 1931, water-stage recorder at present site at different datums.

REMARKS.--Flow regulated since 1922 by Crescent Lake. Many diversions for irrigation above station.

AVERAGE DISCHARGE.--58 years (water years 1925-82), 205 ft³/s, 148,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,660 ft³/s Dec. 25, 1964, gage height, 8.18 ft; minimum, 8 ft³/s Sept. 2, 3, 1931.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1925-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	17	350	83	61	.73	3.4
NOVEMBER	27	356	114	62	.54	4.6
DECEMBER	32	712	159	127	.80	6.5
JANUARY	35	656	154	108	.70	6.3
FEBRUARY	30	562	183	112	.61	7.5
MARCH	60	709	196	112	.57	8.0
APRIL	68	716	291	149	.51	11.9
MAY	83	990	389	201	.52	15.9
JUNE	63	788	329	172	.52	13.4
JULY	93	470	241	80	.33	9.8
AUGUST	30	342	197	72	.36	8.0
SEPTEMBER	12	320	118	75	.64	4.8
ANNUAL	66	374	205	83	.40	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1926-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	47	29	22	17	13	11
3	48	30	23	18	13	11
7	50	31	23	18	14	11
14	53	33	25	20	15	12
30	60	37	28	21	16	12
60	68	42	31	24	18	14
90	79	50	39	31	24	20
120	90	58	45	36	28	23
183	110	72	57	46	36	31

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1925-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
372	558	883	1150	1540	1880	2260

WEIGHTED SKEW = .422

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1925-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	538	838	1080	1450	1760	2120
3	527	808	1030	1350	1620	1920
7	501	757	946	1210	1420	1650
15	460	686	848	1070	1240	1410
30	418	621	763	949	1090	1240
60	365	540	661	820	942	1070
90	329	478	580	710	809	908

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1925-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
546	406	337	298	268	241	199	166	132	103	91	79	68	56	41

DESCHUTES RIVER BASIN

14064500 DESCHUTES RIVER AT BENHAM FALLS, NEAR BEND, OR

LOCATION.--Lat 43°55'49", long 121°24'39", in SW¼NE¼ sec.16, T.19 S., R.11 E., Deschutes County, Hydrologic Unit 17070301, Deschutes National Forest, on right bank 0.5 mi upstream from Benham Falls, 10 mi southwest of Bend, and at mile 181.4.

DRAINAGE AREA.--1,759 mi².

PERIOD OF RECORD.--April 1906 to September 1913, April to September 1914, August to December 1920, April to September 1921, February 1924 to September 1982. Monthly discharge only for some periods, published in WSP 1318. Published as "at West's ranch, near Lava" April 1906 to February 1909, April to September 1914. Records for January 1905 to March 1906 and October 1913 to September 1914, published under present name in WSP 370 and 394, have been found to be unreliable and should not be used.

GAGE.--Water-stage recorder. Datum of gage is 4,142.10 ft National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark). See WSP 1738 for history of changes prior to Nov. 20, 1958.

REMARKS.--Flow regulated by Crane Prairie Reservoir, Crescent Lake, and Wickiup Reservoir. Many diversions for irrigation above station.

AVERAGE DISCHARGE.--65 years (water years 1907-13, 1925-82), 1,408 ft³/s, 1,020,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,000 ft³/s, estimated, Nov. 27, 1909 (gage height not determined); minimum, 363 ft³/s Jan. 20, 1962.

STATISTICAL SUMMARIES (BEFORE THE CONSTRUCTION OF WICKIUP RESERVOIR)

MONTHLY AND ANNUAL MEAN DISCHARGES 1925-41

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	829	1396	1102	173	.16	7.7
NOVEMBER	850	1454	1075	190	.18	7.5
DECEMBER	844	1519	1059	183	.17	7.4
JANUARY	797	1423	1035	166	.16	7.3
FEBRUARY	800	1451	1067	189	.18	7.5
MARCH	864	1450	1111	167	.15	7.8
APRIL	837	1512	1197	183	.15	8.4
MAY	940	1763	1335	235	.18	9.4
JUNE	1037	1615	1373	178	.13	9.6
JULY	1029	1647	1398	181	.13	9.8
AUGUST	930	1671	1344	244	.18	9.4
SEPTEMBER	850	1523	1172	202	.17	8.2
ANNUAL	921	1458	1190	151	.13	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1926-41

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	905	801	752	713	--	--
3	922	815	768	732	--	--
7	929	833	794	766	--	--
14	940	849	813	787	--	--
30	952	859	822	796	--	--
60	971	870	830	801	--	--
90	984	882	840	811	--	--
120	996	889	846	816	--	--
183	1040	923	871	832	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1925-41

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1560	1750	1840	1930	--	--
3	1550	1730	1820	1910	--	--
7	1540	1720	1800	1880	--	--
15	1530	1690	1770	1840	--	--
30	1500	1660	1740	1800	--	--
60	1460	1610	1680	1740	--	--
90	1420	1570	1640	1700	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1925-41

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1620	1540	1470	1420	1370	1320	1240	1170	1110	1040	1000	969	929	889	847

DESCHUTES RIVER BASIN

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14064500 DESCHUTES RIVER AT BENHAM FALLS, NEAR BEND, OR--Continued

STATISTICAL SUMMARIES (AFTER THE COMPLETION OF WICKIUP RESERVOIR)

MONTHLY AND ANNUAL MEAN DISCHARGES 1944-82

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1945-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	646	2089	1217	317	.26	6.9
NOVEMBER	487	1540	784	243	.31	4.5
DECEMBER	520	1360	824	241	.29	4.7
JANUARY	543	1540	861	287	.33	4.9
FEBRUARY	514	1620	938	324	.35	5.3
MARCH	542	2068	989	386	.39	5.6
APRIL	902	2103	1343	345	.26	7.6
MAY	1199	2521	1943	325	.17	11.0
JUNE	1264	3017	2210	363	.16	12.6
JULY	1489	2938	2392	353	.15	13.6
AUGUST	1403	2795	2221	326	.15	12.6
SEPTEMBER	1256	2486	1878	283	.15	10.7
ANNUAL	1021	1977	1470	239	.16	100

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	597	498	457	427	397	--
3	615	514	472	441	410	--
7	629	524	480	448	416	--
14	641	533	488	455	422	--
30	665	551	503	469	435	--
60	699	578	529	495	461	--
90	735	601	546	506	467	--
120	771	624	562	519	475	--
183	884	715	645	594	544	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1944-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
--	--	--	--	--	--	--

WEIGHTED SKEW = --

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2640	2890	3000	3090	3130	--
3	2630	2870	2960	3030	3070	--
7	2600	2820	2900	2960	2990	--
15	2560	2800	2880	2950	2990	--
30	2500	2750	2850	2930	2970	--
60	2420	2670	2780	2870	2910	--
90	2350	2600	2700	2780	2830	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1944-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
2630	2470	2330	2200	2080	1950	1650	1400	1160	924	831	726	659	608	563

DESCHUTES RIVER BASIN

14066000 DESCHUTES RIVER BELOW LAVA ISLAND, NEAR BEND, OR

LOCATION.--Lat 44°00'00", long 121°22'30", in SW¼ sec.23, T.18 S., R.11 E., Deschutes County, Hydrologic Unit 17070301, on right bank 0.8 mi downstream from Lava Island, 1.5 mi downstream from intake of Arnold Canal, 5 mi southwest of Bend, and at mile 173.0.

DRAINAGE AREA.--1,829 mi².

PERIOD OF RECORD.--March 1925 to September 1965.

GAGE.--Water-stage recorder. Altitude of gage is 3,825 ft (by barometer). Prior to May 4, 1927, at site 0.2 mi upstream at different datum. May 4, 1927, to Nov. 11, 1947 and Nov. 12, 1947, to Oct. 24, 1959, at present site at datums 2.00 and 1.00 ft higher, respectively.

REMARKS.--Flow regulated by Crescent Lake and Crane Prairie Reservoir and, since 1942, by Wickiup Reservoir. Small diversions for irrigation above station. Arnold Canal diverts above station for irrigation near Bend.

AVERAGE DISCHARGE.--40 years, 1,237 ft³/s, 895,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,360 ft³/s Dec. 26, gage height, 5.14 ft; minimum, 390 ft³/s Jan. 20, 1962.

STATISTICAL SUMMARIES (BEFORE THE CONSTRUCTION OF WICKIUP RESERVOIR)

MONTHLY AND ANNUAL MEAN DISCHARGES 1926-41

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	734	1243	959	147	.15	7.6
NOVEMBER	773	1256	956	157	.16	7.6
DECEMBER	753	1368	956	165	.17	7.6
JANUARY	709	1301	926	155	.17	7.4
FEBRUARY	727	1238	941	146	.16	7.5
MARCH	806	1334	999	150	.15	8.0
APRIL	739	1434	1056	167	.16	8.4
MAY	808	1594	1137	210	.18	9.1
JUNE	909	1415	1178	146	.12	9.4
JULY	899	1452	1229	154	.13	9.8
AUGUST	817	1516	1186	212	.18	9.5
SEPTEMBER	738	1379	1022	171	.17	8.1
ANNUAL	830	1305	1050	139	.13	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1927-41

PERIOD (CON- SEC- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	784	716	689	671	--	--
3	797	729	704	688	--	--
7	815	748	723	706	--	--
14	828	760	735	718	--	--
30	842	774	749	733	--	--
60	856	785	760	743	--	--
90	873	796	767	748	--	--
120	888	806	773	751	--	--
183	923	828	787	756	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1927-41

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1240	1410	1590	1690	1800	--	--
WEIGHTED SKEW = -.198						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1927-41

PERIOD (CON- SEC- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1410	1570	1640	1710	--	--
3	1400	1550	1610	1670	--	--
7	1380	1530	1600	1650	--	--
15	1370	1510	1570	1620	--	--
30	1340	1490	1550	1600	--	--
60	1300	1430	1490	1540	--	--
90	1260	1390	1450	1500	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1927-41

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1440	1360	1300	1260	1220	1170	1100	1020	953	905	881	856	829	799	767

STATISTICAL SUMMARIES (AFTER THE COMPLETION OF WICKIUP RESERVOIR)

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1944-65

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
2470	2320	2180	2040	1890	1760	1510	1290	1090	902	819	750	679	609	553

14070500 DESCHUTES RIVER BELOW BEND, OR

LOCATION.--Lat 44°04'59", long 121°18'24", in SE¼SE¼ sec.20, T.17 S., R.12 E., Deschutes County, Hydrologic Unit 17070301, on right bank 0.4 mi downstream from North Canal, 0.5 mi north of Bend city limits, and at mile 164.4.

DRAINAGE AREA.--1,899 mi².

PERIOD OF RECORD.--October 1914 to September 1982.

GAGE.--Water-stage recorder. Datum of gage is 3,503.95 ft National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1931, water-stage recorder at site 200 ft downstream at datum 1.00 ft higher.

REMARKS.--Flow regulated by powerplant at Bend, Crescent Lake, Crane Prairie Reservoir, and Wickiup Reservoir. Six large canals and several small ditches divert water above station for irrigation.

AVERAGE DISCHARGE.--68 years, 499 ft³/s, 361,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,820 ft³/s Dec. 27, 1964, gage height, 4.90 ft; maximum gage height, 5.38 ft Dec. 15, 1932 (backwater from ice); minimum discharge, 1.0 ft³/s Aug. 25, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge near this site since 1905, 4,820 ft³/s Nov. 27, 1909.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1944-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	31	855	254	215	.85	5.4
NOVEMBER	289	1194	608	231	.38	12.8
DECEMBER	338	1186	676	218	.32	14.3
JANUARY	435	1369	741	263	.35	15.7
FEBRUARY	454	1495	799	308	.39	16.9
MARCH	270	1767	780	371	.48	16.5
APRIL	22	918	308	205	.67	6.5
MAY	22	586	109	115	1.06	2.3
JUNE	24	799	131	168	1.28	2.8
JULY	24	389	74	68	.92	1.6
AUGUST	21	570	109	131	1.20	2.3
SEPTEMBER	19	523	143	152	1.06	3.0
ANNUAL	205	718	392	154	.39	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1945-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	21	14	11	9.1	7.4	--
3	25	17	14	12	9.9	--
7	29	20	16	14	12	--
14	33	22	18	15	13	--
30	39	24	19	16	14	--
60	47	28	22	19	16	--
90	54	30	23	19	16	--
120	59	32	24	20	16	--
183	76	39	28	22	17	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1944-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1000	1280	1670	1920	2240	2480	--
WEIGHTED SKEW = .158						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1944-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1180	1580	1850	2190	2440	--
3	1140	1530	1780	2100	2340	--
7	1080	1450	1680	1980	2210	--
15	988	1330	1550	1830	2050	--
30	876	1200	1430	1720	1950	--
60	796	1100	1310	1590	1810	--
90	750	1020	1210	1470	1670	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1944-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1190	975	819	707	623	570	453	274	123	63	48	38	32	29	25

14075000 SQUAW CREEK NEAR SISTERS, OR

LOCATION.--Lat 44°14'02", long 121°33'57", in SE¼SW¼ sec.29, T.15 S., R.10 E., Deschutes County, Hydrologic Unit 17070301, on right bank 800 ft upstream from intake of McAllister ditch, 4 mi south of Sisters, and at mile 26.8.

DRAINAGE AREA.--45.2 mi², revised.

PERIOD OF RECORD.--July 1906 to October 1918, June to August 1919, October 1919 to September 1920, May 1921 to September 1924 (no winter records), April 1925 to September 1982. Monthly discharge only for some periods, published in WSP 1318.

GAGE.--Water-stage recorder. Altitude of gage is 3,490 ft, by barometer. July 1, 1906, to May 29, 1913, nonrecording gage at site 1,000 ft downstream at different datum, below intake of McAllister ditch (records include flow in McAllister ditch). May 30, 1913, to Sept. 2, 1915, nonrecording gage and Mar. 24, 1916, to Oct. 5, 1928, water-stage recorder at site 300 ft downstream at different datum. Oct. 6, 1928, to Nov. 7, 1967, water-stage recorder at site 200 ft downstream at datum 2.64 ft lower.

REMARKS.--No regulation. A canal near mouth of Pole Creek, a tributary above station, diverts entire flow of that creek for irrigation of lands near Sisters.

AVERAGE DISCHARGE.--70 years (water years 1907-18, 1920, 1926-82), 105 ft³/s, 76,070 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge since 1909, 2,000 ft³/s Dec. 25, 1980, from rating curve extended above 690 ft³/s on basis of slope-area measurement of peak flow; a maximum gage height of 9.2 ft from water-borne ice was observed on Jan. 11, 1979, and probably occurred on Jan. 10, 1979; previous maximum gage height, about 8.75 ft, over top of gage Nov. 22, 1909, site and datum then in use (discharge not determined); minimum discharge, 14 ft³/s Mar. 2, 1966.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1916-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	40	132	63	17	.27	5.0
NOVEMBER	37	187	75	31	.41	6.0
DECEMBER	35	220	85	44	.52	6.7
JANUARY	24	180	71	32	.45	5.7
FEBRUARY	24	200	68	31	.46	5.4
MARCH	34	158	60	21	.35	4.7
APRIL	37	133	75	22	.29	6.0
MAY	58	279	143	43	.30	11.4
JUNE	113	390	226	71	.31	18.0
JULY	70	347	191	64	.33	15.2
AUGUST	68	209	118	33	.28	9.4
SEPTEMBER	51	135	80	18	.22	6.4
ANNUAL	61	164	104	22	.21	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1917-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	38	31	28	26	23	22
3	39	32	29	27	24	23
7	40	33	30	28	26	24
14	42	35	32	29	26	24
30	46	38	34	31	28	26
60	51	41	37	33	30	27
90	55	44	39	36	32	30
120	60	47	42	38	34	32
183	66	53	47	43	39	36

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1916-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
366	557	887	1150	1540	1870	2250
WEIGHTED SKEW = .348						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1916-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	411	598	742	946	1120	1300
3	356	490	585	713	814	920
7	308	404	463	533	583	630
15	270	350	395	447	481	512
30	244	311	349	392	421	447
60	214	272	304	340	366	387
90	190	238	264	294	313	331

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1916-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
264	205	172	148	129	114	92	77	67	60	56	53	49	45	39

DESCHUTES RIVER BASIN

14076500 DESCHUTES RIVER NEAR CULVER, OR

LOCATION.--Lat 44°29'56", long 121°19'12", in NW¼SE¼ sec.29, T.12 S., R.12 E., Jefferson County, Hydrologic Unit 17070301, on right bank 2.5 mi downstream from Squaw Creek, 6.0 mi southwest of Culver, and at mile 120.6.

DRAINAGE AREA.--2,705 mi².

PERIOD OF RECORD.--July 1952 to September 1982.

GAGE.--Water-stage recorder. Datum of gage is 1,980 ft National Geodetic Vertical Datum of 1929 (river-profile survey). July 14, 1952, to Sept. 30, 1961, at site 4.1 mi downstream at different datum.

REMARKS.--Flow regulated by Crescent Lake and Crane Prairie and Wicklup Reservoirs. Many diversions for irrigation above station.

AVERAGE DISCHARGE.--30 years, 905 ft³/s, 655,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,680 ft³/s Dec. 24, 1964, gage height, 10.00 ft, from rating curve extended above 2,200 ft³/s on basis of slope-area measurement of peak flow; minimum, 418 ft³/s July 7, 8, 1964.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1953-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	470	1080	666	160	.24	6.1
NOVEMBER	837	1683	1161	207	.18	10.7
DECEMBER	953	1958	1288	281	.22	11.8
JANUARY	1010	2012	1360	305	.22	12.5
FEBRUARY	1010	2034	1416	318	.22	13.0
MARCH	839	2360	1325	401	.30	12.2
APRIL	510	1430	817	243	.30	7.5
MAY	457	1228	586	152	.26	5.4
JUNE	455	1020	638	160	.25	5.9
JULY	430	766	549	89	.16	5.0
AUGUST	441	741	529	71	.13	4.9
SEPTEMBER	455	782	554	94	.17	5.1
ANNUAL	677	1195	905	163	.18	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1954-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	482	457	445	436	426	--
3	485	459	447	437	427	--
7	489	462	449	439	428	--
14	493	465	452	442	431	--
30	502	469	453	442	431	--
60	510	471	456	443	432	--
90	521	475	456	443	432	--
120	534	480	458	443	433	--
183	554	492	467	450	433	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1953-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1740	2170	2840	3320	3980	4510	--

WEIGHTED SKEW = .590

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1953-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2010	2550	2930	3440	3840	--
3	1890	2400	2760	3240	3620	--
7	1790	2260	2590	3030	3380	--
15	1690	2080	2330	2640	2870	--
30	1550	1900	2120	2390	2580	--
60	1440	1750	1960	2210	2410	--
90	1380	1660	1850	2080	2260	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1953-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1830	1560	1400	1280	1190	1120	977	742	595	538	521	508	495	481	467

OESCHUTES RIVER BASIN

14078000 BEAVER CREEK NEAR PAULINA, OR

LOCATION.--Lat 44°09'50", long 119°55'20", in NE¼ sec.26, T.16 S., R.23 E., Crook County, Hydrologic Unit 17070303, on right bank 0.7 mi downstream from Paulina Creek, 1.7 mi downstream from Wolf Creek, 2.7 mi northeast of Paulina, and at mile 10.0.

DRAINAGE AREA.--450 mi², approximately.

PERIOD OF RECORD.--October 1942 to September 1975. Prior to October 1945 monthly discharge only, published in WSP 1318.

GAGE.--Water-stage recorder. Altitude of gage is 3,690 ft (by barometer). Oct. 1, 1942, to July 7, 1965 at datum 1.00 higher.

REMARKS.--No regulation. Diversions for irrigation above station. Two small ditches divert above station for irrigation below.

AVERAGE DISCHARGE.--33 years, 89.1 ft³/s, 64,550 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,800 ft³/s Dec. 22, 1964, gage height, 14.20 ft, from floodmark, present datum, from rating curve extended above 1,600 ft³/s, on basis of slope-area measurement of peak flow; no flow Oct. 13-29, 1945.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1943-75

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STANDARD DEVIATION (CFS)	COEFFICIENT OF VARIATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	.4	13	5.3	2.8	.53	.5
NOVEMBER	5.6	129	22	27	1.22	2.1
DECEMBER	8.0	432	83	109	1.31	7.7
JANUARY	11	590	120	139	1.16	11.1
FEBRUARY	16	858	198	165	.83	18.4
MARCH	35	889	279	194	.70	25.9
APRIL	1.5	796	251	162	.65	23.3
MAY	.4	298	93	83	.89	8.6
JUNE	.5	124	17	27	1.54	1.6
JULY	.7	29	4.9	5.7	1.17	.5
AUGUST	.4	7.1	1.6	1.4	.89	.1
SEPTEMBER	.4	6.1	2.3	1.8	.78	.2
ANNUAL	15	215	89	48	.54	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1944-75

PERIOD (CON- SECUTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	.4	.3	.2	.2	.1	--
3	.5	.3	.2	.2	.1	--
7	.5	.3	.2	.2	.1	--
14	.5	.3	.2	.2	.2	--
30	.7	.4	.3	.2	.2	--
60	1.0	.6	.4	.4	.3	--
90	1.4	.8	.6	.5	.4	--
120	2.0	1.1	.9	.7	.5	--
183	4.8	2.7	2.0	1.5	1.1	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1943-75

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
730	1370	2750	4060	6270	8390	--

WEIGHTED SKEW = .333

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1943-75

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECUTIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1140	2040	2740	3720	4510	--
3	901	1640	2210	3020	3680	--
7	682	1210	1590	2090	2480	--
15	505	867	1120	1440	1680	--
30	389	645	812	1020	1160	--
60	290	471	588	729	826	--
90	247	394	485	588	656	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1943-75

DISCHARGE, IN CFS, WHICH WAS EQUALLED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
421	264	181	125	87	60	25	13	7.4	4.4	2.9	1.6	1.0	.7	.5

DESCHUTES RIVER BASIN

14078500 NORTH FORK CROOKED RIVER ABOVE DEEP CREEK, OR

LOCATION.--Lat 44°19'55", long 120°04'55", in NE¼ sec.28, T.14 S., R.22 E., Crook County, Hydrologic Unit 17070304, on left bank 0.8 mi upstream from Deep Creek, 15 mi northwest of Paulina, and 38 mi east of Prineville.

DRAINAGE AREA.--159 mi².

PERIOD OF RECORD.--November 1941 to December 1942, October 1943 to September 1954. Prior to October 1945 monthly discharge only, published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 4,356.00 ft National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to Oct. 1, 1946, at datum 0.33 ft higher.

REMARKS.--No regulation. Several diversions for irrigation of about 3,600 acres above station.

AVERAGE DISCHARGE.--11 years (water years 1943-54), 97.0 ft³/s, 70,230 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,060 ft³/s Apr. 7, 1943, gage height, 4.17 ft, from rating curve extended above 950 ft³/s; maximum gage height, 8.01 ft, last used datum, Jan. 1, 1943 (ice jam); minimum discharge, 0.5 ft³/s Aug. 14, 15, 1942, Aug. 3 to Sept. 24, 1951.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1944-54

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1.3	10	4.9	3.1	.64	.4
NOVEMBER	4.0	37	17	11	.65	1.4
DECEMBER	4.7	152	46	52	1.13	3.9
JANUARY	9.4	187	56	60	1.08	4.8
FEBRUARY	19	210	95	71	.74	8.1
MARCH	58	488	189	122	.65	16.2
APRIL	160	911	465	239	.51	39.8
MAY	25	457	213	127	.60	18.2
JUNE	15	262	74	79	1.06	6.3
JULY	1.4	23	5.8	6.3	1.09	.5
AUGUST	.5	5.5	2.0	1.5	.74	.2
SEPTEMBER	.6	4.7	1.9	1.2	.63	.2
ANNUAL	37	173	97	40	.42	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1945-54

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	1.0	.7	.6	.5	--	--
3	1.0	.7	.6	.5	--	--
7	1.1	.7	.6	.5	--	--
14	1.2	.7	.6	.5	--	--
30	1.3	.8	.6	.5	--	--
60	1.5	.9	.7	.6	--	--
90	1.7	1.1	.9	.8	--	--
120	2.3	1.5	1.2	1.0	--	--
183	7.2	3.8	2.7	2.1	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1944-54

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1100	1410	1820	2090	--	--	--
WEIGHTED SKEW = .156						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1944-54

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	941	1360	1570	--	--	--
3	826	1210	1420	--	--	--
7	704	1030	1220	--	--	--
15	567	848	1020	--	--	--
30	460	679	819	--	--	--
60	376	539	634	--	--	--
90	300	422	490	--	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1944-54

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
504	317	212	148	101	65	32	15	7.9	4.5	3.4	2.2	1.8	1.4	1.1

DESCHUTES RIVER BASIN

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14079500 CROOKED RIVER NEAR POST, OR

LOCATION.--Lat 44°07'00", long 120°15'00", in NE¼ sec.7, T.17 S., R.21 E., Crook County, Hydrologic Unit 17070304, on left bank 0.3 mi downstream from North Fork, 12 mi southeast of Post, and at mile 113.7.

DRAINAGE AREA.--2,160 mi², approximately, of which 500 mi² is probably noncontributing.

PERIOD OF RECORD.--November 1908 to May 1911, December 1939 to September 1960, July 1968 to July 1973. Records for June to August 1911, published in WSP 312, have been found unreliable and should not be used.

GAGE.--Water-stage recorder. Datum of gage is 3,476.25 ft National Geodetic Vertical Datum of 1929. Nov. 9, 1908, to Aug. 31, 1911, nonrecording gage at site 0.2 mi downstream at different datum. Dec. 30, 1939, to Sept. 30, 1960, water-stage recorder at site 0.7 mi downstream at different datum.

REMARKS.--No regulation. Many diversions for irrigation above station.

AVERAGE DISCHARGE.--24 years (water years 1941-60, 1969-72), 337 ft³/s, 244,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,500 ft³/s Jan. 18, 1971, gage height, 9.61 ft, from rating curve extended above 4,800 ft³/s, on basis of slope-area measurement of peak flow; minimum, 2.7 ft³/s Aug. 7, 1970.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 23, 1964, reached a stage of 15.00 ft at nonequivalent site 23 mi downstream, discharge, 19,700 ft³/s.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1941-72

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	29	81	43	13	.29	1.1
NOVEMBER	50	259	104	57	.55	2.6
DECEMBER	56	753	208	185	.89	5.2
JANUARY	60	1488	337	353	1.05	8.5
FEBRUARY	82	2000	522	379	.73	13.2
MARCH	188	2068	833	451	.54	21.0
APRIL	430	2692	1211	580	.48	30.5
MAY	77	1300	500	291	.58	12.6
JUNE	35	635	144	133	.92	3.6
JULY	4.7	108	31	22	.71	.8
AUGUST	5.6	37	14	6.7	.49	.3
SEPTEMBER	10	41	19	7.2	.38	.5
ANNUAL	129	553	331	123	.37	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1942-72

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	8.7	5.9	4.7	3.8	3.0	--
3	9.1	6.2	5.0	4.1	3.3	--
7	9.8	6.8	5.5	4.6	3.7	--
14	10	7.3	6.0	5.1	4.2	--
30	11	8.1	6.8	5.8	4.9	--
60	14	10	8.7	7.8	7.0	--
90	17	13	11	10	9.2	--
120	23	17	15	13	11	--
183	44	33	29	26	24	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1941-72

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
2410	4000	6560	8450	11000	13100	--
WEIGHTED SKEW = -.086						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1941-72

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	3170	5270	6790	8810	10400	--
3	2730	4340	5420	6760	7750	--
7	2260	3400	4120	4950	5530	--
15	1830	2700	3230	3830	4230	--
30	1450	2090	2480	2910	3200	--
60	1130	1570	1810	2070	2220	--
90	943	1290	1480	1660	1770	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1941-72

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1480	960	671	498	367	270	150	89	63	43	32	24	19	15	11

DESCHUTES RIVER BASIN

14080500 CROOKED RIVER NEAR PRINEVILLE, OR

LOCATION.--Lat 44°06'50", long 120°47'40", in SW¼NE¼ sec.10, T.17 S., R.16 E., Crook County, Hydrologic Unit 17070304, on right bank 0.4 mi downstream from Prineville Dam, 13.6 mi south of Prineville, and at mile 72.1.

DRAINAGE AREA.--2,700 mi², approximately, of which 500 mi² is probably noncontributing.

PERIOD OF RECORD.--November 1908 to September 1914, March 1941 to September 1982. Published as "near Prineville" 1908-12, as "at Hoffman's ranch, near Prineville" 1913-14, and as "above Hoffman Dam, near Prineville" March 1941 to September 1960. The estimate of monthly mean discharge for October 1908, published in WSP 370, has been found to be unreliable and should not be used.

GAGE.--Water-stage recorder. Datum of gage is 3,070.85 ft National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to September 1914, nonrecording gage at several sites from 9 mi to 23 mi downstream at various datums. Mar. 26, 1941, to Apr. 23, 1961, water-stage recorder at site 5.5 mi downstream at different datum.

REMARKS.--Flow completely regulated since December 1960 by Prineville Reservoir. Diversions for irrigation above station. Discharge not adjusted for storage or release from Prineville Reservoir as evaporation from reservoir at times exceeds natural flow.

AVERAGE DISCHARGE.--24 years (water years 1910-14, 1942-60), 378 ft³/s, 273,700 acre-ft/yr; 22 years (water years 1961-82), 325 ft³/s, 235,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,410 ft³/s Mar. 26, 1952, gage height, 8.2 ft, from floodmark, site and datum then in use; no flow Aug. 13-21, 1959, Jan. 3-5, 1961.

STATISTICAL SUMMARIES (BEFORE THE CONSTRUCTION OF PRINEVILLE RESERVOIR)

MONTHLY AND ANNUAL MEAN DISCHARGES 1942-59

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	26	87	47	16	.34	1.0
NOVEMBER	63	207	110	44	.40	2.3
DECEMBER	69	768	260	221	.85	5.6
JANUARY	65	830	304	240	.79	6.5
FEBRUARY	98	2352	647	516	.80	13.8
MARCH	197	1880	901	497	.55	19.2
APRIL	455	3058	1509	724	.48	32.2
MAY	72	1460	638	370	.58	13.6
JUNE	33	771	202	192	.95	4.3
JULY	7.6	102	40	27	.68	.9
AUGUST	1.4	38	11	9.6	.86	.2
SEPTEMBER	2.4	37	16	10	.65	.3
ANNUAL	139	647	387	160	.41	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1943-59

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	4.2	1.9	1.2	.8	--	--
3	4.5	2.1	1.5	1.1	--	--
7	4.9	2.5	1.8	1.4	--	--
14	5.5	3.0	2.2	1.7	--	--
30	6.9	3.7	2.7	2.1	--	--
60	10	5.4	3.8	2.8	--	--
90	15	9.1	7.0	5.6	--	--
120	23	16	13	11	--	--
183	49	36	31	28	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1942-59

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
2260	3580	5530	6880	8620	--	--
WEIGHTED SKEW = -.195						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1942-59

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	3360	5140	6190	7350	--	--
3	2910	4430	5310	6280	--	--
7	2460	3680	4380	5150	--	--
15	2000	3100	3790	4590	--	--
30	1600	2460	2990	3610	--	--
60	1310	1910	2240	2570	--	--
90	1100	1590	1850	2110	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1942-59

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1840	1100	785	582	431	322	173	104	73	48	36	25	18	10	5.2

14080500 CROOKED RIVER NEAR PRINEVILLE, OR--Continued

STATISTICAL SUMMARIES (AFTER THE COMPLETION OF PRINEVILLE RESERVOIR)

MONTHLY AND ANNUAL MEAN DISCHARGES 1961-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- TION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	26	270	144	78	.54	3.7
NOVEMBER	14	369	111	94	.85	2.8
DECEMBER	26	1037	259	334	1.29	6.6
JANUARY	.2	1682	385	417	1.08	9.8
FEBRUARY	2.7	1625	484	473	.98	12.4
MARCH	13	2035	466	531	1.14	11.9
APRIL	19	1505	670	443	.66	17.1
MAY	67	1297	506	334	.66	12.9
JUNE	72	327	233	55	.23	6.0
JULY	87	303	233	52	.22	6.0
AUGUST	87	306	228	47	.20	5.8
SEPTEMBER	88	247	196	42	.22	5.0
ANNUAL	47	616	325	154	.47	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1962-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	23	13	9.2	7.0	--	--
3	26	14	9.8	7.3	--	--
7	28	15	11	7.9	--	--
14	31	17	12	8.9	--	--
30	40	22	15	11	--	--
60	60	35	27	21	--	--
90	88	54	41	32	--	--
120	107	70	54	44	--	--
183	144	109	92	79	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORDDISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1961-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SEC- UTIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1760	2980	3520	3940	--	--
3	1710	2900	3440	3870	--	--
7	1550	2690	3250	3750	--	--
15	1300	2290	2820	3300	--	--
30	1010	1780	2220	2660	--	--
60	741	1290	1600	1940	--	--
90	639	1070	1320	1590	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1961-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1370	802	473	344	298	257	231	205	173	130	99	71	54	37	29

DESCHUTES RIVER BASIN

14087400 CROOKED RIVER BELOW OPAL SPRINGS, NEAR CULVER, OR

LOCATION.--Lat 44°29'33", long 121°17'50", in NW¼NE¼ sec.33, T.12 S., R.12 E., Jefferson County, Hydrologic Unit 17070305, on right bank 0.2 mi downstream from Opal Springs, 4.8 mi southwest of Culver, and at mile 6.7.

DRAINAGE AREA.--4,300 mi², approximately, of which 500 mi² is probably noncontributing.

PERIOD OF RECORD.--October 1961 to September 1982.

GAGE.--Water-stage recorder. Datum of gage is 1,953.60 ft National Geodetic Vertical Datum of 1929 (Portland General Electric Co. bench mark).

REMARKS.--Flow regulated since December 1960 by Prineville Reservoir and Ochoco Reservoir, capacity, 47,500 acre-ft. Many diversions for irrigation above station. Practically all of the summer flow comes from Opal Springs and other springs within 15 mi above station. Simultaneous records (1961-63) at former gaging station 5.6 mi downstream indicated over 15 percent increase in summer flow from springs below this station.

AVERAGE DISCHARGE.--21 years, 1,561 ft³/s, 1,131,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,660 ft³/s Dec. 24, 1964, gage height, 9.36 ft; minimum, 836 ft³/s Sept. 8, 1981, caused by refilling of small forebay upstream from gage.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1962-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1239	1650	1441	126	.09	7.7
NOVEMBER	1232	1724	1368	120	.09	7.3
DECEMBER	1179	2686	1560	436	.28	8.3
JANUARY	1182	3551	1712	555	.32	9.1
FEBRUARY	1250	3490	1868	620	.33	10.0
MARCH	1232	4208	1860	750	.40	9.9
APRIL	1192	3215	2028	552	.27	10.8
MAY	1173	2566	1663	422	.25	8.9
JUNE	1196	1478	1305	90	.07	7.0
JULY	1122	1389	1267	86	.07	6.8
AUGUST	1134	1593	1311	106	.08	7.0
SEPTEMBER	1187	1541	1379	102	.07	7.3
ANNUAL	1278	1973	1561	213	.14	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1963-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	1170	1130	1110	1090	--	--
3	1180	1130	1110	1100	--	--
7	1180	1140	1120	1110	--	--
14	1200	1150	1130	1110	--	--
30	1210	1160	1140	1120	--	--
60	1240	1180	1150	1130	--	--
90	1260	1190	1160	1140	--	--
120	1270	1210	1190	1160	--	--
183	1320	1250	1220	1200	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%

WEIGHTED SKEW = --

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1962-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	3380	4550	5240	6010	--	--
3	3310	4470	5150	5930	--	--
7	3150	4260	4950	5750	--	--
15	2870	3850	4450	5180	--	--
30	2520	3310	3820	4450	--	--
60	2130	2750	3170	3710	--	--
90	1990	2500	2840	3270	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1962-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
2940	2200	1820	1640	1560	1500	1430	1380	1340	1290	1270	1250	1220	1200	1150

14087500 CROOKED RIVER NEAR CULVER, OR

LOCATION.--Lat 44°33'40", long 121°16'10", in sec.3 (50 ft west of $\frac{1}{4}$ -corner on line between sec.2 and 3), T.12 S., R.12 E., Jefferson County, Hydrologic Unit 17070305, on right bank 1 mi upstream from mouth, 1.2 mi downstream from Cove powerplant, and 4 mi northwest of Culver.

DRAINAGE AREA.--4,330 mi², approximately, of which 500 mi² is probably noncontributing.

PERIOD OF RECORD.--October 1917 to September 1963.

GAGE.--Water-stage recorder. Datum of gage is 1,664.86 ft National Geodetic Vertical Datum of 1929. Prior to Aug. 2, 1945, staff gage at several sites within 1.2 mi of present site at various datums.

REMARKS.--Flow slightly regulated (since 1919) by Ochoco Reservoir (capacity, 47,500 acre-ft) and since Dec. 13, 1960, by Prineville Reservoir (capacity, 152,800 acre-ft); occasional diurnal fluctuation caused by powerplant 1.2 mi above station. Water is diverted for irrigation of land above station. The area served increased from about 30,000 acres in 1918 to 37,000 acres in 1946. Several hundred cubic feet per second of water diverted from Deschutes River for irrigation of other lands above station. Opal Springs and several other springs within about 17 mi above station contribute about 1,000 ft³/s to flow.

AVERAGE DISCHARGE.--46 years, 1,553 ft³/s, 1,124,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 8,260 ft³/s Mar. 30, 31, 1943, gage height, 6.70 ft, site and datum then in use; minimum recorded, 920 ft³/s Oct. 14, 1945.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1920-60

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1060	1546	1285	131	.10	6.9
NOVEMBER	1116	1522	1319	125	.09	7.0
DECEMBER	1156	2197	1413	242	.17	7.5
JANUARY	1146	2326	1471	273	.19	7.9
FEBRUARY	1170	3977	1751	532	.30	9.3
MARCH	1294	3387	2097	590	.28	11.2
APRIL	1204	4820	2547	838	.33	13.6
MAY	1134	2966	1744	464	.27	9.3
JUNE	1060	2464	1376	269	.20	7.3
JULY	995	1491	1243	114	.09	6.6
AUGUST	970	1413	1229	112	.09	6.6
SEPTEMBER	1028	1442	1261	117	.09	6.7
ANNUAL	1234	2066	1559	237	.15	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1921-60

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	1200	1120	1080	1050	1010	987
3	1200	1120	1080	1050	1010	987
7	1200	1120	1080	1050	1010	987
14	1210	1120	1080	1050	1010	987
30	1210	1130	1080	1050	1010	987
60	1220	1130	1090	1050	1020	990
90	1230	1140	1100	1060	1030	1000
120	1240	1150	1100	1070	1030	1010
183	1260	1170	1130	1090	1060	1030

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1920-60

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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3170 4510 6280 7410 8770 9750 10700

WEIGHTED SKEW = -.228

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1920-60

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SEC- UTIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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1	4340	5980	7000	8210	9060	9860
3	3970	5490	6450	7610	8450	9260
7	3510	4750	5530	6460	7120	7770
15	3080	4110	4780	5600	6200	6790
30	2690	3500	4030	4690	5180	5670
60	2360	2980	3370	3840	4180	4510
90	2160	2690	3020	3420	3710	4000

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1920-60

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
2840	2290	1940	1710	1580	1500	1430	1360	1300	1240	1210	1190	1160	1140	1110

DESCHUTES RIVER BASIN

14088000 LAKE CREEK NEAR SISTERS, OR

LOCATION.--Lat 44°25'35", long 121°43'30", in NE¼SW¼ sec.24, T.13 S., R.8 E., Deschutes County, Hydrologic Unit 17070301, on left bank 300 ft downstream from Suttle Lake and 13 mi northwest of Sisters.

DRAINAGE AREA.--22.2 mi².

PERIOD OF RECORD.--June to November 1911, March to September 1912, May to October 1913, April 1915 to September 1982. Monthly discharge only for some periods, published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 3,431.68 ft National Geodetic Vertical Datum of 1929. Prior to Apr. 1, 1916, nonrecording gage at two sites 400 ft upstream at different datums. Apr. 1, 1916, to Oct. 12, 1928, nonrecording gage or water-stage recorder at site 640 ft downstream at different datum. Oct. 13, 1928, to Aug. 13, 1967, water-stage recorder at site 600 ft downstream at datum 1.61 ft lower.

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

AVERAGE DISCHARGE.--67 years (water years 1916-82), 52.5 ft³/s, 38,040 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum recorded discharge, 446 ft³/s, Dec. 15, 1977, gage height, 4.78 ft, but may have been higher during period of no gage-height record Dec. 23, 1964; minimum, 1.0 ft³/s Nov. 4, 5, 1940; minimum daily, 8 ft³/s Nov. 5, 1940, Oct. 6, 1942.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1918-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	17	67	33	7.2	.22	5.2
NOVEMBER	24	98	41	13	.31	6.5
DECEMBER	23	178	60	32	.53	9.6
JANUARY	23	147	65	30	.46	10.3
FEBRUARY	28	132	62	24	.39	9.9
MARCH	27	169	56	20	.36	8.9
APRIL	34	111	62	15	.25	9.9
MAY	38	157	80	25	.31	12.7
JUNE	29	162	67	29	.44	10.6
JULY	22	69	39	9.2	.24	6.3
AUGUST	22	43	32	5.6	.17	5.1
SEPTEMBER	19	40	31	5.1	.17	4.9
ANNUAL	27	77	52	11	.21	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1919-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	26	20	16	13	9.6	7.7
3	27	21	18	16	13	11
7	28	23	20	18	15	14
14	29	24	22	20	17	16
30	30	25	23	21	19	17
60	30	26	24	22	21	19
90	31	27	24	23	21	19
120	32	27	25	23	22	20
183	35	30	27	26	24	22

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1916-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
114	165	243	298	372	429	489
WEIGHTED SKEW = .085						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1918-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	154	241	307	399	475	556
3	149	229	287	367	431	498
7	139	202	244	298	338	378
15	123	165	190	219	239	258
30	106	135	152	170	181	192
60	90	110	120	131	137	142
90	80	96	104	111	116	119

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1918-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
108	89	77	69	63	57	49	43	39	35	34	32	30	28	25

14091500 METOLIUS RIVER NEAR GRANDVIEW, OR

LOCATION.--Lat 44°37'33", long 121°28'55", in SE¼SW¼ sec.12, T.11 S., R.10 E., Jefferson County, Hydrologic Unit 17070301, Deschutes National Forest, on right bank 1.0 mi upstream from maximum controlled pool of Lake Billy Chinook, 15.0 mi northwest of Culver, and at mile 13.6.

DRAINAGE AREA.--316 mi², at cableway 1.0 mi downstream, where all discharge measurements are made. Hydrologic drainage boundary uncertain owing to ground-water exchange.

PERIOD OF RECORD.--April 1910 to February 1912 (gage heights and discharge measurements only), March 1912 to December 1913, October 1921 to September 1982. Published as "at Hubbard's ranch, near Sisters" 1910, and as "at Hubbard's ranch, near Grandview" 1910-13.

GAGE.--Water-stage recorder. Datum of gage is 1,974.36 ft National Geodetic Vertical Datum of 1929 (levels by Portland General Electric Co.). Prior to Dec. 31, 1913, nonrecording gage at site 2.3 mi upstream at different datum. Oct. 1, 1921, to May 3, 1949, nonrecording gage and May 4, 1949, to June 18, 1963, water-stage recorder at site 2.7 mi downstream at datum 64 ft lower.

REMARKS.--No regulation. Many small diversions for irrigation above station. Stream is spring fed. Records herein are for measuring site.

AVERAGE DISCHARGE.--62 years (water years 1913, 1922-82), 1,493 ft³/s, 1,082,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,530 ft³/s Dec. 24, 1964, gage height, 6.81 ft; minimum, 1,080 ft³/s Feb. 17, 1932, Oct. 2-31, Nov. 6, 7, 10-14, 1942.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1922-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	1081	1560	1345	123	.09	7.5
NOVEMBER	1140	1816	1392	145	.10	7.8
DECEMBER	1110	2454	1494	253	.17	8.3
JANUARY	1154	2250	1523	263	.17	8.5
FEBRUARY	1148	2333	1556	274	.18	8.7
MARCH	1157	2504	1526	219	.14	8.5
APRIL	1162	1960	1543	181	.12	8.6
MAY	1244	2095	1606	192	.12	9.0
JUNE	1196	2118	1636	224	.14	9.1
JULY	1173	1910	1517	187	.12	8.5
AUGUST	1136	1746	1414	151	.11	7.9
SEPTEMBER	1103	1631	1364	131	.10	7.6
ANNUAL	1167	1845	1492	160	.11	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1923-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	1280	1180	1130	1100	1050	1020
3	1280	1190	1140	1100	1060	1030
7	1280	1190	1140	1110	1060	1030
14	1290	1200	1150	1110	1070	1040
30	1300	1210	1160	1120	1080	1050
60	1320	1220	1170	1130	1090	1060
90	1330	1230	1180	1140	1100	1070
120	1340	1240	1190	1150	1110	1080
183	1370	1270	1210	1170	1120	1100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1922-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1980	2600	3560	4260	5220	6010	6840
WEIGHTED SKEW = .490						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1922-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2420	3230	3840	4690	5390	6150
3	2220	2930	3460	4210	4830	5510
7	2050	2590	2980	3520	3960	4420
15	1910	2290	2540	2870	3110	3360
30	1800	2070	2240	2440	2580	2720
60	1710	1930	2050	2190	2280	2370
90	1670	1850	1950	2060	2130	2190

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1922-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1910	1800	1730	1680	1630	1580	1510	1460	1410	1360	1330	1300	1270	1230	1180

DESCHUTES RIVER BASIN

14092500 DESCHUTES RIVER NEAR MADRAS, OR

LOCATION.--Lat 44°43'34", long 121°14'45", in SE¼SW¼ sec.1, T.10 S., R.12 E., Jefferson County, Hydrologic Unit 17070306, on right bank 400 ft downstream from reregulating dam, 2.7 mi downstream from Pelton Dam, 8.5 mi northwest of Madras, and at mile 100.1.

DRAINAGE AREA.--7,820 mi², approximately.

PERIOD OF RECORD.--October 1923 to September 1982.

GAGE.--Water-stage recorder. Datum of gage is 1,390.25 ft National Geodetic Vertical Datum of 1929 (levels by Portland General Electric Co.). See WSP 1738 for history of changes prior to Nov. 23, 1957.

REMARKS.--Diurnal fluctuation caused by Lake Simtustus and reregulating reservoir since 1957, combined capacity for normal operation, 6,500 acre-ft. Some winter and spring runoff stored in Ochoco Reservoir, capacity, 47,500 acre-ft, in Crescent Lake, Crane Prairie and Wickiup Reservoirs, combined capacity, 354,600 acre-ft, and since 1960, in Prineville Reservoir, capacity, 152,800 acre-ft, and since 1964, in Lake Billy Chinook, capacity, 534,700 acre-ft. Large diversions in upper basin for irrigation.

AVERAGE DISCHARGE.--59 years, 4,493 ft³/s, 3,255,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,800 ft³/s Dec. 28, 1964, gage height, 6.29 ft; maximum gage height, 6.89 ft Jan. 1, 1943, site and datum then in use; minimum discharge, 916 ft³/s July 4, 1982, caused by power company testing control gates on dam.

STATISTICAL SUMMARIES (BEFORE CONSTRUCTION OF PELTON DAM)

MONTHLY AND ANNUAL MEAN DISCHARGES 1925-56

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	3098	4773	3709	415	.11	7.0
NOVEMBER	3570	5102	4227	438	.10	8.0
DECEMBER	3731	6520	4615	646	.14	8.7
JANUARY	3844	6968	4735	750	.16	9.0
FEBRUARY	3900	8187	5056	962	.19	9.6
MARCH	4135	7155	5413	916	.17	10.3
APRIL	3723	8495	5496	1279	.23	10.4
MAY	3431	6949	4438	806	.18	8.4
JUNE	3239	5759	4136	698	.17	7.8
JULY	3090	4498	3715	406	.11	7.0
AUGUST	3015	4309	3582	384	.11	6.8
SEPTEMBER	3022	4375	3629	387	.11	6.9
ANNUAL	3591	5632	4391	542	.12	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1926-56

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3400	3190	3100	3030	2960	--
3	3410	3200	3110	3040	2960	--
7	3420	3210	3120	3040	2970	--
14	3440	3220	3120	3050	2970	--
30	3460	3230	3130	3060	2980	--
60	3500	3250	3140	3060	2980	--
90	3540	3280	3160	3070	2980	--
120	3590	3320	3190	3100	3000	--
183	3730	3420	3280	3180	3070	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1925-56

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
6580	8160	10200	11600	13200	14400	--
WEIGHTED SKEW = .174						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1925-56

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	7760	9780	11100	12800	14100	--
3	7420	9310	10600	12200	13400	--
7	6900	8470	9510	10800	11800	--
15	6340	7710	8650	9870	10800	--
30	5890	7050	7840	8870	9660	--
60	5540	6480	7100	7880	8460	--
90	5310	6140	6690	7380	7890	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1925-56

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
6430	5730	5310	4980	4770	4590	4370	4170	3990	3760	3650	3540	3440	3350	3230

DESCHUTES RIVER BASIN

14092500 DESCHUTES RIVER NEAR MADRAS, OR--Continued

STATISTICAL SUMMARIES (AFTER COMPLETION OF ROUND BUTTE DAM)

MONTHLY AND ANNUAL MEAN DISCHARGES 1964-82

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1965-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- TION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	3085	5097	4105	452	.11	7.4
NOVEMBER	3521	5361	4620	420	.09	8.3
DECEMBER	3951	6655	5174	681	.13	9.3
JANUARY	3305	8097	5641	1068	.19	10.2
FEBRUARY	3094	8162	5243	1308	.25	9.5
MARCH	3455	9590	5259	1357	.26	9.5
APRIL	3602	6804	4895	861	.18	8.8
MAY	3554	5505	4345	568	.13	7.8
JUNE	3492	5134	4232	447	.11	7.6
JULY	3059	4786	4022	420	.10	7.3
AUGUST	3064	4718	3939	358	.09	7.1
SEPTEMBER	3081	4414	3936	304	.08	7.1
ANNUAL	3558	5357	4615	498	.11	100

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3240	3010	2900	2820	--	--
3	3330	3110	3000	2920	--	--
7	3460	3220	3110	3020	--	--
14	3610	3350	3220	3110	--	--
30	3820	3550	3400	3260	--	--
60	3890	3610	3440	3300	--	--
90	3930	3630	3460	3320	--	--
120	3970	3650	3480	3330	--	--
183	4040	3720	3550	3410	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORDMAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1964-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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WEIGHTED SKEW = --

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
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1	8210	10600	12300	14600	--	--
3	8000	10200	11800	13800	--	--
7	7550	9460	10800	12500	--	--
15	6860	8490	9640	11200	--	--
30	6270	7530	8390	9510	--	--
60	5740	6700	7350	8210	--	--
90	5570	6410	6930	7590	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1964-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
6780	6080	5670	5330	5090	4870	4540	4300	4090	3930	3850	3780	3710	3610	3410

DESCHUTES RIVER BASIN

14093000 SHITKE CREEK NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°45'41", long 121°13'57", in NW¼NW¼ sec.30, T.9 S., R.13 E., Jefferson County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on left bank 1.9 mi east of Warm Springs and at mile 0.3.

DRAINAGE AREA.--105 mi².

PERIOD OF RECORD.--October 1911 to September 1916, October 1923 to September 1928, October 1972 to September 1974.

GAGE.--Nonrecording gage. Altitude of gage is 1,380 ft, from topographic map.

REMARKS.--No regulation. Some water is diverted for mill pond at point 0.3 mi above station.

AVERAGE DISCHARGE.--12 years, 110 ft³/s, 79,695 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 2,300 ft³/s Jan. 15, 1974; minimum daily, 20 ft³/s Dec. 8-15, 1972.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1912-74

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	42	106	63	19	.30	4.8
NOVEMBER	50	167	96	32	.34	7.3
DECEMBER	64	204	108	40	.37	8.2
JANUARY	54	432	132	99	.75	10.0
FEBRUARY	60	261	135	64	.48	10.2
MARCH	65	209	118	39	.33	9.0
APRIL	66	200	131	41	.31	9.9
MAY	86	238	155	45	.29	11.8
JUNE	69	315	148	77	.52	11.2
JULY	47	213	105	52	.50	8.0
AUGUST	36	106	67	25	.37	5.1
SEPTEMBER	36	84	60	17	.29	4.5
ANNUAL	71	175	110	33	.30	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1913-74

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	43	35	31	29	--	--
3	45	36	32	29	--	--
7	46	37	33	30	--	--
14	47	37	33	30	--	--
30	49	39	35	32	--	--
60	50	40	36	33	--	--
90	54	42	37	34	--	--
120	57	45	40	37	--	--
183	67	56	51	48	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1912-74

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
306	524	934	1280	--	--	--
WEIGHTED SKEW = .255						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1912-74

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	482	867	1240	--	--	--
3	388	703	1000	--	--	--
7	313	534	735	--	--	--
15	237	367	480	--	--	--
30	192	271	332	--	--	--
60	162	219	260	--	--	--
90	152	197	229	--	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1912-74

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
242	186	164	146	130	121	105	90	79	69	64	60	56	49	42

DESCHUTES RIVER BASIN

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14093500 DESCHUTES RIVER AT MECCA, OR

LOCATION.--Lat 44°46'20", long 121°12'30", in SW¼ sec.20, T.9 S., R.13 E., Jefferson County, Hydrologic Unit 17070306, at road bridge, 1.5 mi downstream from Shitike Creek.

DRAINAGE AREA.--7,940 mi², approximately.

PERIOD OF RECORD.--June 1911 to January 1927.

GAGE.--Water-stage recorder. Altitude of gage is 1,350 ft National Geodetic Vertical Datum of 1929 (from river-profile map). Prior to Aug. 10, 1924, staff gage at same site and datum.

REMARKS.--Many diversions for irrigation above station (about 56,000 acres irrigated in 1911; 71,500 acres in 1927). Some regulation by Ochoco Reservoir (capacity, 47,500 acre-ft) since 1919, and Crescent Lake and Crane Prairie Reservoir since 1922.

AVERAGE DISCHARGE.--15 years (water years 1912-26), 4,891 ft³/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,200 ft³/s Jan. 6, 1923, gage height, 6.9 ft, from rating curve extended above 11,000 ft³/s; minimum, 3,170 ft³/s Aug. 27-30, 1920.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1912-27

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1913-26

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	3487	4595	4158	312	.08	7.1
NOVEMBER	4214	5700	4688	337	.07	8.0
DECEMBER	4299	6455	4914	560	.11	8.4
JANUARY	4547	6475	5177	637	.12	8.8
FEBRUARY	4469	7241	5511	883	.16	9.4
MARCH	4722	7710	5725	970	.17	9.8
APRIL	4476	7583	6380	1079	.17	10.9
MAY	3620	7720	5329	1130	.21	9.1
JUNE	3437	6022	4727	872	.18	8.1
JULY	3300	5606	4248	691	.16	7.2
AUGUST	3306	4550	3896	413	.11	6.6
SEPTEMBER	3276	4524	3963	391	.10	6.7
ANNUAL	4152	5507	4892	429	.09	100

PERIOD (CON- SEC- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3780	3490	3330	3190	--	--
3	3790	3490	3330	3200	--	--
7	3800	3510	3350	3220	--	--
14	3830	3530	3380	3250	--	--
30	3880	3580	3420	3290	--	--
60	3930	3620	3460	3320	--	--
90	4000	3690	3520	3380	--	--
120	4080	3750	3580	3430	--	--
183	4270	3920	3720	3560	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1912-26

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1912-26

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
8260	9720	11600	12700	14100	--	--
WEIGHTED SKEW = .216						

PERIOD (CON- SEC- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	9660	11200	12100	13200	--	--
3	9080	10400	11200	12000	--	--
7	8290	9310	9850	10400	--	--
15	7530	8350	8770	9210	--	--
30	6990	7790	8210	8650	--	--
60	6460	7170	7560	7970	--	--
90	6140	6820	7190	7600	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1912-26

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
7230	6470	5990	5600	5300	5140	4870	4690	4480	4300	4210	4050	3880	3700	3470

14097100 WARM SPRINGS RIVER NEAR KAHNEETA HOT SPRINGS, OR

LOCATION.--Lat 44°51'24", long 121°08'55", in SE¼SW¼ sec.23, T.8 S., R.13 E., Wasco County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank 25 ft upstream from bridge, 2.5 mi east of Kahneeta Hot Springs, and at mile 4.6.

DRAINAGE AREA.--526 mi².

PERIOD OF RECORD.--October 1972 to September 1982.

GAGE.--Water-stage recorder. Altitude of gage is 1,400 ft, from topographic map.

REMARKS.--No regulation. Diversions above station.

AVERAGE DISCHARGE.--10 years, 442 ft³/s, 11.41 in/yr, 320,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,540 ft³/s Dec. 15, 1977, gage height, 8.86 ft; minimum daily, 160 ft³/s Jan. 1, 1979.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1973-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	220	318	263	34	.13	4.9
NOVEMBER	244	396	308	48	.15	5.8
DECEMBER	277	1210	606	309	.51	11.4
JANUARY	201	1520	650	415	.64	12.2
FEBRUARY	264	1534	679	351	.52	12.8
MARCH	274	837	575	182	.32	10.8
APRIL	278	805	511	154	.30	9.6
MAY	278	819	518	198	.38	9.7
JUNE	246	803	410	176	.43	7.7
JULY	216	401	284	63	.22	5.3
AUGUST	212	323	260	42	.16	4.9
SEPTEMBER	215	301	255	34	.13	4.8
ANNUAL	259	660	442	127	.29	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1974-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	228	194	177	164	--	--
3	230	197	181	167	--	--
7	231	201	187	177	--	--
14	231	205	193	184	--	--
30	233	211	202	195	--	--
60	238	218	210	205	--	--
90	243	223	215	209	--	--
120	247	226	217	211	--	--
183	262	238	229	224	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1973-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1880	3300	5580	7240	--	--	--
WEIGHTED SKEW = -.255						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1973-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2	5	10	25	50	100
	50%	20%	10%	4%	2%	1%
1	2640	4620	5690	--	--	--
3	2180	3830	4780	--	--	--
7	1670	2870	3600	--	--	--
15	1250	1970	2380	--	--	--
30	954	1380	1610	--	--	--
60	762	1050	1200	--	--	--
90	696	934	1060	--	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1973-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
902	744	659	597	538	474	363	319	294	274	262	249	237	229	221

14097200 WHITE RIVER NEAR GOVERNMENT CAMP, OR

LOCATION.--Lat 45°10'40", long 121°34'30", in NE1/4SW1/4 sec.32, T.4 S., R.10 E., Wasco County, Hydrologic Unit 17070306, in Mount Hood National Forest, on left bank at Faith Spring, 1.4 mi above Klip Creek, and at mile 33.3.

DRAINAGE AREA.--40.7 mi².

PERIOD OF RECORD.--July 1969 to October 1979, July 1980 to September 1981.

GAGE.--Water-stage recorder. Altitude of gage is 2,740 ft from topographic map.

REMARKS.--No regulation or diversion above station.

AVERAGE DISCHARGE.--11 years, 165 ft³/s, 55.05 in/yr, 119,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,650 ft³/s Dec. 13, 1977, gage height, 6.63 ft; minimum, 20 ft³/s Jan. 6, 1977.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1970-81

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	46	124	71	22	.32	3.6
NOVEMBER	59	359	117	87	.75	5.9
DECEMBER	49	593	229	155	.68	11.6
JANUARY	44	378	224	118	.53	11.3
FEBRUARY	48	300	185	82	.44	9.4
MARCH	60	515	183	123	.67	9.3
APRIL	127	252	182	41	.22	9.2
MAY	126	500	307	145	.47	15.5
JUNE	76	571	231	143	.62	11.7
JULY	59	215	110	46	.42	5.6
AUGUST	46	122	73	23	.31	3.7
SEPTEMBER	44	124	65	20	.31	3.3
ANNUAL	74	234	165	52	.31	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1971-79

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	46	41	38	35	--	--
3	46	41	38	35	--	--
7	48	42	38	35	--	--
14	50	44	40	38	--	--
30	54	47	44	42	--	--
60	57	50	47	45	--	--
90	61	52	49	48	--	--
120	66	57	52	49	--	--
183	94	74	63	54	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1970-81

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
586	1280	2590	3640	--	--	--
WEIGHTED SKEW = -.351						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1970-81

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	1200	1780	2040	--	--	--
3	915	1300	1480	--	--	--
7	711	911	987	--	--	--
15	544	700	768	--	--	--
30	428	570	642	--	--	--
60	336	438	491	--	--	--
90	292	376	417	--	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1970-81

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
470	341	273	225	195	171	143	118	96	77	70	64	58	53	49

DESCHUTES RIVER BASIN

14101500 WHITE RIVER BELOW TYGH VALLEY, OR

LOCATION.--Lat 45°14'30", long 121°05'38", in NE¼NE¼ sec.7, T.4 S., R.14 E., Wasco County, Hydrologic Unit 17070306, on left bank 200 ft downstream from former Pacific Power & Light Co. powerplant at White River Falls, 3.9 mi east of town of Tygh Valley, and at mile 2.0.

DRAINAGE AREA.--417 mi².

PERIOD OF RECORD.--October 1917 to September 1982.

GAGE.--Water-stage recorder. Datum of gage is 870.15 ft National Geodetic Vertical Datum of 1929 (levels by Pacific Power & Light Co.). Prior to July 28, 1931, at site 750 ft downstream at different datum. July 28, 1931, to Sept. 30, 1954, at site 700 ft downstream at different datums.

REMARKS.--No regulation. Diversions above station for Irrigation.

AVERAGE DISCHARGE.--65 years, 427 ft³/s, 309,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,300 ft³/s Jan. 6, 1923, gage height, about 13.3 ft, site and datum then in use, from rating curve extended above 5,000 ft³/s; minimum, 7.5 ft³/s Aug. 31, 1961.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1918-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	88	286	153	45	.29	3.0
NOVEMBER	113	622	267	136	.51	5.2
DECEMBER	120	1683	517	387	.75	10.1
JANUARY	117	1998	602	398	.66	11.7
FEBRUARY	128	1574	649	345	.53	12.6
MARCH	129	1428	569	225	.40	11.1
APRIL	223	1445	695	259	.37	13.5
MAY	202	1818	761	342	.45	14.8
JUNE	132	1222	469	265	.57	9.1
JULY	96	392	199	69	.34	3.9
AUGUST	80	190	135	26	.20	2.6
SEPTEMBER	86	182	127	23	.18	2.5
ANNUAL	139	726	427	131	.31	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1919-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	106	90	81	75	68	64
3	107	91	83	76	70	65
7	109	93	85	78	71	66
14	112	96	88	82	76	71
30	117	101	93	87	80	76
60	124	106	98	91	84	79
90	130	111	102	95	87	83
120	138	116	107	100	92	88
183	178	141	126	116	106	100

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1918-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1780	3060	5280	7010	9490	11500	13800
WEIGHTED SKEW = -.005						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1918-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	2550	4300	5540	7170	8410	9660
3	2150	3510	4460	5700	6640	7580
7	1720	2620	3200	3910	4420	4910
15	1380	1940	2260	2610	2840	3040
30	1140	1500	1670	1830	1910	1980
60	949	1220	1340	1450	1510	1550
90	836	1050	1140	1220	1260	1290

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1918-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1180	928	767	658	574	499	373	272	206	164	150	139	129	118	105

DESCHUTES RIVER BASIN

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14103000 DESCHUTES RIVER AT MOODY, NEAR BIGGS, OR

LOCATION.--Lat 45°37'20", long 120°54'05", in SW¼SE¼ sec.26, T.2 N., R.15 E., Sherman County, Hydrologic Unit 17070306, on right bank at Moody, 4.0 mi southwest of Biggs, and at mile 1.4.

DRAINAGE AREA.--10,500 mi², approximately.

PERIOD OF RECORD.--October 1897 to December 1899 (published as "near Moro"), July 1906 to September 1982. Monthly discharge only for some periods, published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 167.54 ft National Geodetic Vertical Datum of 1929. Oct. 19, 1897, to Dec. 31, 1899, nonrecording gage at site 10 mi upstream at different datum. July 22, 1906, to July 18, 1930, nonrecording gage at site 300 ft downstream at datum 0.50 ft lower.

REMARKS.--Some fluctuation caused by regulation at Lake Simtustus since 1957. Some winter and spring runoff stored in Ochoco Reservoir, capacity, 46,420 acre-ft, in Crescent Lake, Crane Prairie and Wicklup Reservoirs, combined capacity, 323,390 acre-ft and since 1960, in Prineville Reservoir (see station 14080400), and since 1964 in Lake Billy Chinook (see station 14092100). Large diversions in upper river basin for irrigation.

AVERAGE DISCHARGE.--78 years, 5,827 ft³/s, 4,222,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 75,500 ft³/s Dec. 22, 1964, gage height, 11.80 ft, from rating curve extended above 47,000 ft³/s; minimum, 2,400 ft³/s Dec. 5, 1957.

STATISTICAL SUMMARIES (BEFORE CONSTRUCTION OF UPSTREAM RESERVOIRS)

MONTHLY AND ANNUAL MEAN DISCHARGES 1898-22

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1899-22

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	4029	6493	5117	592	.12	6.5
NOVEMBER	4713	9378	6059	1106	.18	7.7
DECEMBER	4804	10030	6664	1611	.24	8.5
JANUARY	5049	9419	6852	1136	.17	8.7
FEBRUARY	5305	13880	7494	2257	.30	9.5
MARCH	5672	14350	8075	2230	.28	10.3
APRIL	6424	11860	8782	1470	.17	11.1
MAY	5078	10570	7697	1623	.21	9.8
JUNE	4394	10660	6612	1485	.22	8.4
JULY	3905	8698	5588	1196	.21	7.1
AUGUST	3679	6746	4913	729	.15	6.2
SEPTEMBER	3792	6499	4913	659	.13	6.2
ANNUAL	4980	7866	6517	832	.13	100

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	4530	4020	3770	3570	--	--
3	4530	4020	3770	3570	--	--
7	4600	4080	3820	3620	--	--
14	4680	4160	3890	3670	--	--
30	4750	4230	3940	3700	--	--
60	4810	4300	4020	3790	--	--
90	4870	4360	4080	3840	--	--
120	4950	4440	4160	3920	--	--
183	5180	4680	4400	4160	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1898-22

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1898-22

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
12100	16300	22200	26300	31700	--	--
WEIGHTED SKEW = .179						

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	15900	21100	24900	29900	--	--
3	14300	18700	22000	26600	--	--
7	12400	15600	18100	21600	--	--
15	10900	13200	14800	17100	--	--
30	9840	11600	12800	14300	--	--
60	9140	10500	11400	12300	--	--
90	8600	10000	10800	11800	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1898-22

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
10700	9410	8460	7940	7450	7010	6370	5880	5490	5220	5110	4940	4760	4480	4230

DESCHUTES RIVER BASIN

14103000 DESCHUTES RIVER AT MOODY, NEAR BIGGS, OR--Continued

STATISTICAL SUMMARIES (AFTER THE COMPLETION OF UPSTREAM RESERVOIRS)

MONTHLY AND ANNUAL MEAN DISCHARGES 1965-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	3385	5594	4624	515	.11	6.6
NOVEMBER	3910	6420	5294	534	.10	7.5
DECEMBER	4610	13150	6939	2147	.31	9.9
JANUARY	5086	11290	7786	1775	.23	11.1
FEBRUARY	4401	11750	7284	1881	.26	10.4
MARCH	5058	13580	7029	1965	.28	10.0
APRIL	4467	9246	6439	1287	.20	9.2
MAY	4141	7428	5907	1025	.17	8.4
JUNE	4202	7643	5367	953	.18	7.6
JULY	3992	5917	4679	559	.12	6.7
AUGUST	3980	5359	4439	409	.09	6.3
SEPTEMBER	3957	5092	4459	321	.07	6.3
ANNUAL	4687	7171	5848	766	.13	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1966-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	3810	3550	3430	3340	--	--
3	3880	3620	3500	3410	--	--
7	3980	3730	3610	3520	--	--
14	4100	3900	3810	3760	--	--
30	4250	4030	3930	3860	--	--
60	4340	4090	3980	3900	--	--
90	4390	4120	4000	3910	--	--
120	4470	4180	4060	3970	--	--
183	4670	4340	4190	4090	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1965-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
10600	15900	25400	33200	45100	--	--
WEIGHTED SKEW = .475						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1965-82

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	13400	21100	28800	42500	--	--
3	12100	18600	24700	35100	--	--
7	11100	16100	20600	27700	--	--
15	9980	13600	16400	20500	--	--
30	8900	11300	13100	15400	--	--
60	7950	9860	11200	13000	--	--
90	7630	9210	10300	11600	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1965-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
9190	8170	7530	6990	6560	6210	5680	5260	4930	4640	4500	4390	4280	4140	3980

14113200 MOSIER CREEK NEAR MOSIER, OR

LOCATION.--Lat 45°38'55", long 121°22'35", in NW¼NW¼ sec.19, T.2 N., R.12 E., Wasco County, Hydrologic Unit 17070105, on left bank 0.1 mi downstream from West Fork Mosier Creek, 2.5 mi southeast of Mosier, and at mile 3.0.

DRAINAGE AREA.--41.5 mi².

PERIOD OF RECORD.--April 1963 to September 1981.

GAGE.--Water-stage recorder. Altitude of gage is 425 ft, from topographic map. Prior to July 22, 1976, water-stage recorder at site 20 ft upstream at datum 3.57 ft higher. July 22, 1976, to Dec. 12, 1977, water-stage recorder at site 20 ft upstream at datum 1.57 ft higher.

REMARKS.--No regulation. Several small pumping diversions for irrigation above station.

AVERAGE DISCHARGE.--18 years, 28.5 ft³/s, 20,650 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,790 ft³/s Dec. 23, 1964, gage height, 8.9 ft, from flood profile, from rating curve extended above 1,000 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.35 ft³/s July 25, 26, Aug. 6, 7, 1978.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1964-81

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	2.4	3.7	3.0	.5	.15	.9
NOVEMBER	3.6	29	7.7	6.2	.81	2.2
DECEMBER	3.7	169	42	52	1.24	12.3
JANUARY	3.7	240	96	70	.73	27.9
FEBRUARY	3.8	129	71	37	.52	20.5
MARCH	5.4	144	65	44	.67	18.9
APRIL	4.7	95	37	27	.72	10.9
MAY	3.1	26	12	7.4	.60	3.6
JUNE	1.7	9.1	4.2	1.8	.43	1.2
JULY	1.0	3.7	2.1	.8	.38	.6
AUGUST	1.0	2.6	1.6	.4	.27	.5
SEPTEMBER	1.1	2.6	1.9	.4	.20	.5
ANNUAL	3.0	53	29	14	.48	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1965-81

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	1.1	.7	.6	.5	--	--
3	1.1	.8	.6	.5	--	--
7	1.2	.8	.6	.5	--	--
14	1.2	.9	.7	.6	--	--
30	1.3	.9	.8	.7	--	--
60	1.5	1.2	1.1	1.0	--	--
90	1.7	1.4	1.3	1.2	--	--
120	1.9	1.7	1.5	1.4	--	--
183	2.8	2.4	2.1	2.0	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1964-81

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
290	670	1610	2590	4360	--	--
WEIGHTED SKEW = .168						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1964-81

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	602	1150	1380	1540	--	--
3	462	802	923	999	--	--
7	333	521	573	599	--	--
15	228	336	363	376	--	--
30	156	206	215	218	--	--
60	113	157	168	173	--	--
90	93	131	140	145	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1964-81

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
119	75	53	38	28	21	9.3	5.3	3.8	2.9	2.5	2.1	1.9	1.6	1.3

HOOD RIVER BASIN

14113400 DOG RIVER NEAR PARKDALE, OR

LOCATION.--Lat 45°24'30", long 121°31'10", in SW¼ sec.11, T.2 S., R.10 E., Hood River County, Hydrologic Unit 17070105, Mount Hood National Forest, on right bank 100 ft upstream from city of The Dalles municipal diversion to Mill Creek basin, and 8.8 mi south of Parkdale.

DRAINAGE AREA.--4.50 mi².

PERIOD OF RECORD.--October 1959 to September 1971.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 4,347 ft National Geodetic Vertical Datum of 1929 (levels by city of The Dalles).

REMARKS.--No regulation or diversion above station.

AVERAGE DISCHARGE.--12 years, 7.09 ft³/s, 21.40 in/yr, 5,140 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 100 ft³/s May 29, 1969, gage height, 3.92 ft, from rating curve extended above 30 ft³/s; minimum, 0.03 ft³/s Dec. 1, 1967, result of freezeup.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1961-71

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	2.1	3.6	2.5	.4	.17	2.9
NOVEMBER	2.1	5.6	3.5	1.1	.31	4.0
DECEMBER	2.0	14	4.5	3.6	.81	5.2
JANUARY	2.1	12	5.5	2.8	.50	6.3
FEBRUARY	1.8	17	8.7	5.2	.60	10.1
MARCH	2.0	13	6.1	3.4	.55	7.1
APRIL	3.0	11	6.4	2.6	.41	7.4
MAY	8.4	40	16	8.7	.56	18.1
JUNE	7.5	36	18	8.4	.46	21.1
JULY	3.8	18	8.3	3.9	.47	9.6
AUGUST	2.9	7.2	4.2	1.2	.29	4.9
SEPTEMBER	2.2	4.6	2.9	.7	.23	3.4
ANNUAL	4.6	10	7.2	1.9	.27	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1962-71

PERIOD (CON- SECU- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	1.4	.4	.2	.1	--	--
3	1.5	.6	.3	.1	--	--
7	1.7	1.1	.8	.6	--	--
14	1.9	1.5	1.4	1.2	--	--
30	2.1	1.9	1.8	1.7	--	--
60	2.2	2.1	2.0	2.0	--	--
90	2.5	2.2	2.1	2.0	--	--
120	2.7	2.3	2.1	2.0	--	--
183	3.2	2.6	2.4	2.2	--	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1961-71DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
24	36	55	70	--	--	--
WEIGHTED SKEW = .300						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1961-71DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SECU- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	31	46	58	--	--	--
3	28	42	53	--	--	--
7	25	37	47	--	--	--
15	22	32	41	--	--	--
30	19	28	36	--	--	--
60	16	22	27	--	--	--
90	13	18	22	--	--	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1961-71

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
21	16	13	11	9.1	7.7	5.9	4.7	3.7	3.1	2.8	2.6	2.4	2.2	1.9

14118500 WEST FORK HOOD RIVER NEAR DEE, OR

LOCATION.--Lat 45°35'55", long 121°38'05", In SE¼ sec.1, T.1 N., R.9 E., Hood River County, Hydrologic Unit 17070105, on left bank 0.3 mi upstream from Dead Point Creek, 0.8 mi northwest of Dee, and at mile 0.4.

DRAINAGE AREA.--95.6 mi².

PERIOD OF RECORD.--September 1913 to February 1916 (Incomplete), June 1932 to September 1982.

GAGE.--Water-stage recorder. Datum of gage is 802.1 ft National Geodetic Vertical Datum of 1929. Sept. 1, 1913, to Feb. 12, 1916, nonrecording gage at site 0.5 mi upstream at different datum.

REMARKS.--No regulation. Dee Irrigation District canal diverts from right bank about 6 mi above station for irrigation above station and in Middle Fork basin. Diversions from Green Point Creek basin above station for irrigation near Oak Grove; water from two of these diversions is carried in Hood River Irrigation District canal.

AVERAGE DISCHARGE.--51 years (water years 1914, 1933-82), 558 ft³/s, 404,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge not determined, Dec. 22, 1964, gage height, 27.0 ft from floodmarks; maximum daily, 15,000 ft³/s Dec. 23, 1964; minimum, 93 ft³/s Aug. 22, 1941.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1933-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	125	817	283	173	.61	4.2
NOVEMBER	109	1499	629	349	.55	9.4
DECEMBER	202	2589	944	525	.56	14.1
JANUARY	191	2362	858	483	.56	12.8
FEBRUARY	229	1918	785	370	.47	11.7
MARCH	386	1391	675	203	.30	10.1
APRIL	288	1335	754	230	.31	11.2
MAY	312	1305	696	238	.34	10.4
JUNE	195	1132	477	219	.46	7.1
JULY	140	496	260	86	.33	3.9
AUGUST	109	267	178	38	.22	2.7
SEPTEMBER	109	378	172	46	.26	2.6
ANNUAL	267	837	558	123	.22	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1933-82

PERIOD (CON- SEC- TIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	130	115	107	102	96	92
3	132	116	109	103	97	93
7	134	118	110	104	98	94
14	139	121	113	107	100	96
30	145	126	117	109	102	97
60	157	134	123	115	107	102
90	169	142	130	122	113	108
120	190	155	141	131	121	116
183	268	211	187	171	155	145

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1933-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN
YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT

1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
4820	6880	9890	12000	14800	17000	19200
WEIGHTED SKEW = .091						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1933-82DISCHARGE, IN CFS, FOR INDICATED RECURRENCE
INTERVAL, IN YEARS, AND ANNUAL
EXCEEDANCE PROBABILITY, IN PERCENT

PERIOD (CON- SEC- TIVE DAYS)	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	5080	7390	8790	10400	11500	12500
3	3630	5310	6420	7800	8810	9810
7	2570	3670	4360	5190	5780	6340
15	1850	2530	2930	3380	3680	3970
30	1430	1900	2170	2460	2660	2830
60	1140	1460	1630	1820	1940	2060
90	1020	1270	1390	1520	1600	1670

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1933-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME

5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
1490	1090	894	766	683	612	494	403	316	238	210	188	168	150	133

14120000 HOOD RIVER AT TUCKER BRIDGE, NEAR HOOD RIVER, OR

LOCATION.--Lat 45°39'20", long 121°32'50", in SE¼ sec.15, T.2 N., R.10 E., Hood River County, Hydrologic Unit 17070105, on right bank 25 ft downstream from Tucker Bridge, 0.5 mi upstream from Odell Creek, 4.0 mi southwest of town of Hood River, and at mile 6.1.

DRAINAGE AREA.--279 mi².

PERIOD OF RECORD.--October 1897 to December 1899, September 1913 to September 1914, August 1915 to September 1917, January 1965 to September 1982. Monthly discharge only for some periods, published in WSP 1318.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 383.2 ft National Geodetic Vertical Datum of 1929 (Oregon State Highway Department bench mark). Prior to July 23, 1915, nonrecording gage at bridge at various datums. July 23 to Dec. 21, 1915, water-stage recorder at site 0.8 mi upstream at different datum. January 1916 to September 1917, nonrecording gage at bridge at different datum. Jan. 16 to July 23, 1965, nonrecording gage at bridge.

REMARKS.--Some daily fluctuation caused by diversion dam above station and sawmill at Dee. Diversions for irrigation above station.

AVERAGE DISCHARGE.--22 years (water years 1898-99, 1914, 1916-17, 1966-82), 1,089 ft³/s, 789,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,300 ft³/s Dec. 13, 1977, gage height, 15.59 ft; minimum recorded, 136 ft³/s Sept. 16, 1915, caused by temporary storage behind dam at Dee.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 22, 1964, reached a stage of 20.6 ft, present datum, discharge, 33,200 ft³/s, from rating curve extended above 1,500 ft³/s on basis of slope-area measurement of peak flow.

STATISTICAL SUMMARIES

MONTHLY AND ANNUAL MEAN DISCHARGES 1898-82

MONTH	MINIMUM (CFS)	MAXIMUM (CFS)	MEAN (CFS)	STAN- DARD DEVI- ATION (CFS)	COEFFI- CIENT OF VARI- ATION	PERCENT OF ANNUAL RUNOFF
OCTOBER	327	929	499	169	.34	3.8
NOVEMBER	431	1989	1043	488	.47	7.9
DECEMBER	438	4109	1663	931	.56	12.6
JANUARY	363	3313	1722	819	.48	13.1
FEBRUARY	430	3367	1657	774	.47	12.6
MARCH	681	2915	1352	532	.39	10.3
APRIL	704	2358	1317	431	.33	10.0
MAY	559	2418	1298	496	.38	9.9
JUNE	464	2439	1059	564	.53	8.0
JULY	256	1687	674	385	.57	5.1
AUGUST	266	1088	448	193	.43	3.4
SEPTEMBER	271	804	424	125	.29	3.2
ANNUAL	465	1664	1090	309	.28	100

MAGNITUDE AND PROBABILITY OF ANNUAL LOW FLOW
BASED ON PERIOD OF RECORD 1899-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL NON- EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	20 5%	50 2%	100 1%
1	269	223	206	194	183	--
3	273	228	211	200	190	--
7	282	239	223	212	202	--
14	297	252	235	224	213	--
30	312	266	248	237	226	--
60	338	287	267	255	243	--
90	363	310	292	279	268	--
120	400	340	318	304	291	--
183	520	430	394	369	345	--

MAGNITUDE AND PROBABILITY OF INSTANTANEOUS PEAK FLOW
BASED ON PERIOD OF RECORD 1898-82

DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT						
1.25 80%	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
7290	11800	18500	23100	29200	33800	--
WEIGHTED SKEW = -.209						

MAGNITUDE AND PROBABILITY OF ANNUAL HIGH FLOW
BASED ON PERIOD OF RECORD 1898-82

PERIOD (CON- SEC- UTIVE DAYS)	DISCHARGE, IN CFS, FOR INDICATED RECURRENCE INTERVAL, IN YEARS, AND ANNUAL EXCEEDANCE PROBABILITY, IN PERCENT					
	2 50%	5 20%	10 10%	25 4%	50 2%	100 1%
1	8690	13100	15300	17300	18400	--
3	6420	9400	10900	12300	13000	--
7	4780	6760	7710	8580	9050	--
15	3490	4750	5360	5920	6240	--
30	2780	3590	3940	4240	4390	--
60	2270	2850	3090	3300	3400	--
90	2010	2460	2640	2780	2850	--

DURATION TABLE OF DAILY MEAN FLOW FOR PERIOD OF RECORD 1898-82

DISCHARGE, IN CFS, WHICH WAS EQUALED OR EXCEEDED FOR INDICATED PERCENT OF TIME														
5%	10%	15%	20%	25%	30%	40%	50%	60%	70%	75%	80%	85%	90%	95%
2660	2060	1740	1510	1350	1220	987	829	685	540	475	426	383	341	298

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