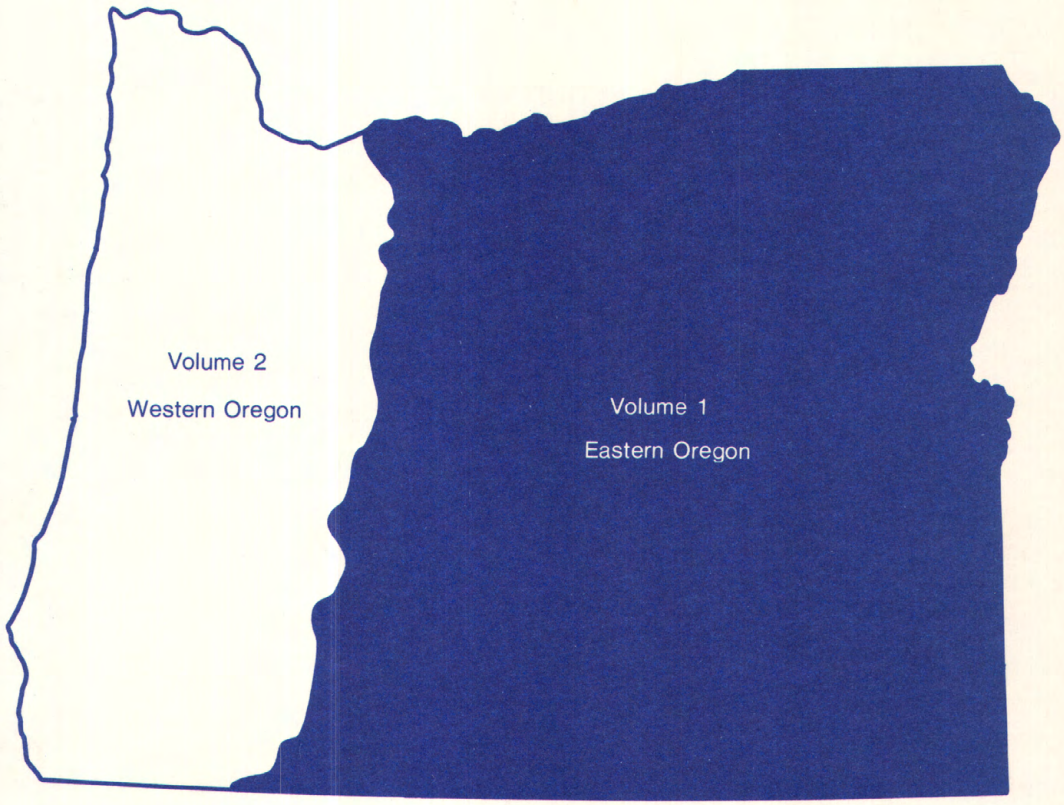
Water Resources Data Oregon Water Year 1986

Volume 1. Eastern Oregon



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT OR-86-1
Prepared in cooperation with the Oregon Water Resources Department and with other agencies

CALENDAR FOR WATER YEAR 1986

1985

OCTOBER

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1986

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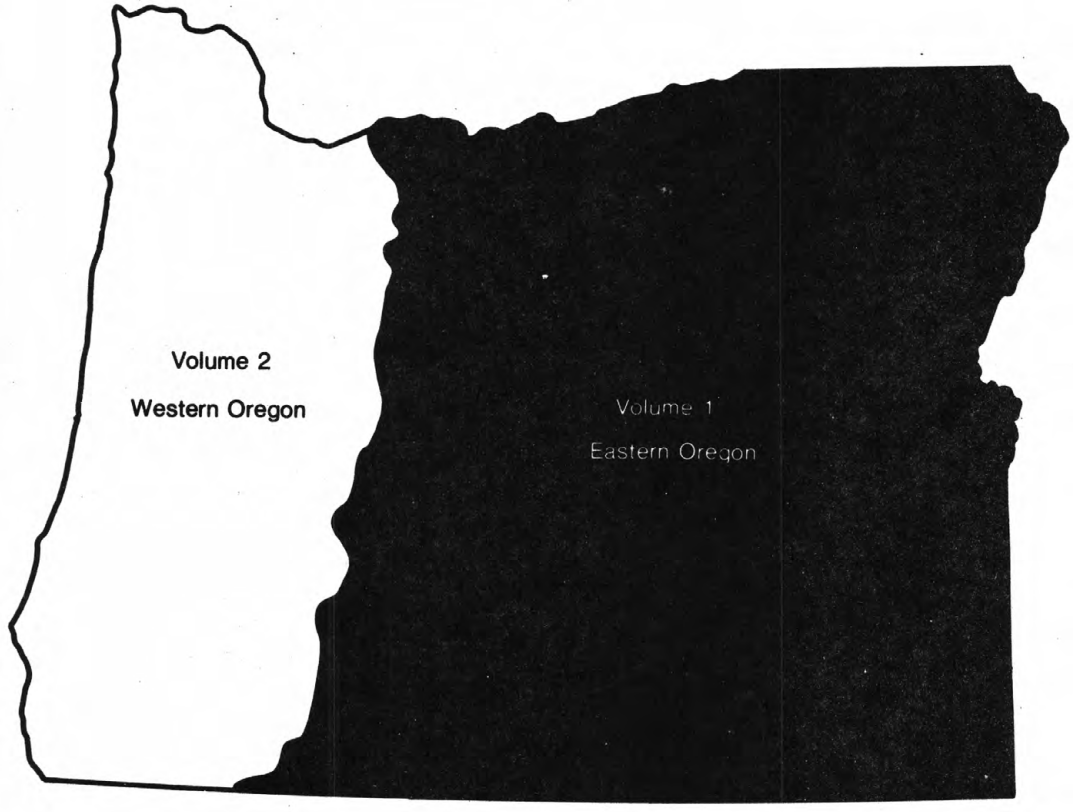
Water Resources Data Oregon Water Year 1986

Volume 1. Eastern Oregon

by C.W. Alexander, P.R. Boucher, R.L. Moffatt, and M.L. Smith



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT OR-86-1
Prepared in cooperation with the Oregon Water Resources Department and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

DONALD PAUL HODEL, Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

For additional information write to:

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Portland, Oregon 97232

1988

PREFACE

This volume of the annual Oregon hydrologic data report is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each State, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by State, local and Federal agencies, and the private sector for developing and managing our Nation's land and water resources. Hydrologic data for Oregon are contained in two volumes as follows:

Volume 1: Eastern Oregon
Volume 2: Western Oregon

The report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data, and who edited and assembled the reports. In addition to the authors, who had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to Geological Survey policy and established guidelines, the following individuals contributed significantly to the collection, processing, and tabulation of the data:

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This report was prepared in cooperation with the State of Oregon and with other agencies under the general supervision of Marvin O. Fretwell, State Chief, Oregon Office, and T. John Conomos, Regional Hydrologist, Western Region.

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Water Resources Data for the 1986 water year for Oregon consist of records of stage, discharge, and water quality of streams; and stage, contents, and water quality of lakes and reservoirs. This report, in two volumes, contains discharge records for 269 gaging stations; stage only records for 10 gaging stations; stage and contents for 39 lakes and reservoirs; water quality for 78 stations, and water quality for 3 precipitation stations. Also included are 5 crest-stage, partial-record stations. Additional water data were collected at various sites, not part of the systematic data collection program, and are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Oregon.

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CONTENTS

ILLUSTRATIONS

TABLES

NOTE.--Data for chemical quality of precipitation and miscellaneous sites are published in separate sections of the data report. See references at the end of this list of page numbers for these sections.

Letter after station name designates type of data: (d) discharge; (e) elevation; (g) gage height; (v) contents; (c) chemical, including periodic biological, microbiological, sediment, pesticide, and radiochemical where applicable; (s) daily suspended sediment; (t) water temperature; and (k) specific conductance.

VIII GAGING STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED

WATER RESOURCES DATA FOR OREGON 1986

INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with state agencies, obtains a large amount of data pertaining to the water resources of Oregon each water year. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make these data readily available to interested parties outside the Geological Survey, the data are published annually in this report series entitled "Water Resources Data - Oregon."

This report includes records on surface water in the State. Specifically, it contains: (1) Discharge records for 269 stream-gaging stations, stage only records for 10 gaging stations, 64 partial-record or miscellaneous streamflow stations, and 5 crest-stage, partial-record streamflow stations; (2) stage and content records for 39 lakes and reservoirs; and (3) water-quality records for 68 streamflow-gaging stations and 10 ungaged streamsites.

This series of annual reports for Oregon began with the 1961 water year with a report that contained only data relating to the quantities of surface water. For the 1964 water year, a similar report was introduced that contained only data relating to water quality. Beginning with the 1975 water year, the report format was changed to present, in one or two volumes, data on quantities of surface water, quality of surface and ground water, and ground-water levels. In 1981, the annual report was divided into two volumes: Volume 1 described the activities for Western Oregon, while Volume 2 described the activities for Eastern Oregon. Beginning with the 1985 water year, presentation of ground-water levels in this report was discontinued.

Prior to introduction of this series and for several water years concurrent with it, water-resources data for Oregon were published in U.S. Geological Survey Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960, were published annually under the title "Surface-Water Supply of the United States, Parts 10, 11, 13, and 14." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." These Water-Supply Papers may be consulted in the libraries of the principal cities of the United States and may be purchased from Distribution Branch, Text Products Section, U.S. Geological Survey, 604 South Pickett Street, Alexandria, VA 22304.

Publications similar to this report are published annually by the Geological Survey for all states. These official Survey reports have an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this report is identified as "U.S. Geological Survey Water-Data Report OR-86-1" and "U.S. Geological Survey Water-Data Report OR-86-2." For archiving and general distribution, the reports for 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including current prices, for ordering specific reports may be obtained from the Office Chief at the address given on back of title page or by telephone (503) 231-2009.

COOPERATION

The U.S. Geological Survey and organizations of the State of Oregon have had cooperative agreements for the systematic collection of surface-water records since 1905. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreements with the Survey are:

Oregon Water Resources Department, William F. Young, Director.
Oregon Department of Fish and Wildlife, John R. Donaldson, Director.
Coos Bay-North Bend Water Board, P. Matson, General Manager.
Eugene Water and Electric Board, Jean Reader, General Manager.
Douglas County, John Youngquist, Coordinator.
City of McMinnville, A. H. Jones, General Manager.
City of Portland, Bureau of Water Works, Edward Tenny, Administrator.
The Confederated Tribes of the Umatilla Indian Reservation,
E. H. Patawa, Chairman, Board of Trustees.
The Confederated Tribes of the Warm Springs Indian Reservation,
D. McClelland, Control Manager.

Assistance in the form of funds or services was provided by the Forest Service, U.S. Department of Agriculture; Corps of Engineers, U.S. Army; Bonneville Power Administration, U.S. Department of Energy; Bureau of Land Management, Bureau of Reclamation, Fish and Wildlife Service, National Park Service, U.S. Department of the Interior in collection of records for stage and discharge stations and water-quality stations published in this report.

The following organizations aided in collecting records for stations under Federal Energy Regulatory Commission licenses: Eugene Water & Electric Board; Pacific Power & Light Co.; Portland General Electric Co.; Middle Fork Irrigation District; Idaho Power Co., Idaho.

SUMMARY OF HYDROLOGIC CONDITIONS

Surface Water

The hydrology of Oregon is influenced by five mountain ranges with the Cascade Range providing a natural division between western and eastern Oregon. These ranges divide the state into drainage basins and greatly affect the distribution of precipitation. Hydrologic patterns are generally uniform from drainage basin to drainage basin throughout western Oregon; whereas in eastern Oregon, hydrologic patterns vary widely between drainage basins.

Western Oregon, which composes about one-third of the total area of the state, has a climate characterized by moderate temperatures, wet winters, and dry summers. About 80 percent of the precipitation occurs between October and March. Annual precipitation ranges from about 20 inches per year in the lower elevations in the southern part of the area to about 200 inches per year in the Coast and Cascade

Ranges. In general, streamflow characteristics are similar, with most of the runoff and flooding on both large and small streams being caused by winter rains. Major floods have occurred when winter rains combine with melting snow.

Eastern Oregon has more complex hydrologic patterns than western Oregon. Precipitation is less than 10 inches per year in the semiarid regions, such as parts of the north-central area, the closed basin in south-central Oregon, and southeastern Oregon. The northeastern part of the state receives as much as 80 inches of precipitation per year, much of it occurring as snowfall. On large streams, flooding can result from winter rains and (or) seasonal snowmelt; in smaller drainage basins, flooding can result from winter rains, seasonal snowmelt, and convection storms.

Surface-water Conditions

Precipitation for the 1986 water year was average across the State, above-average amounts were recorded in the far southeastern section. The water year was marked by record monthly extremes. November 1985 was one of the coldest on record followed by December, which was one of the driest on record. In contrast, many reporting stations indicated February and September as two of the wettest months on record.

Precipitation for the three-month period ending December 31, 1985 was generally below average. Averages ranged from a high of 79 percent in the Hood-Lower Deschutes area to a low of 58 percent in the Klamath area.

Conditions moderated during the three-month period ending March 31. Precipitation averages were below average in the western part of the State, and above average in the eastern one-third and far southeastern portion of the State.

The three-month period, July to September, was a period of contrasts; July and August were hot and dry, followed by heavy rains in September. The September rains ended 58 consecutive days without rain at Corvallis and Salem, and 86 consecutive rainless days at Grants Pass and Medford.

Snowpack accumulation began in late September 1985 as a result of the wet and colder-than-normal weather. The months of November and December were unusually dry and cold; consequently, the snowpacks showed only minor increases. As of January 1, 1986, the mountain snowpack, as reported by the Soil Conservation Service, was near normal. Heavy rains during February melted much of the low-elevation snow in the western mountains and southern sub-basins. The snowpack continued to increase, but at a less-than-normal rate during March and April. By May 1, most of the low-elevation snow was gone, and high-elevation snow was below normal. At that time, Harney and Malheur Counties had the highest snowpack (98 percent and 83 percent, respectively). The Deschutes drainage was 73 percent of normal, followed by the Mount Hood area, Willamette River drainage, and John Day Basin at 50 percent of normal. The snowpack was essentially gone from the rest of the State by that date.

The preceding summary of conditions was compiled from monthly reports prepared by the National Weather Service and Soil Conservation Service.

Runoff during the 1986 water year was near average across Oregon. The exception was in southern Oregon where runoff was above average (Table 1).

Table 1.--Comparison of mean discharge for the 1986 water year with mean discharge for the period of record at long-term stations

Station number	Station name	Drainage area (mi^2)	Length of record (yrs)	Mean discharge 1986 water year (ft^3/s)	Long-term mean discharge (ft^3/s)	Percent of average	Maximum annual mean discharge period of record year	Maximum annual mean discharge period of record ft^3/s
10396000	Donner und Blitzen River near Frenchglenn	a200	56	161	128	126	1984	273
11502500	Williamson River below Sprague River, near Chiloquin	a3,000	69	1,407	1,064	132	1956	2,187
13181000	Owyhee River near Rome	a8,000	37	1,949	1,041	187	1984	3,400
13214000	Malheur River near Drewsey	a910	60	275	195	141	1984	474
13331500	Minam River at Minam	a240	22	460	478	96	1974	713
14048000	John Day River at McDonald Ferry	a7,580	81	2,647	2,108	126	1984	4,724
14137000	Sandy River near Marmot	262	75	1,294	1,367	95	1974	1,933
14178000	North Santiam River below Boulder Creek, near Detroit	216	60	1,037	1,010	103	1974	1,506
14301000	Nehalem River near Foss	667	47	2,152	2,709	79	1974	4,235
14321000	Umpqua River near Elkton	3,683	81	7,181	7,537	95	1984	10,030
14325000	South Fork Coquille River at Powers	169	67	817	795	103	1974	1,374

a Approximately.

Several storms of sufficient intensity to produce flooding occurred during the year. These were not major storms; therefore, flooding was limited to small areas. During February, heavy rains in the western mountains and southern sub-basins melted much of the low-elevation snowpack which resulted in the annual peak discharge at most nonregulated gaging stations. Several gages recorded new peak-of-record discharges during this period. Malheur Lake (station 10401800) set a new record elevation of 4,102.60 ft in late April. Flash flooding occurred in June in northeastern Oregon; however, no major damage was observed.

Peak discharges for representative gages are shown in Table 2.

Table 2.--Comparison of peak discharge for the 1986 water year with peak discharge for the period of record at long-term stations

Station number	Station name	Drainage area (mi^2)	Peak discharge 1986 water year Date	ft^3/s	Exceedance probability	Peak discharge period of record Date	ft^3/s
10396000	Donner und Blitzen River near Frenchglenn	a200	Feb. 18	3,060	.07	Apr. 26, 1978	4,270
11502500	Williamson River below Sprague River, near Chiloquin	a3,000	Mar. 13	6,010	.13	Dec. 26, 1964	16,100
13181000	Owyhee River near Rome	a8,000	Feb. 19	*41,400	---	Feb. 19, 1986	41,400
13214000	Malheur River near Drewsey	a910	Feb. 24	4,030	.20	Dec. 23, 1964	12,000
13331500	Minam River at Minam	a240	May 31	4,240	.20	June 16, 1974	6,260
14048000	John Day River at McDonald Ferry	a7,580	Feb. 24	29,200	.05	Dec. 24, 1964	42,800
14137000	Sandy River near Marmot	262	Feb. 23	37,800	.03	Dec. 22, 1964	61,400
14178000	North Santiam River below Boulder Creek, near Detroit	216	Feb. 23	13,100	.13	Dec. 22, 1964	26,700
14301000	Nehalem River near Foss	667	Feb. 23	27,300	.50	Jan. 20, 1972	46,900
14321000	Umpqua River near Elkton	3,683	Feb. 23	146,000	.20	Dec. 23, 1964	265,000
14325000	South Fork Coquille River at Powers	169	Feb. 22	11,000	.80	Dec. 22, 1964	48,900

a Approximately.

* New peak of record.

NOTE.--Exceedance probability refers to the probability that an event will exceed a specific magnitude in a given time period. A flow of 200 ft^3/s with an exceedance probability of 0.5 means that there is a 50 percent chance that the flow will exceed 200 ft^3/s in any one year.

No periods of record low flows were observed during the 1986 water year. The minimum streamflows for representative gages are shown in Table 3.

Table 3.--Comparison of minimum daily discharge for the 1986 water year with minimum discharge for the period of record at long-term stations

Station number	Station name	Drainage area (sq.mi.)	Minimum daily discharge		Minimum instantaneous discharge 1986 water year		Minimum instantaneous discharge Period of record	
			Date	ft^3/s	Date	ft^3/s	Date	ft^3/s
10396000	Donner und Blitzen River near Frenchglenn	a200	Dec. 11	27	--	--	Dec. 9, 1972	4.2
11502500	Williamson River below Sprague River, near Chiloquin	a3,000	Aug. 13	558	Aug. 13, 14	550	Oct. 14, 1920	320
13181000	Owyhee River near Rome	a8,000	Sept. 3	156	Dec. 14	121	several days	42
13214000	Malheur River near Drewsey	a910	Aug. 6-9	1.7	Aug. 5-9	1.7	many days	0
13331500	Minam River at Minam	a240	Nov. 24	37	Nov. 24, 25	26	Dec. 6, 1972, Jan. 10, 1973	10
14048000	John Day River at McDonald Ferry	a7,580	Aug. 25	125	Aug. 25, 26	122	many days	0
14137000	Sandy River near Marmot	262	Sept. 14	262	Sept. 14	258	Oct. 27, 28, 1952	195
14178000	North Santiam River below Boulder Creek, near Detroit	216	Sept. 13	399	Sept. 6, 12, 13	397	Sept. 13, 1909	250
14301000	Nehalem River near Foss	667	Aug. 28	67	Aug. 27-29, Sept. 8	67	Aug. 29, 1967	34
14321000	Umpqua River near Elkton	3,683	Sept. 9	928	Sept. 8-10	928	July 18, 1926	640
14325000	South Fork Coquille River at Powers	169	Sept. 5-7	14	Sept. 6	13	several days	12

a Approximately.

NOTE.--Non-exceedance probability refers to the probability that an event will not exceed a specific magnitude in a given time period. A flow of 12 ft^3/s with a non-exceedance probability of 0.50 means there is a 50 percent chance that the flow will be less than 12 ft^3/s in any one year.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Bench-Mark Network is a network of more than 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in national or regional water-quality planning and management. The several hundred sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objective of NASQAN is to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting. The design of the network is intended to provide data for (1) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (2) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (3) a nationally consistent data base useful for water-quality assessment and hydrologic research.

The National Trends Network (NTN) is a 150 station network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of atmospheric deposition, which includes snow, rain, dust particles, aerosols, and gases. The core from which the NTN was built was the already-existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

Radiochemical program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Tritium network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

EXPLANATION OF THE RECORDS

The surface-water records published in this report are for the 1986 water year that began October 1, 1985, and ended September 30, 1986. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and content data for lakes and reservoirs, and water-quality data for surface water. The locations of the stations where the data were collected are shown in figures 1 and 2. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

Each data station in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The two systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations are based on geographic location. The "downstream order" system is used for regular surface-water stations and the "latitude-longitude" system is used for surface-water stations where only miscellaneous measurements are made. Basin designation is based on the Hydrologic Unit Map for Oregon prepared in cooperation with the U.S. Water Resources Council (1974).

Downstream Order System

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a mainstream station are listed before that station. A station on a tributary that enters between two mainstream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary with respect to the stream to which it is immediately tributary is indicated by an indention in the "List of Stations" in the front of this report. Each indention represents one rank. This downstream order and system of indention show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

The station-identification number is assigned according to downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete eight-digit number for each station, such as 14105700, which appears just to the left of the station name, includes the two-digit Part number "14" plus the six-digit downstream-order number "105700." The Part number designates the major river basin; for example, part "14" refers to the Pacific slope basins in Oregon and lower Columbia River basin.

Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained using a continuous stage-recording device through which either instantaneous or mean daily discharges may be computed for any time, or any period of time, during the period of record. Complete records of lake or reservoir content, similarly, are those for which stage or content may be computed or estimated with reasonable accuracy for any time, or period of time. They may be obtained using a continuous stage-recording device, but need not be. Because daily mean discharges and end-of-day contents commonly are published for such stations, they are referred to as "daily stations."

By contrast, partial records are obtained through discrete measurements without using a continuous stage-recording device and pertain only to a few flow characteristics, or perhaps only one. The nature of the partial record is indicated by table titles such as "Crest-stage partial records," or "Low-flow partial records." Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records, but they are presented separately in this report.

Data Collection and Computation

The data obtained at a complete-record gaging station on a stream or canal consist of a continuous record of stage, individual measurements of discharge throughout a range of stages, and notations regarding factors that may affect the relations between stage and discharge. These data, together with supplemental information, such as weather records, are used to compute daily discharges. The data obtained at a complete-record gaging station on a lake or reservoir consist of a record of stage and of notations regarding factors that may affect the relation between stage and lake content. These data are used with stage-area and stage-capacity curves or tables to compute water-surface areas and lake storage.

Continuous records of stage are obtained with analog recorders that trace continuous graphs of stage or with digital recorders that punch stage values on paper tapes at selected time intervals. Measurements of discharge are made with current meters using methods adapted by the Geological Survey that are described in standard textbooks, in Water-Supply Paper 2175, and in U.S. Geological Survey Techniques of Water-Resources Investigations (TWRI), Book 3, Chapter A6.

In computing discharge records, results of individual measurements are plotted against the corresponding stages, and stage-discharge relation curves are then constructed. From these curves, rating tables indicating the approximate discharge for any stage within the range of the measurements are prepared. If it is necessary to define extremes of discharge outside the range of the current-meter measurements, the curves are extended using: (1) logarithmic plotting; (2) velocity-area studies; (3) results of indirect measurements of peak discharge, such as slope-area or contracted-opening measurements, and computations of flow-over-dams or weirs; or (4) step-backwater techniques.

Daily mean discharges are computed by applying the daily mean stages (gage heights) to the stage-discharge curves or tables. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on the individual discharge measurements and notes of the personnel making the measurements are applied to the gage heights before the discharges are determined from the curves or tables. This shifting-control method also is used if the stage-discharge relation is changed temporarily because of aquatic growth or debris on the control. For some stations, formation of ice in the winter may so obscure the stage-discharge relations that daily mean discharges must be estimated from other information such as temperature and precipitation records, notes of observations, and records for other stations in the same or nearby basins for comparable periods.

At some stream-gaging stations the stage-discharge relation is affected by the backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations an acoustic velocity meter (AVM) is used instead of the slope method. The AVM measures both water-surface elevation and velocity from which discharge can be computed directly.

In computing records of lake or reservoir contents, it is necessary to have information available from surveys, curves, or tables that define the relation of stage to content. The application of stage to the stage-content curves or tables gives the contents from which daily, monthly, or yearly changes then are determined. If the stage-content relation changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relation. Discharges over lake or reservoir spillways are computed from stage-discharge relations much as other stream discharges are computed.

For some gaging stations there are periods when no gage-height record is obtained, or the validity of the recorded gage height is so questionable that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated from the recorded range in stage, previous or following record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise, daily contents may be estimated from operator's logs, previous or following record, inflow-outflow studies, and other information. Information explaining how estimated daily-discharge values are identified in station records is included in the next two sections, "Data Presentation" (REMARKS paragraph) and "Identifying Estimated Daily Discharge."

Data Presentation

The records published for each gaging station consist of two parts, the manuscript or station description and the data table for the current water year. The manuscript provides, under various headings, descriptive information, such as station location; period of record; average discharge; historical extremes; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.

LOCATION.--Information on locations is obtained from the most accurate maps available. The location of the gage with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileages are based on information developed by the Hydraulics and Hydrology Committee of the Pacific Northwest River Basins Commission.

DRAINAGE AREA.--Drainage areas are measured using the most accurate maps available. Because the type of maps available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

PERIOD OF RECORD.--This indicates the period for which there are published records for the station or for an equivalent station. An equivalent station is one that was in operation at a time that the present station was not, and whose location was such that records from it can reasonably be considered equivalent with records from the present station.

REVISED RECORDS.--Published records, because of new information, occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted after the year dates as follows: "(M)" means the instantaneous maximum discharge was revised; "(m)" the instantaneous minimum was revised; and "(P)" the peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was first published is given.

GAGE.--The type of gage in current use, the datum of the current gage referred to National Geodetic Vertical Datum of 1929 (see "DEFINITION OF TERMS"), and a condensed history of the types, locations, and datums of previous gages are given under this heading.

REMARKS.--All periods of estimated daily-discharge record will either be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily-discharge table. (See next section, "Identifying Estimated Daily Discharge.") If a remarks statement is used to identify estimated record, the paragraph will begin with this information presented as the first entry. The paragraph is also used to present information relative to the accuracy of the records, special methods of computation, conditions that affect natural flow at the station and, possibly, other pertinent items. For reservoir stations, information is given on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

AVERAGE DISCHARGE.--The discharge value given is the arithmetic mean of the water-year mean discharges. It is computed only for stations having at least 5 water years of complete record, and only water years of complete record are included in the computation. It is not computed for stations where diversions, storage, or other water-use practices cause the value to be meaningless. If water developments significantly altering flow at a station are put into use after the station has been in operation for a period of years, a new average is computed as soon as 5 water years of record have accumulated following the development.

EXTREMES FOR PERIOD OF RECORD.--Extremes may include maximum and minimum stages and maximum and minimum discharges or content. Unless otherwise qualified, the maximum discharge or content is the instantaneous maximum corresponding to the

highest stage that occurred. The highest stage may have been obtained from a graphic or digital recorder, a crest-stage gage, or by direct observation of a nonrecording gage. If the maximum stage did not occur on the same day as the maximum discharge or content, it is given separately. Similarly, the minimum is the instantaneous minimum discharge, unless otherwise qualified, and was determined and is reported in the same manner as the maximum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Included here is information concerning major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the U.S. Geological Survey.

EXTREMES FOR CURRENT YEAR.--Extremes given here are similar to those for the period of record, except the peak discharge listing may include secondary peaks. For stations meeting certain criteria, all peak discharges and stages occurring during the water year and greater than a selected base discharge are presented under this heading. The peaks greater than the base discharge, excluding the highest one, are referred to as secondary peaks. Peak discharges are not published for canals, ditches, drains, or streams for which the peaks are subject to substantial control by man. The time of occurrence for peaks is expressed in 24-hour local standard time. For example, 12:30 a.m. is 0030, and 1:30 p.m. is 1330. The minimum for the current water year appears below the table of peak data.

REVISIONS.--If a critical error in published records is discovered, a revision is included in the first report published following discovery of the error.

Although rare, occasionally the records of a discontinued gaging station may need revision. Because, for these stations, there would be no current or, possibly, future station manuscript published to document the revision in a "Revised Records" entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the Oregon office to determine if the published records were ever revised after the station was discontinued. Of course, if the data were obtained by computer retrieval, the data would be current and there would be no need to check because any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the "Remarks" and in the inclusion of a skeleton stage-capacity table when daily contents are given.

The daily table for stream-gaging stations gives mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also is usually expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN."), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion or if the drainage area includes large noncontributing areas. In the yearly summary below the monthly summary, the figures shown are the

appropriate discharges for the calendar and water years. At some stations monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversions or reservoir contents are given. These figures are identified by a symbol and corresponding footnote.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of annual maximum stage and discharge at crest-stage stations, and the second is a table of discharge measurements at low-flow partial-record stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables of annual state data reports are identified either by flagging individual daily values with the letter symbol "e" and printing a table footnote, "e Estimated," or by listing the dates of the estimated record in the REMARKS paragraph of the station description.

Accuracy of the Records

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

The accuracy attributed to the records is indicated under the "REMARKS" paragraph. "Excellent" means that about 95 percent of the daily discharges are within 5 percent of the true; "good," within 10 percent; and "fair," within 15 percent. Records that do not meet the criteria mentioned, are rated "poor." Different accuracies may be attributed to different parts of a given record. Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second for values less than 1 ft^3/s; the nearest tenth between 1.0 and 10 ft^3/s; whole numbers between 10 and 1,000 ft^3/s; and 3 significant figures for more than 1,000 ft^3/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

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

Other Records Available

Monthly records for several ungaged sites are given in a separate section following the gaged sites. The accuracy of records for ungaged sites is generally lower than that for gaged sites, depending on the precision of the computation method and the accuracy of data used in the computations. For most gaging stations, unpublished, detailed information, on file in the Oregon office, includes discharge measurements, gage-height records, and rating tables. Many gaging-station records in Oregon through 1982 have been analyzed to determine several statistical summaries: (1) The number of days in each year that the daily discharge was between selected limits (duration tables); (2) the lowest mean discharge for selected numbers of consecutive days in each year; and (3) the highest mean discharge for selected numbers of consecutive days in each year.

Other Federal and State agencies have collected discharge data at other sites in Oregon during the current water year. Although these records have not been published by the U.S. Geological Survey, the National Water Data Exchange, NAWDEX, Water Resources Division, U.S. Geological Survey, National Center, Reston, VA 22092, maintains an index of these sites and will furnish information about them.

Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. Records of surface-water quality in this report may involve a variety of types of data and measurement frequencies.

Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A continuing-record station is a site where data are collected on a regularly scheduled basis. Frequency may be one or more times daily, weekly, monthly, or quarterly. A partial-record station is a site where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A miscellaneous sampling site is a location other than a continuing or partial-record station, where random samples are collected to give better areal coverage to define water-quality conditions in the river basin.

A careful distinction needs to be made between "continuing records" as used in this report and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently. Locations of stations for which records on the quality of surface water appear in this report are shown in figure 2.

Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream-order sequence. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurements at miscellaneous sites.

On-site Measurements and Sample Collection

In obtaining water-quality data, it is important that the data obtained represent the in situ quality of the water. To assure this, certain measurements, such as water temperature, pH, and dissolved oxygen, need to be made onsite when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures need to be followed in collecting the samples, treating the samples to prevent changes in quality pending analysis, and shipping the samples to the laboratory. Procedures for onsite measurements and for collecting, treating, and shipping samples are given in publications on "Techniques of Water-Resources Investigations," (TWRI), Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4. All of these references are listed under "PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS" in this report. Also, detailed information on collecting, treating, and shipping samples may be obtained from the Geological Survey Oregon office.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load. All samples obtained for the National Stream Quality Accounting Network (see "DEFINITION OF TERMS") are obtained from at least several verticals. Whether samples are obtained from the centroid of flow or from several verticals, depends on flow conditions and other factors which must be evaluated by the collector.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the U.S. Geological Survey office whose address is given on the back of the title page of this report.

Water Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small diurnal temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the Oregon office.

Sediment

Suspended-sediment concentrations are determined from samples collected by one of the standard sampling techniques discussed in TWRI, Book 3, Chapter C2, "Field methods for measurement of fluvial sediment." Samples are obtained using standard depth- or point-integrating samplers, or by means of an approved pumping sampler. Mean concentrations for the sampled cross section are in turn determined from these samples.

During periods of rapidly changing flow or rapidly changing suspended-sediment concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow and in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of suspended-sediment discharge, periodic measurements of particle-size distributions for the suspended-sediment, bed-load, and bed-material samples are included for stations where samples were obtained to measure this parameter.

Laboratory Measurements

Sediment samples, samples for biochemical-oxygen demand (BOD), samples for identification of biological populations, samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed in the Geological Survey laboratory in Arvada, Colorado. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chap. C1. Methods used by the Geological Survey laboratory are given in TWRI, Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4.

Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and so forth, obtained at a frequency less than daily are presented first. Tables of "daily values" of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

DRAINAGE AREA.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

PERIOD OF RECORD.--This indicates the periods for which there are published water-quality records for the station. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the parameters individually.

INSTRUMENTATION.--Information on instrumentation is given only if a water-quality monitor, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.--Remarks provide added information pertinent to the collection, analysis, or computation of the records.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

EXTREMES.--Maximums and minimums are given only for parameters measured daily or more frequently. None are given for parameters measured weekly or less frequently, because the true maximums or minimums may not have been sampled. Extremes, when given, are provided for both the period of record and for the current water year.

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the U.S. Geological Survey's computerized data system, WATSTORE, and subsequently by monthly transfer of update transactions to the U.S. Environmental Protection Agency's STORET system. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of U.S. Geological Survey water-quality data are encouraged to obtain all required data from the appropriate computer file.

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its own station number and name in the regular downstream-order sequence.

Remark Codes

The following remark codes may appear with the water-quality data in this report:

PRINTED OUTPUT	REMARK
E	Estimated value
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)

ACCESS TO WATSTORE DATA

The National WATer Data STOrage and REtrieval System (WATSTORE) was established for handling water data collected through the activities of the U.S. Geological Survey and to provide for more effective and efficient means of releasing the data to the public. The system is operated and maintained on the central computer facilities of the Survey at its National Center in Reston, Virginia.

WATSTORE can provide a variety of useful products ranging from simple data tables to complex statistical analyses. A minimal fee, plus the actual computer cost incurred in producing a desired product, is charged to the requester. Information about the availability of specific types of data, the acquisition of data or products, and user charges can be obtained locally from each of the Water Resources Division's District offices (see address given on the back of the title page).

General inquiries about WATSTORE may be directed to:

Chief Hydrologist
U.S. Geological Survey
437 National Center
Reston, Virginia 22092

DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. See also table for converting English units to International System (SI) Units on the inside of the back cover.

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equal to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Adenosine triphosphate (ATP) is an organic, phosphate-rich, compound important in the transfer of energy in organisms. Its central role in living cells makes it an excellent indicator of the presence of living material in water. A measure of ATP therefore provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter of the original water sample.

Algae are mostly aquatic single-celled, colonial, or multicelled plants, containing chlorophyll and lacking roots, stems, and leaves.

Algal growth potential (AGP) is the maximum algal dry weight biomass that can be produced in a natural water sample under standardized laboratory conditions. The growth potential is the algal biomass present at stationary phase and is expressed as milligrams dry weight of algae produced per liter of sample.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Artesian means confined and is used to describe a well in which the water level stands above the top of the aquifer tapped by the well. A flowing artesian well is one in which the water level is above the land surface.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, while others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory these bacteria are defined as all the organisms that produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35°C plus or minus 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 milliliters (mL) of sample.

Fecal coliform bacteria are bacteria that are present in the intestine or feces of warmblooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms that produce blue colonies within 24 hours when incubated at 44.5°C plus or minus 0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal streptococcal bacteria are bacteria found also in the intestine of warmblooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C plus or minus 1.0°C on KF-streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Base flow. See Base runoff.

Base runoff refers to sustained or fair weather runoff. In most streams, base runoff is composed largely of ground-water effluent. The term base flow is often used in the same sense as base runoff. However, the distinction is the same as that between streamflow and runoff. When the concept in the terms base flow and base runoff is that of the natural flow in a stream, base runoff is the logical term.

Bed material is the sediment mixture of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by micro-organisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the mass per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnance at a temperature of 500°C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m^3), and periphyton and benthic organisms in grams per square meter (g/m^2).

Dry mass refers to the mass of residue present after drying in an oven at 105°C for zooplankton and periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry-mass values are expressed in the same units as ash mass.

Organic mass or volatile mass of the living substance is the difference between the dry mass and the ash mass and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash and dry mass.

Wet mass is the mass of living matter plus contained water.

Bottom material: See Bed material.

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters (mL) or liters (L).

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water, and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with natural water color or with carbonaceous organic pollution from sewage or industrial wastes.

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common green pigments in plants.

Color unit is produced by one milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

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

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

Control structure as used in this report is a structure on a stream or canal that is used to regulate the flow or stage of the stream or to prevent the intrusion of salt water.

Cubic foot per second (ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Cubic foot per second-day [$(ft^3/s)/d$] is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons, or 2,445 cubic meters.

Cubic feet per second per square mile [$(ft^3/s)/mi^2$] is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment) that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Dissolved refers to that material in a representative water sample which passes through a 0.45-um membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determinations of "dissolved" constituents are made on subsamples of the filtrate.

Dissolved-solids concentration of water is determined either analytically by the "residue-on-evaporation" method, or mathematically by totaling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination of dissolved solids, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. Therefore, in the mathematical calculation of dissolved-solids concentration, the bicarbonate value, in milligrams per liter, is multiplied by 0.492 to reflect the change.

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

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is computed as the sum of equivalents of polyvalent cations and is expressed as the equivalent concentration of calcium carbonate (CaCO3).

Hydrologic Bench-Mark Network is a network of more than 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an eight-digit number.

Land-surface datum (lsd) is a datum plane that is approximately at land surface at each ground-water observation well.

Measuring point (MP) is an arbitrary permanent reference point from which the distance to the water surface in a well is measured to obtain the water level.

Metamorphic stage refers to the stage of development that an organism exhibits during its transformation from an immature form to an adult form. This developmental process exists for most insects, and the degree of difference from the immature stage to the adult form varies from relatively slight to pronounced, with many intermediates. Examples of metamorphic stages of insects are egg-larva-adult or egg-nymph-adult.

Methylene blue active substances (MBAS) are apparent detergents. The determination depends on the formation of a blue color when methylene blue dye reacts with synthetic anionic detergent compounds.

Micrograms per gram (ug/g) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

Micrograms per liter (UG/L, ug/L) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represents the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/L and is based on the mass of dry sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD of 1929) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in national or regional water-quality planning and management. The several hundred sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data

Coordination in consultation with the Water Resources Council. The objective of NASQAN is to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting. The design of the network is intended to provide data for (1) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (2) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (3) a nationally consistent data base useful for water-quality assessment and hydrologic research.

National Trends Network (NTN) is a 150-station network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of atmospheric deposition, which includes snow, rain, dust particles, aerosols, and gases. The core from which the NTN was built was the already-existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

Organism is any living entity.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per unit area habitat, usually square meter (m^2), acre, or hectare. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume usually milliliter (mL) or liter (L). Numbers of planktonic organisms can be expressed in these terms.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Parameter Code is a 5-digit number used in the U.S. Geological Survey computerized data system, WATSTORE, to uniquely identify a specific constituent. The codes used in WATSTORE are the same as those used in the U.S. Environmental Protection Agency data system, STORET. The Environmental Protection Agency assigns and approves all requests for new codes.

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

Particle size is the diameter, in millimeters (mm), of a particle determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with the recommendation made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay.....	0.00024 - 0.004	Sedimentation
Silt.....	.004 - .062	Sedimentation
Sand.....	.062 - 2.0	Sedimentation or sieve
Gravel.....	2.0 - 64.0	Sieve

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic matter is removed and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native-water analysis.

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population in terms of types, numbers, mass, or volume.

Periphyton is the assemblage of microorganisms attached to and living upon submerged solid surfaces. While primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms.

Pesticides are chemical compounds used to control undesirable organisms. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides.

Picocurie (PC, pCi) is one trillionth (1 x 10E-12) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7 x 10E+10 radioactive disintegrations per second. A picocurie yields 2.22 disintegrations per minute (dpm).

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment, and are commonly known as algae.

Blue-green algae are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample.

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algae mats or floating "moss" in lakes. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers.

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic and chemosynthetic activity of producer organisms (chiefly, green plants). The rate of primary production is estimated by measuring the amount of oxygen released (oxygen method) or the amount of carbon assimilated by the plants (carbon method).

Milligrams of carbon per area or volume per unit time [(mg C/m^2)/time] for periphyton and macrophytes and [(mg C/m^3)/time] for phytoplankton are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon 14). The carbon 14 method is of greater sensitivity than the oxygen light and dark bottle method, and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Milligrams of oxygen per area or volume per unit time [(mg $O2/m^2$)/time] for periphyton and macrophytes and [(mg $O2/m^3$)/time] for phytoplankton are the units for expressing primary productivity. They define production and respiration rates as estimated from changes in the measured dissolved-oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period.

Radiochemical program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Recoverable from bottom material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Return period is the average time interval between occurrences of a hydrological event of a given or greater magnitude, usually expressed in years. May also be called recurrence interval.

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

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Bed load is the sediment that is transported in a stream by rolling, sliding, or skipping along the bed very close to the bed surface. In this report, bed load is considered to consist of particles in transit within 0.25 ft of the streambed.

Bed load discharge (tons per day) is the quantity of bed load measured by dry weight that moves past a section as bed load in a given time.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Suspended-sediment discharge (tons/day) is the rate at which dry mass of sediment passes a section of a stream or is the quantity of sediment, as measured by dry mass or volume, that passes a section in a given time. It is calculated in units of tons per day as follows: concentration (mg/L) x discharge (ft^3/s) x 0.0027.

Suspended-sediment load is a general term that refers to material in suspension. It is not synonymous with either discharge or concentration.

Total-sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry mass or volume, that passes a section during a given time.

Total-sediment load or total load is a term which refers to the total sediment (bed load plus suspended-sediment load) that is in transport. It is not synonymous with total-sediment discharge.

Seven-day 10-year low flow (7 Q10) is the discharge at the 10-year recurrence interval taken from a frequency curve of annual values of the lowest mean discharge for 7 consecutive days (the 7-day low flow).

Sodium-adsorption-ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions within soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in microsiemens per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in microsiemens). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and the volume of water, per unit of time, flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lives.

Natural substrate refers to any naturally occurring emersed or submersed solid surface, such as a rock or tree, upon which an organism lives.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multiplate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton.

Surface area of a lake is that area outlined on the latest U.S.G.S. topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the areas are computed from the best maps available at the time planimetered. All areas shown are those for the stage when the planimetered map was made.

Surficial bed material is the part (0.1 to 0.2 ft) of the bed material that is sampled using U.S. Series Bed-Material Samplers.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of undissolved material in a water-sediment mixture. It is associated with the material retained on a 0.45-um filter.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45-um membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Determinations of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45-um membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classificiation of organisms is based upon a hierarchial scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, Hexagenia limbata, is the following:

Kingdom	Animal
Phylum	Arthropoda
Class	Insecta
Order	Ephemeroptera
Family	Ephemeridae
Genus	Hexagenia
Species	Hexagenia limbata

Thermograph is an instrument that continuously records variations of temperature on a chart. The more general term "temperature recorder" is used in the table headings and refers to any instrument that records temperature whether on a chart, a tape, or any other medium.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration of the constituent, in milligrams per liter, by 0.00136.

Tons per day (T/DAY) is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour period.

Total is the total amount of a given constituent in a representative water-suspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determined all of the constituent in the sample.)

Total discharge is the total quantity of any individual constituent, as measured by dry mass or volume, that passes through a stream cross section per unit of time. This term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

Total, recoverable is the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses, because different digestion procedures are likely to produce different analytical results.

Tritium Network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

Water year in Geological Survey reports dealing with surface-water supply is the 12-month period, October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1980, is called the "1980 water year."

WDR is used as an abbreviation for "Water-Data Report" in the REVISED RECORDS paragraph to refer to State annual hydrologic-data reports (WRD was used as an abbreviation for "Water-Resources Data" in reports published prior to 1976).

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

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

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

The U.S. Geological Survey publishes a series of manuals describing procedures for planning and conducting specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) pertains to surface water. The chapter, the unit if publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises.

The reports listed below are for sale by the U.S. Geological Survey, Books and Open-File Reports Section, Federal Center, Box 25425, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations."

1-D1. WATER TEMPERATURE--INFLUENTIAL FACTORS, FIELD MEASUREMENT, AND DATA PRESENTATION, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.

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3-A2. MEASUREMENT OF PEAK DISCHARGE BY THE SLOPE-AREA METHOD, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.

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3-A4. MEASUREMENT OF PEAK DISCHARGE AT WIDTH CONTRACTIONS BY INDIRECT METHODS, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 pages.

3-A5. MEASUREMENT OF PEAK DISCHARGE AT DAMS BY INDIRECT METHODS, by Harry Hulsing: USGS-TWRI Book 3, Chapter A5. 1967. 29 pages.

3-A6. GENERAL PROCEDURE FOR GAGING STREAMS, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.

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3-A17. ACOUSTIC VELOCITY METER SYSTEMS, by Antonius Laenen: USGS--TWRI Book 3, Chapter A17. 1985. 38 pages.

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3-B3. TYPE CURVES FOR SELECTED PROBLEMS OF FLOW TO WELLS IN CONFINED AQUIFERS, by J. E. Reed: USGS--TWRI Book 3, Chapter B3. 1980. 106 pages.

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5-A2. DETERMINATION OF MINOR ELEMENTS IN WATER BY EMISSION SPECTROSCOPY, by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages.

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5-A6. QUALITY ASSURANCE PRACTICES FOR THE CHEMICAL AND BIOLOGICAL ANALYSES OF WATER AND FLUVIAL SEDIMENTS, by L. C. Friedman and D. E. Erdmann: USGS--TWRI Book 5, Chapter A6. 1982. 181 pages.

5-C1. LABORATORY THEORY AND METHODS FOR SEDIMENT ANALYSIS, by H. P. Guy: USGS TWRI Book 5, Chapter C1. 1969. 58 pages.

7-C1. FINITE-DIFFERENCE MODEL FOR AQUIFER SIMULATION IN TWO DIMENSIONS WITH RESULTS OF NUMERICAL EXPERIMENTS, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.

7-C2. COMPUTER MODEL OF TWO-DIMENSIONAL SOLUTE TRANSPORT AND DISPERSION IN GROUND WATER, by L. F. Konikow and J. D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.

7-C3. A MODEL FOR SIMULATION OF FLOW IN SINGULAR AND INTERCONNECTED CHANNELS, by R. W. Schaffranek, R. A. Baltzer, and D. E. Goldberg: USGS--TWRI Book 7, Chapter C3. 1981. 110 pages.

8-A1. METHODS OF MEASURING WATER LEVELS IN DEEP WELLS, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages.

8-A2. INSTALLATION AND SERVICE MANUAL FOR U.S. GEOLOGICAL SURVEY MANOMETERS, by J. D. Craig: USGS--TWRI Book 8, Chapter A2. 1983. 57 pages.

8-B2. CALIBRATION AND MAINTENANCE OF VERTICAL-AXIS TYPE CURRENT METERS, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages.

REMARK CODES.--The following remark codes may appear with the water-quality data in this section:

PRINTED OUTPUT	REMARK
E	Estimated value
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)

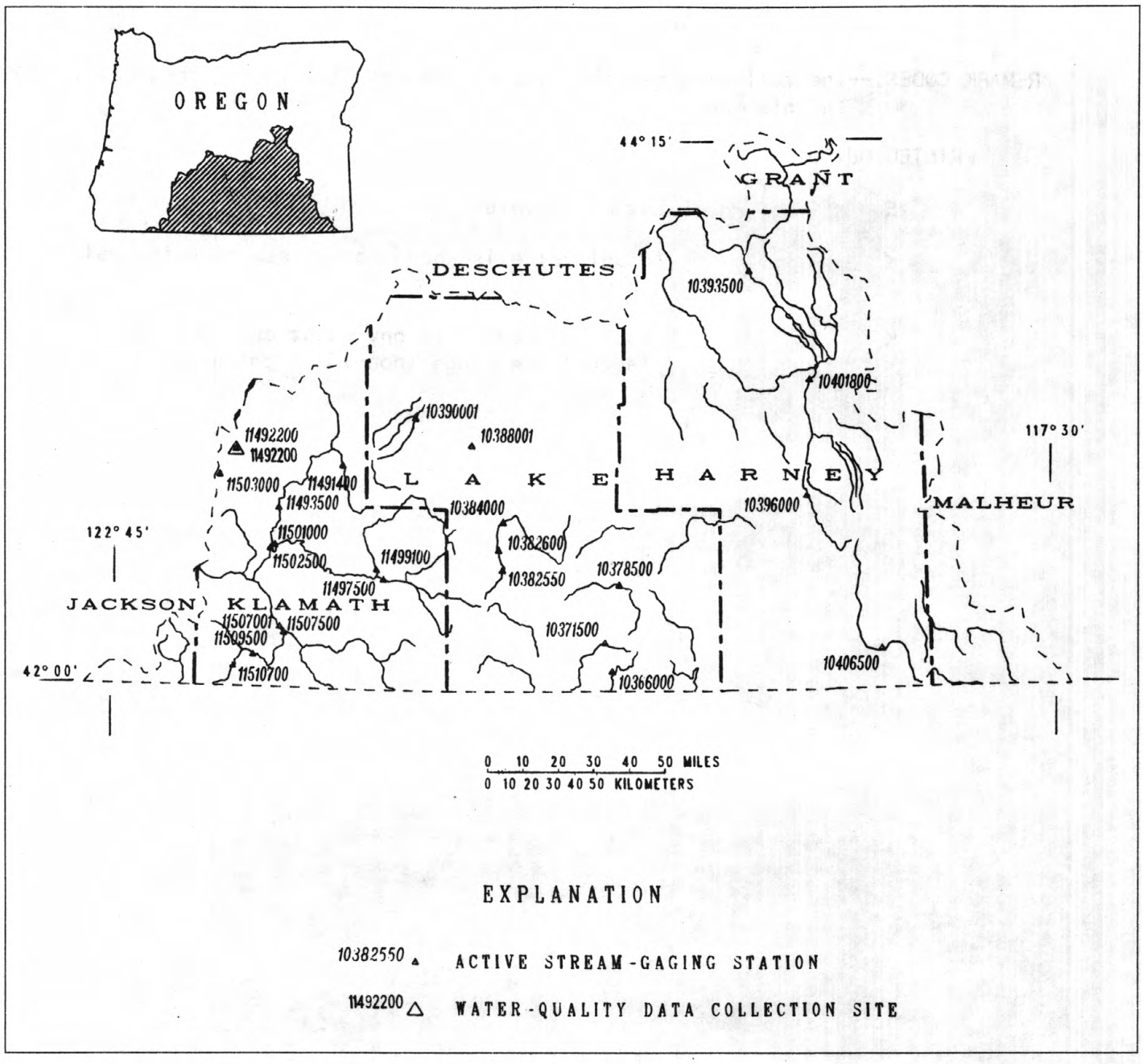

Figure 1.--Location of surface-water and water-quality stations in the Oregon Closed Basins and the Klamath River basin.

THE GREAT BASIN

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 mi^2, including 46 mi^2 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 current year.

REVISED RECORDS.--WSP 1090: 1945. WSP 1514: 1951-53, 1954(M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 4,560.83 ft above 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.--Estimated daily discharges: Oct. 1, 2, Nov. 10-14, 21-25, Dec. 11-14, Jan. 10-14, Feb. 18-25. Records good except for estimated daily discharges, which are fair. Some regulation by pumpage from Cowhead Lake. Diversions in Oregon for irrigation upstream from station; considerable diversions for irrigation in Cowhead Lake area in California.

AVERAGE DISCHARGE.--51 years (water years 1911-15, 1919, 1941-44, 1946-86), 54.7 ft^3/s, 39,630 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,400 ft^3/s Feb. 18, 1986, gage height, 16.94 ft, on basis of slope-area measurement; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 510 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 18	0130	*10,400	*16.94	Mar. 8	1830	1,860	8.60
Feb. 24	unknown	unknown	unknown	Mar. 20	2130	595	5.35

Minimum discharge, 0.10 ft^3/s Dec. 27, result of freezeup.

REVISIONS.--Peak discharges greater than 2,000 ft^3/s and maximum (*) reported for water years 1963-85 have been revised as shown in the following table. They supersede figures published in the reports for 1963, 1965, 1969-72, 1974, 1980, 1982, 1983.

Water Year 1963:

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 2	2200	3,330	10.82
Feb. 1	0200	*6,880	*14.4
Feb. 3	1400	4,100	11.75
Apr. 6	0200	4,000	11.63

Water Year 1965:

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 23	0300	*9,140	*16.1

Water Year 1969:

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 30	1800	*3,800	*11.40

Water Year 1970:

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 23	2400	*5,900	*13.55

Water Year 1971:

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 17	1900	*6,410	*14.0
Mar. 23	2000	3,970	11.6
June 1	2100	3,500	11.04

Water Year 1972:

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 22	1530	3,370	10.88
Feb. 28	0200	*4,180	*11.84
Mar. 3	0200	3,070	10.48

Water Year 1974:

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 15	2400	*2,630	*9.86
Mar. 29	1800	2,120	9.06

Water Year 1980:

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 13	1830	*5,540	*13.22
Feb. 18	0330	2,090	9.01

Water Year 1982:

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 19	2330	3,280	10.76
Feb. 16	0030	*4,510	*12.20
Apr. 11	1630	3,360	10.86

Water Year 1983:

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 13	0430	*2,770	*10.07

10366000 TWENTYMILE CREEK NEAR ADEL, OR--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	5.5	6.6	9.3	50	284	102	106	132	8.4	4.6	3.9
2	5.0	5.7	7.2	9.9	26	245	95	119	120	8.1	4.3	3.8
3	4.9	5.7	9.1	11	22	220	102	129	120	8.2	4.1	3.8
4	4.8	5.6	8.3	10	21	175	111	115	100	7.7	4.1	3.7
5	4.6	6.0	7.3	11	23	167	105	113	85	8.3	4.0	3.4
6	4.6	6.0	7.9	22	16	154	108	115	76	8.2	3.8	3.3
7	5.2	5.7	8.4	17	12	439	123	113	69	7.7	3.8	3.2
8	5.6	5.7	7.7	11	8.8	1100	169	121	61	7.5	3.9	3.5
9	5.0	5.3	6.6	9.7	8.8	664	158	104	57	7.5	3.9	3.8
10	5.0	5.0	5.2	9.0	10	470	144	113	49	7.2	3.7	4.4
11	5.2	4.6	5.0	8.2	9.5	431	133	104	46	6.9	3.4	4.5
12	5.4	4.6	5.5	8.2	9.6	382	140	97	46	6.7	3.4	4.2
13	5.2	4.6	6.0	8.2	126	270	125	98	45	6.3	3.5	4.0
14	5.0	5.5	6.2	8.2	320	202	116	105	42	6.0	3.5	4.1
15	5.1	6.2	7.1	8.1	634	193	105	101	40	5.7	3.5	4.0
16	5.1	6.8	7.5	14	598	206	100	102	37	5.9	3.4	4.3
17	5.3	6.5	7.9	106	1990	172	101	105	34	6.2	3.6	6.1
18	5.2	5.3	6.6	145	9000	116	98	116	33	6.3	3.3	7.1
19	5.2	5.5	6.3	74	4000	206	91	130	31	6.1	3.1	6.8
20	4.8	6.1	5.8	65	1400	373	91	138	29	5.9	3.1	6.3
21	5.1	5.5	5.5	24	600	346	100	127	27	5.7	3.2	6.2
22	5.7	5.2	5.9	18	450	288	100	104	25	5.2	3.2	6.0
23	6.5	5.1	5.9	16	450	232	141	92	24	5.1	3.2	5.3
24	6.9	5.1	5.6	13	700	253	115	90	21	5.1	3.2	6.7
25	6.5	5.0	5.7	12	570	170	113	102	21	5.3	3.1	8.1
26	6.2	5.7	6.0	11	478	130	104	118	19	5.6	3.2	8.7
27	5.9	6.4	5.4	9.6	413	123	104	126	18	5.4	3.0	8.7
28	5.9	6.6	5.5	11	357	127	108	130	9.4	5.2	3.4	6.9
29	5.7	7.3	5.7	16	---	116	106	131	7.7	5.5	3.6	6.3
30	5.9	6.0	6.2	75	---	116	101	133	8.7	5.1	3.6	6.3
31	5.7	---	6.8	238	---	113	---	133	---	4.9	3.9	---
TOTAL	167.2	169.8	202.4	1008.4	22302.7	8483	3409	3530	1432.8	198.9	110.6	157.4
MEAN	5.39	5.66	6.53	32.5	797	274	114	114	47.8	6.42	3.57	5.25
MAX	6.9	7.3	9.1	238	9000	1100	169	138	132	8.4	4.6	8.7
MIN	4.6	4.6	5.0	8.1	8.8	113	91	90	7.7	4.9	3.0	3.2
AC-FT	332	337	401	2000	44240	16830	6760	7000	2840	395	219	312

CAL YR 1985	TOTAL	13985.1	MEAN	38.3	MAX	589	MIN	2.4	AC-FT	27740
WTR YR 1986	TOTAL	41172.2	MEAN	113	MAX	9000	MIN	3.0	AC-FT	81670

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 mi^2.

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

REVISED RECORDS.--WDR OR-83-1: 1979(M), 1980(M,P), 1982(M,P).

GAGE.--Water-stage recorder. Datum of gage is 4,980.34 ft above 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.--Estimated daily discharges: Nov. 11-15, 18-23, 26; Dec. 9-31; Feb. 6-11. Records good except for estimated daily discharges, which are fair. No regulation. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--58 years, 135 ft^3/s, 97,810 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,420 ft^3/s Dec. 23, 1964, gage height, 10.64 ft, from floodmark, from rating curve extended above 1,100 ft^3/s on basis of slope-area measurement of peak flow at gage height 7.3 ft; minimum discharge, 1.7 ft^3/s July 20, 27-29, 1934.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 18	1300	*4,180	*6.23	Mar. 24	1000	910	3.49
Feb. 23	1800	2,000	4.72	Mar. 30	0030	820	3.35
Mar. 8	0030	2,340	5.01	Apr. 9	0200	780	3.29
Mar. 20	2130	931	3.52	Apr. 23	0130	686	3.13

Minimum discharge, 15 ft^3/s Sept. 4-7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	29	28	40	130	620	644	312	414	35	17	17
2	24	28	30	42	111	546	528	357	382	34	17	17
3	24	28	36	42	82	517	475	428	422	31	17	17
4	24	28	34	38	79	474	448	408	326	28	17	16
5	24	30	34	62	79	483	436	401	275	28	17	15
6	25	29	34	84	70	518	469	375	242	28	17	15
7	31	28	34	90	60	1130	567	346	214	28	17	16
8	28	28	32	67	55	1890	648	302	189	28	17	17
9	24	25	28	68	54	1230	699	274	162	28	17	17
10	25	25	25	60	54	936	668	422	142	28	17	18
11	27	21	24	55	54	792	624	330	129	26	17	18
12	27	20	23	50	59	688	633	277	122	25	17	17
13	26	23	23	46	67	587	517	259	117	24	17	17
14	26	26	25	46	111	489	455	270	110	22	17	18
15	25	28	30	44	247	427	424	267	100	20	17	19
16	24	29	35	61	320	363	407	270	90	19	17	24
17	24	28	37	375	913	327	397	272	80	20	17	28
18	24	26	37	307	3340	295	352	299	68	20	17	42
19	25	24	37	213	1100	413	327	341	65	19	17	39
20	25	24	37	182	700	584	337	373	57	19	17	37
21	25	27	35	127	447	502	404	390	56	18	17	32
22	30	28	30	108	658	411	533	360	51	18	17	31
23	43	29	30	87	1630	426	568	304	46	17	17	28
24	64	29	30	68	1150	728	444	280	45	17	17	43
25	60	29	30	70	924	542	421	304	44	18	17	50
26	47	27	30	66	882	483	359	337	43	18	17	52
27	41	29	30	67	841	535	357	365	42	18	17	45
28	37	28	30	72	724	625	365	383	40	18	17	42
29	34	26	30	95	---	687	340	404	38	19	17	41
30	32	33	30	177	---	729	315	408	37	18	17	46
31	29	---	35	162	---	703	---	418	---	18	17	---
TOTAL	948	812	963	3071	14941	19680	14161	10536	4148	707	527	834
MEAN	30.6	27.1	31.1	99.1	534	635	472	340	138	22.8	17.0	27.8
MAX	64	33	37	375	3340	1890	699	428	422	35	17	52
MIN	24	20	23	38	54	295	315	259	37	17	17	15
AC-FT	1880	1610	1910	6090	29640	39040	28090	20900	8230	1400	1050	1650

CAL YR 1985	TOTAL	43045	MEAN	118	MAX	1030	MIN	11	AC-FT	85380
WTR YR 1986	TOTAL	71328	MEAN	195	MAX	3340	MIN	15	AC-FT	141500

10378500 HONEY CREEK NEAR PLUSH, OR

LOCATION.--Lat 42°25'33", long 119°55'23", in SW¼SW¼ sec.20, T.36 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 mi^2, 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 current year. Monthly discharge only May 1930 to September 1949, published in WSP 1314.

REVISED RECORDS.--WSP 1564: 1911-12. WSP 1714: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,552.60 ft above 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.--Estimated daily discharges: Oct. 1, 2; Nov. 10-15, 19-24; Dec. 9, 10, 13-15, 27, 28; Jan. 21-28; Feb. 6-11. Records good except for estimated daily discharges and discharges for Aug. 25 to Sept. 3, which are fair. Slight regulation by five small reservoirs, combined capacity, 870 acre-ft. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--60 years (water years 1911-14, 1931-86), 31.3 ft^3/s, 22,680 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maxiumum discharge, 11,000 ft^3/s Dec. 23, 1964, gage height, 13.4 ft, from floodmark, from rating curve extended above 250 ft^3/s on basis of slope-area measurements at gage height 10.46 ft and of peak flow; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 18	2000	596	5.19	Mar. 24	0930	332	4.37
Feb. 23	2100	648	5.32	May 10	0530	255	4.09
Mar. 7	2300	*1,110	*6.34				

Minimum discharge, 0.14 ft^3/s Aug. 23-25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	5.6	6.7	14	18	173	152	62	70	9.0	1.3	.52
2	2.7	5.5	7.4	13	16	146	123	68	65	7.4	1.1	.54
3	2.6	5.5	11	11	15	131	112	88	67	6.8	.98	.56
4	2.6	5.4	9.7	9.0	14	122	109	116	55	5.9	.86	.69
5	2.6	5.6	8.6	12	13	121	104	115	49	5.9	.68	3.4
6	2.7	5.9	8.0	32	11	127	109	94	46	6.3	.65	3.8
7	3.1	5.9	8.5	21	10	322	127	101	29	5.6	.56	3.1
8	3.3	5.9	7.8	14	9.3	738	135	112	38	5.3	.50	2.0
9	3.6	5.5	6.5	14	9.0	400	142	109	39	5.5	.42	1.9
10	3.5	4.5	5.7	11	9.0	287	138	187	33	5.5	.31	3.7
11	3.6	4.1	6.0	10	10	223	127	134	28	4.1	.24	4.1
12	3.7	4.1	7.4	9.7	13	180	121	89	23	2.7	.20	3.7
13	4.6	4.1	7.3	9.1	14	148	106	82	22	2.4	.22	2.1
14	4.7	4.5	7.3	9.0	15	126	99	74	21	2.4	.21	1.4
15	4.3	6.0	7.4	8.6	35	110	92	71	16	2.0	.18	1.3
16	4.3	6.8	8.3	9.5	47	97	86	68	22	1.5	.17	1.3
17	4.1	6.2	7.9	48	165	90	86	69	21	1.8	.29	1.8
18	2.2	5.4	6.9	27	458	79	80	71	20	2.4	.35	3.4
19	1.8	4.7	7.5	21	254	76	73	68	20	2.0	.32	4.8
20	3.4	4.3	5.7	20	126	98	75	69	18	1.7	.26	4.9
21	4.4	4.3	4.6	10	86	135	85	82	15	1.4	.23	4.6
22	4.9	4.4	6.1	7.0	98	132	98	89	14	1.2	.22	4.0
23	5.4	4.4	3.2	6.8	261	130	100	75	13	.99	.16	3.7
24	9.6	4.4	3.9	6.8	363	241	87	65	13	.96	.14	3.8
25	12	4.4	4.1	6.8	380	170	85	62	13	.91	.22	6.0
26	10	5.6	2.5	6.8	373	144	78	57	11	.94	.28	5.3
27	7.9	5.9	3.0	6.8	285	151	74	57	10	1.6	.38	5.5
28	4.2	6.8	4.5	9.0	205	173	77	61	10	1.6	.52	4.2
29	7.6	6.3	9.6	13	---	178	70	63	10	1.5	.45	4.1
30	6.3	4.3	14	16	---	190	66	65	11	1.4	.29	4.8
31	5.7	---	14	18	---	176	---	70	---	1.4	.35	---
TOTAL	144.1	156.3	221.1	429.9	3312.3	5614	3016	2593	822	100.10	13.04	95.01
MEAN	4.65	5.21	7.13	13.9	118	181	101	83.6	27.4	3.23	.42	3.17
MAX	12	6.8	14	48	458	738	152	187	70	9.0	1.3	6.0
MIN	1.8	4.1	2.5	6.8	9.0	76	66	57	10	.91	.14	.52
AC-FT	286	310	439	853	6570	11140	5980	5140	1630	199	26	188

CAL YR 1985	TOTAL	9301.29	MEAN	25.5	MAX	310	MIN	.18	AC-FT	18450
WTR YR 1986	TOTAL	16516.85	MEAN	45.3	MAX	738	MIN	.14	AC-FT	32760

10382550 CHEWAUCAN RIVER NEAR BUCK MOUNTAIN, NEAR PAISLEY, OR

LOCATION.--Lat 42°29'10", long 120°34'22", in SE¼ sec.34, T.35 S., R.18 E., Lake County, Hydrologic Unit 17120006, on left bank at road crossing, 1.0 mi upstream from Ben Young Creek, 1.5 mi northeast of Buck Mountain, and 14.5 mi south of Paisley.

DRAINAGE AREA.--157 mi^2.

PERIOD OF RECORD.--October 1982 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Elevation of gage is 5,030 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 10 to Jan. 27. Records good except for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,860 ft^3/s Mar. 7, 1986, gage height, 5.63 ft; maximum gage height, 6.36 ft Jan. 16, 1986, from ice jam; minimum discharge, 18 ft^3/s Aug. 28-30, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 16	unknown	ice jam	*6.36	Mar. 7	1930	*1,860	5.63
Feb. 17	1830	962	5.07	Mar. 29	2300	653	4.75
Feb. 23	1330	925	5.04				

Minimum discharge, 24 ft^3/s Oct. 10, Nov. 13, 14, Aug. 18, 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	44	50	80	95	446	517	343	496	57	28	30
2	35	43	42	85	90	419	454	354	470	53	28	29
3	35	42	50	90	82	390	422	444	506	51	27	29
4	35	42	58	85	78	379	404	395	407	53	29	27
5	35	44	52	120	75	382	394	367	353	58	29	27
6	35	42	48	190	67	397	421	347	323	55	28	27
7	38	42	44	170	85	884	460	320	294	53	27	27
8	37	42	40	140	68	1100	487	302	257	54	27	29
9	37	38	36	120	61	828	517	302	231	54	28	33
10	37	34	30	100	70	687	530	337	211	52	27	35
11	39	30	30	90	69	581	525	288	199	50	25	33
12	39	26	34	70	64	505	512	280	195	46	25	32
13	36	24	38	56	69	435	449	293	185	44	26	32
14	36	24	42	56	94	372	410	300	173	42	26	32
15	38	30	54	60	184	335	388	301	157	43	25	34
16	36	38	56	90	203	304	360	305	140	46	25	38
17	36	38	58	210	478	272	332	321	131	46	25	51
18	36	34	58	170	667	245	298	357	123	43	24	53
19	36	34	56	120	473	240	292	397	117	41	24	56
20	36	34	54	95	330	241	326	432	108	38	25	58
21	39	32	50	85	236	250	389	481	100	37	26	50
22	41	30	50	110	422	252	476	410	93	37	25	43
23	77	28	50	80	814	266	483	375	88	35	25	41
24	77	28	52	60	565	491	441	349	86	35	25	82
25	62	30	52	62	489	387	437	359	88	34	25	66
26	57	36	52	64	484	391	383	398	69	34	25	77
27	54	44	52	66	480	439	392	435	69	34	26	64
28	52	50	50	69	468	489	378	453	64	34	27	58
29	47	50	50	83	---	536	356	470	63	32	31	56
30	46	50	60	114	---	584	341	480	60	30	32	72
31	43	---	70	102	---	576	---	491	---	27	30	---
TOTAL	1322	1103	1518	3092	7360	14103	12574	11486	5856	1348	825	1321
MEAN	42.6	36.8	49.0	99.7	263	455	419	371	195	43.5	26.6	44.0
MAX	77	50	70	210	814	1100	530	491	506	58	32	82
MIN	35	24	30	56	61	240	292	280	60	27	24	27
AC-FT	2620	2190	3010	6130	14600	27970	24940	22780	11620	2670	1640	2620

CAL YR 1985	TOTAL	36518	MEAN	100	MAX	674	MIN	19	AC-FT	72430
WTR YR 1986	TOTAL	61908	MEAN	170	MAX	1100	MIN	24	AC-FT	122800

10382600 CHEWAUCAN RIVER BELOW COFFEEPOT CREEK, NEAR PAISLEY, OR

LOCATION.--Lat 42°34'07", long 120°35'40", in NW¼NE¼ sec.4, T.35 S., R.18 E., Lake County, Hydrologic Unit 17120006, on left bank 1.4 mi downstream from Coffeepot Creek, and 9 mi south of Paisley.

DRAINAGE AREA.--216 mi^2.

PERIOD OF RECORD.--October 1982 to September 1986 (discontinued).

GAGE.--Water-stage recorder. Elevation of gage is 4,880 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 10 to Jan. 27. Records good except for estimated daily discharges, which are fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,230 ft^3/s May 31, 1983, gage height, 5.28 ft, from floodmark; minimum discharge, 15 ft^3/s Nov. 24, Dec. 3, 1982, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 17	1900	1,160	4.20	Mar. 7	2330	*1,860	*4.97
Feb. 23	0200	857	3.75	Mar. 30	0100	671	3.43

Minimum discharge, 24 ft^3/s Aug. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	45	52	85	116	495	550	363	463	66	32	32
2	35	44	44	90	111	469	492	369	439	63	33	32
3	35	43	44	95	98	444	460	451	477	60	31	31
4	35	43	60	90	89	432	446	420	398	60	33	30
5	35	45	56	150	85	432	432	387	350	63	33	30
6	35	42	52	230	70	444	452	371	323	59	32	29
7	37	42	48	190	91	886	492	346	301	57	31	30
8	37	42	44	170	69	1410	515	324	259	57	31	31
9	36	40	38	140	64	932	538	321	232	58	32	35
10	36	35	32	120	78	742	549	362	213	56	30	37
11	39	34	32	100	75	635	544	314	195	54	29	35
12	38	30	36	80	70	559	543	301	190	50	28	34
13	36	26	42	64	83	487	482	309	183	49	29	34
14	36	26	46	64	115	426	446	319	172	47	29	34
15	38	30	56	64	236	395	429	317	157	46	28	36
16	37	38	60	100	294	363	401	319	140	48	27	39
17	37	38	62	250	645	327	376	329	132	49	26	47
18	36	36	62	200	825	297	339	360	123	47	25	54
19	36	36	60	150	624	290	329	394	118	45	25	54
20	36	36	58	115	445	290	360	423	109	42	26	58
21	38	34	54	90	327	297	415	468	102	41	27	51
22	44	32	52	110	462	298	490	414	95	40	28	45
23	70	30	52	85	807	312	503	383	92	39	28	42
24	83	30	54	65	603	529	458	356	88	39	26	67
25	64	32	54	70	542	440	455	359	96	38	26	61
26	58	36	54	74	533	439	410	390	76	38	26	68
27	55	44	54	78	530	479	409	420	77	38	27	61
28	52	52	52	83	516	526	404	433	72	38	30	55
29	48	52	52	102	---	566	382	444	72	37	29	54
30	46	52	62	146	---	614	364	452	69	35	35	63
31	44	---	75	127	---	602	---	460	---	32	33	---
TOTAL	1327	1145	1599	3577	8603	15857	13465	11678	5813	1491	905	1309
MEAN	42.8	38.2	51.6	115	307	512	449	377	194	48.1	29.2	43.6
MAX	83	52	75	250	825	1410	550	468	477	66	35	68
MIN	35	26	32	64	64	290	329	301	69	32	25	29
AC-FT	2630	2270	3170	7090	17060	31450	26710	23160	11530	2960	1800	2600

CAL YR 1985	TOTAL	39945	MEAN	109	MAX	679	MIN	19	AC-FT	79230
WTR YR 1986	TOTAL	66769	MEAN	183	MAX	1410	MIN	25	AC-FT	132400

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, May 1924 to current year. 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.

REVISED RECORDS.--WSP 860: Drainage area. WSP 1927: 1957-59.

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

REMARKS.--Estimated daily discharges: Nov. 11 to Jan. 4, Feb. 7, 8, 10, 11. Records good except for estimated daily discharges, which are fair. No regulation. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--71 years, 148 ft³/s, 107,200 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.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 16	2400	1,320	3.90	Apr. 10	0400	669	3.09
Feb. 17	2030	1,310	3.93	Apr. 23	0300	621	3.01
Feb. 23	0400	956	3.52	May 4	0030	525	2.83
Mar. 8	0200	*1,910	*4.52	May 21	0900	555	2.89
Mar. 24	1130	723	3.18	June 6	0830	615	3.00
Mar. 30	0330	761	3.24				

Minimum daily discharge, 29 ft³/s Nov. 13, 14, Aug. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	53	60	100	132	567	625	393	491	85	35	35
2	42	52	50	105	127	533	551	399	466	82	36	34
3	42	51	60	110	116	503	513	493	514	79	35	34
4	42	51	70	100	104	487	493	469	424	76	35	34
5	42	53	65	178	101	488	472	420	375	73	36	33
6	42	52	60	319	75	504	492	408	345	71	35	32
7	44	51	55	238	70	944	539	382	324	68	34	32
8	46	51	50	188	68	1610	565	358	285	66	34	33
9	43	49	43	161	68	1110	600	352	256	67	35	37
10	46	44	37	138	68	859	615	395	234	65	34	41
11	48	38	36	108	70	736	606	348	215	63	33	39
12	47	34	40	87	87	639	600	331	209	59	32	38
13	45	29	45	67	93	547	533	337	202	56	32	38
14	44	29	55	68	128	469	490	347	192	53	32	38
15	46	37	65	67	265	431	466	344	180	52	32	39
16	45	45	68	193	337	397	434	346	161	54	31	43
17	45	45	70	345	700	362	412	356	153	57	30	50
18	45	40	70	222	1080	327	371	386	144	53	30	60
19	44	40	68	182	757	323	357	422	141	51	29	59
20	44	40	63	151	516	324	380	456	131	49	30	66
21	45	38	60	96	376	330	437	514	123	46	31	56
22	53	35	60	120	474	332	530	455	116	45	32	50
23	72	33	60	100	927	345	563	416	111	44	31	46
24	104	33	62	71	708	594	506	385	107	44	31	66
25	78	35	62	78	624	494	500	384	117	43	30	71
26	68	45	62	80	608	485	449	412	96	42	30	76
27	64	50	62	85	609	529	439	445	94	43	31	69
28	61	60	60	89	591	588	442	460	92	42	33	60
29	58	60	60	106	---	635	415	472	89	41	31	58
30	56	60	70	158	---	698	394	480	87	40	38	66
31	53	---	85	143	---	695	---	488	---	36	36	---
TOTAL	1596	1333	1833	4253	9879	17885	14789	12653	6474	1745	1014	1433
MEAN	51.5	44.4	59.1	137	353	577	493	408	216	56.3	32.7	47.8
MAX	104	60	85	345	1080	1610	625	514	514	85	38	76
MIN	42	29	36	67	68	323	357	331	87	36	29	32
AC-FT	3170	2640	3640	8440	19590	35470	29330	25100	12840	3460	2010	2840

CAL YR 1985	TOTAL	47037	MEAN	129	MAX	844	MIN	23	AC-FT	93300
WTR YR 1986	TOTAL	74887	MEAN	205	MAX	1610	MIN	29	AC-FT	148500

10388001 ANA RIVER NEAR SUMMER LAKE, OR

LOCATION.--Lat 42°59'42" (revised), long 120°44'54" (revised), in SE¼ sec.6, T.30 S., R.17 E., Lake County, Hydrologic Unit 17120005, on left bank 300 ft downstream from diversion dam and 2.0 mi northeast of town of Summer Lake.

DRAINAGE AREA.--Indeterminate; Ana River Springs, source of the stream located three-quarters of a mile upstream from station, are flooded by pondage behind diversion dam.

PERIOD OF RECORD.--October 1929 to September 1939 (river only); June to September 1928, April 1931 to July 1938, and April 1940 to September 1942 (irrigation season records for Summer Lake Canal only); June 1951 to current year. Prior to June 1951 monthly discharge only, published in WSP 1314.

GAGE.--Water-stage recorder. Elevation of gage is 4,160 ft from plans of Ana River diversion dam. Oct. 1, 1929, to Sept. 30, 1939, at site 80 ft downstream at different datum.

REMARKS.--No estimated daily discharges. Records excellent except those for August and September, which are good. All records presented herein include flow in Summer Lake Canal which diverts 300 ft upstream from station for irrigation of lands along west side of Summer Lake. Flow regulated by gates at diversion dam.

AVERAGE DISCHARGE.--38 years (water years 1931-32, 1936, 1952-86), 90.9 ft^3/s, 65,860 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 188 ft^3/s Dec. 22, 1964, gage height, 2.81 ft, no flow in canal; minimum discharge, 1.0 ft^3/s Jan. 21, 22, 1970; minimum daily, 3.0 ft^3/s Oct. 31, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 126 ft^3/s Oct. 8; minimum, 56 ft^3/s June 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76	90	86	88	92	94	92	84	86	84	84	86
2	76	90	87	88	92	94	92	84	86	84	88	87
3	77	90	86	88	92	94	92	85	86	81	87	92
4	77	90	86	88	92	93	92	86	86	80	87	91
5	77	90	86	88	92	93	92	80	86	81	86	90
6	78	90	87	89	92	93	93	72	78	81	86	89
7	88	90	86	89	91	94	93	61	88	81	86	89
8	116	90	85	89	91	94	93	73	89	81	87	85
9	122	90	85	89	91	94	94	80	89	81	87	84
10	122	90	86	89	91	94	94	88	89	81	87	83
11	115	90	86	89	91	94	94	88	91	81	87	83
12	109	90	86	89	91	94	94	86	87	80	85	83
13	90	90	86	89	91	94	94	85	87	81	86	83
14	89	89	86	89	91	93	94	84	87	81	85	85
15	89	89	87	91	92	93	94	84	87	82	86	88
16	89	89	87	91	92	93	94	84	87	83	89	89
17	89	89	87	91	93	93	94	84	87	82	89	89
18	89	88	87	91	94	93	94	85	87	86	89	88
19	89	88	88	90	94	93	94	85	86	85	89	88
20	89	87	88	90	93	93	94	85	56	84	89	88
21	89	87	88	90	93	93	91	86	64	84	90	88
22	89	87	88	91	93	93	84	86	76	83	84	88
23	89	87	88	91	92	93	85	86	83	84	90	88
24	89	87	88	91	92	93	82	86	84	84	90	88
25	90	87	87	91	92	92	81	86	85	84	90	88
26	90	87	87	92	94	92	81	86	84	84	91	88
27	90	86	87	92	94	92	81	86	84	84	90	90
28	90	86	88	91	94	92	82	86	84	83	86	88
29	90	86	87	91	---	92	82	86	84	83	86	87
30	90	86	87	92	---	92	83	86	84	84	86	98
31	90	---	87	92	---	92	---	86	---	84	87	---
TOTAL	2832	2655	2690	2789	2582	2886	2699	2589	2517	2561	2709	2631
MEAN	91.4	88.5	86.8	90.0	92.2	93.1	90.0	83.5	83.9	82.6	87.4	87.7
MAX	122	90	88	92	94	94	94	88	91	86	91	98
MIN	76	86	85	88	91	92	81	61	56	80	84	83
AC-FT	5620	5270	5340	5530	5120	5720	5350	5140	4990	5080	5370	5220

CAL YR 1985	TOTAL	31986	MEAN	87.6	MAX	122	MIN	70	AC-FT	63440
WTR YR 1986	TOTAL	32140	MEAN	88.1	MAX	122	MIN	56	AC-FT	63750

10390001 SILVER CREEK NEAR SILVER LAKE, OR

LOCATION.--Lat 43°06'50", long 121°03'59" in NE¼SW¼ sec.28, T.28 S., R.14 E., Lake County, Hydrologic Unit 17120005, on right bank 1.5 mi downstream from diversion dam of Silver Lake Irrigation District, 1.5 mi southwest of town of Silver Lake, and 3 mi upstream from Bridge Creek.

DRAINAGE AREA.--180 mi^2, approximately.

PERIOD OF RECORD.--January 1905 to March 1907, January 1909 to September 1927, February to December 1928, February 1929 to current year.

REVISED RECORDS.--WSP 1564: 1906, 1910, 1921(M). WSP 1734: Drainage area.

GAGE.--Water-stage recorder. Concrete control since Sept. 15, 1932. Datum of gage is 4,361.22 ft above National Geodetic Vertical Datum of 1929. Prior to May 24, 1932, nonrecording gage or water-stage recorder at practically same location at datum 1.00 ft higher, or nonrecording gage at diversion dam outlet 1.5 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 13, 14, 18, 19, 23, 25, 26, 30, Dec. 1, 10-13, 16-30, Jan. 3, 4, 6, 24, Feb. 9. Records good. Flow regulated by reservoir, capacity, 800 acre-ft, 1.5 mi upstream from station and by Thompson Valley Reservoir, capacity, 17,400 acre-ft, 11 mi upstream from station. Records given herein include flow in Silver Lake Irrigation District Canal which diverts 1.5 mi upstream from station. No record of diversion October 1943 to September 1965.

AVERAGE DISCHARGE.--74 years (water years 1906, 1910-27, 1930-41, 1944-86), 31.7 ft^3/s, 22,960 acre-ft/yr, including diversion by Silver Lake Irrigation District Canal.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,800 ft^3/s Mar. 20, 1907, gage height, 10.08 ft, present datum, from rating curve extended above 700 ft^3/s; maximum gage height, 10.3 ft Dec. 22, 1964; no flow at times in 1931-32, 1934, 1937.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 564 ft^3/s Mar. 9; minimum daily, 11 ft^3/s Oct. 21, Nov. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	12	13	13	28	64	187	64	67	47	42	38
2	12	11	13	14	28	59	166	66	68	45	42	38
3	12	12	13	14	26	55	151	67	67	45	42	39
4	13	12	14	14	23	53	138	66	63	44	42	39
5	13	12	14	14	21	53	125	64	63	44	42	38
6	13	12	14	15	19	55	121	63	63	44	43	38
7	13	12	14	15	19	150	124	62	60	44	44	40
8	13	12	14	15	18	368	130	59	57	43	43	40
9	13	12	14	15	17	528	139	56	54	43	43	40
10	13	12	14	16	17	432	146	55	53	42	43	40
11	13	12	14	16	17	365	146	54	54	40	43	35
12	13	12	13	16	17	314	140	53	55	39	43	32
13	13	12	13	16	18	267	131	54	57	40	43	32
14	13	12	13	16	19	224	119	56	58	40	43	32
15	12	12	13	15	38	185	115	58	57	40	43	32
16	12	12	13	17	67	157	110	58	57	40	42	32
17	12	12	13	24	73	138	100	58	55	39	43	33
18	12	13	13	33	158	94	90	60	56	38	46	32
19	12	13	13	33	94	91	79	60	56	38	52	34
20	12	13	13	25	49	92	78	66	56	38	57	34
21	11	13	13	20	45	96	81	84	55	38	57	34
22	12	13	13	19	86	95	87	78	55	37	57	33
23	12	13	13	18	119	94	93	76	55	37	57	23
24	12	13	13	18	94	114	92	75	55	37	54	18
25	12	13	13	17	81	122	87	74	55	37	50	18
26	12	13	13	17	74	122	82	74	55	37	50	18
27	12	12	13	17	70	131	79	67	52	38	45	18
28	12	13	13	17	67	150	76	66	52	40	43	18
29	12	13	13	18	---	170	72	67	52	40	44	18
30	12	13	13	31	---	184	70	67	52	40	40	17
31	12	---	13	31	---	191	---	67	---	42	38	---
TOTAL	382	371	411	579	1402	5213	3354	1994	1714	1256	1416	933
MEAN	12.3	12.4	13.3	18.7	50.1	168	112	64.3	57.1	40.5	45.7	31.1
MAX	13	13	14	33	158	528	187	84	68	47	57	40
MIN	11	11	13	13	17	53	70	53	52	37	38	17
AC-FT	758	736	815	1150	2780	10340	6650	3960	3400	2490	2810	1850

CAL YR 1985	TOTAL	13261.1	MEAN	36.3	MAX	312	MIN	4.3	AC-FT	26300
WTR YR 1986	TOTAL	19025	MEAN	52.1	MAX	528	MIN	11	AC-FT	37740

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 mi^2.

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 current year.

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

REMARKS.--Estimated daily discharges: Nov. 12-15, Nov. 20 to Feb. 17, May 27 to June 5, June 13 to July 13. Records good except those for Nov. 20 to Feb. 17, which are fair. No regulation. Diversions for irrigation upstream from station during periods of high flow only.

AVERAGE DISCHARGE.--73 years (water years 1904-5, 1910-12, 1918-21, 1923-86), 182 ft^3/s, 131,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,960 ft^3/s Apr. 6, 1952, gage height, 15.2 ft; no flow July 19 to Sept. 22, 1934.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,110 ft^3/s Mar. 8, gage height, 12.51 ft; minimum discharge, 19 ft^3/s Sept. 7-9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	42	37	28	75	1670	1410	452	190	36	26	21
2	34	42	40	30	80	1940	1310	422	190	35	25	21
3	35	41	40	30	80	1740	1170	409	175	33	24	21
4	37	44	40	30	80	1610	1100	410	160	33	24	20
5	36	42	40	32	75	1570	1040	405	150	34	24	20
6	36	42	40	34	70	1600	1000	425	139	34	23	20
7	36	42	40	34	62	1800	1000	433	132	32	23	19
8	37	43	40	34	56	2950	1000	423	125	31	22	19
9	39	45	34	34	50	2770	1010	397	118	31	22	19
10	37	44	25	37	50	2710	1000	382	112	32	22	21
11	39	39	22	40	50	2580	967	378	104	32	22	21
12	41	36	22	38	56	2120	931	373	98	33	21	21
13	39	37	25	35	72	1770	895	366	93	34	21	21
14	38	40	27	35	82	1530	855	349	85	35	21	21
15	38	40	27	37	110	1340	806	326	80	34	21	23
16	39	44	27	40	180	1230	752	303	75	34	20	23
17	37	49	27	44	280	1120	677	285	67	34	20	26
18	37	50	26	48	512	987	652	269	63	35	20	28
19	37	49	25	55	571	935	627	252	58	34	20	30
20	37	35	23	54	534	910	598	238	53	34	20	32
21	37	27	23	54	534	950	573	240	50	32	20	32
22	40	27	23	54	512	976	567	256	47	31	20	33
23	50	28	23	54	850	1010	580	263	44	31	20	31
24	56	29	23	54	1300	1130	548	269	40	30	21	32
25	55	28	23	52	1520	1180	532	251	38	30	21	39
26	52	26	23	49	1650	1150	519	225	38	28	20	43
27	52	28	23	48	1710	1220	508	200	41	27	20	45
28	49	35	23	48	1450	1340	521	185	41	27	20	43
29	46	37	23	54	---	1450	498	185	40	27	20	42
30	44	37	23	65	---	1510	483	185	38	27	21	43
31	43	---	25	70	---	1500	---	190	---	26	21	---
TOTAL	1265	1148	882	1351	12651	48298	24129	9746	2684	986	665	830
MEAN	40.8	38.3	28.5	43.6	452	1558	804	314	89.5	31.8	21.5	27.7
MAX	56	50	40	70	1710	2950	1410	452	190	36	26	45
MIN	32	26	22	28	50	910	483	185	38	26	20	19
AC-FT	2510	2280	1750	2680	25090	95800	47860	19330	5320	1960	1320	1650

CAL YR 1985	TOTAL	65885	MEAN	181	MAX	1930	MIN	17	AC-FT	130700
WTR YR 1986	TOTAL	104635	MEAN	287	MAX	2950	MIN	19	AC-FT	207500

10396000 DONNER UND BLITZEN RIVER NEAR FRENCHGLEN, OR
(National stream-quality accounting network station)

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 National Wildlife Refuge, 2.0 mi downstream from Fish Creek, and 3.5 mi southeast of Frenchglen.

DRAINAGE AREA.--200 mi^2, 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 current year. 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.

REVISED RECORDS.--WSP 330: Drainage area (former site). WSP 860: Drainage area (present site). WSP 1564: 1938-39(M), 1942-43(M), 1948(M), 1951(P), 1952-53. WSP 1714: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 4,254 ft above 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.--Estimated daily discharges: Nov. 12-16, 19, 22, 24, 27, 28, Dec. 9 to Jan. 7, Feb. 9-15. Water-discharge records excellent except for periods of ice effect Nov. 12-16, 19, 22, 24, 27, 28, Dec. 9 to Jan. 7, Feb. 9-15, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--56 years (water years 1912-13, 1915-16, 1918-21, 1939-86), 128 ft^3/s, 92,740 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,270 ft^3/s Apr. 26, 1978, gage height, 7.15 ft, from floodmarks, from rating curve extended above 1,900 ft^3/s on basis of slope-area measurement of peak flow; minimum discharge, 4.2 ft^3/s Dec. 9, 1972, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 650 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 18	0300	*3,060	*6.28	Mar. 8	1700	1,050	4.32
Feb. 22	2100	687	3.79	May 29	2130	1,050	4.32

Minimum daily discharge, 27 ft^3/s Dec. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	55	57	60	112	257	300	222	788	126	64	54
2	53	54	58	56	82	233	262	242	744	129	63	54
3	52	54	60	52	82	225	239	275	695	133	62	53
4	52	54	55	50	92	217	224	269	589	130	61	52
5	52	55	55	58	86	222	228	251	499	110	60	52
6	52	54	55	54	68	228	269	255	436	102	60	52
7	56	55	56	52	58	269	320	257	405	99	58	52
8	54	54	54	62	53	584	371	238	345	99	58	52
9	51	54	40	62	52	476	377	236	310	99	58	54
10	54	55	32	65	54	468	365	278	299	97	57	54
11	56	53	27	66	58	371	339	278	302	102	57	54
12	56	50	33	59	60	390	338	246	312	99	56	53
13	54	52	45	59	82	291	285	234	326	91	56	52
14	54	56	52	64	110	322	259	235	332	89	56	52
15	54	58	50	60	160	246	239	231	314	89	55	53
16	54	60	46	85	225	237	218	228	278	87	55	53
17	54	56	48	171	899	209	212	240	268	82	55	56
18	53	54	47	194	1340	161	193	286	253	78	54	60
19	52	54	43	289	809	158	184	361	194	77	53	61
20	52	56	40	249	509	178	195	413	178	76	54	63
21	53	55	41	90	287	195	246	436	175	76	58	60
22	56	52	42	75	386	182	319	367	176	74	56	57
23	56	48	43	72	451	186	323	336	179	73	55	56
24	59	52	45	60	261	193	282	324	185	72	54	61
25	58	59	43	57	231	178	282	421	181	71	53	65
26	57	41	41	58	233	178	252	570	185	71	53	65
27	56	38	43	59	258	210	243	638	165	69	53	64
28	55	50	46	77	269	263	234	774	146	68	58	62
29	55	59	48	163	---	304	228	844	138	68	56	62
30	55	54	45	148	---	346	212	869	128	67	53	70
31	55	---	52	218	---	350	---	833	---	65	54	---
TOTAL	1682	1601	1442	2944	7367	8327	8038	11687	9525	2768	1755	1708
MEAN	54.3	53.4	46.5	95.0	263	269	268	377	318	89.3	56.6	56.9
MAX	59	60	60	289	1340	584	377	869	788	133	64	70
MIN	51	38	27	50	52	158	184	222	128	65	53	52
AC-FT	3340	3180	2860	5840	14610	16520	15940	23180	18890	5490	3480	3390

CAL YR 1985	TOTAL	44747	MEAN	123	MAX	542	MIN	27	AC-FT	88760
WTR YR 1986	TOTAL	58844	MEAN	161	MAX	1340	MIN	27	AC-FT	116700

10396000 DONNER UND BLITZEN RIVER NEAR FRENCHGLEN, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to September 1986 (discontinued).

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1975 to September 1981.
WATER TEMPERATURES: October 1975 to September 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS NONCARB DIS-SOLVED (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)
OCT											
23...	0945	56	108	7.5	7.5	10.4	K580	28	39	0	9.3
FEB											
05...	1015	94	93	8.1	3.0	13.2	K7	20	32	0	7.6
JUN											
04...	0830	580	41	7.1	9.0	10.6	25	48	15	0	3.8
AUG											
06...	1100	60	86	8.9	16.0	9.6	K4	--	36	0	8.5

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WATER DISSOLV FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)
OCT										
23...	3.8	5.7	1.5	58	2.6	1.3	0.1	0.04	0.2	0.2
FEB										
05...	3.2	5.3	1.5	40	5.0	1.0	<0.1	0.04	0.2	0.4
JUN										
04...	1.4	2.2	0.8	21	1.2	0.4	<0.1	0.06	0.1	0.8
AUG										
06...	3.5	5.5	1.4	56	2.1	0.7	0.1	0.01	<0.1	0.3

DATE	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, TOTAL (MG/L AS P)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	TUR-BID-ITY (NTU)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT										
23...	0.02	0.02	0.03	30	72	89	11	1.9	8	1.2
FEB										
05...	0.02	0.03	0.04	29	70	78	18	14	8	2.0
JUN										
04...	0.02	0.18	0.23	16	35	39	55	4.5	186	291
AUG										
06...	<0.01	0.01	0.02	28	70	84	11	1.0	4	0.65

K - Results based on colony count outside acceptable range (non-ideal colony count).

10396000 DONNER UND BLITZEN RIVER NEAR FRENCHGLEN, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)
OCT 23...	40	<1	8	<0.5	1	<1	9	1	50	1
FEB 05...	--	<1	6	<0.5	<1	<1	<3	<1	--	<1
JUN 04...	--	--	--	--	--	--	--	--	--	--
AUG 06...	20	<1	8	0.6	<1	<1	<3	1	20	<5

DATE	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)
OCT 23...	<4	5	<0.1	<10	1	<1	<1	56	<6	22
FEB 05...	<4	4	<0.1	<10	<1	<1	<1	50	<6	13
JUN 04...	--	--	--	--	--	--	--	--	--	--
AUG 06...	<4	4	<0.1	<10	<1	<1	<1	54	<6	5

10401800 MALHEUR LAKE NEAR VOLTAGE, OR

LOCATION.--Lat 43°16'04", long 118°50'31", in NE¼SE¼ sec.35, T.26 S., R.31 E., Harney County, Hydrologic Unit 17120001, at Malheur National Wildlife Refuge Headquarters, near Voltage.

DRAINAGE AREA.--2,150 mi^2, approximately.

PERIOD OF RECORD.--March 1972 to September 1980, March 1983 to current year. Published as "at break in Cole Island Dike" (sta 10401830) 1972-78.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum (NGVD) of 1929. Prior to Aug. 21, 1984, at various sites within 6 mi of present site, at different datums.

REMARKS.--Equipment malfunction during the 1986 water year resulted in U.S. Fish and Wildlife and U.S. Geological Survey observer gage readings being used for the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily elevation observed, 4,102.60 ft Apr. 24, 1986; minimum recorded, 4,090.60 ft Oct. 2, 3, 16, 1976.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum elevation observed since 1938, 4,095.39 ft, occurred in 1952, from records of Malheur National Wildlife Refuge for staff gage in channel of Donner und Blitzen River; entire bed of lake dry September 1934.

EXTREMES FOR CURRENT YEAR.--Maximum daily elevation observed, 4,102.60 ft Apr. 24; minimum daily observed, 4,100.50 ft Sept. 24.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4100.75	4100.60	4100.60	---	---	---	4102.44	4102.54	---	---	---	---
2	---	---	---	---	---	---	4102.44	---	---	---	---	---
3	4100.73	---	---	---	4101.10	---	4102.44	---	---	4101.92	---	---
4	---	---	---	---	---	---	4102.48	---	4102.45	---	4101.28	---
5	4100.73	---	---	---	4101.07	4101.68	---	4102.48	4102.50	---	---	---
6	---	---	---	4100.90	---	---	---	---	4102.43	---	4101.30	---
7	---	---	---	---	---	---	4102.50	---	---	---	4101.25	---
8	---	---	---	4100.90	---	---	4102.50	---	4101.82	4101.82	4101.26	---
9	---	---	---	---	---	---	4102.50	4102.50	4102.36	4101.76	---	---
10	---	---	4100.85	4100.90	4101.10	4101.90	4102.52	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	4101.74	---	---
12	---	---	---	4100.90	---	---	---	4102.56	4102.31	---	4101.22	---
13	---	---	---	4100.90	---	4102.06	---	4102.56	4102.30	---	---	---
14	---	---	---	---	---	---	---	---	---	---	4101.26	---
15	4100.68	---	---	4100.90	---	---	4102.50	4102.56	---	4101.70	---	---
16	---	---	---	---	---	---	4102.54	---	---	---	---	4100.68
17	---	---	4100.88	4100.90	---	---	4102.50	---	4102.22	---	---	---
18	4100.65	---	---	---	---	---	4102.55	---	---	4101.60	4101.06	---
19	---	---	---	---	4101.45	4102.30	---	4102.52	---	---	4101.02	4100.66
20	---	---	---	4100.90	---	---	---	---	4102.20	---	---	---
21	4100.60	---	---	---	4101.48	---	4102.56	---	---	4101.60	4101.04	---
22	---	---	---	4100.90	---	---	4102.56	4102.52	4102.12	---	---	4100.64
23	4100.60	---	---	---	---	---	4102.56	---	---	4101.54	---	---
24	4100.70	---	---	4100.90	---	---	4102.60	---	---	4101.54	---	4100.50
25	4100.60	---	---	---	---	4102.40	---	---	4102.08	4101.51	4100.98	4100.60
26	---	---	---	---	4101.60	---	---	---	---	---	---	---
27	---	---	---	4101.00	---	---	---	4102.52	4102.06	---	4100.96	---
28	4100.60	4100.60	---	---	---	4102.42	4102.56	---	---	4101.48	---	---
29	---	---	---	4101.10	---	---	---	---	---	---	4100.96	4100.68
30	4100.60	4100.60	---	---	---	---	4102.56	---	4102.06	4101.46	---	---
31	---	---	---	4101.10	---	4102.44	---	---	---	---	---	---

10406500 TROUT CREEK NEAR DENIO, NV

LOCATION.--Lat 42°09'20", long 118°27'14", in NW¼SE¼ 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 mi^2, 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 current year. Prior to Oct. 1, 1961, published as "near Denio, Oreg."

REVISED RECORDS.--WSP 1564: 1932, 1933-34(M), 1938(M). WSP 1714: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,351.52 ft above 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.--Estimated daily discharges: Nov. 10 to Dec. 2, Dec. 9 to Jan. 6, Jan. 8, 10, 13-15, 25-29, Feb. 7-11. Records good except for estimated daily discharges, which are poor. No regulation. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--55 years (water years 1923, 1933-86), 16.9 ft^3/s, 12,240 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 470 ft^3/s Aug. 1, 1933, gage height, 5.26 ft, from rating curve extended above 230 ft^3/s; minimum discharge observed, 0.10 ft^3/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.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 17	2100	61	2.59	May 3	0200	73	2.64
Mar. 8	1830	*127	*3.05	May 10	0430	72	2.63
Mar. 31	0200	76	2.71	May 21	2200	100	2.86
Apr. 12	0830	117	2.99	May 31	0030	119	2.99

Minimum discharge, 3.1 ft^3/s Aug. 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.5	8.3	9.0	8.0	11	58	69	45	87	9.2	7.0	4.9
2	8.5	8.3	10	9.2	11	53	62	47	80	11	6.5	4.8
3	8.4	8.3	12	10	11	50	56	62	74	9.8	6.3	4.1
4	8.3	8.3	11	9.0	10	48	50	65	66	11	6.0	4.1
5	8.3	8.5	10	10	9.8	46	46	57	59	12	6.1	4.1
6	8.3	8.4	10	10	9.0	47	48	55	53	11	5.9	5.5
7	9.7	8.5	11	8.2	8.5	48	54	51	48	10	5.6	5.3
8	9.8	8.7	10	9.0	8.0	91	57	46	43	12	5.1	5.2
9	8.9	8.4	9.5	12	8.0	78	77	45	39	11	5.1	5.4
10	9.0	8.4	8.0	12	8.0	77	82	54	37	11	4.9	5.8
11	9.6	7.0	6.4	9.5	8.0	71	91	46	33	10	4.7	5.7
12	9.5	6.8	6.0	9.2	10	67	109	44	31	10	4.9	5.4
13	9.1	6.8	6.0	8.8	12	62	100	45	29	9.3	6.3	5.2
14	9.0	6.4	6.5	8.5	11	57	95	50	26	8.4	5.2	5.3
15	9.1	6.4	7.0	8.5	14	52	91	53	26	6.6	3.5	5.6
16	8.1	7.5	7.0	9.5	15	49	85	54	24	8.3	3.7	5.8
17	7.6	8.4	7.0	11	31	45	79	55	22	9.7	4.0	6.2
18	8.5	8.0	7.0	11	35	42	72	61	20	9.7	4.0	6.9
19	8.4	7.6	6.5	12	44	39	67	72	21	9.4	4.1	7.9
20	8.4	7.6	6.3	11	48	37	65	89	18	9.2	4.4	7.9
21	8.8	7.6	6.2	10	39	36	66	97	17	8.9	4.8	7.1
22	9.7	7.6	6.2	10	39	39	66	84	16	8.6	4.9	6.6
23	9.9	6.0	6.4	9.4	41	42	63	72	15	8.3	4.8	6.5
24	10	5.0	6.8	9.7	41	46	65	64	15	8.5	4.8	8.0
25	9.6	5.6	6.5	9.3	49	46	59	70	15	8.6	4.4	8.7
26	9.3	5.6	6.3	8.6	56	45	56	81	12	8.8	4.8	9.1
27	9.2	5.6	6.1	8.6	58	47	51	93	12	8.6	4.7	9.6
28	8.9	5.6	6.0	9.0	58	53	47	101	11	8.3	5.2	8.4
29	8.9	5.8	6.5	10	---	63	44	100	10	8.2	5.3	8.1
30	8.2	8.0	7.0	10	---	71	43	105	9.7	7.9	4.5	8.9
31	8.1	---	7.3	11	---	72	---	98	---	7.6	4.7	---
TOTAL	275.6	219.0	237.5	302.0	703.3	1677	2015	2061	968.7	290.9	156.2	192.1
MEAN	8.89	7.30	7.66	9.74	25.1	54.1	67.2	66.5	32.3	9.38	5.04	6.40
MAX	10	8.7	12	12	58	91	109	105	87	12	7.0	9.6
MIN	7.6	5.0	6.0	8.0	8.0	36	43	44	9.7	6.6	3.5	4.1
AC-FT	547	434	471	599	1390	3330	4000	4090	1920	577	310	381

CAL YR 1985	TOTAL	6880.7	MEAN	18.9	MAX	95	MIN	4.7	AC-FT	13650
WTR YR 1986	TOTAL	9098.3	MEAN	24.9	MAX	109	MIN	3.5	AC-FT	18050

WILLIAMSON RIVER BASIN

11491400 WILLIAMSON RIVER BELOW SHEEP CREEK, NEAR LENZ, OR

LOCATION.--Lat 42°54'42", long 121°28'32", in NE¼SW¼ sec.1, T.31 S., R.10 E., Klamath County, Hydrologic Unit 18010201, on left bank at Forest Service bridge, 0.1 mi downstream from Sheep Creek and 17 mi east of Lenz.

DRAINAGE AREA.--205 mi^2.

PERIOD OF RECORD.--October 1973 to current year. Prior to October 1979, in reports of Oregon Water Resources Department.

GAGE.--Water-stage recorder. Elevation of gage is 4,550 ft, from topographic map.

REMARKS.--Estimated daily discharges: Oct. 1 to Dec. 22. Records good except those for Oct. 1 to June 19, which are poor. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--13 years, 74.2 ft^3/s, 53,760 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 246 ft^3/s May 9, 10, 1974, gage height, 3.51 ft; minimum discharge, 16 ft^3/s Dec. 13, 1980, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 173 ft^3/s Mar. 9; minimum, 57 ft^3/s on several days in December, January, July, and August.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	62	60	60	59	71	110	152	101	88	64	62	63
2	62	60	60	60	71	110	149	99	86	64	61	62
3	62	60	60	60	70	110	145	110	86	66	60	60
4	62	60	60	59	69	110	145	116	90	67	61	61
5	62	60	62	61	68	112	144	111	98	67	60	61
6	62	60	65	64	67	115	143	113	100	67	60	61
7	59	60	68	62	67	129	143	108	98	67	60	61
8	59	60	68	61	65	163	143	104	91	65	58	61
9	59	60	68	63	65	173	143	101	86	65	59	60
10	62	60	66	63	65	170	143	104	84	64	60	60
11	62	60	65	62	65	168	142	101	82	65	60	60
12	62	60	64	61	66	165	141	98	84	63	60	60
13	62	61	64	61	69	162	140	96	83	63	58	60
14	62	63	64	61	72	158	137	92	81	64	58	59
15	62	65	64	62	79	154	135	87	79	65	59	60
16	62	66	64	67	80	152	133	84	78	64	59	61
17	62	66	63	76	86	148	133	80	76	64	59	62
18	62	65	62	79	99	144	128	79	74	65	59	62
19	62	63	61	79	110	141	122	79	73	64	59	63
20	64	62	60	75	109	139	118	80	73	65	58	68
21	65	60	60	71	109	138	116	84	72	64	57	68
22	67	60	60	68	112	137	118	87	72	64	58	67
23	68	60	60	67	115	138	121	84	71	63	59	68
24	68	60	58	65	112	144	119	82	71	61	59	71
25	67	60	58	65	112	144	121	79	70	59	59	72
26	66	60	58	65	111	143	121	74	66	58	59	73
27	64	60	57	65	111	144	117	75	65	58	59	72
28	63	60	57	67	111	147	115	78	66	58	60	71
29	62	60	58	71	---	149	111	79	66	60	60	71
30	61	60	58	72	---	152	105	83	66	62	62	72
31	60	---	58	71	---	153	---	87	---	62	63	---
TOTAL	1944	1831	1910	2042	2406	4422	3943	2835	2375	1967	1845	1930
MEAN	62.7	61.0	61.6	65.9	85.9	143	131	91.5	79.2	63.5	59.5	64.3
MAX	68	66	68	79	115	173	152	116	100	67	63	73
MIN	59	60	57	59	65	110	105	74	65	58	57	59
AC-FT	3860	3630	3790	4050	4770	8770	7820	5620	4710	3900	3660	3830

CAL YR 1985	TOTAL	26128	MEAN	71.6	MAX	114	MIN	52	AC-FT	51820
WTR YR 1986	TOTAL	29450	MEAN	80.7	MAX	173	MIN	57	AC-FT	58410

11492200 CRATER LAKE NEAR CRATER LAKE, OR
(Hydrologic bench-mark station)

LOCATION.--Lat 42°58'45", long 122°04'45", (unsurveyed) Crater Lake National Park and Vicinity Quadrangle, Klamath County, Hydrologic Unit 18010201, at boat harbor at end of trail in Cleetwood Cove and 6 mi northeast of Crater Lake post office.

DRAINAGE AREA.--26.2 mi^2, of which 20.5 mi^2 is lake area at elevation 6,176 ft.

WATER-ELEVATION RECORDS

PERIOD OF RECORD.--October 1961 to current year. 1878 to September 1961 (fragmentary records) available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to September 1961, nonrecording gage and various reference points used near old boat landing at abandoned trail (Eagle Cove) directly across Lake.

REMARKS.--Crater Lake occupies the caldera of prehistoric Mount Mazama. It has no visible inlet or outlet. Over a period of years precipitation and runoff from snowmelt on the walls of the crater are offset by seepage and evaporation. Records of accumulated annual precipitation, collected at the north rim of Crater Lake as part of the operation of this station, are published annually in reports of the National Weather Service.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 6,179.34 ft Mar. 25, 1975; minimum observed, 6,163.2 ft Sept. 10, 1942.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum elevation known, 6,180.5 ft, average of several observations of line of crustose lichens made between 1916 and 1960; that stage may have occurred near the close of the 19th century. The occurrence of living pine trees slightly higher suggests that the lake has not been materially higher for several centuries.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 6,178.56 ft Mar. 13; minimum, 6,176.11 ft Oct. 20.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6176.40	6176.41	6176.52	6176.47	6176.86	6178.11	6178.43	6178.18	6178.25	6178.04	6177.61	6177.02
2	6176.38	6176.39	6176.66	6176.50	6177.07	6178.09	6178.41	6178.29	6178.27	6178.02	6177.57	6177.00
3	6176.36	6176.38	6176.65	6176.48	6177.05	6178.07	6178.38	6178.33	6178.27	6178.05	---	6176.98
4	6176.34	6176.38	6176.64	6176.54	6177.05	6178.07	6178.38	6178.34	6178.27	6178.04	---	6176.97
5	6176.32	6176.36	6176.64	6176.54	6177.04	6178.05	6178.38	6178.31	6178.25	6178.02	---	6176.96
6	6176.31	6176.34	6176.68	6176.50	6177.04	6178.11	6178.36	6178.33	6178.24	6178.00	---	6176.93
7	6176.27	6176.36	6176.73	6176.48	6177.02	6178.31	6178.36	6178.32	6178.25	6177.98	---	6176.93
8	6176.23	6176.36	6176.72	6176.52	6176.97	6178.38	6178.33	6178.30	6178.22	6177.99	---	6176.86
9	6176.18	6176.41	6176.70	6176.57	6176.97	6178.49	6178.32	6178.30	6178.22	6177.95	---	6176.86
10	6176.17	6176.39	6176.66	6176.54	6176.95	6178.42	6178.31	6178.31	6178.22	6177.96	---	6176.80
11	6176.18	6176.36	6176.64	6176.48	6176.91	6178.47	6178.29	6178.29	6178.20	6177.95	---	6176.79
12	6176.17	6176.33	6176.63	6176.46	6176.95	6178.46	6178.34	6178.30	6178.20	6177.92	---	6176.75
13	6176.15	6176.32	6176.61	6176.45	6177.00	6178.54	6178.33	6178.29	6178.20	6177.91	---	6176.72
14	6176.13	6176.30	6176.61	6176.45	6176.98	6178.49	6178.22	6178.27	6178.17	6177.88	---	6176.70
15	6176.13	6176.39	6176.59	6176.54	6177.13	6178.54	6178.30	6178.25	6178.13	6177.88	---	6176.72
16	6176.16	6176.40	6176.57	6176.66	6177.16	6178.52	6178.32	6178.24	6178.16	6177.86	---	6176.70
17	6176.15	6176.45	6176.55	6176.72	6177.31	6178.50	6178.33	6178.22	6178.16	6177.82	---	6176.77
18	6176.13	6176.42	6176.55	6176.75	6177.50	6178.49	6178.32	6178.22	6178.15	6177.83	---	6176.77
19	6176.14	6176.45	6176.54	6176.75	6177.57	6178.49	6178.30	6178.21	6178.13	6177.82	---	6176.77
20	6176.11	6176.45	6176.52	6176.70	6177.67	6178.47	6178.29	6178.25	6178.13	6177.79	---	6176.77
21	6176.18	6176.47	6176.52	6176.73	6177.70	6178.45	6178.27	6178.27	6178.11	6177.79	---	6176.74
22	6176.38	6176.45	6176.50	6176.77	6177.99	6178.46	6178.29	6178.25	6178.11	6177.77	---	6176.72
23	6176.52	6176.43	6176.49	6176.79	6178.13	6178.49	6178.27	6178.24	6178.08	6177.77	---	6176.82
24	6176.49	6176.42	6176.48	6176.77	6178.13	6178.52	6178.22	6178.22	6178.08	6177.75	---	6176.86
25	6176.50	6176.39	6176.47	6176.74	6178.13	6178.49	6178.27	6178.22	6178.08	6177.71	6177.17	6176.98
26	6176.48	6176.38	6176.46	6176.75	6178.13	6178.49	6178.33	6178.22	6178.07	6177.70	6177.15	6177.02
27	6176.49	6176.36	6176.45	6176.75	6178.13	6178.47	6178.33	6178.22	6178.05	6177.68	6177.14	6177.00
28	6176.46	6176.46	6176.43	6176.70	6178.11	6178.46	6178.34	6178.22	6178.06	6177.66	6177.13	6176.98
29	6176.45	6176.46	6176.43	6176.86	---	6178.45	6178.29	6178.22	6178.02	6177.63	6177.09	6177.02
30	6176.45	6176.45	6176.41	6176.84	---	6178.45	6178.25	6178.24	6178.02	6177.61	6177.06	6176.98
31	6176.42	---	6176.45	6176.91	---	6178.45	---	6178.27	---	6177.63	6177.04	---
MAX	6176.52	6176.47	6176.73	6176.91	6178.13	6178.54	6178.43	6178.34	6178.27	6178.05	---	6177.02
MIN	6176.11	6176.30	6176.41	6176.45	6176.86	6178.05	6178.22	6178.18	6178.02	6177.61	---	6176.70

CAL YR 1985 MAX 6178.34 MIN 6176.11

11492200 CRATER LAKE NEAR CRATER LAKE, OR--Continued
(Hydrologic bench-mark station)

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1963 to current year.

INSTRUMENTATION.--Temperature recorder since October 1963. Elevation of probe is 6,157 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Samples were collected at boat harbor at end of trail in Cleetwood Cove and 6 mi northeast of Crater Lake post office.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 18.5°C Aug. 9, 10, 1978; minimum recorded, 0.5°C on several days in 1969, but may have been as low or lower during period of missing record Oct. 29, 1985 to July 1, 1986.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 17.0°C Aug. 17-19; minimum not determined, occurred during period of missing record between Oct. 29 and July 1.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARB DISSOLVED (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS CACO3)	SODIUM, DISSOLVED (MG/L AS NA)
OCT 16...	1200	94	8.0	8.5	29	0	7.1	2.7	11
MAR 05...	1000	116	7.1	--	28	0	7.0	2.5	10
JUL 01...	1330	112	7.2	11.0	27	0	6.5	2.5	10
AUG 25...	1300	112	--	16.0	26	0	7.0	2.0	11

DATE	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY WATER DISSOLV FIELD (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)
OCT 16...	1.8	30	10	9.6	0.5	0.04	<0.1	0.3
MAR 05...	1.8	39	8.8	9.4	0.1	0.02	<0.1	0.2
JUL 01...	1.7	30	11	8.6	0.1	0.02	<0.1	0.2
AUG 25...	1.8	29	20	9.9	0.2	--	<0.1	<0.2

DATE	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, TOTAL (MG/L AS P)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	TURBIDITY (NTU)
OCT 16...	0.01	<0.01	<0.01	18	73	79	0.4
MAR 05...	<0.01	0.01	0.01	17	68	80	0.4
JUL 01...	0.02	0.02	0.01	17	74	75	1.0
AUG 25...	0.02	0.02	0.03	18	84	87	0.2

11492200 CRATER LAKE NEAR CRATER LAKE, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)
OCT 16...	20	3	17	<0.5	<1	<1	<3	2	<3	1
MAR 05...	10	3	20	<0.5	<1	--	<3	1	4	2
JUL 01...	--	--	--	--	--	--	--	--	--	--
AUG 25...	--	--	--	--	--	--	--	--	--	--

DATE	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)
OCT 16...	45	2	<0.1	<10	8	<1	<1	58	<6	7
MAR 05...	45	<1	0.2	<10	4	<1	<1	60	<6	15
JUL 01...	--	--	--	--	--	--	--	--	--	--
AUG 25...	--	--	--	--	--	--	--	--	--	--

DATE	GROSS ALPHA, DISSOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DISSOLVED (PCI/L AS CS-137)	GROSS BETA, DISSOLVED (PCI/L AS SR/YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/YT-90)	RADIUM 226, DISSOLVED, RADON METHOD (PCI/L)	URANIUM DISSOLVED, EXTRACTION (UG/L)
OCT 16...	<0.4	<0.8	2.2	2.1	<0.8	<0.7	0.02	<0.10
MAR 05...	--	--	--	--	--	--	--	--
JUL 01...	--	--	--	--	--	--	--	--
AUG 25...	--	--	--	--	--	--	--	--

11492200 CRATER LAKE NEAR CRATER LAKE, OR-- Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	10.5	10.0	10.5									
2	10.5	10.5	10.5									
3	10.5	10.5	10.5									
4	10.5	10.5	10.5									
5	11.0	10.5	10.5									
6	10.5	10.5	10.5									
7	10.5	10.0	10.0									
8	10.0	9.5	9.5									
9	9.5	9.0	9.0									
10	9.0	8.5	9.0									
11	9.0	8.5	8.5									
12	9.0	8.5	8.5									
13	9.0	8.5	8.5									
14	9.0	8.5	8.5									
15	9.0	8.5	8.5									
16	8.5	8.5	8.5									
17	8.5	8.5	8.5									
18	9.0	8.5	8.5									
19	8.5	8.5	8.5									
20	8.5	8.0	8.5									
21	8.0	8.0	8.0									
22	8.0	7.5	7.5									
23	7.5	7.5	7.5									
24	7.5	7.5	7.5									
25	7.5	7.5	7.5									
26	7.5	7.0	7.5									
27	7.5	7.0	7.5									
28	7.5	7.0	7.5									
29	---	---	---									
30	---	---	---									
31	---	---	---									
MONTH	---	---	---									

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1												
2												
3												
4												
5												
6												
7												
8												
9												
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27												
28												
29												
30												
31												
MONTH												

11492200 CRATER LAKE NEAR CRATER LAKE, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1				---	---	---	13.5	13.0	13.5	16.0	15.5	16.0
2				12.0	11.0	11.5	13.5	13.0	13.5	15.5	15.0	15.5
3				13.0	11.5	12.5	13.5	13.0	13.5	16.0	15.5	15.5
4				12.0	10.0	11.5	14.5	13.5	14.0	16.0	15.5	15.5
5				10.5	9.5	10.0	14.0	14.0	14.0	16.0	15.5	15.5
6				10.5	10.0	10.0	14.5	13.5	14.0	16.0	15.5	16.0
7				10.5	10.0	10.0	15.0	14.0	14.5	16.0	15.5	16.0
8				11.0	10.0	10.5	15.5	14.5	15.0	16.0	15.5	16.0
9				11.5	10.5	11.0	15.0	14.0	14.5	15.5	15.0	15.5
10				11.5	10.5	11.0	15.5	14.0	15.0	15.0	15.0	15.0
11				11.5	10.5	11.5	16.0	15.0	15.5	15.0	15.0	15.0
12				11.5	11.0	11.5	16.0	14.5	15.5	15.0	14.5	14.5
13				12.0	11.5	11.5	15.5	15.0	15.5	14.5	14.0	14.5
14				12.5	11.0	12.0	16.0	15.5	15.5	14.0	13.5	14.0
15				12.5	11.5	12.0	16.5	15.0	15.5	13.5	13.0	13.5
16				11.5	11.0	11.0	16.5	16.0	16.5	13.0	12.5	13.0
17				12.5	11.5	12.0	17.0	15.5	16.5	12.5	12.5	12.5
18				12.5	11.5	12.0	17.0	16.0	16.5	12.5	12.0	12.0
19				12.5	11.5	12.0	17.0	16.5	16.5	12.0	11.5	11.5
20				12.0	11.0	11.5	16.5	16.0	16.5	11.5	11.5	11.5
21				12.5	11.5	12.0	16.5	16.0	16.5	11.5	11.0	11.5
22				12.5	11.5	12.0	16.5	16.0	16.0	11.5	11.0	11.0
23				13.0	11.5	12.5	16.5	16.0	16.5	11.5	11.0	11.0
24				13.5	12.5	13.0	16.5	16.0	16.0	11.0	10.5	10.5
25				14.0	13.0	13.5	16.0	16.0	16.0	10.5	10.0	10.5
26				14.0	13.0	13.5	16.5	16.0	16.0	10.0	9.5	9.5
27				14.0	13.0	13.5	16.5	16.5	16.5	9.5	9.0	9.5
28				14.0	13.5	14.0	16.5	16.0	16.5	9.5	9.0	9.0
29				14.0	13.0	13.5	16.0	15.5	16.0	9.5	9.0	9.0
30				14.0	13.0	13.5	16.0	15.5	16.0	9.0	9.0	9.0
31				14.0	13.0	13.5	16.0	15.5	15.5	---	---	---
MONTH				---	---	---	17.0	13.0	15.5	16.0	9.0	13.0

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 mi^2, approximately.

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

REVISED RECORDS.--WSP 1565: 1908-9.

GAGE.--Water-stage recorder. Datum of gage is 4,483.16 ft above 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.--Estimated daily discharges: Nov. 28, 29, Dec. 31. Records good. Flow affected by natural storage in Klamath Marsh. Small diversions upstream from station for irrigation in vicinity of marsh.

AVERAGE DISCHARGE.--32 years (water years 1955-86), 213 ft^3/s, 154,300 acre-ft/yr.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,220 ft^3/s Mar. 2-4, gage height, 5.50 ft; minimum discharge, 2.4 ft^3/s Sept. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	86	192	190	158	501	1200	721	383	247	96	28	3.4
2	86	196	189	156	525	1210	720	377	243	91	26	3.0
3	88	198	191	157	546	1220	707	390	238	87	29	4.1
4	91	199	193	157	556	1210	694	387	231	83	28	4.3
5	92	202	196	159	556	1190	692	386	224	85	24	4.3
6	94	204	202	162	543	1160	675	386	220	83	22	3.8
7	93	200	207	163	550	1160	647	386	220	79	22	2.6
8	103	203	211	166	538	1190	617	385	217	74	20	3.4
9	102	204	213	178	534	1180	597	377	212	70	21	4.1
10	102	213	211	180	526	1180	581	368	205	68	18	3.5
11	102	212	208	180	523	1160	553	362	198	69	16	2.5
12	106	209	205	184	517	1150	525	356	189	69	16	2.7
13	108	206	202	187	525	1130	517	348	178	67	17	2.6
14	109	205	200	189	528	1140	509	345	169	64	20	2.8
15	110	206	199	192	555	1120	489	340	166	63	19	2.9
16	112	209	196	201	583	1130	479	336	161	61	18	2.8
17	116	212	194	221	645	1130	483	328	157	59	17	3.8
18	117	209	192	249	691	1110	485	322	155	58	15	5.8
19	117	206	191	286	751	1070	484	316	155	57	11	8.1
20	114	206	189	313	778	1030	478	309	152	56	8.9	9.4
21	117	203	187	328	808	963	468	297	150	54	8.1	12
22	125	200	185	348	864	939	461	300	146	48	12	12
23	149	197	182	359	952	896	459	293	141	45	13	12
24	158	197	178	359	1040	833	441	287	135	40	12	14
25	164	195	174	359	1090	832	425	279	127	40	11	17
26	170	193	172	363	1120	831	422	271	118	38	7.7	23
27	176	191	169	369	1160	817	417	266	111	36	6.4	29
28	183	191	164	383	1190	794	407	261	106	33	4.8	33
29	187	191	163	410	---	765	403	258	105	30	3.6	33
30	188	191	159	446	---	737	402	254	100	28	3.4	38
31	192	---	157	473	---	729	---	252	---	28	3.4	---
TOTAL	3857	6040	5869	8035	19695	32206	15958	10205	5176	1859	481.3	302.9
MEAN	124	201	189	259	703	1039	532	329	173	60.0	15.5	10.1
MAX	192	213	213	473	1190	1220	721	390	247	96	29	38
MIN	86	191	157	156	501	729	402	252	100	28	3.4	2.5
AC-FT	7650	11980	11640	15940	39070	63880	31650	20240	10270	3690	955	601

CAL YR 1985	TOTAL	84587.4	MEAN	232	MAX	785	MIN	2.8	AC-FT	167800
WTR YR 1986	TOTAL	109684.2	MEAN	301	MAX	1220	MIN	2.5	AC-FT	217600

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 mi^2.

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 current year. Monthly discharge only October 1913, published in WSP 1315-B. Prior to October 1917, published as "near Yainax."

REVISED RECORDS.--WSP 1315-B: 1917(M).

GAGE.--Water-stage recorder. Datum of gage is 4,305.35 ft above 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 estimated daily discharges. Records good except those for March to September, which are fair. No regulation. Diversions for irrigation upstream from station in the vicinity of Bly.

AVERAGE DISCHARGE.--36 years (water years 1914-15, 1920, 1954-86), 317 ft^3/s, 229,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,980 ft^3/s Dec. 23, 1964, gage height, 12.19 ft; minimum, 50 ft^3/s Aug. 25, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,730 ft^3/s Mar. 9, gage height, 8.83 ft; minimum discharge, 76 ft^3/s Aug. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	146	170	150	158	292	1050	836	471	661	209	97	93
2	145	168	155	179	310	998	766	462	672	205	97	96
3	143	167	161	200	411	955	688	525	762	197	93	103
4	143	166	167	176	339	905	654	599	708	196	90	92
5	146	166	168	219	292	876	624	562	571	197	88	89
6	146	165	181	373	245	864	630	596	539	201	90	90
7	150	164	203	256	217	917	671	579	511	201	87	85
8	147	166	229	207	196	1710	707	544	471	191	88	85
9	137	167	194	216	196	2640	755	494	439	187	88	87
10	138	162	151	210	199	2200	785	499	414	180	86	90
11	144	154	123	207	199	1660	785	492	375	179	89	93
12	148	129	138	191	212	1390	763	473	385	179	89	93
13	146	147	142	186	227	1200	710	468	397	180	87	95
14	143	157	151	189	334	1010	636	468	386	171	89	92
15	145	168	152	193	651	847	589	447	365	167	86	95
16	146	174	149	236	757	748	556	451	349	162	86	96
17	146	175	145	806	1110	662	529	461	334	159	85	117
18	153	160	144	658	1840	575	489	471	323	155	88	161
19	151	147	142	511	2280	528	454	491	319	146	84	175
20	149	165	139	365	1900	512	457	534	300	143	82	212
21	159	157	138	276	1480	508	503	667	288	138	86	190
22	171	156	138	243	1070	509	587	740	277	130	93	173
23	200	141	138	236	1240	512	632	653	268	127	96	170
24	235	161	140	217	1500	576	611	594	269	122	97	188
25	211	156	139	196	1270	684	589	566	287	117	94	208
26	196	135	136	194	1120	628	552	559	264	113	84	202
27	189	150	136	195	1100	650	521	568	235	116	84	221
28	184	162	140	201	1100	711	553	561	225	124	86	199
29	177	156	138	224	---	766	509	575	233	118	86	187
30	174	151	142	308	---	827	479	595	227	105	88	189
31	171	---	146	327	---	867	---	640	---	103	90	---
TOTAL	4979	4762	4715	8353	22087	29485	18620	16805	11854	4918	2753	4066
MEAN	161	159	152	269	789	951	621	542	395	159	88.8	136
MAX	235	175	229	806	2280	2640	836	740	762	209	97	221
MIN	137	129	123	158	196	508	454	447	225	103	82	85
AC-FT	9880	9450	9350	16570	43810	58480	36930	33330	23510	9750	5460	8060

CAL YR 1985	TOTAL	93704	MEAN	257	MAX	1050	MIN	109	AC-FT	185900
WTR YR 1986	TOTAL	133397	MEAN	365	MAX	2640	MIN	82	AC-FT	264600

11499100 SYCAN RIVER BELOW SNAKE CREEK, NEAR BEATTY, OR

LOCATION.--Lat 42°29'10", long 121°16'40", in SW¼SE¼ sec.34, T.35 S., R.12 E., Klamath County, Hydrologic Unit 18010202, on left bank 200 ft downstream from Snake Creek and 3.1 mi north of Beatty.

DRAINAGE AREA.--568 mi^2.

PERIOD OF RECORD.--October 1973 to current year. Prior to October 1979, in reports of Oregon Water Resources Department.

GAGE.--Water-stage recorder. Elevation of gage is 4,310 ft, from topographic map.

REMARKS.--Estimated daily discharges: Oct. 1-9. Records good. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--13 years, 187 ft^3/s, 135,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,550 ft^3/s Feb. 21 or 22, 1982, gage height, 12.22 ft, from floodmarks; minimum discharge, 3.0 ft^3/s Nov. 21, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,800 ft^3/s Mar. 9, gage height, 8.71 ft; minimum discharge, 15 ft^3/s Dec. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	40	32	32	386	810	655	295	179	68	34	37
2	30	41	33	31	355	774	644	267	171	65	34	37
3	30	41	36	30	296	748	614	281	167	64	34	36
4	30	40	38	29	239	724	559	333	161	63	34	35
5	30	40	39	46	218	700	530	360	162	61	34	34
6	31	39	39	37	159	686	510	372	169	59	34	35
7	31	39	40	32	137	831	493	364	167	57	33	35
8	31	39	37	34	105	1560	503	339	157	56	33	35
9	29	40	35	38	87	1760	526	315	147	54	32	34
10	29	37	30	38	81	1650	551	282	138	52	32	34
11	30	33	27	38	73	1420	555	259	129	52	33	34
12	30	33	29	37	67	1200	544	265	123	50	32	34
13	29	32	30	42	72	1090	509	255	115	50	33	34
14	29	30	31	45	83	931	476	234	108	50	34	34
15	29	34	30	43	212	837	440	226	101	47	34	35
16	29	36	29	83	514	740	410	222	97	45	34	36
17	29	35	28	111	658	672	404	210	91	44	33	40
18	30	32	28	99	1090	610	388	201	85	43	34	40
19	30	30	27	247	1630	576	363	196	81	42	34	44
20	32	34	27	286	1460	548	335	196	78	40	34	44
21	36	33	26	207	1060	522	315	216	76	40	35	39
22	40	32	26	233	875	507	318	248	73	38	35	38
23	47	30	26	172	1120	508	357	276	71	38	35	39
24	39	32	26	107	1280	513	420	277	69	37	35	47
25	36	31	26	90	1210	538	409	261	74	37	35	45
26	35	28	25	74	1050	561	374	237	69	36	35	49
27	34	30	25	67	951	546	354	214	67	36	36	46
28	34	33	25	76	869	553	331	197	67	36	36	41
29	34	32	25	121	---	591	322	187	72	36	36	40
30	34	32	26	331	---	620	315	182	69	35	35	40
31	35	---	27	387	---	647	---	185	---	39	35	---
TOTAL	1002	1038	928	3243	16337	24973	13524	7952	3333	1470	1057	1151
MEAN	32.3	34.6	29.9	105	583	806	451	257	111	47.4	34.1	38.4
MAX	47	41	40	387	1630	1760	655	372	179	68	36	49
MIN	29	28	25	29	67	507	315	182	67	35	32	34
AC-FT	1990	2060	1840	6430	32400	49530	26820	15770	6610	2920	2100	2280

CAL YR 1985	TOTAL	47963	MEAN	131	MAX	1930	MIN	23	AC-FT	95130
WTR YR 1986	TOTAL	76008	MEAN	208	MAX	1760	MIN	25	AC-FT	150800

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 mi^2, approximately.

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

REVISED RECORDS.--WSP 591: 1922(M). WSP 1011: 1943 (M). WSP 1565: 1921-22.

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

REMARKS.--Estimated daily discharges: Nov. 12-14, 18, 19, 22-27, Dec. 11-29. Records good. Minor regulation from irrigation diversions upstream from station.

AVERAGE DISCHARGE.--65 years (water years 1922-86), 592 ft^3/s, 428,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,900 ft^3/s Dec. 26, 1964, gage height, 10.37 ft; minimum daily discharge, 50 ft^3/s May 26, 1926.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,850 ft^3/s Feb. 22, gage height, 6.30 ft; minimum discharge, 183 ft^3/s Aug. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	338	374	386	354	903	2820	1590	1040	807	346	219	224
2	340	371	372	372	995	2590	1640	1010	834	347	213	223
3	341	374	378	395	996	2400	1670	956	843	339	204	225
4	342	373	385	409	986	2250	1680	944	851	328	200	209
5	346	371	396	418	969	2140	1620	973	848	318	201	201
6	347	367	403	435	850	2050	1540	1040	863	308	203	204
7	355	367	417	539	739	2060	1450	1080	801	310	205	199
8	356	370	434	570	622	2220	1400	1090	756	307	204	206
9	355	371	456	470	550	2350	1390	1070	740	311	199	206
10	349	379	451	453	502	2770	1400	1040	706	301	204	215
11	342	374	330	452	493	3750	1420	995	652	291	213	236
12	335	310	330	442	498	4590	1450	947	606	278	202	246
13	347	300	360	430	513	4680	1490	887	560	277	194	257
14	351	310	410	421	543	4230	1490	866	539	280	197	269
15	357	384	415	432	723	3660	1460	837	504	278	205	282
16	354	392	360	502	1070	3030	1390	815	473	280	208	290
17	349	379	340	832	1470	2590	1330	780	443	282	205	305
18	349	375	350	1070	2120	2250	1240	766	415	288	197	324
19	350	315	340	1220	2700	1990	1200	750	397	283	203	359
20	354	370	320	1190	3440	1790	1170	729	386	289	208	404
21	362	313	330	1080	4250	1630	1110	732	378	287	214	413
22	376	370	330	954	4740	1520	1040	766	377	270	217	422
23	400	340	330	766	4700	1470	1050	832	368	263	226	410
24	408	360	330	705	4060	1450	1080	919	359	247	223	400
25	420	320	330	628	3300	1430	1120	926	355	237	221	401
26	433	360	340	544	3100	1440	1180	897	353	236	222	420
27	414	340	330	506	3160	1490	1180	832	347	242	231	438
28	395	339	320	504	3070	1510	1130	786	349	248	231	441
29	381	380	320	527	---	1490	1100	766	353	239	224	444
30	373	385	339	604	---	1500	1060	748	349	240	217	426
31	363	---	340	722	---	1540	---	767	---	230	216	---
TOTAL	11282	10733	11272	18946	52062	72680	40070	27586	16612	8780	6526	9299
MEAN	364	358	364	611	1859	2345	1336	890	554	283	211	310
MAX	433	392	456	1220	4740	4680	1680	1090	863	347	231	444
MIN	335	300	320	354	493	1430	1040	729	347	230	194	199
AC-FT	22380	21290	22360	37580	103300	144200	79480	54720	32950	17420	12940	18440

CAL YR 1985	TOTAL	198105	MEAN	543	MAX	2680	MIN	181	AC-FT	392900
WTR YR 1986	TOTAL	285848	MEAN	783	MAX	4740	MIN	194	AC-FT	567000

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 mi^2, approximately.

PERIOD OF RECORD.--June 1917 to current year.

REVISED RECORDS.--WSP 981: 1938(M). WSP 1565: 1920(M), 1927(M), 1938.

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

REMARKS.--Estimated daily discharges: Nov. 13, 14, 22-27, Dec. 11, 12, June 1-3. Records excellent. Some regulation by diversion dams and logpond operations of Sprague River. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--69 years, 1,064 ft^3/s, 770,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,100 ft^3/s Dec. 26, 1964, gage height, 10.56 ft; minimum discharge, 320 ft^3/s Oct. 14, 1920.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,010 ft^3/s Mar. 13, gage height, 6.52 ft; minimum discharge, 550 ft^3/s Aug. 13, 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	770	917	944	855	1700	4300	2680	1700	1280	782	588	598
2	770	918	926	867	1830	4090	2720	1630	1290	777	584	598
3	773	923	930	895	1840	3930	2740	1610	1300	766	577	595
4	772	926	935	909	1830	3790	2730	1590	1300	753	573	581
5	777	920	952	930	1820	3660	2660	1620	1310	737	572	570
6	773	925	968	937	1690	3550	2550	1690	1310	726	573	574
7	781	927	987	1030	1580	3590	2450	1720	1270	723	574	569
8	785	929	999	1080	1440	3790	2360	1730	1220	716	574	570
9	793	934	1020	991	1360	3850	2310	1720	1200	717	569	570
10	787	941	1020	972	1310	4220	2300	1670	1160	707	575	577
11	781	939	860	976	1290	5010	2320	1590	1120	690	578	590
12	772	872	770	969	1300	5780	2340	1550	1070	678	565	595
13	787	840	891	980	1310	5920	2350	1520	1030	678	558	599
14	795	850	907	982	1350	5490	2350	1480	1010	681	562	604
15	803	952	906	999	1530	4970	2310	1440	980	676	576	622
16	806	963	900	1120	1920	4490	2220	1410	957	675	580	637
17	802	948	897	1380	2430	4060	2120	1390	933	676	577	664
18	802	945	892	1610	3220	3700	2050	1370	908	682	565	676
19	804	918	877	1790	3850	3420	1990	1370	889	677	573	705
20	810	927	865	1810	4470	3170	1940	1340	880	681	575	751
21	823	875	861	1720	5160	2950	1850	1340	865	682	584	767
22	863	890	854	1620	5700	2810	1780	1380	869	661	583	777
23	906	830	844	1450	5810	2730	1760	1450	855	648	598	772
24	914	900	846	1380	5270	2660	1790	1510	839	631	596	774
25	929	910	842	1310	4680	2610	1840	1500	825	619	602	764
26	948	880	836	1230	4510	2610	1870	1450	814	616	601	796
27	945	870	830	1200	4600	2670	1880	1380	800	617	611	805
28	929	900	825	1220	4540	2690	1830	1320	800	622	611	809
29	921	945	810	1260	---	2640	1780	1290	798	609	597	814
30	918	939	826	1360	---	2620	1760	1270	792	606	589	802
31	904	---	831	1490	---	2650	---	1270	---	597	593	---
TOTAL	25743	27353	27651	37322	79340	114420	65630	46300	30674	21106	18033	20125
MEAN	830	912	892	1204	2834	3691	2188	1494	1022	681	582	671
MAX	948	963	1020	1810	5810	5920	2740	1730	1310	782	611	814
MIN	770	830	770	855	1290	2610	1760	1270	792	597	558	569
AC-FT	51060	54250	54850	74030	157400	227000	130200	91840	60840	41860	35770	39920

CAL YR 1985	TOTAL	403094	MEAN	1104	MAX	3990	MIN	509	AC-FT	799500
WTR YR 1986	TOTAL	513697	MEAN	1407	MAX	5920	MIN	558	AC-FT	1019000

11503000 ANNIE SPRING NEAR CRATER LAKE, OR

LOCATION.--Lat 42°52'20", long 122°10'00", unsurveyed, Klamath County, Hydrologic Unit 18010203, in Crater Lake National Park, at highway bridge 0.1 mi downstream from source.

DRAINAGE AREA.--Indeterminate, normal flow is entirely from Annie Spring.

PERIOD OF RECORD.--June 1977 to current year. Discharge measurement and fragmentary gage-height record August to October 1913. Discharge measurements only Oct. 11, 1967, June 26, Sept. 13, 1968.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 5,982.65 ft above National Geodetic Vertical Datum of 1929 (National Park Service bench mark).

REMARKS.--No estimated daily discharges. Records good except those for Oct. 1 to Jan. 15, which are fair. Slight regulation by pumps 0.1 mi upstream. Diversion for domestic use by National Park Service 0.1 mi upstream.

COOPERATION.--Records of diversion by pumping furnished by National Park Service.

AVERAGE DISCHARGE.--9 years, 3.29 ft^3/s, 2,380 acre-ft/yr, adjusted for diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18 ft^3/s July 6, 1984, gage height, 1.56 ft; minimum discharge, 0.33 ft^3/s Nov. 20, 22, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17 ft^3/s June 6, gage height, 1.54 ft; minimum discharge, 1.1 ft^3/s several days in December, January, February.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	2.0	1.5	1.4	1.3	1.8	2.6	3.4	9.7	8.3	3.7	2.5
2	2.6	2.0	1.5	1.3	1.3	2.1	2.5	3.4	12	8.1	3.7	2.5
3	2.6	2.0	1.5	1.3	1.3	2.2	2.5	3.4	14	7.6	3.6	2.5
4	2.5	1.9	1.5	1.3	1.3	2.2	2.5	3.4	15	7.2	3.6	2.4
5	2.5	1.9	1.5	1.4	1.3	2.3	2.6	3.4	16	6.9	3.6	2.5
6	2.5	1.9	1.5	1.4	1.2	2.3	2.6	3.3	16	6.7	3.5	2.4
7	2.4	1.9	1.4	1.3	1.2	2.5	2.6	3.3	16	7.0	3.4	2.4
8	2.4	1.9	1.4	1.4	1.3	2.7	2.6	3.1	16	6.7	3.4	2.4
9	2.4	1.8	1.4	1.3	1.2	3.4	2.6	2.9	15	6.6	3.4	2.4
10	2.3	1.8	1.4	1.3	1.3	3.8	2.6	2.7	14	6.5	3.4	2.4
11	2.3	1.8	1.3	1.4	1.3	3.9	2.7	2.7	14	6.2	3.3	2.3
12	2.3	1.8	1.3	1.4	1.2	3.9	2.7	2.7	14	5.9	3.3	2.4
13	2.3	1.8	1.3	1.4	1.2	3.9	2.9	2.6	13	5.8	3.2	2.4
14	2.3	1.8	1.3	1.4	1.2	3.8	2.9	2.5	13	5.7	3.2	2.4
15	2.3	1.8	1.3	1.4	1.3	3.8	2.9	2.5	13	5.6	3.3	2.3
16	2.2	1.7	1.3	1.3	1.2	3.8	3.0	2.5	13	5.5	3.2	2.3
17	2.2	1.7	1.3	1.3	1.3	3.7	3.0	2.5	13	5.3	3.0	2.3
18	2.2	1.7	1.3	1.3	1.2	3.6	2.9	2.6	13	5.2	3.0	2.3
19	2.1	1.7	1.3	1.3	1.2	3.2	2.8	2.7	13	5.0	2.9	2.3
20	2.1	1.7	1.3	1.3	1.2	3.0	2.7	3.1	12	4.8	2.8	2.3
21	2.1	1.7	1.3	1.3	1.2	2.9	2.7	3.4	12	4.6	2.7	2.3
22	2.1	1.6	1.4	1.3	1.2	2.7	2.7	3.5	12	4.4	2.7	2.3
23	2.1	1.6	1.4	1.3	1.3	2.7	3.0	3.7	10	4.3	2.6	2.3
24	2.1	1.6	1.3	1.3	1.3	2.6	3.3	3.7	10	4.2	2.6	2.2
25	2.1	1.6	1.3	1.3	1.4	2.5	3.4	3.7	9.5	4.1	2.6	2.2
26	2.1	1.6	1.3	1.3	1.4	2.5	3.4	3.9	9.4	3.9	2.6	2.3
27	2.1	1.6	1.3	1.3	1.6	2.5	3.4	4.6	9.4	3.8	2.5	2.3
28	2.1	1.6	1.3	1.3	1.7	2.5	3.4	5.6	9.1	3.9	2.5	2.2
29	2.0	1.6	1.3	1.3	---	2.5	3.4	6.3	8.9	3.9	2.5	2.2
30	2.0	1.5	1.3	1.3	---	2.5	3.4	7.5	8.4	3.9	2.5	2.2
31	2.0	---	1.4	1.3	---	2.5	---	8.9	---	3.8	2.5	---
TOTAL	69.8	52.6	42.2	41.2	36.1	90.3	86.3	113.5	373.4	171.4	94.8	70.2
MEAN	2.25	1.75	1.36	1.33	1.29	2.91	2.88	3.66	12.4	5.53	3.06	2.34
MAX	2.6	2.0	1.5	1.4	1.7	3.9	3.4	8.9	16	8.3	3.7	2.5
MIN	2.0	1.5	1.3	1.3	1.2	1.8	2.5	2.5	8.4	3.8	2.5	2.2
AC-FT	138	104	84	82	72	179	171	225	741	340	188	139
MEAN†	2.28	1.78	1.38	1.35	1.31	2.93	2.89	3.69	12.5	5.66	3.19	2.42
AC-FT†	140	106	85.1	83.0	72.8	180	172	227	746	348	196	144

CAL YR 1985	TOTAL	1109.9	MEAN	3.04	MAX	9.5	MIN	1.3	AC-FT	2200	MEAN†	3.09	AC-FT†	2240
WTR YR 1986	TOTAL	1241.8	MEAN	3.40	MAX	16	MIN	1.2	AC-FT	2460	MEAN†	3.45	AC-FT†	2500

† Adjusted for diversion by pumping.

11507001 UPPER KLAMATH LAKE NEAR KLAMATH FALLS, OR

LOCATION.--Lat 42°15'00", long 121°48'55", in NW¼SW¼ sec.19, T.38 S., R.9 E., Klamath County, Hydrologic Unit 18010203, at southeast end of lake, 1.4 mi upstream from outlet and 2.5 mi northwest of Main Street Bridge at Klamath Falls.

DRAINAGE AREA.--3,810 mi², approximately, including 26.2 mi² in closed basin of Crater Lake.

PERIOD OF RECORD.--May 1904 to September 1923 (gage heights only), October 1923 to current year. Monthend contents only October 1923 to September 1927, published in WSP 1315-B.

GAGE.--Water-stage recorder. Datum of gage is 4,098.22 ft above National Geodetic Vertical Datum of 1929, or 4,100.00 ft above Bureau of Reclamation datum. Gage readings have been reduced to elevations above Bureau of Reclamation datum. See WSP 1735 for history of changes prior to Nov. 10, 1923. Since Oct. 1, 1974, supplementary water-stage recorders at sites 7 mi north and 21 mi northwest at same datum (water-surface transfer by Pacific Power and Light Co.).

REMARKS.--Reservoir is formed by concrete dam at outlet of natural lake, completed in 1921, replacing a temporary dam built in 1919; controlled storage began Apr. 15, 1919. Capacity, 523,700 acre-ft between elevations 4,136.0 ft and 4,143.3 ft. Dead storage below elevation 4,136.0 ft is 211,300 acre-ft. Stored water may be diverted through "A" Canal for irrigation on land under Klamath project of Bureau of Reclamation, or released to Link River through dam or powerplants at Klamath Falls. Contents given herein represent those above elevation 4,136.0 ft. Prior to Oct. 1,1973, contents given represented those above elevation 4,135.0 ft. Prior to Sept. 30, 1974, contents at end of month obtained by averaging elevations for last 3 days of month and first 3 days of following month to compensate for wind effect. Since Oct. 1, 1974, daily elevations are weighted mean of elevations at base and supplementary gages; contents at end of month are obtained from weighted midnight elevations of base and supplementary gages.

COOPERATION.--Capacity table furnished by Bureau of Reclamation, Klamath Project.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 4,144.98 ft about Apr. 20, 1904, from high-water marks; minimum recorded, 4,135.55 ft Oct. 30, 1944.

EXTREMES FOR CURRENT YEAR.--Maximum daily elevation, 4,143.10 ft June 7; minimum daily, 4,139.95 ft Sept. 15, 16.

Capacity table (elevation, in feet, and contents, in acre-feet)

4,136	0	4,139	193,700	4,142	414,400
4,137	61,300	4,140	262,600	4,143	498,300
4,138	127,000	4,141	335,400	4,143.3	523,700

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4140.62	4140.88	4141.05	4140.66	4141.56	4142.67	4142.68	4142.72	4143.07	4142.56	4141.49	4140.42
2	4140.62	4140.90	4141.07	4140.69	4141.60	4142.66	4142.65	4142.82	4143.08	4142.52	4141.44	4140.39
3	4140.62	4140.90	4141.05	4140.72	4141.66	4142.63	4142.65	4142.92	4143.09	4142.50	4141.42	4140.36
4	4140.64	4140.93	4141.02	4140.71	4141.69	4142.60	4142.66	4142.95	4143.08	4142.45	4141.40	4140.34
5	4140.62	4140.92	4141.01	4140.74	4141.74	4142.57	4142.68	4142.93	4143.08	4142.40	4141.35	4140.31
6	4140.62	4140.92	4141.02	4140.76	4141.76	4142.53	4142.67	4142.96	4143.08	4142.36	4141.29	4140.30
7	4140.64	4140.92	4141.03	4140.79	4141.76	4142.52	4142.65	4143.00	4143.10	4142.31	4141.25	4140.25
8	4140.62	4140.94	4141.02	4140.83	4141.76	4142.56	4142.67	4143.02	4143.08	4142.29	4141.22	4140.23
9	4140.59	4140.94	4141.02	4140.83	4141.75	4142.52	4142.68	4143.03	4143.07	4142.26	4141.19	4140.17
10	4140.56	4141.02	4141.01	4140.81	4141.73	4142.57	4142.72	4143.04	4143.07	4142.21	4141.15	4140.12
11	4140.56	4141.07	4140.98	4140.84	4141.72	4142.58	4142.71	4143.02	4143.06	4142.20	4141.12	4140.09
12	4140.57	4141.06	4140.96	4140.86	4141.72	4142.61	4142.72	4143.02	4143.05	4142.16	4141.08	4140.06
13	4140.57	4141.03	4140.94	4140.89	4141.78	4142.65	4142.72	4143.02	4143.03	4142.12	4141.03	4140.02
14	4140.56	4141.04	4140.92	4140.96	4141.82	4142.65	4142.70	4143.02	4143.02	4142.08	4140.99	4140.00
15	4140.56	4141.06	4140.89	4141.03	4141.85	4142.63	4142.70	4143.00	4142.98	4142.06	4140.95	4139.95
16	4140.56	4141.09	4140.87	4141.14	4141.92	4142.71	4142.73	4142.99	4142.92	4142.01	4140.91	4139.95
17	4140.58	4141.12	4140.86	4141.22	4142.06	4142.68	4142.78	4142.99	4142.88	4141.97	4140.85	4139.96
18	4140.59	4141.14	4140.84	4141.28	4142.21	4142.60	4142.78	4142.99	4142.93	4141.92	4140.83	4140.00
19	4140.57	4141.14	4140.81	4141.35	4142.32	4142.56	4142.78	4142.99	4142.90	4141.92	4140.80	4140.06
20	4140.44	4141.14	4140.80	4141.40	4142.38	4142.52	4142.78	4142.99	4142.87	4141.91	4140.78	4140.10
21	4140.60	4141.13	4140.79	4141.42	4142.40	4142.52	4142.78	4142.99	4142.84	4141.90	4140.74	4140.14
22	4140.63	4141.12	4140.76	4141.42	4142.48	4142.52	4142.80	4142.96	4142.83	4141.86	4140.72	4140.16
23	4140.74	4141.13	4140.73	4141.46	4142.58	4142.49	4142.76	4142.96	4142.80	4141.81	4140.68	4140.14
24	4140.78	4141.14	4140.72	4141.48	4142.65	4142.56	4142.72	4142.99	4142.76	4141.78	4140.65	4140.18
25	4140.80	4141.13	4140.69	4141.49	4142.67	4142.53	4142.76	4143.00	4142.74	4141.75	4140.62	4140.18
26	4140.83	4141.12	4140.67	4141.49	4142.68	4142.51	4142.76	4143.03	4142.70	4141.71	4140.59	4140.27
27	4140.84	4141.07	4140.65	4141.50	4142.68	4142.53	4142.79	4143.06	4142.68	4141.67	4140.56	4140.32
28	4140.88	4141.09	4140.65	4141.52	4142.68	4142.56	4142.83	4143.07	4142.65	4141.64	4140.52	4140.36
29	4140.86	4141.09	4140.64	4141.50	---	4142.58	4142.84	4143.08	4142.62	4141.61	4140.50	4140.38
30	4140.88	4141.06	4140.62	4141.57	---	4142.62	4142.83	4143.08	4142.59	4141.57	4140.47	4140.42
31	4140.87	---	4140.62	4141.55	---	4142.64	---	4143.07	---	4141.54	4140.44	---
MEAN	4140.66	4141.04	4140.86	4141.13	4142.06	4142.58	4142.73	4142.99	4142.92	4142.03	4140.94	4140.19
MAX	4140.88	4141.14	4141.07	4141.57	4142.68	4142.71	4142.84	4143.08	4143.10	4142.56	4141.49	4140.42
MIN	4140.44	4140.88	4140.62	4140.66	4141.56	4142.49	4142.65	4142.72	4142.59	4141.54	4140.44	4139.95
(†)	326400	338500	308700	378800	471100	466100	481300	498300	462700	378800	294100	293300
(‡)	+18500	+12100	-29800	+70100	+92300	-5000	+15200	+17000	-35600	-83900	-84700	-800

CAL YR 1985 MEAN 4141.53 MAX 4143.11 MIN 4140.35 AC-FT‡ +19700
WTR YR 1986 MEAN 4141.67 MAX 4143.10 MIN 4139.95 AC-FT‡ -14600

† Contents, in acre-feet, at 2400, on last day of month.
‡ Change in contents, in acre-feet.

11507500 LINK RIVER AT KLAMATH FALLS, OR

LOCATION.--Lat 42°13'25", long 121°47'35", in SW¼NW¼ sec.32, T.38 S., R.9 E., Klamath County, Hydrologic Unit 18010204, on right bank 600 ft upstream from outlet of Keno Canal and 0.4 mi upstream from Main Street Bridge at Klamath Falls.

DRAINAGE AREA.--3,810 mi^2, approximately, including 26.2 mi^2 in closed basin of Crater Lake.

PERIOD OF RECORD.--May 1904 to current year. Records since October 1983 equivalent to earlier records if flow in Keno Canal is added to flow past station.

GAGE.--Water-stage recorder. Datum of gage is 4,083.71 ft above National Geodetic Vertical Datum of 1929, or 4,085.50 ft above mean sea level, datum of Bureau of Reclamation. Prior to Sept. 14, 1912, water-stage recorder or nonrecording gages at several sites within 0.5 mi of present site at various datums. Sept. 14, 1912, to Nov. 23, 1923, at site 600 ft downstream at datum 5.42 ft lower. Nov. 24, 1923, to Nov. 15, 1961, at site on left bank at present datum.

REMARKS.--No estimated daily discharges. Records excellent. Flow regulated since 1919 by Upper Klamath Lake (see station 11507001). Large diurnal fluctuation caused by powerplant upstream from station. Water diverted upstream from station by main or "A" Canal of Klamath project (see station 11507200). Many other diversions upstream from lake. All records presented herein do not include flow in Keno Canal which, since September 1908, has diverted from Upper Klamath Lake at Link River Dam for power generation, and returns flow to Link River downstream from station.

AVERAGE DISCHARGE.--79 years (water years 1905-83), 1,593 ft^3/s, 1,154,000 acre-ft/yr, not adjusted for "A" Canal.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,400 ft^3/s May 12, 1904, gage height at Main Street Bridge, 7.30 ft, datum then in use, from floodmarks; minimum daily discharge, 17 ft^3/s Dec. 13, 1937.

EXTREMES FOR CURRENT YEAR.-- Maximum discharge, 7,500 ft^3/s Mar. 7; minimum, 92 ft^3/s Oct. 11, result of regulation from Upper Klamath Lake, minimum daily, 265 ft^3/s Sept. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1030	1060	2430	1130	1880	6660	2950	717	669	902	849	936
2	1070	1040	2430	1070	1880	6640	3080	674	360	750	744	776
3	1160	1060	2460	1160	1900	6570	3070	599	564	1070	743	866
4	1080	1060	2270	1040	1900	6550	3070	1240	1010	749	800	950
5	1090	1120	1850	1040	1980	6490	3080	1790	546	823	853	911
6	1150	1180	2200	930	1990	6390	3080	951	662	555	863	1050
7	1170	1180	2150	933	1990	6370	2540	827	680	521	881	1210
8	1110	1180	2050	1020	2020	6400	2180	1210	476	556	1000	919
9	866	1180	2080	1000	2040	6190	2180	1440	381	871	780	1010
10	835	1070	2330	977	2070	6380	2120	1470	704	755	733	1030
11	1020	1070	2320	923	2080	6370	2450	1640	759	678	854	947
12	1110	1190	2240	925	2070	6410	2250	1510	804	513	934	794
13	1010	1280	2320	926	1960	6580	1960	1510	775	504	748	762
14	1100	1080	2310	877	2300	6480	1990	1510	875	655	717	756
15	994	1100	2250	831	2720	6360	2220	1330	814	825	901	747
16	903	1100	2250	569	2290	6810	2230	878	679	823	917	687
17	903	1160	2240	1000	3060	6790	2340	1220	859	1000	703	473
18	517	1250	2230	878	3910	6570	2350	1350	999	833	568	432
19	502	1440	2190	830	5240	5950	2320	1450	1140	795	553	273
20	483	1640	2090	1430	5610	5110	2400	1430	1090	712	553	265
21	531	2020	2110	2020	5860	4450	2570	1160	975	643	549	489
22	682	2140	2180	2040	6250	3580	2470	983	1060	883	594	708
23	682	2140	2240	2000	6450	3550	2110	562	997	779	676	885
24	1040	2120	2240	2010	6600	3580	1540	453	865	739	625	843
25	981	2160	2210	2120	6610	3580	1080	560	1150	758	544	608
26	1030	2560	2170	2100	6580	3140	992	499	1250	889	541	611
27	1100	2740	1860	1870	6310	2740	962	443	1090	737	537	614
28	1150	2650	1720	2030	6660	2560	975	500	761	583	534	615
29	1170	2540	1760	2020	---	2570	992	674	884	724	737	762
30	1180	2430	1540	2040	---	2630	732	897	760	879	1060	1060
31	1140	---	1160	1910	---	2650	---	963	---	1130	957	---
TOTAL	29789	46940	65880	41649	102210	163100	64283	32440	24638	23634	23048	22989
MEAN	961	1565	2125	1344	3650	5261	2143	1046	821	762	743	766
MAX	1180	2740	2460	2120	6660	6810	3080	1790	1250	1130	1060	1210
MIN	483	1040	1160	569	1880	2560	732	443	360	504	534	265
AC-FT	59090	93110	130700	82610	202700	323500	127500	64340	48870	46880	45720	45600

CAL YR 1985	TOTAL	464816	MEAN	1273	MAX	5990	MIN	187	AC-FT	922000
WTR YR 1986	TOTAL	640600	MEAN	1755	MAX	6810	MIN	265	AC-FT	1271000

11509500 KLAMATH RIVER AT KENO, OR

LOCATION.--Lat 42°08'00", long 121°57'40", in NW¼SE¼ 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 mi^2, approximately (not including Lost River or Lower Klamath Lake basins).

PERIOD OR RECORD.--June 1904 to December 1913, October 1929 to current year. Monthly discharge only October to December 1929, published in WSP 1315-B.

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

REMARKS.--No estimated daily discharges. Records excellent. Flow regulated since 1919 by Upper Klamath Lake (see sta 11507001). Fluctuation by Keno powerplant 0.9 mi upstream. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--66 years, 1,712 ft^3/s, 1,240,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,300 ft^3/s Feb. 28, 1986, gage height, 12.82 ft, caused by regulation from Keno powerplant 0.9 mi upstream; minimum discharge, 26 ft^3/s Sept. 23, 1956; minimum daily, 60 ft^3/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 ft^3/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,300 ft^3/s Feb. 28, gage height, 12.82 ft, caused by regulation from Keno powerplant 0.9 mi upstream; minimum discharge, 239 ft^3/s June 2; minimum daily, 266 ft^3/s July 12, 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1450	1370	2740	1380	2500	8120	3380	1030	328	471	831	919
2	1470	1370	2740	1340	2500	8000	3680	2100	383	537	748	955
3	1490	1370	2740	1290	2500	7950	3750	2400	563	553	748	924
4	1490	1370	2750	1300	2500	7840	3530	870	668	497	796	950
5	1490	1490	2600	1290	2490	7440	3530	809	401	489	845	934
6	1490	1490	2630	1300	2490	7450	3530	1280	422	358	842	919
7	1490	1390	2760	1300	2490	7440	3030	1480	425	268	816	909
8	1500	1270	2700	1290	2490	7880	2420	1910	425	267	752	909
9	1500	1270	2710	1290	2490	8960	2380	2010	423	272	756	1100
10	1490	1270	2770	1290	2490	9010	2380	2000	422	283	761	1110
11	1500	1270	2770	1290	2490	8710	2380	2010	423	275	770	1110
12	1500	1370	2590	1290	2490	8200	2390	1910	374	266	779	1030
13	1500	1490	2630	1290	2490	8290	2390	1800	347	266	775	965
14	1430	1500	2640	1290	2700	8540	2380	1800	346	268	779	975
15	1380	1490	2570	1280	3300	8180	2380	1630	359	271	770	990
16	1380	1490	2500	1570	4080	8350	2380	1270	356	271	765	1010
17	1380	1490	2420	1870	5010	8420	2440	1270	356	270	779	1030
18	956	1490	2380	1870	7090	8190	2480	1270	357	268	798	1040
19	934	1490	2350	1870	8700	7110	2480	1280	357	268	807	1060
20	930	1860	2350	2190	8790	6490	2480	1070	391	268	817	1080
21	932	2180	2390	2490	8530	5810	2480	849	408	269	729	1090
22	935	2080	2390	2500	8020	4490	2480	793	407	271	733	1110
23	1130	2040	2380	2510	8020	4450	2240	662	408	271	738	1060
24	1380	2050	2380	2500	8110	4320	1680	590	405	271	738	975
25	1380	2230	2390	2500	8080	4240	1230	590	359	403	733	929
26	1360	2790	2380	2510	7980	3780	1250	592	314	623	733	1070
27	1350	2930	2120	2500	8000	3260	1250	593	380	625	720	1160
28	1360	2870	1990	2500	8350	3270	1190	633	413	739	770	1160
29	1360	2830	1990	2500	---	3260	1080	681	413	890	865	1200
30	1370	2740	1710	2500	---	3260	1040	660	412	938	960	1350
31	1370	---	1360	2500	---	3260	---	365	---	938	934	---
TOTAL	41677	53340	75820	56390	137170	203970	71710	38207	12045	12924	24387	31023
MEAN	1344	1778	2446	1819	4899	6580	2390	1232	402	417	787	1034
MAX	1500	2930	2770	2510	8790	9010	3750	2400	668	938	960	1350
MIN	930	1270	1360	1280	2490	3260	1040	365	314	266	720	909
AC-FT	82670	105800	150400	111800	272100	404600	142200	75780	23890	25630	48370	61530

CAL YR 1985	TOTAL	543971	MEAN	1490	MAX	6520	MIN	263	AC-FT	1079000
WTR YR 1986	TOTAL	758663	MEAN	2079	MAX	9010	MIN	266	AC-FT	1505000

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 mi^2, approximately (not including Lost River or Lower Klamath Lake basins).

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

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

REMARKS.--No estimated daily discharges. Records excellent. Flow regulated by Upper Klamath Lake (see station 11507001). Large diurnal fluctuation caused by Keno and John C. Boyle powerplants. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--27 years, 1,945 ft^3/s, 1,409,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,000 ft^3/s Mar. 5, 1972, gage height, 9.33 ft; minimum discharge, 283 ft^3/s Feb. 17, 1968; minimum daily, 317 ft^3/s July 25, 1968.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,300 ft^3/s Mar. 8, gage height, 9.10 ft; minimum discharge, 383 ft^3/s July 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1610	1590	2980	1530	2850	8370	3570	1420	632	769	1120	1220
2	1620	1590	2980	1530	2840	8260	3790	2040	635	766	1090	1220
3	1640	1590	3000	1530	2820	8140	3870	2840	808	772	1230	1220
4	1640	1590	2980	1520	2810	8040	3700	1130	948	854	904	808
5	1630	1630	2990	1520	2810	7510	3680	890	675	949	1000	1300
6	1630	2070	2960	1560	2770	7510	3680	1600	677	702	1100	1270
7	2110	1550	2940	1520	2770	7640	3310	1640	632	712	1090	1280
8	1550	1510	2950	1520	2770	8230	2890	2150	632	396	811	1280
9	1570	1390	2950	1520	2770	9630	2740	2390	629	400	995	1260
10	1570	1460	2970	1550	2770	9580	2710	2280	630	394	995	1490
11	2180	1460	2970	1570	2770	9330	2710	2270	630	506	993	1500
12	1580	1550	2920	1560	2790	8470	2730	2170	630	512	991	1470
13	1600	1680	2900	1560	2840	8600	2770	2080	611	514	991	1270
14	1650	1690	2890	1530	2900	8950	2760	2090	614	519	992	1270
15	1650	1680	2900	1520	3520	8450	2730	1880	611	515	990	1270
16	1610	1710	2880	1860	4150	8590	2730	1610	613	513	992	1270
17	1600	1720	2870	2290	5060	8750	2720	1510	612	512	991	1270
18	1320	2040	2870	2240	7310	8460	2850	1500	629	519	990	1270
19	1130	1700	2870	2250	9360	7330	2780	1520	632	536	1030	1310
20	1130	1710	2870	2350	9440	6520	2860	1430	625	535	944	1530
21	1140	2490	2870	2680	9060	5970	2780	1140	628	531	943	1270
22	1140	2620	2870	2850	8340	4530	2810	906	617	509	897	1260
23	1330	2260	2870	2820	8340	4470	2670	900	622	472	805	1180
24	1600	2300	2860	2770	8520	4430	2000	905	628	516	807	1120
25	1620	2450	2850	2770	8430	4290	1430	901	674	715	806	1120
26	1630	2860	2850	2800	8290	4020	1530	906	676	941	897	1220
27	1590	3030	2850	2810	8280	3460	1520	906	630	938	900	1250
28	1590	3040	2850	2810	8680	3500	1510	863	631	942	897	1370
29	1590	2980	2850	2810	---	3460	1430	905	632	1120	1090	1240
30	1590	2970	2850	2810	---	3460	1430	1050	629	1130	1220	1530
31	1590	---	2310	2830	---	3460	---	637	---	1130	1220	---
TOTAL	48430	59910	89520	64790	146060	211410	80690	46459	19472	20839	30721	38338
MEAN	1562	1997	2888	2090	5216	6820	2690	1499	649	672	991	1278
MAX	2180	3040	3000	2850	9440	9630	3870	2840	948	1130	1230	1530
MIN	1130	1390	2310	1520	2770	3460	1430	637	611	394	805	808
AC-FT	96060	118800	177600	128500	289700	419300	160000	92150	38620	41330	60940	76040

CAL YR 1985	TOTAL	640601	MEAN	1755	MAX	6680	MIN	399	AC-FT	1271000
WTR YR 1986	TOTAL	856639	MEAN	2347	MAX	9630	MIN	394	AC-FT	1699000

11516530 KLAMATH RIVER BELOW IRON GATE DAM, CA

LOCATION.--Lat 41°55'41", long 122°26'35", in SE¼NE¼ sec.17, T.47 N., R.5 W., Siskiyou County, Hydrologic Unit 18010206, on left bank 0.1 mi downstream from Bogus Creek, 0.6 mi downstream from Iron Gate Dam, and 5.9 mi northeast of Hornbrook.

DRAINAGE AREA.--4,630 mi^2, approximately (not including Lost River and Lower Klamath Lake basins).

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,162.44 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Power and Light Co.).

REMARKS.--No estimated daily discharges. Records excellent. Flow regulated by Upper Klamath Lake (station 11507001), capacity, 523,700 acre-ft, Iron Gate Reservoir, other smaller reservoirs, and diversions upstream from station.

AVERAGE DISCHARGE.--26 years, 2,308 ft^3/s, 1,672,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,400 ft^3/s Dec. 22, 1964, gage height, 13.63 ft, from rating curve extended above 15,000 ft^3/s, on basis of slope-area measurement of peak flow; minimum daily discharge, 647 ft^3/s Oct. 30, Nov. 6, 1960, Sept. 24, Oct. 1, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,900 ft^3/s Feb. 19, gage height, 10.21 ft; minimum daily discharge, 713 ft^3/s June 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1800	1710	3230	1750	3060	9220	3920	1760	749	723	1010	1310
2	1800	1710	3180	1660	3250	8980	4180	1770	729	729	1010	1320
3	1810	1710	3080	1670	3340	8700	4330	1770	835	731	1020	1320
4	1810	1710	3100	1690	3280	8740	4120	1770	989	731	1020	1320
5	1810	1800	3230	1710	3130	8210	4010	1780	763	732	1010	1320
6	1810	1810	3220	1710	3060	8000	4050	1770	747	732	1010	1320
7	1800	1810	3260	1710	2990	8800	3800	1770	729	732	1020	1320
8	1810	1810	3220	1700	2930	9840	3200	2180	721	731	1010	1320
9	1810	1810	3180	1680	2910	10800	3100	2350	719	722	1010	1320
10	1810	1810	3110	1670	2900	10500	2960	2360	717	718	1010	1320
11	1810	1810	3060	1670	2910	10300	3010	2380	713	716	1010	1330
12	1810	1810	3040	1670	2970	9410	3010	2380	715	716	1010	1330
13	1810	1810	3010	1670	3280	9350	3030	2380	714	728	1010	1330
14	1750	1810	3010	1670	3570	9490	3010	2370	722	730	1010	1330
15	1690	1810	3000	1670	4710	9340	2950	2170	838	729	1010	1340
16	1690	1810	2970	2530	5690	9110	2960	1790	875	728	1010	1340
17	1680	1810	2770	3620	8930	9420	3100	1790	738	730	1010	1350
18	1340	1810	2750	3190	11200	9180	2870	1790	732	729	1030	1340
19	1320	1810	2750	2710	13100	8260	2850	1790	736	729	1010	1330
20	1320	1810	2750	2680	12400	6960	2990	1650	727	730	1010	1320
21	1330	2030	2750	2990	11300	6680	3090	1400	739	729	1010	1320
22	1320	2490	2720	3080	10000	5060	3030	1250	724	729	1010	1320
23	1310	2520	2720	3070	9560	4760	2770	1060	731	729	1010	1320
24	1700	2520	2720	3080	9680	5030	2250	1020	727	729	1010	1500
25	1710	2690	2750	3050	9490	4760	2150	1020	734	727	1020	1770
26	1710	3200	2760	2980	9240	4440	1770	1020	729	726	1030	1780
27	1710	3220	2630	2980	9170	3580	1760	1020	740	727	1020	1630
28	1710	3250	2330	2980	9240	3930	1760	1030	739	726	1020	1510
29	1710	3060	2310	3000	---	3880	1760	1020	730	723	1020	1670
30	1710	3090	2210	3040	---	3820	1760	1030	724	724	1020	1790
31	1700	---	1800	3030	---	3850	---	1030	---	747	1050	---
TOTAL	51910	63860	88620	73310	177290	232400	89550	51670	22525	22562	31470	42140
MEAN	1675	2129	2859	2365	6332	7497	2985	1667	751	728	1015	1405
MAX	1810	3250	3260	3620	13100	10800	4330	2380	989	747	1050	1790
MIN	1310	1710	1800	1660	2900	3580	1760	1020	713	716	1010	1310
AC-FT	103000	126700	175800	145400	351700	461000	177600	102500	44680	44750	62420	83580

CAL YR 1985 TOTAL 712685 MEAN 1953 MAX 7830 MIN 714 AC-FT 1414000
WTR YR 1986 TOTAL 947307 MEAN 2595 MAX 13100 MIN 713 AC-FT 1879000

12472800 COLUMBIA RIVER BELOW PRIEST RAPIDS DAM, WA

LOCATION.--Lat 46°37'44", long 119°51'49", in SE¼NW¼ sec.7, T.13 N., R.24 E., Grant County, Hydrologic Unit 17020016, on left bank 2.6 mi downstream from Priest Rapids Dam, 14.7 mi south of Beverly, and at mile 394.5.

DRAINAGE AREA.--96,000 mi^2, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1917 to current year. January 1917 to September 1930, at site 3.4 mi downstream, published as "at Vernita." October 1930 to July 27, 1959, at site 46.5 mi upstream, published as "at Trinidad."

REVISED RECORDS.--WSP 1933: Drainage area. WDR WA-82-2: 1965(m), 1971(m).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1930, nonrecording gages at site 3.4 mi downstream at datum 388.7 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1930, to July 27, 1959, water-stage recorder at site 46.5 mi upstream at datum 499.3 ft above National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--Estimated daily discharges: Jan. 7-13, Jan. 31 to Feb. 12, Mar. 5-7, July 21, 22. Water-discharge records excellent. Estimated daily discharges taken from Priest Rapids Dam powerplant records. Diversions for irrigation of about 500,000 acres upstream from station. Flow regulated by 10 major reservoirs and numerous smaller reservoirs and powerplants. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--69 years, 119,800 ft^3/s, 86,800,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 692,600 ft^3/s June 12, 1948, gage height, 59.35 ft, site and datum then in use; minimum discharge, 4,120 ft^3/s Feb. 10, 1932, gage height, 11.40 ft, site and datum then in use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 7, 1894, reached a discharge of about 740,000 ft^3/s, based on information obtained at other points.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 279,000 ft^3/s Nov. 24, elevation, 416.11 ft; minimum discharge, 37,200 ft^3/s Nov. 3, elevation, 396.53 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113000	95000	132000	72400	68900	117000	155000	154000	160000	107000	101000	63700
2	77200	72000	138000	90000	66500	112000	142000	156000	162000	89900	115000	99200
3	94600	68300	124000	83200	79300	116000	152000	137000	165000	88500	87200	103000
4	108000	72400	131000	74800	93400	112000	143000	114000	171000	66600	96900	105000
5	74500	104000	126000	83500	95900	116000	139000	128000	163000	46900	109000	120000
6	71100	105000	132000	91800	114000	106000	134000	141000	176000	46100	116000	115000
7	99800	111000	147000	90100	114000	116000	124000	151000	171000	68900	115000	87000
8	106000	112000	139000	87900	105000	111000	132000	143000	147000	86400	116000	101000
9	115000	112000	145000	86200	113000	84600	131000	143000	152000	97400	117000	66000
10	107000	109000	150000	80800	131000	109000	124000	153000	154000	132000	107000	70200
11	107000	104000	149000	80000	131000	122000	126000	144000	154000	139000	108000	78100
12	78400	107000	152000	83200	137000	122000	140000	146000	147000	127000	131000	65400
13	68900	111000	153000	101000	134000	131000	162000	153000	131000	130000	114000	62300
14	70100	112000	147000	109000	132000	121000	149000	157000	137000	131000	120000	61100
15	91000	113000	141000	99500	132000	129000	164000	153000	135000	130000	106000	90600
16	74000	112000	143000	94400	105000	120000	197000	141000	135000	124000	102000	97800
17	84700	102000	149000	102000	85700	121000	163000	135000	129000	148000	95200	53100
18	88800	106000	156000	72400	96500	141000	140000	134000	126000	153000	102000	58100
19	72200	112000	157000	69900	94000	139000	112000	143000	117000	150000	113000	62700
20	64700	116000	140000	69900	105000	117000	113000	141000	120000	136000	118000	47000
21	81600	123000	134000	69900	90700	123000	126000	149000	115000	142000	101000	46200
22	102000	140000	97200	76500	84600	118000	175000	136000	107000	152000	101000	74200
23	88100	170000	113000	87100	70700	97800	163000	122000	128000	144000	76500	75300
24	98500	141000	104000	96700	66700	114000	174000	124000	132000	135000	56300	58600
25	94300	142000	83000	83500	70500	136000	173000	104000	123000	146000	81300	71900
26	83100	147000	100000	74700	69900	143000	153000	114000	110000	151000	95200	77100
27	71300	149000	117000	83100	82100	128000	137000	130000	102000	137000	105000	50200
28	83900	134000	89600	103000	101000	115000	149000	153000	110000	118000	75900	44900
29	93800	123000	91400	95800	---	133000	172000	137000	98700	120000	71700	74100
30	104000	130000	99900	77100	---	190000	168000	131000	107000	115000	64600	84500
31	102000	---	95700	68800	---	159000	---	139000	---	121000	48900	---
TOTAL	2768600	3454700	3975800	2638200	2769400	3819400	4432000	4306000	4084700	3678700	3066700	2263300
MEAN	89310	115200	128300	85100	98910	123200	147700	138900	136200	118700	98930	75440
MAX	115000	170000	157000	109000	137000	190000	197000	157000	176000	153000	131000	120000
MIN	64700	68300	83000	68800	66500	84600	112000	104000	98700	46100	48900	44900
AC-FT	5492000	6852000	7886000	5233000	5493000	7576000	8791000	8541000	8102000	7297000	6083000	4489000

CAL YR 1985	TOTAL	39319900	MEAN	107700	MAX	179000	MIN	39000	AC-FT	77991000
WTR YR 1986	TOTAL	41257500	MEAN	113000	MAX	197000	MIN	44900	AC-FT	81834000

12472800 COLUMBIA RIVER BELOW PRIEST RAPIDS DAM, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: March 1980 to current year. Temperature records for site "at Vernita Bridge, near Priest Rapids Dam" (station 12472900) for period July 1974 to September 1980 are equivalent.

INSTRUMENTATION.--Temperature recorder since December 1979.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 21.5°C Aug. 4, 1985; minimum, 1.0°C Feb. 3-11, 1985.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum, 20.5°C Aug. 7-11, 13-18, 21-27, 30, 31, Sept. 1, 4; minimum, 1.5°C Dec. 31, Jan. 1-17.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	17.5	17.0	17.0	13.0	12.5	13.0	5.5	5.0	5.0	2.0	1.5	2.0
2	17.5	17.0	17.0	13.5	13.0	13.0	5.0	4.5	5.0	2.0	1.5	1.5
3	17.5	16.5	17.0	13.5	13.0	13.0	4.5	4.5	4.5	2.0	1.5	1.5
4	17.0	16.5	17.0	13.0	12.5	12.5	4.5	4.5	4.5	1.5	1.5	1.5
5	17.5	16.5	17.0	12.5	12.0	12.0	5.0	4.5	4.5	1.5	1.5	1.5
6	17.0	16.5	17.0	12.5	12.0	12.0	5.5	5.0	5.0	2.0	1.5	1.5
7	16.5	16.5	16.5	12.5	12.0	12.0	5.5	5.0	5.5	2.0	1.5	1.5
8	16.5	16.0	16.0	12.0	11.5	12.0	5.5	5.5	5.5	2.0	1.5	1.5
9	16.5	16.0	16.0	11.5	11.5	11.5	5.5	5.5	5.5	1.5	1.5	1.5
10	16.5	16.0	16.0	11.5	10.5	11.0	5.5	5.5	5.5	2.0	1.5	1.5
11	16.5	16.0	16.0	10.5	10.0	10.5	5.5	5.0	5.0	2.0	1.5	1.5
12	16.0	15.5	15.5	10.5	10.0	10.0	5.0	5.0	5.0	2.0	1.5	1.5
13	16.0	15.0	15.5	10.5	9.5	10.0	5.0	4.5	5.0	1.5	1.5	1.5
14	15.5	15.0	15.0	10.0	9.5	10.0	4.5	4.5	4.5	1.5	1.5	1.5
15	16.0	15.0	15.5	10.0	9.5	9.5	4.5	4.0	4.0	2.0	1.5	1.5
16	15.5	15.0	15.5	10.0	9.5	9.5	4.0	4.0	4.0	2.0	1.5	2.0
17	15.5	15.0	15.5	10.0	9.0	9.0	4.0	3.5	4.0	2.5	1.5	2.0
18	15.5	15.0	15.0	9.5	8.5	9.0	3.5	3.5	3.5	2.5	2.0	2.5
19	15.0	15.0	15.0	8.5	8.0	8.5	3.5	3.5	3.5	3.0	2.5	2.5
20	15.5	15.0	15.0	8.5	8.0	8.0	3.5	3.5	3.5	3.0	2.5	3.0
21	15.0	15.0	15.0	8.0	7.5	8.0	3.5	3.0	3.5	2.5	2.5	2.5
22	15.0	14.5	15.0	7.5	7.5	7.5	4.0	3.0	3.5	2.5	2.0	2.5
23	15.0	14.0	14.5	7.5	6.5	7.0	3.5	3.0	3.0	2.5	2.0	2.5
24	15.0	14.5	14.5	8.0	6.5	7.0	3.5	3.0	3.0	2.5	2.0	2.0
25	15.0	14.5	14.5	7.0	6.5	6.5	3.0	3.0	3.0	2.5	2.0	2.0
26	15.0	14.0	14.5	7.0	6.5	6.5	3.0	2.5	2.5	2.5	2.0	2.0
27	15.0	14.0	14.5	6.5	6.0	6.0	2.5	2.5	2.5	2.5	2.0	2.0
28	14.5	14.0	14.0	6.0	5.5	5.5	2.5	2.0	2.5	2.0	2.0	2.0
29	14.0	13.5	14.0	5.5	5.5	5.5	2.5	2.0	2.0	2.5	2.0	2.0
30	14.0	13.0	13.5	5.5	5.0	5.5	2.0	2.0	2.0	2.5	2.0	2.5
31	13.0	12.5	13.0	---	---	---	2.0	1.5	2.0	2.5	2.5	2.5
MONTH	17.5	12.5	15.5	13.5	5.0	9.5	5.5	1.5	4.0	3.0	1.5	2.0

12472800 COLUMBIA RIVER BELOW PRIEST RAPIDS DAM, WA--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	3.0	2.5	2.5	4.0	3.5	3.5	6.0	5.5	6.0	8.5	8.0	8.0
2	3.0	2.5	3.0	4.0	3.5	3.5	6.0	5.5	5.5	8.5	8.0	8.5
3	3.0	2.5	2.5	4.0	3.5	3.5	6.0	5.5	6.0	8.5	8.5	8.5
4	3.0	2.5	2.5	4.0	3.5	4.0	6.0	6.0	6.0	9.5	8.5	9.0
5	3.0	2.5	3.0	4.5	4.0	4.0	6.0	6.0	6.0	9.0	8.5	9.0
6	3.0	2.5	3.0	4.5	4.0	4.5	6.5	6.0	6.0	9.0	8.5	9.0
7	3.0	3.0	3.0	4.5	4.0	4.5	6.5	6.0	6.0	9.5	9.0	9.0
8	3.0	3.0	3.0	5.0	4.5	4.5	7.0	6.0	6.5	10.0	9.5	9.5
9	3.0	3.0	3.0	5.5	4.5	5.0	7.0	6.5	7.0	10.0	9.5	9.5
10	3.0	3.0	3.0	5.0	4.5	5.0	7.0	6.5	7.0	10.0	9.5	9.5
11	3.0	3.0	3.0	5.0	4.5	4.5	7.0	6.5	6.5	10.0	9.5	10.0
12	3.0	3.0	3.0	5.0	5.0	5.0	6.5	6.5	6.5	10.0	10.0	10.0
13	3.0	2.5	2.5	5.0	4.5	5.0	6.5	6.5	6.5	10.5	10.0	10.0
14	2.5	2.5	2.5	5.0	4.5	5.0	7.0	6.5	7.0	10.0	10.0	10.0
15	2.5	2.5	2.5	5.0	5.0	5.0	7.0	6.5	7.0	10.5	10.0	10.0
16	2.5	2.5	2.5	5.0	5.0	5.0	6.5	6.5	6.5	10.5	10.0	10.0
17	3.0	2.5	3.0	5.5	5.0	5.0	7.0	6.5	6.5	10.5	10.0	10.5
18	3.0	2.5	3.0	5.0	5.0	5.0	7.0	7.0	7.0	11.0	10.5	10.5
19	2.5	2.5	2.5	5.5	5.0	5.0	7.0	7.0	7.0	11.0	10.5	11.0
20	2.5	2.5	2.5	5.5	5.5	5.5	7.5	7.0	7.0	11.0	11.0	11.0
21	3.0	2.5	2.5	5.5	5.5	5.5	8.0	7.0	7.5	11.0	10.5	11.0
22	3.0	2.5	2.5	6.0	5.5	5.5	8.0	7.5	8.0	10.5	10.5	10.5
23	3.0	2.5	3.0	6.0	5.5	5.5	8.0	7.5	7.5	11.0	10.5	10.5
24	4.0	3.0	3.5	6.0	5.5	5.5	8.0	7.5	8.0	11.5	10.5	11.0
25	4.0	3.5	3.5	5.5	5.5	5.5	8.0	7.5	7.5	12.0	11.0	11.5
26	4.5	3.5	4.0	5.5	5.5	5.5	8.0	7.5	7.5	12.0	11.5	12.0
27	4.0	3.5	4.0	5.5	5.5	5.5	8.0	7.5	8.0	12.5	11.5	12.0
28	4.0	3.5	3.5	6.0	5.5	6.0	8.0	8.0	8.0	12.5	12.0	12.5
29	---	---	---	6.0	5.5	6.0	8.5	8.0	8.0	13.0	12.0	12.5
30	---	---	---	6.0	6.0	6.0	8.5	8.0	8.0	13.0	12.5	12.5
31	---	---	---	6.0	5.5	5.5	---	---	---	13.5	12.5	13.0
MONTH	4.5	2.5	3.0	6.0	3.5	5.0	8.5	5.5	7.0	13.5	8.0	10.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	13.5	13.0	13.5	17.0	16.0	16.5	19.5	18.5	19.5	20.5	19.0	19.5
2	14.0	13.5	13.5	17.0	16.5	17.0	19.5	19.0	19.5	20.0	19.5	19.5
3	14.0	13.5	13.5	17.5	16.5	17.0	20.0	19.0	19.5	20.0	19.5	20.0
4	14.0	14.0	14.0	17.0	16.0	16.5	20.0	19.0	19.5	20.5	19.5	20.0
5	14.5	14.0	14.0	17.5	15.5	16.5	19.5	19.0	19.5	20.0	19.5	20.0
6	14.5	14.0	14.0	18.5	16.0	17.0	20.0	19.5	19.5	20.0	19.5	19.5
7	14.5	14.0	14.0	18.5	17.0	17.5	20.5	19.5	20.0	20.0	19.0	19.5
8	14.0	14.0	14.0	18.0	17.0	17.5	20.5	19.5	20.0	19.5	19.0	19.0
9	14.0	13.5	14.0	17.5	17.0	17.5	20.5	20.0	20.0	19.5	18.5	19.0
10	14.5	13.5	14.0	17.5	17.0	17.5	20.5	20.0	20.5	19.0	18.0	18.5
11	14.5	14.0	14.0	17.5	17.0	17.0	20.5	20.0	20.0	18.5	18.0	18.0
12	14.5	14.0	14.5	17.5	17.0	17.0	20.0	19.5	20.0	18.5	17.5	18.0
13	15.0	14.5	14.5	17.0	16.5	17.0	20.5	19.5	20.0	18.5	17.5	18.0
14	15.0	14.5	15.0	17.0	17.0	17.0	20.5	20.0	20.0	18.5	17.5	18.0
15	15.5	15.0	15.0	17.0	16.5	16.5	20.5	19.5	19.5	18.0	17.5	18.0
16	15.5	15.0	15.0	16.5	16.0	16.0	20.5	19.5	20.0	18.5	17.5	18.0
17	15.5	15.0	15.5	16.5	16.0	16.5	20.5	19.5	20.0	18.0	17.5	17.5
18	15.5	15.0	15.0	17.0	16.5	17.0	20.5	19.5	20.0	18.5	17.5	18.0
19	15.0	15.0	15.0	17.5	17.0	17.5	20.0	19.5	20.0	18.0	17.5	17.5
20	15.5	15.0	15.0	18.0	17.5	17.5	20.0	19.5	19.5	18.5	17.0	17.5
21	15.5	15.0	15.0	18.5	17.5	18.0	20.5	19.5	20.0	18.5	17.0	17.5
22	16.0	15.0	15.5	18.5	18.0	18.0	20.5	19.5	20.0	18.0	17.0	17.5
23	16.0	15.0	15.5	18.5	18.0	18.0	20.5	19.5	20.0	17.5	16.5	17.0
24	16.0	16.0	16.0	19.0	18.0	18.5	20.5	19.5	20.0	17.0	16.5	17.0
25	16.5	16.0	16.0	19.0	18.5	18.5	20.5	20.0	20.0	17.0	16.0	16.5
26	16.0	15.5	16.0	18.5	18.5	18.5	20.5	20.0	20.0	17.0	16.0	16.5
27	16.5	15.5	16.0	19.0	18.5	18.5	20.5	20.0	20.0	17.0	16.0	16.5
28	16.5	16.0	16.0	19.0	18.5	18.5	20.0	19.5	20.0	17.0	16.0	16.5
29	16.5	16.0	16.0	19.0	18.5	18.5	20.0	19.5	19.5	16.5	16.0	16.0
30	16.5	16.0	16.5	19.0	18.5	18.5	20.5	19.0	19.5	16.0	15.5	16.0
31	---	---	---	19.5	18.5	19.0	20.5	19.0	19.5	---	---	---
MONTH	16.5	13.0	15.0	19.5	15.5	17.5	20.5	18.5	20.0	20.5	15.5	18.0
YEAR	20.5	1.5	10.5									

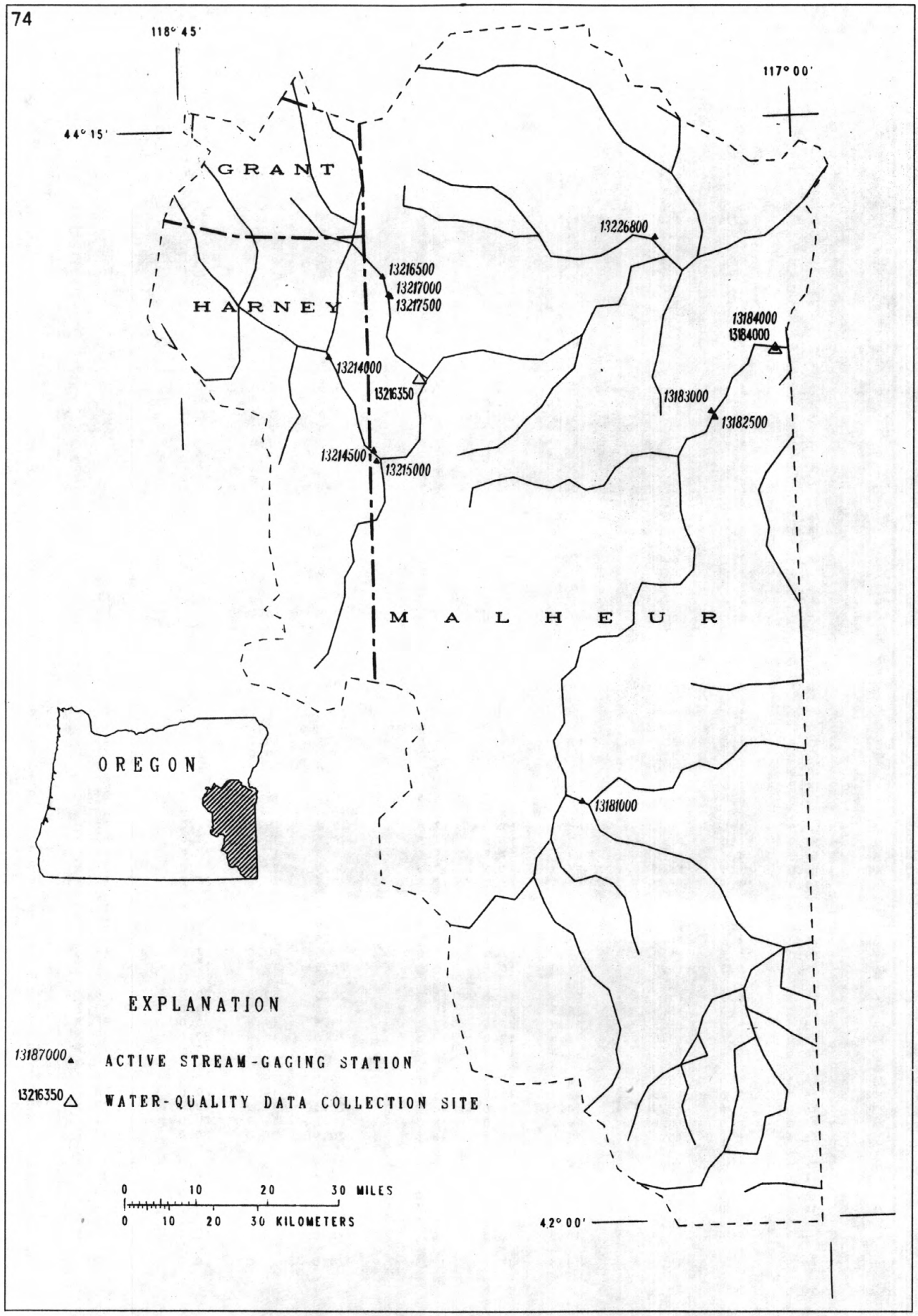

Figure 2.--Location of surface-water and water-quality stations in the Owyhee River, Malheur River, and Bully Creek basins.

13181000 OWYHEE RIVER NEAR ROME, OR

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.

DRAINAGE AREA.--About 8,000 mi^2.

PERIOD OF RECORD.--October 1949 to current year.

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

REMARKS.--Estimated daily discharges: Nov. 23, 26, 28-30, Dec. 1, 2, 14-31, Jan. 1, 10-15. Records excellent except for estimated daily discharges, which are fair. Flow regulated by Antelope Reservoir, capacity, 70,000 acre-ft, increased in 1970, and Wild Horse Reservoir, capacity, 32,690 acre-ft, and numerous small reservoirs. Diversions upstream from station for irrigation.

AVERAGE DISCHARGE.--37 years, 1,041 ft^3/s, 754,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,400 ft^3/s Feb. 19, 1986, gage height, 19.09 ft; minimum, 42 ft^3/s Aug. 12, 1954, July 28, Aug. 5, 1961, July 31, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,400 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 19	0945	*41,400	*19.09	Mar. 9	1045	20,300	13.59
Feb. 24	1145	21,100	13.88	Apr. 14	0145	5,470	6.88

Minimum discharge, 121 ft^3/s Dec. 14, result of freezeup.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	172	213	230	260	1620	10500	4430	2140	1580	369	266	182
2	175	208	270	292	2130	9730	4220	1990	1610	346	267	161
3	178	205	309	297	2220	9220	4000	1870	1570	334	265	156
4	178	208	319	292	1910	8830	3720	1920	1520	334	262	178
5	176	209	364	292	1660	8320	3700	2140	1440	333	255	177
6	180	205	371	315	1380	7900	3550	2320	1370	331	252	176
7	186	203	366	343	1130	7820	3430	2500	1260	319	259	177
8	183	200	381	343	916	11000	3520	2420	1190	309	253	188
9	179	199	388	357	779	18100	3620	2310	1160	312	243	211
10	179	198	364	360	670	11900	4310	2300	1180	319	230	210
11	181	198	331	340	599	10000	4270	2510	1110	321	225	219
12	189	199	270	320	616	8860	3980	2760	997	329	217	201
13	191	193	202	320	723	7490	4730	2610	933	330	213	189
14	195	196	198	320	1850	6270	4970	2310	856	339	208	192
15	200	185	195	330	3250	5660	4790	2110	801	334	205	189
16	199	169	200	447	5560	5220	4330	2080	749	309	200	181
17	196	230	200	951	8760	5210	3590	1990	686	295	192	179
18	195	245	205	989	31100	5160	3100	1940	585	298	192	173
19	191	252	200	1190	36500	4280	2940	1870	547	291	193	170
20	191	236	195	1370	26400	3930	2780	1790	520	281	197	172
21	194	238	180	1230	17400	4220	2670	1780	490	272	199	171
22	194	216	180	1040	12200	4290	2650	1830	456	269	199	174
23	194	205	185	939	12800	4470	2780	1800	452	258	196	175
24	196	199	195	819	19000	4270	2920	1840	405	251	196	192
25	223	198	200	709	16900	4270	2760	1780	380	247	197	216
26	221	200	190	625	14500	3880	2690	1670	383	253	190	236
27	222	233	170	575	12900	3670	2590	1570	414	262	186	247
28	232	230	170	532	11500	3890	2520	1550	426	263	188	254
29	239	230	175	594	---	4340	2360	1480	401	269	188	258
30	233	230	190	771	---	4480	2260	1520	383	278	184	261
31	221	---	230	1040	---	4540	---	1550	---	273	180	---
TOTAL	6083	6330	7623	18602	246973	211720	104180	62250	25854	9328	6697	5865
MEAN	196	211	246	600	8820	6830	3473	2008	862	301	216	196
MAX	239	252	388	1370	36500	18100	4970	2760	1610	369	267	261
MIN	172	169	170	260	599	3670	2260	1480	380	247	180	156
AC-FT	12070	12560	15120	36900	489900	419900	206600	123500	51280	18500	13280	11630

CAL YR 1985	TOTAL	308054	MEAN	844	MAX	9810	MIN	139	AC-FT	611000
WTR YR 1986	TOTAL	711505	MEAN	1949	MAX	36500	MIN	156	AC-FT	1411000

13182500 LAKE OWYHEE NEAR NYSSA, OR

LOCATION.--Lat 43°38'30", long 117°14'30", in NW¼SE¼ sec.20, T.22 S., R.45 E., Malheur County, Hydrologic Unit 17050110, near left abutment on Owyhee Dam on Owyhee River, 21 mi southwest of Nyssa, and at mile 28.5.

DRAINAGE AREA.--11,160 mi^2, approximately.

PERIOD OF RECORD.--October 1932 to current year (month-end contents and change in contents only prior to October 1979). Prior to October 1958, published as Owyhee Reservoir at Owyhee Dam, near Nyssa.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to Oct. 1, 1965, nonrecording gage at same site and datum.

REMARKS.--Estimated elevations at 2400 hours: Dec. 1 to Mar. 3, Mar. 11 to June 17. U.S. Bureau of Reclamation records used for estimates. Reservoir is formed by concrete arch-gravity dam, completed in September 1932; storage began Oct. 16, 1932. Capacity, 1,122,000 acre-ft between elevations 2,367.50 ft bottom of sluice gates and 2,670.00 ft top of spillway gate, 715,000 acre-ft between elevations 2,590.20 ft diversion tunnel and 2,670.00 ft. Dead storage below elevation 2,367.50 ft negligible. Figures given herein are contents above elevation 2,367.50 ft. Reservoir generally will not be drawn below elevation 2,590.2 ft, contents, 406,800 acre-ft, which project considers dead storage. Water is released through diversion tunnel to South Canal for irrigation of lands west of Snake River in vicinity of Homedale, Idaho, and to North Canal for irrigation of lands north and west of Owyhee River and through sluice gates to river for Owyhee Canal, which diverts about 18 mi downstream.

COOPERATION.--Capacity tables furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 1,140,000 acre-ft Apr. 15, 1952, elevation, 2,671.50 ft; minimum contents observed since full capacity was attained on May 7, 1936, 437,000 acre-ft Oct. 1, 1961, elevation, 2,595.35 ft.

EXTREMES FOR CURRENT YEAR.--Maximum recorded contents, 1,131,000 acre-ft Feb. 24, elevation, 2,670.73 ft; minimum contents, 786,200 acre-ft Oct. 18, 19, elevation, 2,639.88 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

2,590	405,700	2,640	787,300
2,600	466,300	2,650	888,300
2,610	535,400	2,660	999,700
2,620	611,900	2,670	1,122,000
2,630	695,800	2,671	1,135,000

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2641.61	2640.26	2642.28	2644.44	2649.07	2668.51	2669.53	2669.93	2669.91	2665.30	2658.00	2650.35
2	2641.49	2640.29	2642.45	2644.54	2649.46	2668.09	2669.57	2669.99	2669.85	2665.04	2657.71	2650.15
3	2641.35	2640.42	2642.59	2644.65	2649.87	2667.70	2669.61	2670.03	2669.83	2664.81	2657.48	2649.93
4	2641.24	2640.50	2642.68	2644.77	2650.34	2667.38	2669.59	2670.05	2669.78	2664.56	2657.23	2649.70
5	2641.14	2640.54	2642.75	2644.89	2650.66	2667.05	2669.63	2670.10	2669.70	2664.32	2656.98	2649.48
6	2641.03	2640.59	2642.83	2644.99	2650.98	2666.74	2669.70	2669.98	2669.59	2664.09	2656.72	2649.25
7	2640.86	2640.66	2642.90	2645.08	2651.24	2666.42	2669.76	2669.97	2669.51	2663.85	2656.49	2649.09
8	2640.73	2640.69	2642.98	2645.18	2651.46	2666.36	2669.79	2669.95	2669.45	2663.57	2656.26	2648.84
9	2640.62	2640.79	2643.05	2645.27	2651.66	2667.59	2669.81	2669.95	2669.33	2663.39	2656.00	2648.65
10	2640.50	2640.85	2643.12	2645.36	2651.76	2668.18	2669.86	2669.96	2669.25	2663.15	2655.74	2648.46
11	2640.38	2640.89	2643.12	2645.45	2651.93	2668.27	2669.97	2669.93	2669.15	2662.98	2655.46	2648.26
12	2640.31	2641.00	2643.19	2645.54	2652.11	2668.24	2670.01	2669.94	2669.05	2662.73	2655.36	2648.09
13	2640.21	2641.01	2643.36	2645.63	2652.29	2667.99	---	2669.98	2668.92	2662.51	2655.13	2647.90
14	2640.11	2641.06	2643.44	2645.73	2652.51	2667.62	2670.30	2669.95	2668.74	2662.27	2654.84	2647.74
15	2640.03	2641.15	2643.52	2645.87	2653.22	2667.35	2670.32	2669.97	2668.63	2662.05	2654.59	2647.58
16	2639.97	2641.23	2643.59	2646.06	2653.75	2667.13	2670.27	2669.98	2668.47	2661.85	2654.30	2647.42
17	2639.92	2641.31	2643.65	2646.27	2655.04	2666.93	2670.12	2670.00	2668.30	2661.61	2654.13	2647.25
18	2639.88	2641.32	2643.71	2646.48	---	2667.00	2669.91	2670.00	2668.06	2661.41	2653.83	2647.10
19	2639.90	2641.39	2643.78	2646.69	2665.34	2666.99	2669.62	2670.05	2667.87	2661.19	2653.54	2646.98
20	2639.90	2641.50	2643.84	2646.91	2668.70	2666.96	2669.44	2670.06	2667.66	2660.97	2653.34	2646.86
21	2639.96	2641.62	2643.90	2647.21	2669.84	2667.19	2669.22	2670.00	2667.47	2660.73	2653.08	2646.72
22	2640.00	2641.63	2643.96	2647.47	2670.25	2667.46	2669.28	2669.98	2667.29	2660.48	2652.80	2646.61
23	2640.00	2641.63	2644.01	2647.72	2670.43	2667.77	2669.29	2669.99	2667.09	2660.25	2652.56	2646.50
24	2640.02	2641.74	2644.06	2647.78	2670.73	2667.94	2669.41	2670.01	2666.88	2659.98	2652.28	2646.43
25	2640.03	2641.79	2644.11	2647.94	2670.49	2668.20	2669.52	2670.05	2666.64	2659.71	2652.05	2646.30
26	2640.05	2641.79	2644.16	2648.10	2670.05	2668.34	2669.60	2670.07	2666.40	2659.47	2651.81	2646.20
27	2640.09	2641.91	2644.20	2648.23	2669.52	2668.51	2669.70	2670.14	2666.20	2659.22	2651.58	2646.10
28	2640.12	2642.02	2644.24	2648.37	2669.05	2668.69	2669.77	2670.06	2665.99	2659.04	2651.34	2646.00
29	2640.12	2642.08	2644.28	2648.52	---	2668.88	2669.84	2670.04	2665.73	2658.72	2651.10	2645.89
30	2640.16	2642.15	2644.32	2648.68	---	---	2669.91	2669.98	2665.52	2658.49	2650.85	2645.84
31	2640.16	---	2644.37	2648.86	---	2669.34	---	2669.92	---	2658.24	2650.60	---
MAX	2641.61	2642.15	2644.37	2648.86	---	---	---	2670.14	2669.91	2665.30	2658.00	2650.35
MIN	2639.88	2640.26	2642.28	2644.44	---	---	---	2669.92	2665.52	2658.24	2650.60	2645.84
(†)	788900	808200	830200	876300	1110000	1113000	1121000	1121000	1066000	979400	894800	845100
(‡)	-15200	+19300	+22000	+46700	+233700	+3000	+8000	0	-55000	-86600	-84600	-49700

CAL YR 1985 AC-FT‡ -161400
WTR YR 1986 AC-FT‡ +41600

† Contents, in acre-feet, at 2400, on last day of month.
‡ Change in contents in acre-feet.

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 mi^2, approximately.

PERIOD OF RECORD.--February 1929 to current year.

REVISED RECORDS.--WSP 983: 1941-42. WSP 1397: 1930, 1933, 1946.

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

REMARKS.--Estimated daily discharge: Dec. 16, Jan. 28. Records good except for estimated daily discharges, which are fair. Flow regulated since October 1932 by Lake Owyhee (see sta 13182500), and by many smaller reservoirs. Diversion of 457,000 acre-ft from Lake Owyhee during the year for irrigation of lands downstream from station and outside the basin. Many smaller diversions upstream from Lake Owyhee for irrigation upstream from station.

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

AVERAGE DISCHARGE.--54 years (water years 1933-86), 451 ft^3/s, 326,700 acre-ft/yr, not adjusted for storage or diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,900 ft^3/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.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 20,900 ft^3/s Feb. 25, gage height, 15.12 ft; minimum daily discharge, 2.0 ft^3/s Nov. 28 to Dec. 2, Dec. 14, 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	243	35	2.0	2.9	4.9	14600	3810	656	248	249	249	246
2	210	5.2	2.0	2.9	4.9	13400	3840	523	249	249	249	246
3	243	4.2	2.2	2.9	5.0	12200	3770	553	248	249	249	246
4	243	12	2.4	2.9	5.1	11800	3840	505	248	249	238	246
5	243	12	2.4	2.9	5.0	11300	3240	761	249	249	249	246
6	243	8.7	2.4	2.9	4.6	10800	3260	1380	249	249	234	245
7	243	5.2	2.2	2.9	4.4	10600	3030	1320	249	249	246	243
8	243	4.0	2.2	2.9	4.3	10400	2820	1320	249	249	243	229
9	243	3.5	2.1	2.9	4.3	11100	3060	1360	249	249	243	237
10	243	3.4	2.1	2.9	4.3	10900	3130	1400	249	249	235	243
11	243	3.4	11	2.9	4.3	10700	3360	1380	234	249	246	243
12	243	3.4	4.2	2.9	5.3	10800	3480	1370	248	249	246	243
13	243	3.4	2.2	2.9	64	10500	3180	1440	249	249	246	243
14	235	4.6	2.0	2.9	242	9950	3830	1410	249	249	246	243
15	246	12	2.0	2.9	180	8330	4300	872	249	249	246	243
16	246	8.0	2.3	2.9	111	7830	4500	599	242	249	246	243
17	246	5.1	2.6	2.9	153	6650	4470	662	245	249	246	243
18	246	3.8	2.9	2.9	62	5690	4230	557	249	251	246	243
19	246	3.3	2.9	2.9	4880	5340	3790	522	249	250	246	243
20	246	2.8	2.9	2.9	12300	4310	3490	521	249	252	246	243
21	247	2.6	2.9	2.9	14800	2920	2490	480	249	239	246	243
22	240	2.4	2.9	2.9	12000	2730	1470	320	251	252	246	238
23	218	2.2	2.9	2.9	12200	2980	1160	252	252	252	246	238
24	246	2.2	2.9	2.9	17400	3170	1020	252	252	252	246	239
25	246	2.1	2.9	2.9	20100	3180	874	251	252	252	246	240
26	246	2.1	2.9	2.9	18600	3220	708	247	252	252	246	240
27	246	2.1	2.9	2.9	17000	3100	842	250	252	252	246	240
28	246	2.0	2.9	3.0	15400	2930	780	248	252	252	246	240
29	246	2.0	2.9	4.2	---	3010	661	239	252	243	246	240
30	246	2.0	2.9	4.3	---	2990	587	242	243	249	246	240
31	246	---	2.9	4.8	---	3270	---	246	---	249	246	---
TOTAL	7510	164.7	88.9	94.6	145548.4	230700	83022	22138	7457	7730	7601	7255
MEAN	242	5.49	2.87	3.05	5198	7442	2767	714	249	249	245	242
MAX	247	35	11	4.8	20100	14600	4500	1440	252	252	249	246
MIN	210	2.0	2.0	2.9	4.3	2730	587	239	234	239	234	229
AC-FT	14900	327	176	188	288700	457600	164700	43910	14790	15330	15080	14390
MEAN†	318	330	351	763	9406	7493	3668	1953	814	283	256	256
AC-FT†	19580	19630	21580	46890	522400	460700	218200	120100	48410	17410	15730	15210

CAL YR 1985	TOTAL	190776.6	MEAN	523	MAX	5340	MIN	2.0	AC-FT	378400	MEAN†	922	AC-FT†	667300
WTR YR 1986	TOTAL	519309.6	MEAN	1423	MAX	20100	MIN	2.0	AC-FT	1030000	MEAN†	2108	AC-FT†	1526000

† Adjusted for diversions from Lake Owyhee and change in lake contents.

13184000 OWYHEE RIVER AT OWYHEE, OR
(National stream quality accounting network station)

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 mi^2, approximately.

WATER-DISCHARGE RECORDS

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 1986 (discontinued). 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.

REVISED RECORDS.--WSP 1317: 1890-91, 1904, 1909-11, 1929, drainage area.

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

REMARKS.--Estimated daily discharges: Oct. 1-20, Dec. 13 to Jan. 5, Jan. 28. Water-discharge records good except those for period of no gage-height record Oct. 1-20, and period of ice effect Dec. 13 to Jan.5, which are poor. Flow regulated since October 1932 by Lake Owyhee (see station 13182500) and smaller reservoirs. Diversions from Lake Owyhee for irrigation of lands upstream from station and outside the basin. Many smaller diversions upstream from Lake Owyhee for irrigation.

AVERAGE DISCHARGE.--20 years (water years 1896, 1904-16, 1922-27), 1,048 ft^3/s, 759,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,000 ft^3/s Mar. 2, 1910, gage height, 12.9 ft, site and datum then in use, from rating curve extended above 14,000 ft^3/s; no flow July 7, 19, Aug. 14-16, 1924, July 5, 6, 1926. Maximum discharge since construction of Owyhee Dam in 1932, 21,100 ft^3/s Feb. 25, 1986, gage height, 15.89 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21,100 ft^3/s Feb. 25, gage height, 15.89 ft; minimum daily discharge, 44 ft^3/s Dec. 27-29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	140	118	55	47	75	14100	3360	620	156	154	154	139
2	120	57	58	48	68	13300	3650	489	157	156	147	138
3	125	45	56	50	59	11700	3520	522	159	158	145	138
4	135	51	55	50	58	11000	3550	441	156	163	146	135
5	135	65	55	51	61	10800	3260	489	166	173	144	133
6	135	71	55	50	62	10100	3020	1190	180	171	149	135
7	135	70	55	49	57	9900	3000	1220	184	170	143	137
8	125	71	55	48	54	9650	2600	1200	184	159	150	141
9	130	64	53	47	51	10100	2820	1220	179	169	149	133
10	130	62	53	47	50	10300	2870	1260	177	170	149	144
11	135	61	51	47	49	9990	3010	1270	176	171	143	147
12	135	54	51	46	49	9990	3200	1250	157	162	142	145
13	130	54	49	46	52	9780	2900	1300	171	166	142	144
14	120	55	48	51	104	9400	3310	1310	172	169	147	141
15	125	58	48	46	270	8130	3770	1100	171	161	148	135
16	125	59	49	46	273	7270	3980	495	174	166	145	131
17	125	65	49	47	188	6750	4000	597	170	166	148	137
18	120	64	48	49	210	5310	3880	557	166	158	146	140
19	115	60	47	49	572	5130	3500	440	164	156	148	139
20	120	59	46	47	9210	4470	3300	456	170	151	135	180
21	123	57	46	47	14000	3110	2690	430	170	152	139	186
22	128	56	45	45	12600	2650	1690	373	174	150	136	186
23	119	55	46	45	10900	2800	1120	212	171	158	135	185
24	108	55	46	47	14800	3020	1140	200	165	158	140	193
25	124	56	46	46	20700	3090	817	196	162	160	143	197
26	121	55	45	45	19400	2990	764	189	160	158	140	210
27	120	55	44	45	17200	3040	750	178	170	161	140	209
28	120	56	44	45	15300	2860	766	174	169	164	139	207
29	121	56	44	45	---	2880	666	165	171	157	141	206
30	122	55	45	47	---	2830	545	152	168	146	143	213
31	123	---	46	62	---	2990	---	153	---	156	140	---
TOTAL	3889	1819	1533	1480	136472	219430	77448	19848	5069	4989	4456	4804
MEAN	125	60.6	49.5	47.7	4874	7078	2582	640	169	161	144	160
MAX	140	118	58	62	20700	14100	4000	1310	184	173	154	213
MIN	108	45	44	45	49	2650	545	152	156	146	135	131
AC-FT	7710	3610	3040	2940	270700	435200	153600	39370	10050	9900	8840	9530

CAL YR 1985	TOTAL	175590	MEAN	481	MAX	4860	MIN	44	AC-FT	348300
WTR YR 1986	TOTAL	481237	MEAN	1318	MAX	20700	MIN	44	AC-FT	954500

13184000 OWYHEE RIVER AT OWYHEE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--July 1979 to September 1986 (discontinued).

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: March 1980 to September 1982.
WATER TEMPERATURES: July 1979 to September 1982.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS NONCARB DIS-SOLVED (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)
OCT											
21...	1530	119	486	8.2	10.0	10.2	2400	480	160	0	44
DEC											
09...	1600	49	1180	8.5	5.0	--	1000	K220	300	0	83
FEB											
03...	1330	56	990	7.7	5.5	13.4	K150	--	260	0	70
APR											
08...	1030	2580	153	7.7	10.0	8.8	64	K14	44	0	12
JUN											
03...	0845	172	400	8.1	20.0	7.5	K560	K2200	120	0	32
AUG											
05...	1030	141	412	8.2	19.0	8.2	K530	--	110	0	32

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WATER DISSOLV FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)
OCT										
21...	11	59	5.8	327	90	20	0.8	0.06	1.4	0.6
DEC										
09...	23	150	10	303	260	48	1.6	0.07	4.1	1.1
FEB										
03...	20	120	13	261	210	41	1.2	0.28	3.3	1.6
APR										
08...	3.4	13	2.9	59	15	5.0	0.4	0.06	0.4	0.5
JUN										
03...	8.6	43	5.7	121	63	12	0.7	0.14	1.0	1.0
AUG										
05...	8.2	44	6.1	125	73	11	0.6	0.13	1.1	0.7

DATE	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, TOTAL (MG/L AS P)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	TUR-BID-ITY (NTU)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
OCT										
21...	0.06	0.05	0.08	31	352	460	113	15	44	14
DEC										
09...	0.04	0.06	0.05	45	808	820	107	10	102	13
FEB										
03...	0.19	0.21	0.30	39	678	690	103	14	32	4.8
APR										
08...	0.07	0.08	0.13	23	126	110	878	42	30	209
JUN										
03...	0.10	0.13	0.14	33	397	270	184	62	138	64
AUG										
05...	0.07	0.09	0.20	31	286	280	109	65	118	45

K - Results based on colony count outside acceptable range (non-ideal colony count).

13184000 OWYHEE RIVER AT OWYHEE, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)
OCT 21...	110	21	36	<0.5	<1	<1	9	3	47	1
DEC 09...	--	--	--	--	--	--	--	--	--	--
FEB 03...	20	42	44	1	<1	<1	<3	<1	25	<1
APR 08...	--	--	--	--	--	--	--	--	--	--
JUN 03...	--	--	--	--	--	--	--	--	--	--
AUG 05...	420	17	29	<0.5	1	<1	<3	3	240	<5

DATE	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)
OCT 21...	45	21	0.1	<10	2	2	<1	190	13	11
DEC 09...	--	--	--	--	--	--	--	--	--	--
FEB 03...	86	67	<0.1	20	<1	5	<1	300	21	7
APR 08...	--	--	--	--	--	--	--	--	--	--
JUN 03...	--	--	--	--	--	--	--	--	--	--
AUG 05...	36	26	<0.1	<10	2	1	<1	140	11	9

13214000 MALHEUR RIVER NEAR DREWSEY, 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 Drewsey, and at mile 129.0.

DRAINAGE AREA.--910 mi^2, approximately.

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

REVISED RECORDS.--WSP 1093: 1927. WSP 1287: Drainage area. WSP 1397: 1921, 1927-31, 1937, drainage area (former site). WSP 1517: 1952. WDR OR-78-1: 1976(P).

GAGE.--Water-stage recorder. Datum of gage is 3,479.13 ft above 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.--Estimated daily discharges: Nov. 22-24, 29-30, Dec. 10 to Jan. 16. Records good except for estimated daily discharges, which are fair. Slight regulation by small reservoirs upstream from station. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--60 years (water years 1927-86), 195 ft^3/s, 141,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft^3/s Dec. 23, 1964, gage height, 13.50 ft, from rating curve extended above 4,500 ft^3/s on basis of contracted-opening measurement at gage height 13.20 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 18	0300	2,110	7.26	Mar. 8	2330	2,550	7.88
Feb. 24	0230	*4,030	*9.48	Mar. 30	1230	1,260	6.00

Minimum discharge, 1.7 ft^3/s Aug. 5-9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	79	86	104	110	300	1620	1050	216	291	28	5.7	4.2
2	75	87	108	120	273	1570	887	228	291	27	5.0	4.3
3	80	86	104	118	311	1400	785	232	306	31	4.0	4.0
4	80	86	101	108	240	1300	766	258	259	40	3.5	3.7
5	78	85	98	117	211	1270	753	243	230	42	1.8	4.0
6	76	90	96	125	177	1260	733	279	210	41	1.7	3.9
7	75	89	97	115	150	1380	754	241	177	42	1.7	3.3
8	80	96	95	110	133	2340	764	208	155	42	1.7	3.7
9	77	102	92	125	117	2100	791	176	138	44	1.7	5.2
10	76	99	82	120	103	1650	794	174	98	49	3.3	5.0
11	85	84	68	112	103	1700	745	178	106	41	9.5	5.7
12	84	74	74	110	123	1330	714	158	102	38	9.0	7.3
13	88	75	82	110	133	1110	646	129	97	34	7.8	7.3
14	86	75	82	110	144	1030	587	126	81	33	8.6	7.5
15	85	80	91	118	164	913	534	130	80	33	6.9	46
16	80	82	90	130	961	927	494	126	81	31	5.6	35
17	78	99	88	202	1280	819	476	123	77	31	4.4	43
18	78	84	88	146	1790	646	422	114	56	23	3.3	56
19	84	87	82	129	1230	644	368	99	49	21	3.1	65
20	78	82	77	119	691	744	330	104	55	23	2.9	71
21	86	89	78	118	811	845	326	123	70	20	4.0	66
22	85	82	79	113	1170	859	362	181	52	13	3.2	63
23	98	75	80	109	2530	829	406	171	44	9.7	3.1	69
24	105	69	84	107	3050	995	389	164	38	8.8	3.3	70
25	109	75	83	106	2190	1040	368	152	37	8.0	3.3	85
26	100	85	77	102	2030	954	384	158	38	7.7	3.5	90
27	96	96	75	100	1860	992	346	157	34	7.6	4.2	104
28	92	99	79	98	1750	1050	359	196	34	6.4	3.6	92
29	89	92	79	99	---	1130	299	246	35	5.6	3.2	83
30	87	92	85	114	---	1170	277	271	32	5.5	2.9	89
31	86	---	87	156	---	1150	---	281	---	5.4	3.1	---
TOTAL	2635	2582	2685	3676	24025	36767	16909	5642	3353	791.7	128.6	1196.1
MEAN	85.0	86.1	86.6	119	858	1186	564	182	112	25.5	4.15	39.9
MAX	109	102	108	202	3050	2340	1050	281	306	49	9.5	104
MIN	75	69	68	98	103	644	277	99	32	5.4	1.7	3.3
AC-FT	5230	5120	5330	7290	47650	72930	33540	11190	6650	1570	255	2370

CAL YR 1985	TOTAL	63326.0	MEAN	173	MAX	1300	MIN	3.8	AC-FT	125600
WTR YR 1986	TOTAL	100390.4	MEAN	275	MAX	3050	MIN	1.7	AC-FT	199100

13214500 WARMSPRINGS RESERVOIR NEAR RIVERSIDE, OR

LOCATION.--Lat 43°35'07", long 118°12'30", on line between NW¼SW¼ and SW¼SW¼ sec.8, T.23 S., R.37 E., Malheur County, Hydrologic Unit 17050116, on Bureau of Reclamation lands, near right end of dam on Malheur River, 3 mi northwest of Riverside, 4 mi upstream from South Fork, and at mile 114.0.

DRAINAGE AREA.--1,100 mi², approximately.

PERIOD OF RECORD.--January 1920 to October 1929, December 1929 to current year. Prior to Sept. 3, 1980, monthend contents and change in contents only.

GAGE.--Water-stage recorder. Datum of gage is 3,327.0 ft above National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation); gage readings have been reduced to elevations NVGD. Prior to May 29, 1964, nonrecording gage read daily or weekly.

REMARKS.--Reservoir is formed by concrete-arch dam. Storage began in 1919. Capacity, 191,000 acre-ft between elevations 3,327.00 ft, bottom of outlet tunnel, and 3,406.00 ft, top of flashboards. Dead storage, 1,400 acre-ft below elevation 3,327.00 ft not included in records. Water used to irrigate lands on both sides of river between Namorf and Ontario.

COOPERATION.--Capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 196,100 acre-ft Apr. 16, May 13, 1958, elevation, 3,407.10 ft; no contents Sept. 18 to Nov. 1, 1929, Aug. 26 to sometime in November 1935, Sept. 18 to Oct. 11, 1950, sometime in August to Oct. 3, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 182,300 acre-ft Apr. 21, elevation, 3,404.08 ft; minimum contents, 41,960 acre-ft Oct. 10, 11, elevation, 3,362.91 ft.

Capacity table (elevation, in feet, and useable contents, in acre-feet)

3,327	0	3,345	10,150	3,380	90,520
3,330	295	3,350	16,930	3,390	124,600
3,335	1,960	3,360	35,400	3,400	164,400
3,340	5,090	3,370	60,140	3,406	191,000

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3363.40	3364.56	3366.70	3368.16	3371.52	3392.23	3402.26	3403.39	3400.47	3394.04	3384.75	3374.48
2	3363.31	3364.64	3366.82	3368.19	3371.81	3393.15	3402.21	3403.31	3400.42	3393.75	3384.44	3374.14
3	3363.23	3364.71	3366.89	3368.28	3372.05	3393.98	3402.20	3403.24	3400.34	3393.42	3384.15	3373.83
4	3363.16	3364.81	3366.98	3368.29	3372.31	3394.71	3402.30	3403.17	3400.25	3393.11	3383.85	3373.52
5	3363.10	3364.86	3367.07	3368.36	3372.58	3395.41	3402.42	3403.11	3400.13	3392.78	3383.54	3373.22
6	3363.04	3364.94	3367.17	3368.49	3372.78	3396.09	3402.53	3403.05	3400.03	3392.48	3383.21	3372.92
7	3362.96	3365.02	3367.26	3368.50	3372.89	3396.79	3402.64	3402.99	3399.88	3392.17	3382.88	3372.64
8	3362.93	3365.10	3367.35	3368.53	3372.91	3398.16	3402.86	3402.91	3399.73	3391.87	3382.55	3372.36
9	3362.92	3365.20	3367.43	3368.93	3372.92	3399.53	3403.13	3402.83	3399.55	3391.57	3382.21	3372.07
10	3362.91	3365.29	3367.48	3368.96	3372.91	3400.41	3403.43	3402.74	3399.38	3391.26	3381.87	3371.79
11	3362.93	3365.36	3367.54	3368.96	3373.25	3401.02	3403.64	3402.66	3399.21	3390.98	3381.54	3371.52
12	3362.98	3365.40	3367.56	3368.96	3373.37	3401.00	3403.75	3402.57	3399.03	3390.68	3381.19	3371.27
13	3363.04	3365.46	3367.56	3368.96	3373.53	3400.85	3403.79	3402.46	3398.85	3390.39	3380.87	3371.03
14	3363.11	3365.50	3367.70	3368.96	3373.72	3400.79	3403.81	3402.36	3398.68	3390.09	3380.54	3370.79
15	3363.20	3365.57	3367.73	3368.96	3374.03	3400.74	3403.84	3402.26	3398.47	3389.78	3380.22	3370.55
16	3363.28	3365.64	3367.74	3368.96	3374.69	3400.65	3403.89	3402.15	3398.26	3389.48	3379.89	3370.36
17	3363.34	3365.69	3367.74	3368.96	3376.03	3400.59	3403.94	3402.03	3398.06	3389.18	3379.56	3370.18
18	3363.41	3365.76	3367.75	3369.79	3377.92	3400.54	3404.01	3401.90	3397.83	3388.91	3379.24	3370.05
19	3363.49	3365.82	3367.76	3370.12	3379.24	3400.58	3404.05	3401.75	3397.59	3388.64	3378.92	3369.94
20	3363.57	3365.92	3367.76	3370.23	3379.90	3400.69	3404.07	3401.59	3397.33	3388.36	3378.59	3369.86
21	3363.64	3365.95	3367.76	3370.25	3380.53	3400.91	3404.07	3401.45	3396.87	3388.10	3378.26	3369.78
22	3363.73	3366.05	3367.76	3370.32	3381.37	3401.22	3404.03	3401.36	3396.63	3387.83	3377.89	3369.71
23	3363.81	3366.09	3367.76	3370.48	3383.40	3401.50	3403.98	3401.26	3396.37	3387.54	3377.58	3369.63
24	3363.90	3366.15	3367.76	3370.51	3385.91	3401.81	3403.93	3401.16	3396.11	3387.25	3377.25	3369.56
25	3363.99	3366.21	3367.76	3370.52	3387.53	3402.06	3403.86	3401.06	3395.84	3386.94	3376.90	3369.50
26	3364.08	3366.26	3367.77	3370.64	3388.91	3402.07	3403.80	3400.97	3395.56	3386.62	3376.54	3369.49
27	3364.18	3366.34	3367.79	3370.70	3390.15	3402.05	3403.74	3400.87	3395.26	3386.30	3376.18	3369.49
28	3364.26	3366.43	3367.81	3370.82	3391.23	3402.09	3403.68	3400.78	3394.96	3385.98	3375.83	3369.49
29	3364.32	3366.50	3367.84	3370.95	---	3402.16	3403.58	3400.71	3394.65	3385.67	3375.47	3369.48
30	3364.41	3366.59	3367.85	3371.09	---	3402.25	3403.50	3400.66	3394.35	3385.35	3375.14	3369.47
31	3364.49	---	3367.89	3371.29	---	3402.28	---	3400.56	---	3385.05	3374.80	---
MAX	3364.49	3366.59	3367.89	3371.29	3391.23	3402.28	3404.07	3403.39	3400.47	3394.04	3384.75	3374.48
MIN	3362.91	3364.56	3366.70	3368.16	3371.52	3392.23	3402.20	3400.56	3394.35	3385.05	3374.80	3369.47
(†)	45750	51020	54410	63790	129100	174300	179700	166900	141200	107100	74230	58690
(‡)	+2370	+5270	+3390	+9380	+65310	+45200	+5400	-12800	-25700	-34100	-32870	-15540

CAL YR 1985 MAX -- MIN -- AC-FT‡ -76290
WTR YR 1986 MAX 3404.07 MIN 3362.91 AC-FT‡ +15310

† Contents, in acre-feet, at 2400, on last day of month.
‡ Change in contents, in acre-feet.

13215000 MALHEUR RIVER BELOW WARMSPRINGS RESERVOIR, NEAR RIVERSIDE, OR

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 Warmsprings Dam, 3.0 mi upstream from South Fork, 4.0 mi northwest of Riverside, and at mile 113.0.

DRAINAGE AREA.--1,100 mi^2, approximately.

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 current year. 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 Warmsprings reservoir site, near Riverside 1914-17.

REVISED RECORDS.--WSP 833: 1936. WSP 1063: 1942-45. WSP 1397: 1909-10, 1917. WSP 1447: 1955. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 3,305 ft, by barometer. See WSP 1317 or 1737 for history of changes prior to Sept. 29, 1949.

REMARKS.--Estimated daily discharges: Oct. 13 to Mar. 9. Records good except for estimated daily discharges, which are poor. Flow completely regulated since November 1919 by Warmsprings Reservoir (see station 13214500). Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--67 years (water years 1920-86), 194 ft^3/s, 140,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 7,200 ft^3/s Mar. 1, 1910, gage height, 10.7 ft, site and datum then in use, from rating curve extended above 820 ft^3/s; maximum discharge since storage began November 1919, 3,150 ft^3/s Mar. 22, 1984, gage height, 9.70 ft, from floodmark; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,540 ft^3/s Mar. 11, gage height, 7.10 ft; mininum daily discharge, 0.04 ft^3/s Oct. 25 to Jan. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	193	.04	.04	.04	.10	.10	1100	448	445	562	456	435
2	179	.04	.04	.04	.10	.10	993	430	447	558	450	435
3	169	.04	.04	.04	.10	.10	790	413	444	557	444	434
4	154	.04	.04	.04	.10	.10	571	407	443	555	443	414
5	147	.04	.04	.04	.10	.10	497	407	443	552	454	403
6	145	.04	.04	.04	.10	.10	497	404	443	552	461	394
7	146	.04	.04	.04	.10	.10	499	387	444	549	484	393
8	90	.04	.04	.04	.10	.10	343	380	445	548	491	385
9	53	.04	.04	.04	.10	.10	210	380	448	548	485	379
10	53	.04	.04	.04	.10	183	210	364	448	545	484	375
11	53	.04	.04	.04	.10	954	316	358	448	543	484	365
12	3.0	.04	.04	.04	.10	1480	484	358	448	525	475	339
13	.18	.04	.04	.04	.10	1450	538	348	448	515	470	326
14	.18	.04	.04	.04	.10	1210	538	340	447	514	468	327
15	.18	.04	.04	.04	.10	1090	460	340	470	510	466	319
16	.18	.04	.04	.04	.10	1090	413	369	466	507	466	301
17	.18	.04	.04	.05	.10	958	343	383	466	491	466	283
18	.18	.04	.04	.05	.10	746	308	385	482	463	460	251
19	.18	.04	.04	.06	.10	547	310	405	504	456	449	223
20	.18	.04	.04	.07	.10	483	312	413	508	455	458	198
21	.18	.04	.04	.07	.10	365	378	415	515	438	470	183
22	.15	.04	.04	.08	.10	261	457	387	530	430	473	172
23	.12	.04	.04	.09	.10	261	479	371	524	430	469	160
24	.08	.04	.04	.09	.10	321	479	367	523	455	456	139
25	.04	.04	.04	.10	.10	587	480	368	521	470	475	123
26	.04	.04	.04	.10	.10	960	480	371	542	484	484	101
27	.04	.04	.04	.10	.10	982	480	371	571	490	484	89
28	.04	.04	.04	.10	.10	982	479	372	568	476	476	89
29	.04	.04	.04	.10	---	981	479	385	565	467	463	94
30	.04	.04	.04	.10	---	982	458	410	562	466	444	97
31	.04	---	.04	.10	---	1060	---	443	---	456	450	---
TOTAL	1387.25	1.20	1.24	1.90	2.80	17933.90	14381	11979	14558	15567	14458	8226
MEAN	44.7	.04	.04	.06	.10	579	479	386	485	502	466	274
MAX	193	.04	.04	.10	.10	1480	1100	448	571	562	491	435
MIN	.04	.04	.04	.04	.10	.10	210	340	443	430	443	89
AC-FT	2750	2.4	2.5	3.8	5.6	35570	28520	23760	28880	30880	28680	16320

CAL YR 1985	TOTAL	97444.00	MEAN	267	MAX	1550	MIN	.04	AC-FT	193300
WTR YR 1986	TOTAL	98497.29	MEAN	270	MAX	1480	MIN	.04	AC-FT	195400

13216350 MALHEUR RIVER AT JUNTURA, OR

LOCATION.--Lat 43°44'16", long 118°04'32", in SE¼NE¼ sec.20, T.21 S., R.38 E., Malheur County, Hydrologic Unit 17050116, at county road bridge, 0.5 mi southeast of Juntura, and 1.9 mi upstream from North Fork Malheur River.

DRAINAGE AREA.--Not determined.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: July 1985 to September 1986 (discontinued).

INSTRUMENTATION.--Water-temperature recorder with probe, located at county road bridge.

REMARKS.--Equipment malfunction Feb. 4, 1986 to Apr. 8, 1986, June 25, 1986 to Aug. 5, 1986.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum recorded, 22.5°C Aug. 5, 6, 25, 26, 1985; on several days in August and September 1986, but may have been higher during period of missing record, June 25 to Aug. 5, 1986; minimum, 0.0°C on many days during the winter months.

EXTREMES FOR CURRENT YEAR.--
AUGUST TO SEPTEMBER 1985.--
WATER TEMPERATURES: Maximum recorded, 22.5°C Aug. 5, 6, 25, 26; minimum recorded, 9.0 Sept. 30.

WATER YEAR 1986.--
WATER TEMPERATURES: Maximum recorded, 22.5°C on several days in August and September; minimum, 0.0°C on many days during winter months.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1				---	---	---	17.0	15.5	16.0	21.0	16.5	19.0
2				---	---	---	20.0	14.5	17.0	19.0	17.0	18.0
3				---	---	---	21.5	15.5	18.5	20.5	15.5	18.0
4				---	---	---	20.5	17.0	19.0	21.0	17.0	19.0
5				---	---	---	22.5	17.0	19.5	19.5	18.0	19.0
6				---	---	---	22.5	17.0	20.0	19.0	17.0	17.5
7				---	---	---	21.5	18.0	20.0	17.0	16.5	16.5
8				---	---	---	19.0	16.0	17.5	16.5	14.5	16.0
9				21.0	16.5	19.5	20.5	15.5	18.0	14.5	13.5	14.0
10				20.5	15.5	18.5	19.5	17.0	18.0	16.0	12.5	14.0
11				19.5	16.5	18.0	21.0	16.0	18.0	14.5	13.5	14.0
12				20.0	15.5	17.5	21.5	17.0	19.0	15.5	12.5	14.0
13				20.5	15.5	18.0	21.5	17.0	19.0	16.5	13.0	14.5
14				21.0	15.5	18.0	21.5	16.5	19.0	17.0	14.0	15.5
15				21.0	15.5	18.5	21.5	17.0	19.5	16.0	13.0	14.5
16				21.0	15.5	18.5	21.5	17.0	19.5	17.0	12.5	14.5
17				21.0	16.0	18.5	21.5	17.0	19.5	16.0	14.0	15.0
18				21.0	15.5	18.5	21.5	18.5	20.0	16.5	11.5	14.0
19				21.0	15.5	18.5	19.5	17.0	18.5	17.0	12.5	14.5
20				21.0	15.5	18.5	21.5	17.0	19.5	17.0	12.5	14.5
21				20.5	16.0	18.5	21.5	16.5	19.0	18.5	15.0	16.5
22				19.0	16.0	17.0	22.0	17.0	19.5	17.5	13.0	15.5
23				21.0	15.5	18.0	21.5	17.0	19.5	17.0	12.5	15.0
24				21.0	15.5	18.5	21.0	17.0	19.5	17.5	12.5	15.0
25				21.5	15.5	18.5	22.5	17.5	20.0	17.0	12.5	15.0
26				20.5	16.0	18.5	22.5	18.5	20.5	17.0	12.0	14.5
27				21.0	16.0	19.0	22.0	18.0	20.5	17.0	12.5	14.5
28				20.5	16.0	18.0	21.5	17.5	20.0	15.0	10.5	13.0
29				20.5	16.5	18.0	21.0	17.0	19.5	14.0	10.0	12.0
30				19.5	16.5	18.0	20.0	18.0	19.0	14.0	9.0	11.5
31				17.5	16.0	17.0	21.0	16.5	19.0	---	---	---
MONTH				---	---	---	22.5	14.5	19.0	21.0	9.0	15.5

13216350 MALHEUR RIVER AT JUNTURA,OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	14.0	9.5	11.5	9.0	5.5	7.5	.0	.0	.0	.0	.0	.0
2	16.5	12.0	14.0	11.0	7.0	9.0	.0	.0	.0	.0	.0	.0
3	17.0	13.5	15.0	10.5	6.5	9.0	.5	.0	.0	.0	.0	.0
4	15.5	11.5	13.5	9.5	6.5	8.5	.5	.0	.0	.0	.0	.0
5	15.5	10.5	13.0	8.0	5.0	6.5	.5	.0	.0	.0	.0	.0
6	14.0	11.5	12.5	8.5	6.5	7.5	.0	.0	.0	.0	.0	.0
7	12.5	8.5	10.5	8.0	7.0	7.5	.0	.0	.0	.0	.0	.0
8	8.5	6.5	7.5	8.0	5.0	6.5	.5	.0	.0	.0	.0	.0
9	8.5	3.5	6.0	6.5	4.0	5.0	.5	.0	.0	.0	.0	.0
10	9.0	4.0	6.5	5.5	3.5	4.0	.0	.0	.0	.0	.0	.0
11	9.0	7.0	8.0	3.0	.0	1.5	.0	.0	.0	.0	.0	.0
12	10.0	6.5	8.5	2.0	.0	.5	.0	.0	.0	.0	.0	.0
13	11.0	5.5	8.0	1.5	.0	.5	.0	.0	.0	.0	.0	.0
14	11.0	5.5	8.5	1.5	.0	.5	.0	.0	.0	.0	.0	.0
15	12.5	7.0	9.5	.5	.0	.0	.0	.0	.0	.0	.0	.0
16	12.5	7.5	10.0	1.5	.0	.5	.0	.0	.0	.0	.0	.0
17	12.5	7.5	10.0	1.0	.0	.5	.0	.0	.0	.0	.0	.0
18	12.5	7.5	10.5	1.0	.0	.0	.0	.0	.0	.0	.0	.0
19	12.0	8.0	10.5	1.0	.0	.0	.0	.0	.0	.0	.0	.0
20	11.5	8.5	9.5	.5	.0	.0	.0	.0	.0	.0	.0	.0
21	9.5	8.0	9.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
22	7.5	6.0	7.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
23	9.5	7.5	8.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
24	13.0	9.0	11.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
25	12.0	10.0	11.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
26	13.0	9.5	11.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
27	13.0	8.5	11.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
28	12.0	9.0	10.5	.0	.0	.0	.0	.0	.0	.0	.0	.0
29	9.5	5.5	8.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
30	9.5	5.5	7.5	.5	.0	.0	.0	.0	.0	.0	.0	.0
31	8.0	5.5	7.0	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	17.0	3.5	10.0	11.0	.0	2.5	.5	.0	.0	.0	.0	.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	.0	.0	.0				---	---	---	12.5	10.0	11.5
2	.0	.0	.0				---	---	---	13.0	11.0	12.0
3	.0	.0	.0				---	---	---	12.0	10.0	10.5
4	.0	.0	.0				---	---	---	13.5	9.5	11.5
5	---	---	---				---	---	---	11.0	9.5	10.5
6	---	---	---				---	---	---	12.5	9.0	10.5
7	---	---	---				---	---	---	15.0	10.5	12.5
8	---	---	---				---	---	---	14.0	10.5	12.5
9	---	---	---				14.5	10.0	12.0	13.5	10.5	12.5
10	---	---	---				14.0	11.0	12.5	12.5	10.5	11.5
11	---	---	---				11.5	9.0	10.5	14.0	10.0	11.5
12	---	---	---				10.5	8.0	9.5	15.0	10.5	13.0
13	---	---	---				10.5	6.5	8.5	14.0	11.5	13.0
14	---	---	---				10.0	7.0	9.0	15.0	9.5	12.5
15	---	---	---				9.5	7.5	8.5	14.5	12.0	13.0
16	---	---	---				10.0	6.5	8.5	16.5	11.0	13.5
17	---	---	---				10.5	7.5	9.0	17.5	12.5	15.0
18	---	---	---				12.5	8.0	10.5	17.5	14.0	16.0
19	---	---	---				14.0	9.5	12.0	17.0	13.5	15.5
20	---	---	---				15.5	11.5	14.0	15.5	13.0	14.0
21	---	---	---				16.0	12.5	14.5	13.5	10.5	12.0
22	---	---	---				13.5	9.5	12.5	15.5	9.5	12.5
23	---	---	---				12.0	7.5	10.5	15.0	12.0	13.5
24	---	---	---				12.5	8.0	11.0	18.0	11.5	15.0
25	---	---	---				11.5	9.0	10.5	19.0	14.0	17.0
26	---	---	---				12.5	8.5	11.0	20.0	15.5	18.0
27	---	---	---				12.0	9.5	10.5	20.0	17.0	18.5
28	---	---	---				14.0	9.0	11.5	21.0	16.0	18.5
29	---	---	---				12.0	9.0	11.0	21.0	17.0	19.0
30	---	---	---				13.0	8.5	11.0	20.5	17.0	19.0
31	---	---	---				---	---	---	20.0	16.0	18.5
MONTH	---	---	---				---	---	---	21.0	9.0	14.0

UPPER MALHEUR RIVER BASIN

13216350 MALHEUR RIVER AT JUNTURA, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	20.0	15.0	18.0				---	---	---	22.0	17.5	19.5
2	19.0	15.5	17.5				---	---	---	22.5	17.5	20.0
3	20.0	15.0	17.5				---	---	---	22.5	18.0	20.5
4	19.0	15.0	17.0				---	---	---	22.5	18.0	20.5
5	17.5	14.0	16.0				---	---	---	22.0	18.5	20.5
6	18.5	14.0	16.5				21.5	17.0	19.5	21.5	18.0	20.0
7	17.0	14.0	16.0				21.5	17.0	19.5	22.0	18.0	20.0
8	18.0	12.5	15.0				22.5	17.0	20.0	21.5	18.5	20.0
9	19.0	13.0	16.0				22.5	17.5	20.0	19.0	16.5	18.0
10	20.0	14.0	17.0				21.5	17.5	20.0	20.0	15.5	17.5
11	20.0	14.5	17.5				22.0	17.0	20.0	20.0	16.5	18.5
12	18.5	15.0	16.5				22.0	17.0	20.0	19.0	16.5	17.5
13	18.5	14.0	16.5				22.0	17.0	19.5	19.5	16.5	18.0
14	18.0	14.5	16.5				22.0	17.5	20.0	18.0	15.0	17.0
15	19.5	14.0	16.5				22.0	17.5	20.0	17.5	15.0	16.5
16	19.5	14.5	17.0				21.0	17.5	18.5	17.0	15.0	16.0
17	19.5	14.5	17.0				21.5	17.0	19.0	16.0	14.5	15.0
18	18.0	14.0	15.5				22.5	17.0	20.0	17.5	13.5	15.5
19	17.5	11.5	14.5				22.0	18.0	20.0	16.0	14.5	15.5
20	17.5	12.0	15.0				21.0	17.5	19.0	15.0	13.0	14.0
21	18.5	12.5	15.5				22.5	17.5	20.0	16.5	12.5	14.5
22	19.0	13.0	16.0				21.5	17.0	20.0	17.5	12.0	14.5
23	19.5	13.5	16.5				22.5	17.5	20.0	16.0	12.5	14.5
24	19.0	14.0	17.0				22.0	17.5	20.0	14.5	12.5	13.0
25	---	---	---				22.0	18.0	20.5	12.5	10.5	11.0
26	---	---	---				22.0	17.5	20.0	11.0	9.5	10.5
27	---	---	---				22.5	18.0	20.5	13.0	8.5	11.0
28	---	---	---				21.5	18.5	20.0	12.5	10.5	11.5
29	---	---	---				22.0	18.5	20.0	12.5	9.5	11.0
30	---	---	---				21.0	17.5	19.0	13.5	10.0	11.5
31	---	---	---				21.5	17.0	19.0	---	---	---
MONTH	---	---	---				---	---	---	22.5	8.5	16.0

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

LOCATION.--Lat 43°56'54", long 118°10'24", in NW¼NE¼ sec.4, T.19 S., R.37 E., Malheur County, Hydrologic Unit 17050116, on left bank 1,000 ft upstream from Beulah Reservoir, 3.5 mi northwest of Beulah, and at mile 16.8. Prior to Sept. 24, 1985, at site 800 ft upstream.

DRAINAGE AREA.--355 mi^2.

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

REVISED RECORDS.--WSP 1934: 1960(M).

GAGE.--Water-stage recorder. Elevation of gage is 3,320 ft above National Geodetic Vertical Datum of 1929, from topographic map. 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 site 800 ft upstream, datum of gage 3,351.0 ft. Oct. 9, 1975, to Sept. 24, 1985, at site 800 ft upstream, datum of gage 3,349.4 ft.

REMARKS.--Estimated daily discharges: Nov. 11 to Dec. 1, Dec. 9 to Mar. 6. Records good except those for estimated daily discharges, which are fair. No regulation. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--50 years (water years 1937-86), 139 ft^3/s, 100,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,970 ft^3/s Dec. 23, 1964, gage height, 9.90 ft, present datum, from floodmark, from rating curve extended above 1,300 ft^3/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 ft^3/s Dec. 13, 1967, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 18	1800	810	3.07	Mar. 7	2230	1,420	3.69
Feb. 23	1800	*2,460	*4.45	Mar. 31	0130	737	2.93

Minimum daily discharge, 43 ft^3/s Sept. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	62	69	70	67	168	575	628	232	228	69	56	54
2	62	69	108	76	168	596	548	220	233	67	56	51
3	62	69	108	76	160	526	501	213	258	65	56	51
4	62	68	97	70	135	511	479	214	200	66	54	50
5	62	72	86	73	110	507	455	204	186	77	53	47
6	62	70	81	78	98	501	436	216	182	69	53	43
7	67	73	85	73	89	852	434	207	162	66	53	47
8	67	78	80	84	80	1050	477	206	153	66	54	51
9	62	74	90	84	72	751	536	201	147	68	53	51
10	69	73	79	72	66	709	553	198	139	68	50	51
11	67	65	65	60	71	601	534	196	132	67	47	54
12	68	65	65	55	83	550	506	191	127	64	47	53
13	66	61	65	52	98	485	461	185	120	62	48	53
14	66	60	66	52	140	430	410	178	114	61	49	53
15	67	63	66	67	237	384	377	172	111	59	50	54
16	67	66	66	74	326	378	358	168	106	64	48	55
17	67	76	63	90	459	323	361	162	98	70	44	63
18	67	62	63	89	642	291	356	159	94	66	46	72
19	67	62	64	80	471	292	345	161	92	64	47	63
20	67	67	64	71	331	316	329	170	91	63	47	65
21	68	65	62	67	308	353	320	185	87	61	49	62
22	74	61	62	65	658	363	341	188	83	58	52	62
23	79	56	62	62	1540	377	356	181	80	57	52	59
24	86	54	62	59	1210	478	348	173	75	55	51	68
25	79	63	62	58	913	466	343	169	76	55	49	72
26	75	66	57	57	863	465	330	161	75	55	49	74
27	73	66	57	55	652	502	311	177	76	55	51	69
28	71	74	57	55	584	564	310	197	73	56	52	66
29	70	76	58	59	---	634	277	217	73	58	52	67
30	69	69	58	68	---	676	253	224	72	57	51	73
31	69	---	58	108	---	676	---	232	---	56	53	---
TOTAL	2119	2012	2186	2156	10732	16182	12273	5957	3743	1944	1572	1753
MEAN	68.4	67.1	70.5	69.5	383	522	409	192	125	62.7	50.7	58.4
MAX	86	78	108	108	1540	1050	628	232	258	77	56	74
MIN	62	54	57	52	66	291	253	159	72	55	44	43
AC-FT	4200	3990	4340	4280	21290	32100	24340	11820	7420	3860	3120	3480

CAL YR 1985	TOTAL	42894	MEAN	118	MAX	591	MIN	12	AC-FT	85080
WTR YR 1986	TOTAL	62629	MEAN	172	MAX	1540	MIN	43	AC-FT	124200

13217000 BEULAH RESERVOIR AT BEULAH, OR

LOCATION.--Lat 43°54'41", long 118°09'25", in SW¼SE¼ sec.15, T.19 S., R.37 E., Malheur County, Hydrologic Unit 17050116, on top of dam near right end of dam on North Fork Malheur River, 0.2 mi northwest of Beulah, and at mile 15.0.

DRAINAGE AREA.--440 mi^2, approximately.

PERIOD OF RECORD.--December 1935 to current year. Prior to October 1968, published as Agency Valley Reservoir at Beulah. Prior to March 1979, monthend contents only.

REVISED RECORDS.--WSP 1397: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 7.49 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1978, published as "National Geodetic Vertical Datum of 1929, Bureau of Reclamation construction datum." Prior to Mar. 28, 1979, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill, rock-faced dam. Storage began December 1935. Capacity, 59,920 acre-ft between gage heights 3,263.21 ft, bottom of outlet tunnel, and 3,340.0 ft, top of spillway gates; with gates open the capacity is 32,220 acre-ft. No dead storage. Water is used for irrigation of lands below Juntura, on Vale project, Bureau of Reclamation.

COOPERATION.--Prior to Mar. 28, 1979, daily gage heights furnished by Vale-Oregon Irrigation District. Capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 62,770 acre-ft May 3, 1941, gage height, 3,341.50 ft; no contents Sept. 17 to Oct. 13, 1950, Aug. 28 to Oct. 4, 1955, Aug. 13 to Oct. 1, 1961, Sept. 21 to Oct. 5, 1968, sometime Aug. 1-31 to Oct. 3, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 60,070 acre-ft Apr. 10, gage height, 3,340.08 ft; minimum contents, 17,850 acre-ft Oct. 12, gage height, 3,310.90 ft.

Capacity table (gage height, in feet, and total contents, in acre-feet)

3,285	2,020	3,300	8,980	3,320	28,250
3,290	3,750	3,305	12,520	3,330	42,530
3,295	6,090	3,310	16,950	3,341	61,840

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3312.41	3313.74	3317.20	3320.51	3324.13	3337.04	3339.94	3339.52	3337.84	3331.28	3323.92	3315.42
2	3312.37	3313.86	3317.38	3320.65	3324.29	3337.01	3339.88	3339.48	3337.75	3330.94	3323.63	3315.26
3	3312.32	3313.98	3317.52	3320.74	3324.42	3337.04	3339.87	3339.42	3337.76	3330.68	3323.36	3315.09
4	3312.23	3314.10	3317.65	3320.86	3324.56	3337.15	3339.84	3339.36	3337.65	3330.34	3323.08	3314.91
5	3312.13	3314.22	3317.77	3320.98	3324.69	3337.31	3339.80	3339.36	3337.51	3330.11	3322.79	3314.74
6	3312.05	3314.35	3317.92	3321.08	3324.79	3337.44	3339.74	3339.37	3337.38	3329.86	3322.46	3314.54
7	3311.94	3314.48	3318.07	3321.19	3324.88	3337.81	3339.80	3339.37	3337.23	3329.58	3322.13	3314.34
8	3311.74	3314.61	3318.19	3321.28	3324.96	3338.05	3339.88	3339.36	3337.09	3329.30	3321.82	3314.20
9	3311.47	3314.75	3318.29	3321.40	3325.02	3337.74	3339.98	3339.35	3336.96	3329.07	3321.50	3314.02
10	3311.24	3314.87	3318.37	3321.51	3325.13	3337.69	3339.95	3339.32	3336.82	3328.85	3321.15	3313.86
11	3311.00	3314.95	3318.42	3321.60	3325.24	3337.65	3339.93	3339.32	3336.65	3328.68	3320.80	3313.70
12	3310.97	3315.03	3318.48	3321.70	3325.39	3337.54	3339.87	3339.33	3336.47	3328.49	3320.44	3313.52
13	3311.10	3315.12	3318.55	3321.80	3325.55	3337.55	3339.82	3339.27	3336.27	3328.31	3320.11	3313.35
14	3311.24	3315.21	3318.65	3321.93	3325.71	3337.64	3339.81	3339.23	3336.01	3328.10	3319.78	3313.18
15	3311.37	3315.32	3318.74	3322.08	3325.86	3337.70	3339.72	3339.16	3335.77	3327.88	3319.42	3313.02
16	3311.49	3315.49	3318.84	3322.24	3326.26	3337.76	3339.74	3339.13	3335.52	3327.67	3319.06	3312.84
17	3311.63	3315.61	3318.94	3322.37	3326.83	3337.80	3339.78	3339.05	3335.25	3327.55	3318.71	3312.74
18	3311.75	3315.72	3319.03	3322.49	3327.65	3337.96	3339.83	3338.93	3334.90	3327.38	3318.38	3312.65
19	3311.89	3315.85	3319.14	3322.61	3328.15	3338.26	3339.83	3338.82	3334.64	3327.21	3318.07	3312.54
20	3312.03	3315.96	3319.24	3322.71	3328.43	3338.59	3339.82	3338.67	3334.35	3326.99	3317.75	3312.44
21	3312.13	3316.05	3319.35	3322.80	3328.69	3338.81	3339.76	3338.52	3334.09	3326.77	3317.46	3312.33
22	3312.32	3316.15	3319.45	3322.94	3329.51	3338.97	3339.67	3338.45	3333.82	3326.49	3317.19	3312.23
23	3312.49	3316.22	3319.56	3323.06	3331.62	3339.15	3339.68	3338.37	3333.57	3326.25	3316.98	3312.11
24	3312.66	3316.32	3319.66	3323.14	3333.34	3339.37	3339.70	3338.32	3333.28	3326.00	3316.81	3312.03
25	3312.82	3316.42	3319.77	3323.23	3334.73	3339.53	3339.66	3338.27	3333.01	3325.75	3316.64	3311.99
26	3312.97	3316.52	3319.87	3323.31	3335.92	3339.62	3339.69	3338.20	3332.70	3325.49	3316.47	3312.01
27	3313.10	3316.64	3319.96	3323.43	3336.65	3339.72	3339.67	3338.10	3332.41	3325.25	3316.30	3311.99
28	3313.22	3316.79	3320.06	3323.57	3337.00	3339.79	3339.65	3338.03	3332.08	3325.00	3316.11	3311.95
29	3313.35	3316.93	3320.15	3323.70	---	3339.88	3339.58	3337.99	3331.81	3324.72	3315.94	3311.94
30	3313.47	3317.06	3320.24	3323.84	---	3339.94	3339.56	3337.92	3331.54	3324.46	3315.75	3311.92
31	3313.60	---	3320.37	3323.99	---	3339.99	---	3337.87	---	3324.19	3315.59	---
MAX	3313.60	3317.06	3320.37	3323.99	3337.00	3339.99	3339.98	3339.52	3337.84	3331.28	3323.92	3315.42
MIN	3310.97	3313.74	3317.20	3320.51	3324.13	3337.01	3339.56	3337.87	3331.54	3324.19	3315.59	3311.92
(†)	20670	24640	28730	33600	54370	59900	59090	55960	44990	33880	22910	18900
(‡)	+1230	+3970	+4090	+4870	+20770	+5530	-810	-3130	-10970	-11110	-10970	-4010

CAL YR 1985 MAX 3340.02 MIN 3310.97 AC-FT‡ -6250
WTR YR 1986 MAX 3339.99 MIN 3310.97 AC-FT‡ -540

† Contents in acre-feet, at 2400, on last day of month.
‡ Change in contents, in acre-feet.

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 mi^2, approximately.

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

REVISED RECORDS.--WSP 1397: 1927-32, 1934, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,261.20 ft above 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.--Estimated daily discharges: Nov. 4, 5, 8-30, Dec. 1 to Jan. 16, Aug. 17 to Sept. 5. Records good except those for November to February, which are poor. Flow regulated since 1935 by Beulah Reservoir (see sta 13217000). Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--51 years (water years 1936-86), 149 ft^3/s, 108,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,000 ft^3/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 ft^3/s on basis of computation of peak flow over dam; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,310 ft^3/s Mar. 8, gage height, 5.42 ft; minimum discharge, no flow Dec. 11 to Jan. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	.10	.05	.00	.03	799	578	280	309	311	256	153
2	86	.10	.05	.00	.03	828	544	277	325	304	256	153
3	86	.10	.05	.00	.03	708	487	279	337	301	254	153
4	102	.10	.05	.00	.03	585	468	278	335	299	250	153
5	113	.10	.04	.00	.03	547	468	259	332	298	258	153
6	113	.10	.04	.00	.03	551	468	246	311	298	278	153
7	113	.10	.04	.00	.03	636	373	219	300	297	278	153
8	171	.10	.04	.00	.03	1010	321	215	298	287	278	153
9	198	.10	.04	.00	.03	1260	377	215	296	277	278	153
10	193	.10	.02	.00	.03	959	442	213	293	251	278	150
11	193	.09	.00	.01	.03	847	466	212	290	227	278	150
12	82	.08	.00	.01	.03	786	444	211	290	223	278	150
13	.41	.07	.00	.01	.03	612	424	212	293	224	276	150
14	.14	.07	.00	.02	.03	480	394	226	327	224	275	150
15	.14	.07	.00	.02	.03	451	386	234	344	213	281	150
16	.10	.06	.00	.02	.03	451	303	233	342	197	283	148
17	.14	.06	.00	.03	.03	373	256	277	342	194	287	148
18	.14	.06	.00	.03	.03	219	255	299	342	194	284	141
19	.14	.06	.00	.03	.03	109	285	299	338	212	284	136
20	.21	.06	.00	.03	.03	86	305	324	334	221	247	136
21	.30	.05	.00	.03	.03	219	330	339	338	232	247	136
22	.41	.05	.00	.03	.03	290	355	323	337	254	235	130
23	.21	.05	.00	.03	.12	290	324	315	331	243	235	128
24	.21	.05	.00	.03	3.0	286	311	278	315	233	235	126
25	.13	.05	.00	.03	5.3	351	312	260	332	233	203	112
26	.10	.05	.00	.03	31	406	310	274	336	233	203	94
27	.10	.05	.00	.03	250	419	311	304	336	233	153	93
28	.09	.05	.00	.03	517	470	310	314	326	239	153	94
29	.09	.05	.00	.03	---	489	295	314	318	252	153	94
30	.10	.05	.00	.03	---	490	289	311	316	256	153	94
31	.10	---	.00	.03	---	527	---	311	---	256	153	---
TOTAL	1538.26	2.18	.42	.54	807.08	16534	11191	8351	9663	7716	7560	4087
MEAN	49.6	.07	.01	.02	28.8	533	373	269	322	249	244	136
MAX	198	.10	.05	.03	517	1260	578	339	344	311	287	153
MIN	.09	.05	.00	.00	.03	86	255	211	290	194	153	93
AC-FT	3050	4.3	.8	1.1	1600	32800	22200	16560	19170	15300	15000	8110

CAL YR 1985	TOTAL	49968.31	MEAN	137	MAX	673	MIN	.00	AC-FT	99110
WTR YR 1986	TOTAL	67450.48	MEAN	185	MAX	1260	MIN	.00	AC-FT	133800

13226800 BULLY CREEK RESERVOIR NEAR VALE, OR

LOCATION.--Lat 44°00'55", long 117°23'45", in SE¼SW¼ sec.12, T.18 S., R.43 E., Malheur County, Hydrologic Unit 17050118, U.S. Bureau of Reclamation land, on top of dam over outlet works near right end of dam on Bully Creek, 8.0 mi northwest of Vale, and at mile 12.5.

DRAINAGE AREA.--547 mi^2.

PERIOD OF RECORD.--February 1963 to current year. Prior to March 1979, monthend contents only.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Bureau of Reclamation datum). Prior to Mar. 22, 1979, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill, rock-faced dam. Storage began Feb. 1, 1963. Capacity, 29,980 acre-ft between elevations 2,456.58 ft, outlet works, and 2,516.00 ft, spillway crest. Dead storage, 1,650 acre-ft below elevation 2,456.58 ft. Figures given herein do not include dead storage. Water used for irrigation lands of Vale-Oregon Irrigation District. Bully Creek Reservoir feed canal diverts from Malheur River by way of Vale Oregon canal.

COOPERATION.--Capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents not determined, occurred during period Apr. 4 to May 2, 1969, elevation above 2,516.00 ft, spillway crest; no usable contents at times in 1973, 1977, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 29,800 acre-ft Apr. 20, elevation, 2,515.82 ft; minimum contents recorded, 6,870 acre-ft Oct. 22, elevation, 2,483.71 ft, but may have been less during period of no record Oct. 1-21, 23-31, Nov. 1-14.

Capacity table (elevation, in feet, and contents, in acre-feet)

2,483	6,580	2,505	20,130
2,490	9,930	2,510	24,370
2,495	12,900	2,520	34,040
2,500	16,290		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	2487.18	2488.93	2491.27	2508.44	2513.30	2514.96	2511.81	2505.35	2497.75	2488.69
2	---	---	2487.30	2488.98	2491.40	2507.75	2513.45	2514.85	2511.60	2505.09	2497.48	2488.40
3	---	---	2487.39	2489.04	2491.52	2507.13	2513.65	2514.73	2511.45	2504.86	2497.19	2488.19
4	---	---	2487.49	2489.06	2491.65	2506.82	2513.76	2514.73	2511.26	2504.42	2496.92	2488.01
5	---	---	2487.57	2489.16	2491.80	2506.66	2513.88	2514.52	2511.01	2504.22	2496.61	2487.85
6	---	---	2487.65	2489.23	2491.90	2507.00	2514.00	2514.48	2510.89	2503.99	2496.29	2487.70
7	---	---	2487.78	2489.26	2492.01	2507.25	2514.11	2514.48	2510.75	2503.74	2495.98	2487.56
8	---	---	2487.88	2489.33	2492.11	2507.71	2514.17	2514.38	2510.60	2503.47	2495.65	2487.46
9	---	---	2487.96	2489.40	2492.20	2507.98	2514.49	2514.38	2510.45	2503.23	2495.34	2487.34
10	---	---	2488.01	2489.47	2492.27	2508.00	2514.76	2514.38	2510.29	2502.93	2495.01	2487.21
11	---	---	2488.05	2489.54	2492.39	2508.27	2514.94	2514.38	2510.10	2502.68	2494.68	2487.10
12	---	---	2488.09	2489.60	2492.50	2508.10	2515.14	2514.21	2509.91	2502.42	2494.31	2487.01
13	---	---	2488.14	2489.66	2492.67	2508.25	2515.36	2514.16	2509.73	2502.18	2493.98	2486.95
14	---	---	2488.19	2489.71	2492.80	2508.56	2515.47	2513.99	2509.48	2501.90	2493.65	2486.88
15	---	2485.90	2488.24	2489.79	2492.94	2508.91	2515.60	2513.99	2509.31	2501.65	2493.31	2486.82
16	---	2486.02	2488.29	2489.90	2494.71	2509.29	2515.69	2513.93	2509.08	2501.37	2492.99	2486.80
17	---	2486.13	2488.34	2489.96	2498.20	2509.60	2515.80	2513.87	2508.84	2501.17	2492.68	2486.85
18	---	2486.19	2488.38	2490.04	2503.30	2509.83	2515.80	2513.70	2508.54	2500.98	2492.34	2486.90
19	---	2486.26	2488.42	2490.14	2505.88	2510.11	2515.81	2513.70	2508.27	2500.79	2492.03	2486.93
20	---	2486.37	2488.46	2490.22	2506.84	2510.33	2515.82	2513.70	2508.05	2500.57	2491.71	2487.09
21	---	2486.41	2488.50	2490.29	2507.19	2510.58	2515.77	2513.42	2507.77	2500.38	2491.44	2487.23
22	2483.74	2486.48	2488.53	2490.39	2507.89	2510.86	2515.61	2512.99	2507.57	2500.18	2491.20	2487.38
23	---	2486.52	2488.58	2490.49	2510.66	2511.13	2515.58	2512.88	2507.32	2499.96	2490.93	2487.56
24	---	2486.57	2488.62	2490.56	2512.17	2511.33	2515.54	2512.78	2507.10	2499.77	2490.66	2487.76
25	---	2486.65	2488.66	2490.61	2511.91	2511.64	2515.54	2512.68	2506.90	2499.54	2490.40	2487.93
26	---	2486.71	2488.68	2490.71	2511.21	2511.95	2515.39	2512.57	2506.67	2499.29	2490.18	2488.06
27	---	2486.79	2488.72	2490.77	2510.18	2512.23	2515.34	2512.43	2506.35	2499.07	2489.96	2488.21
28	---	2486.89	2488.76	2490.87	2509.16	2512.48	2515.22	2512.31	2506.08	2498.83	2489.70	2488.34
29	---	2486.97	2488.79	2490.96	---	2512.70	2515.01	2512.17	2505.83	2498.55	2489.43	2488.47
30	---	2487.06	2488.84	2491.05	---	2512.90	2515.02	2512.13	2505.58	2498.27	2489.18	2488.62
31	---	---	2488.86	2491.16	---	2513.11	---	2511.95	---	2498.01	2488.93	---
MAX	---	---	2488.86	2491.16	2512.17	2513.11	2515.82	2514.96	2511.81	2505.35	2497.75	2488.69
MIN	---	---	2487.18	2488.93	2491.27	2506.66	2513.30	2511.95	2505.58	2498.01	2488.93	2486.80
(†)	a7080	8400	9320	10590	23630	27200	29020	26120	20600	14890	9350	9190
(‡)	+110	+1320	+920	+1270	+13040	+3570	+1820	-2900	-5520	-5710	-5540	-160

CAL YR 1985 AC-FT‡ -6550
WTR YR 1986 AC-FT‡ +2220

† Contents in acre-feet, at 2400, on last day of month.
‡ Change in contents, in acre-feet.
a Interpolated.

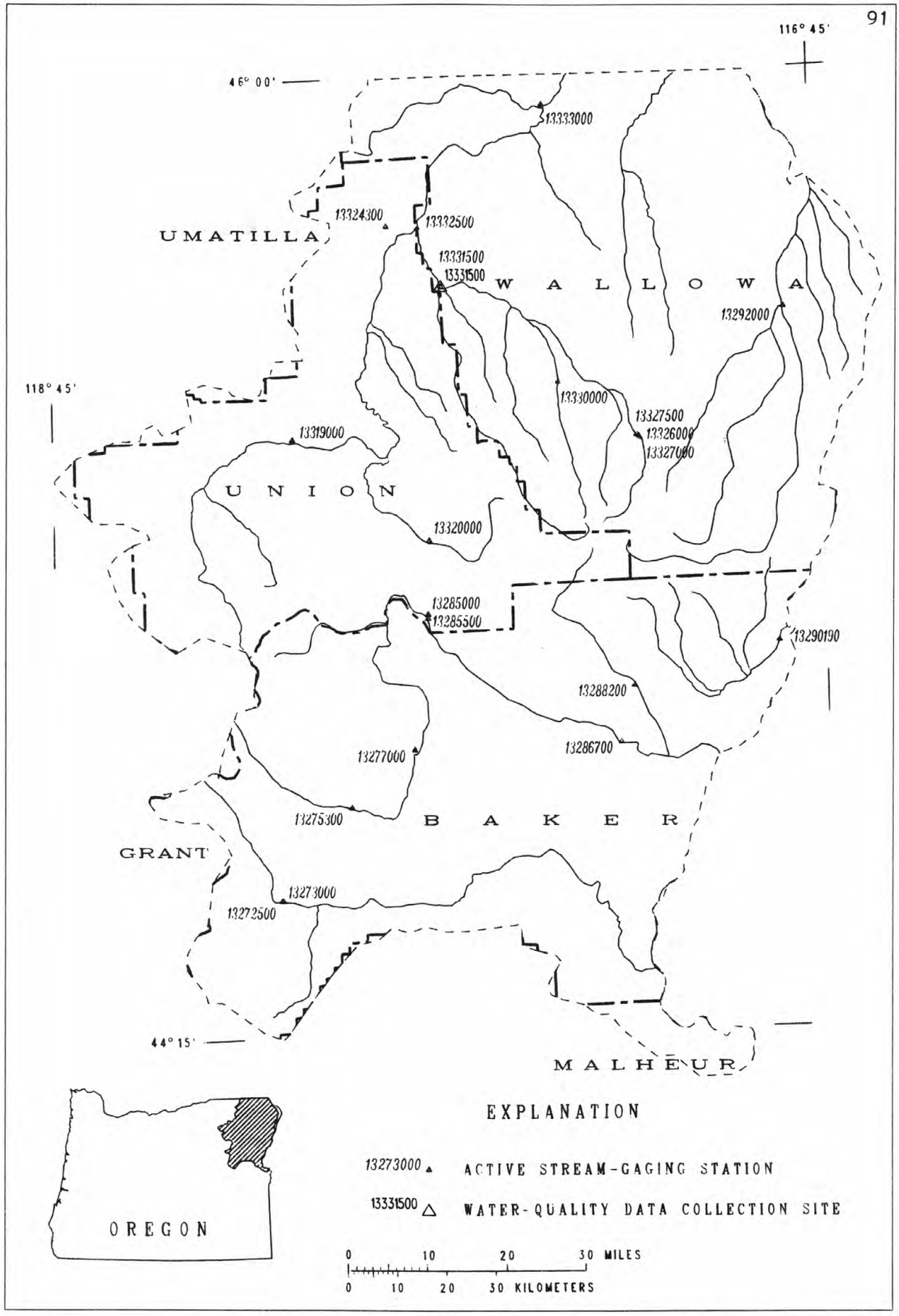

Figure 3.--Location of surface-water and water-quality stations in the Burnt River, Powder River, Imnaha River, Grande Ronde River, and Wallowa River basins.

13272500 UNITY RESERVOIR NEAR UNITY, OR

LOCATION.--Lat 44°30'13", long 118°10'45", in SE¼SW¼ sec.21, T.12 S., R.37 E., Baker County, Hydrologic Unit 17050202, at spillway near right end of dam on Burnt River, 4.4 mi north of Unity, and at mile 63.6.

DRAINAGE AREA.--309 mi^2.

PERIOD OF RECORD.--March 1938 to current year. Prior to September 1978, monthend contents only.

GAGE.-- Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark). Mar. 13, 1938, to Nov. 4, 1941, reference mark or mercury pressure gage and Nov. 5, 1941, to Dec. 10, 1978, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill dam with concrete spillway and outlet works, completed by Bureau of Reclamation in 1937; storage began Feb. 19, 1938. Capacity, 25,200 acre-ft between elevations 3,776.5 ft, bottom of outlet gates, and 3,820.0 ft, top of radial gates on spillway when closed. Dead storage, 600 acre-ft below elevation 3,776.5 ft. Records given herein represent usable contents. Water used for irrigation in the Burnt River Irrigation District near Hereford and Bridgeport.

COOPERATION.--Data for computing capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 26,770 acre-ft Apr. 8, 1971, elevation, 3,821.62 ft; no contents Sept. 5 to Oct. 4, 1955.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 25,820 acre-ft May 11, elevation, 3,820.65 ft, but may have been higher during period of no record May 12-28; minimum, 4,320 acre-ft Sept. 24, elevation, 3,790.62 ft.

Capacity table (elevation, in feet, and usable contents, in acre-feet)

3,790	4,020	3,810	16,680
3,795	6,610	3,815	20,770
3,800	9,600	3,820	25,220
3,805	12,960	3,821	26,150

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3794.27	3797.58	3801.17	3803.94	3806.78	3816.36	3819.44	3820.24	3817.87	3811.50	3805.20	3796.33
2	3794.33	3797.67	3801.37	3804.05	3806.92	3817.11	3819.28	3820.25	3817.72	3811.31	3804.92	3796.06
3	3794.35	3797.79	3801.47	3804.11	3807.02	3817.57	3819.20	3820.25	3817.54	3811.15	3804.61	3795.79
4	3794.41	3797.92	3801.67	3804.20	3807.17	3817.97	3819.08	3820.26	3817.36	3810.96	3804.33	3795.48
5	3794.47	3798.03	3801.71	3804.35	3807.33	3818.42	3818.97	3820.29	3817.15	3810.87	3804.02	3795.17
6	3794.52	3798.17	3801.82	3804.41	3807.45	3818.76	3818.89	3820.33	3816.95	3810.74	3803.72	3794.86
7	3794.57	3798.35	3801.96	3804.45	3807.54	3819.97	3818.85	3820.39	3816.75	3810.57	3803.45	3794.57
8	3794.62	3798.53	3802.07	3804.53	3807.63	3820.37	3818.87	3820.46	3816.56	3810.35	3803.15	3794.27
9	3794.71	3798.70	3802.16	3804.62	3807.73	3819.92	3818.96	3820.51	3816.40	3810.19	3802.85	3793.99
10	3794.78	3798.85	3802.24	3804.73	3807.86	3819.64	3819.04	3820.55	3816.23	3810.02	3802.56	3793.68
11	3794.88	3798.96	3802.29	3804.81	3807.98	3819.49	3819.07	3820.63	3816.02	3809.83	3802.24	3793.39
12	3794.97	3799.06	3802.33	3804.89	3808.12	3819.22	3818.99	---	3815.77	3809.67	3801.97	3793.12
13	3794.09	3799.16	3802.38	3804.99	3808.23	3818.98	3818.90	---	3815.50	3809.53	3801.69	3792.86
14	3795.20	3799.24	3802.47	3805.07	3808.38	3818.77	3818.95	---	3815.20	3809.25	3801.41	3792.61
15	3795.31	3799.37	3802.55	3805.18	3808.49	3818.63	3819.05	---	3814.95	3809.96	3801.11	3792.40
16	3795.40	3799.54	3802.63	3805.32	3808.65	3818.45	3819.14	---	3814.71	3808.76	3800.86	3792.18
17	3795.53	3799.67	3802.72	3805.40	3808.82	3818.24	3819.24	---	3814.46	3808.63	3800.57	3791.93
18	3795.63	3799.76	3802.81	3805.49	3809.02	3818.06	3819.32	---	3814.14	3808.50	3800.27	3791.73
19	3795.77	3799.88	3802.90	3805.58	3809.21	3817.98	3819.37	---	3813.93	3808.35	3799.99	3791.51
20	3795.90	3800.03	3802.99	3805.65	3809.41	3818.12	3819.47	---	3813.71	3808.20	3799.73	3791.29
21	3795.99	3800.02	3803.08	3805.74	3809.60	3818.43	3819.62	---	3813.49	3807.99	3799.41	3790.88
22	3796.12	3800.22	3803.16	3805.88	3809.75	3818.65	3819.76	---	3813.30	3807.79	3799.15	3790.95
23	3796.35	3800.27	3803.26	3805.97	3810.27	3818.77	3819.88	---	3813.13	3807.58	3798.86	3790.79
24	3796.52	3800.33	3803.34	3806.01	3811.23	3818.99	3819.97	---	3812.90	3807.40	3798.56	3790.72
25	3796.65	3800.42	3803.41	3806.11	3812.32	3819.08	3820.01	---	3812.68	3807.13	3798.26	3790.78
26	3796.81	3800.54	3803.49	3806.19	3813.41	3818.99	3820.09	---	3812.50	3806.84	3798.00	3790.84
27	3796.95	3800.67	3803.55	3806.28	3814.46	3819.13	3820.16	---	3812.27	3806.61	3797.73	3790.90
28	3797.07	3800.79	3803.62	3806.40	3815.43	3819.36	3820.26	---	3812.03	3806.33	3797.44	3790.94
29	3797.19	3800.91	3803.67	3806.51	---	3819.62	3820.23	3818.24	3811.83	3806.10	3797.16	3791.00
30	3797.32	3801.04	3803.74	3806.58	---	3819.68	3820.26	3818.16	3811.65	3805.87	3796.86	3791.06
31	3797.43	---	3803.82	3806.69	---	3819.64	---	3818.03	---	3805.46	3796.60	---
MAX	3797.43	3801.04	3803.82	3806.69	3815.43	3820.37	3820.26	---	3817.87	3811.50	3805.20	3796.33
MIN	3794.09	3797.58	3801.17	3803.94	3806.78	3816.36	3818.85	---	3811.65	3805.46	3796.60	3790.72
(†)	8010	10260	12130	14180	21140	24890	25450	23440	17980	13290	7520	4530
(‡)	+1850	+2250	+1870	+2050	+6960	+3750	+560	-2010	-5460	-4690	-5770	-2990

CAL YR 1985 MAX 3820.04 MIN 3793.91 AC-FT‡ -2590
WTR YR 1986 MAX ------- MIN ------- AC-FT‡ -1630

† Contents in acre-feet, at 2400, on last day of month.
‡ Change in contents, in acre-feet.

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 mi^2.

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

REVISED RECORDS.--WSP 903: 1939. WSP 1397: 1916, 1930, 1930(M).

GAGE.--Water-stage recorder. Datum of gage is 3,758.19 ft above 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.--No estimated daily discharges. Records excellent except those for Nov. 18 to Jan. 6, Feb. 28 to Apr. 16, which are good. Flow regulated since 1938 by Unity Reservoir (see station 13272500). Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--58 years (water years 1929-86), 88.1 ft^3/s, 63,830 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,220 ft^3/s Apr. 17, 1943, gage height, 5.91 ft, present datum, from rating curve extended above 1,300 ft^3/s; maximum gage height, 9.07 ft Apr. 8, 1971; no flow at times; minimum discharge before construction of Unity Dam, 1.6 ft^3/s Aug. 31, 1935.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,050 ft^3/s Mar. 8, gage height, 8.35 ft; minimum discharge, 0.89 ft^3/s Oct. 17, due to regulation.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	12	13	14	14	199	482	138	116	98	126	91
2	13	12	13	14	14	267	391	138	126	95	126	90
3	12	12	13	14	14	330	345	137	134	95	125	89
4	12	12	13	14	14	353	337	136	133	94	124	94
5	12	12	13	14	14	368	335	138	133	94	124	96
6	12	12	14	15	15	417	333	150	133	94	123	95
7	13	12	14	32	14	614	332	135	132	94	123	94
8	13	12	14	22	15	1030	314	126	131	94	122	94
9	13	12	14	9.0	15	1030	303	113	131	94	121	93
10	13	12	14	10	15	811	302	106	131	93	121	92
11	13	12	14	11	15	670	299	106	131	93	118	91
12	13	12	14	11	16	618	300	106	135	93	113	87
13	13	12	14	11	17	544	273	105	144	92	111	84
14	13	12	14	11	17	460	215	99	143	92	109	82
15	12	12	14	11	17	393	174	91	142	91	109	82
16	12	13	14	12	18	368	171	94	141	91	108	78
17	11	13	14	12	19	358	149	117	138	91	107	72
18	11	13	14	13	20	333	140	139	132	91	107	71
19	11	13	14	14	20	297	140	139	126	91	106	71
20	11	13	14	14	21	296	129	135	119	90	105	70
21	12	13	14	14	21	296	119	131	119	102	104	65
22	12	13	14	14	37	331	134	131	117	107	103	62
23	12	13	15	14	48	349	138	131	117	107	103	62
24	12	13	15	14	73	350	138	125	116	106	102	30
25	12	13	15	14	85	405	137	122	116	108	99	14
26	12	13	15	13	109	433	136	128	116	109	94	13
27	12	13	15	13	133	384	137	125	108	109	94	13
28	12	13	15	13	155	365	137	116	104	108	93	13
29	12	13	15	13	---	447	136	116	104	107	92	13
30	12	13	14	13	---	507	137	116	104	108	92	13
31	12	---	14	13	---	502	---	116	---	122	91	---
TOTAL	377	375	436	426.0	985	14125	6813	3805	3772	3053	3395	2014
MEAN	12.2	12.5	14.1	13.7	35.2	456	227	123	126	98.5	110	67.1
MAX	13	13	15	32	155	1030	482	150	144	122	126	96
MIN	11	12	13	9.0	14	199	119	91	104	90	91	13
AC-FT	748	744	865	845	1950	28020	13510	7550	7480	6060	6730	3990

CAL YR 1985	TOTAL	34685.0	MEAN	95.0	MAX	679	MIN	3.8	AC-FT	68800
WTR YR 1986	TOTAL	39576.0	MEAN	108	MAX	1030	MIN	9.0	AC-FT	78500

13275300 POWDER RIVER NEAR SUMPTER, OR

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.

DRAINAGE AREA.--168 mi^2, approximately. Prior to Oct. 1, 1970, 170 mi^2 at cableway, 0.5 mi downstream.

PERIOD OF RECORD.--April 1965 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,898.47 ft above National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark). Prior to July 29, 1965, nonrecording gage at datum 1.03 ft higher.

REMARKS.--Estimated daily discharges: Jan. 4, 5, 7, 8, June 5 to Aug. 25. Records excellent except those below 20 ft^3/s, which are good. Flow completely regulated since Oct. 31, 1967, by Phillips Lake, active capacity, 90,540 acre-ft. Many small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--21 years, 116 ft^3/s, 84,040 acre-ft/yr, not adjusted for storage in Phillips Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 971 ft^3/s Apr. 30, 1965, gage height, 4.43 ft; no flow Nov. 12, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 1,600 ft^3/s, approximately, Mar. 20, 1910, based on comparison with records for station downstream, near Baker.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 382 ft^3/s Sept. 20, gage height, 3.28 ft; minimum discharge, 0.60 ft^3/s Sept. 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	11	9.5	7.7	8.5	8.7	177	245	262	252	233	90
2	12	11	9.4	7.8	8.3	8.0	177	225	330	262	268	90
3	12	11	9.4	8.1	8.3	7.8	177	215	358	255	314	116
4	12	11	9.4	8.0	8.6	8.0	180	215	358	249	370	132
5	11	10	9.4	8.0	8.3	7.8	182	192	358	249	370	132
6	11	10	9.4	8.9	8.5	7.8	182	185	358	249	370	132
7	11	10	9.4	8.4	8.5	8.2	182	185	358	245	366	132
8	11	10	9.4	8.3	8.3	8.3	182	185	354	249	366	127
9	11	10	9.4	8.3	8.3	8.3	142	185	354	221	366	92
10	11	10	9.4	8.3	8.5	8.3	170	184	358	206	346	85
11	11	10	9.4	8.3	8.5	8.7	221	182	358	206	314	79
12	11	10	9.4	8.3	8.9	8.9	221	216	330	194	303	79
13	11	10	9.4	8.3	8.5	8.9	221	266	314	185	289	79
14	11	10	9.4	8.3	8.8	8.9	221	266	314	185	275	79
15	11	10	9.1	8.3	9.2	8.7	237	256	314	185	262	79
16	11	10	8.9	8.3	9.3	8.3	245	259	279	185	265	79
17	11	10	8.9	8.3	8.4	82	246	268	245	175	272	79
18	11	10	8.9	8.3	8.3	114	246	268	233	157	272	56
19	11	10	8.9	8.3	8.0	135	225	268	233	150	265	30
20	11	10	8.4	8.3	8.3	175	188	268	233	152	239	33
21	11	10	8.3	8.3	8.3	175	180	243	212	152	218	27
22	11	10	8.3	8.3	8.3	175	185	224	194	152	206	27
23	11	10	8.3	8.3	8.3	175	212	194	227	152	191	24
24	11	10	8.3	8.3	8.9	175	242	145	252	162	180	11
25	11	10	8.3	8.3	8.9	177	262	135	252	185	150	17
26	11	10	8.3	8.3	8.9	177	268	135	252	200	139	17
27	11	10	8.1	8.3	8.5	177	267	156	242	200	163	17
28	11	10	7.8	8.3	8.3	177	265	199	236	200	150	17
29	11	10	7.8	8.3	---	177	265	212	236	200	145	17
30	11	10	7.8	8.3	---	177	251	251	236	200	113	15
31	11	---	7.6	8.9	---	177	---	262	---	200	90	---
TOTAL	345	304	273.7	256.7	238.7	2578.6	6419	6689	8640	6214	7870	1989
MEAN	11.1	10.1	8.83	8.28	8.52	83.2	214	216	288	200	254	66.3
MAX	12	11	9.5	8.9	9.3	177	268	268	358	262	370	132
MIN	11	10	7.6	7.7	8.0	7.8	142	135	194	150	90	11
AC-FT	684	603	543	509	473	5110	12730	13270	17140	12330	15610	3950

CAL YR 1985	TOTAL	48917.0	MEAN	134	MAX	477	MIN	7.6	AC-FT	97030
WTR YR 1986	TOTAL	41817.7	MEAN	115	MAX	370	MIN	7.6	AC-FT	82950

13277000 POWDER RIVER AT BAKER, OR

LOCATION.--Lat 44°46'06", long 117°49'50", in SE¼NE¼ sec.20, T.9 S., R.40 E., Baker County, Hydrologic Unit 17050203, on right bank 600 ft upstream from Myrtle Street Bridge in Baker, 0.5 mi downstream from Sutton Creek, and at mile 107.6.

DRAINAGE AREA.--351 mi^2.

PERIOD OF RECORD.--May to September 1913, April to July 1914, November 1971 to current year. Monthly discharge only May 1913, April 1914 published in WSP 1317. November 1971 to September 1978 in reports of Oregon Water Resources Department.

REVISED RECORDS.--WSP 1317: 1913.

GAGE.--Water-stage recorder. Datum of gage is 3,441.71 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 19, 1971, nonrecording gage at site 0.7 mi downstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 10 to Feb. 1, Feb. 8-10. Records excellent except those for periods of ice effect Nov. 1 to Feb. 1, Feb. 8-10, which are poor. Flow regulated since Oct. 31, 1967, by Phillips Lake, active capacity, 90,540 acre-ft. Old Settlers Slough diverts from left bank 0.2 mi upstream for irrigation downstream from station.

AVERAGE DISCHARGE.--14 years, 123 ft^3/s, 89,110 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,120 ft^3/s Jan. 15, 1974, gage height, 5.55 ft; maximum gage height, 5.57 ft Jan. 5, 1984 (ice jam); minimum discharge, 0.7 ft^3/s Oct. 28, 29, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 658 ft^3/s Feb. 23, gage height, 4.37 ft; minimum daily discharge, 11 ft^3/s Nov. 22, 23, but may have been less during period of ice effect.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	19	17	19	190	134	220	208	180	163	149	68
2	18	19	19	20	293	129	217	199	210	187	185	67
3	18	19	21	19	283	115	215	182	271	191	227	75
4	18	21	22	17	219	107	212	183	286	190	286	95
5	18	23	20	19	149	103	207	167	294	191	295	93
6	18	22	21	21	92	102	207	156	308	189	302	94
7	19	27	23	18	70	165	207	156	316	199	312	94
8	19	31	24	21	62	189	205	156	310	205	325	96
9	18	27	20	24	54	176	205	166	309	188	330	69
10	19	22	15	22	48	138	153	171	306	167	317	59
11	19	19	13	19	45	121	244	169	300	166	286	49
12	18	18	14	20	40	115	246	169	283	160	258	49
13	18	17	15	22	37	102	243	225	266	146	239	50
14	18	18	14	21	33	104	241	226	266	143	214	49
15	18	19	14	24	75	97	245	227	262	137	195	51
16	18	17	15	33	146	103	255	206	245	140	197	52
17	17	15	16	48	134	121	253	216	205	135	208	54
18	18	16	16	68	130	174	246	217	185	124	209	56
19	18	15	15	88	89	174	223	213	184	111	203	40
20	18	13	15	72	66	223	179	211	181	110	185	29
21	18	12	14	52	52	226	154	227	171	110	169	35
22	20	11	15	37	111	226	163	187	142	104	156	28
23	22	11	16	32	489	224	187	164	145	102	144	27
24	21	12	15	30	340	226	207	123	171	108	128	24
25	20	14	14	29	237	223	228	94	172	123	123	25
26	20	13	13	28	204	221	242	92	173	140	78	26
27	19	15	13	27	166	219	243	101	167	142	112	24
28	19	17	13	28	143	218	242	128	156	140	100	23
29	19	18	14	31	---	221	239	153	155	137	87	23
30	19	17	13	45	---	221	223	162	153	136	91	25
31	19	---	16	110	---	220	---	177	---	133	69	---
TOTAL	580	537	505	1064	3997	5137	6551	5431	6772	4617	6179	1549
MEAN	18.7	17.9	16.3	34.3	143	166	218	175	226	149	199	51.6
MAX	22	31	24	110	489	226	255	227	316	205	330	96
MIN	17	11	13	17	33	97	153	92	142	102	69	23
AC-FT	1150	1070	1000	2110	7930	10190	12990	10770	13430	9160	12260	3070

CAL YR 1985	TOTAL	44210	MEAN	121	MAX	562	MIN	11	AC-FT	87690
WTR YR 1986	TOTAL	42919	MEAN	118	MAX	489	MIN	11	AC-FT	85130

13285000 THIEF VALLEY RESERVOIR NEAR NORTH POWDER, OR

LOCATION.--Lat 45°00'45", long 117°46'50", in NE¼SW¼ sec.26, T.6 S., R.40 E., Baker County, Hydrologic Unit 17050203, Bureau of Reclamation land, on top of right end of dam on Powder River, 7.0 mi east of North Powder, and at mile 70.0.

DRAINAGE AREA.--910 mi^2, approximately.

PERIOD OF RECORD.--October 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark).

REMARKS.--Reservoir is formed by concrete dam. Storage began in February 1932. Capacity, 17,400 acre-ft between elevations 3,094.00 ft, minimum pool, and 3,133.00 ft, spillway crest. No dead storage. Water used for irrigation of lands of Lower Powder River Irrigation District. Elevations for Oct. 31 to Dec. 9, Dec. 15-22, Jan. 3-15, Feb. 11 to Mar. 6 furnished by U.S. Bureau of Reclamation.

COOPERATION.--Capacity table furnished by Oregon Water Resources Department.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 18,900 acre-ft July 2, 1982, elevation, 3,134.99 ft; minimum contents recorded, 2,250 acre-ft Oct. 1, 1981, elevation, 3,104.66 ft; minimum contents (estimated), 2,190 acre-ft Sept. 30, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 18,610 acre-ft Feb. 23, elevation, 3,134.61 ft; minimum contents, 4,970 acre-ft Sept. 23, 24, elevation, 3,111.92 ft.

Capacity table (elevation, in feet, and contents, in acre-feet)

3,110	4,170
3,125	11,880
3,130	15,210
3,135	18,910

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3114.45	3119.40	3131.43	---	3133.72	3133.98	3133.88	3133.60	3134.14	3132.13	3124.95	3117.69
2	3114.45	3119.82	3131.90	---	3133.82	3133.95	3133.84	3133.55	3134.05	3131.84	3124.62	3117.28
3	3114.44	3120.23	3132.23	3133.21	3133.85	3133.93	3133.86	3133.53	3134.02	3131.47	3124.26	3116.98
4	3114.35	3120.65	3132.63	3133.21	3133.85	3133.89	3133.86	3133.51	3134.19	3131.19	3123.90	3116.70
5	3114.34	3121.04	3132.97	3133.26	3133.65	3133.88	3133.89	3133.57	3133.99	3131.05	3123.56	3116.28
6	3114.36	3121.47	3133.26	3133.26	3133.58	3133.87	3133.89	3133.56	3133.96	3130.78	3123.11	3115.98
7	3114.44	3122.02	3133.33	3133.26	3133.57	3133.95	3133.89	3133.54	3133.91	3130.64	3122.98	3115.66
8	3114.43	3122.64	3133.34	3133.26	3133.42	3134.08	3133.89	3133.50	3133.82	3130.72	3122.81	3115.41
9	3114.41	3123.20	3133.34	3133.26	3133.41	3134.13	3133.89	3133.48	3133.79	3130.85	3122.73	3115.10
10	3114.44	3123.81	---	3133.26	3133.41	3134.13	3133.83	3133.44	3133.79	3130.95	3122.86	3114.84
11	3114.48	3124.22	---	3133.26	3133.41	3134.13	3133.83	3133.44	3133.77	3130.99	3122.90	3114.40
12	3114.53	3124.65	---	3133.27	3133.38	3133.94	3133.84	3133.46	3133.73	3130.89	3122.78	3114.23
13	3114.56	3124.99	---	3133.27	3133.41	3133.88	3133.82	3133.40	3133.65	3130.71	3122.65	3113.90
14	3114.61	3125.39	---	3133.27	3133.44	3133.88	3133.82	3133.43	3133.49	3130.49	3122.50	3113.49
15	3114.72	3125.84	3133.24	3133.27	3133.66	3133.82	3133.82	3133.44	3133.54	3130.21	3122.29	3113.19
16	3114.88	3126.35	3133.23	3133.27	3133.94	3133.82	3133.70	3133.43	3133.51	3129.89	3122.00	3112.91
17	3115.00	3126.84	3133.23	3133.32	3133.99	3133.81	3133.71	3133.42	3133.52	3129.63	3121.69	3112.71
18	3115.20	3127.28	---	3133.34	3133.96	3133.76	3133.67	3133.42	3133.43	3129.41	3121.33	3112.46
19	3115.39	3127.63	3133.23	3133.44	3133.85	3133.80	3133.67	3133.42	3133.44	3129.22	3121.01	3112.27
20	3115.58	3128.02	3133.22	3133.46	3133.68	3133.81	3133.63	3133.41	3133.44	3128.98	3120.67	3112.18
21	3115.74	3128.35	3133.22	3133.46	3133.64	3133.81	3133.64	3133.59	3133.40	3128.71	3120.39	3112.09
22	3115.93	3128.50	3133.22	3133.46	3133.82	3133.81	3133.68	3133.61	3133.39	3128.41	3120.20	3112.05
23	3116.21	3128.72	---	3133.34	3134.61	3133.82	3133.68	3133.61	3133.38	3128.05	3119.98	3111.92
24	3116.54	3129.13	---	3133.34	3134.47	3133.81	3133.68	3133.64	3133.28	3127.72	3119.81	3111.97
25	3116.83	3129.48	---	3133.32	3134.41	3133.81	3133.68	3133.68	3133.19	3127.35	3119.58	3111.96
26	3117.17	3129.79	---	3133.32	3134.27	3133.82	3133.67	3133.81	3133.08	3126.96	3119.36	3112.02
27	3117.47	3130.11	---	3133.32	3134.14	3133.81	3133.65	3133.99	3132.94	3126.59	3119.14	3112.00
28	3117.79	3130.32	---	3133.33	3134.05	3133.87	3133.66	3134.12	3132.75	3126.26	3118.86	3111.98
29	3118.18	3130.76	---	3133.44	---	3133.87	3133.58	3134.19	3132.54	3125.95	3118.62	3111.96
30	3118.61	3130.90	---	3133.59	---	3133.87	3133.58	3134.21	3132.36	3125.60	3118.29	3111.96
31	3118.99	---	3133.21	3133.68	---	3133.88	---	3134.19	---	3125.26	3117.91	---
MAX	3118.99	3130.90	---	---	3134.61	3134.13	3133.89	3134.21	3134.19	3132.13	3124.95	3117.69
MIN	3114.34	3119.40	---	---	3133.38	3133.76	3133.58	3133.40	3132.36	3125.26	3117.91	3111.92
(†)	8400	15860	17560	17910	18190	18060	17840	18290	16930	12040	7830	4990
(‡)	+2290	+7460	+1700	+350	+280	-130	-220	+450	-1360	-4890	-4210	-2840

CAL YR 1985 AC-FT‡ -90
WTR YR 1986 AC-FT‡ -1120

† Contents in acre-feet, at 2400, on last day of month.
‡ Change in contents, in acre-feet.

13285500 POWDER RIVER BELOW THIEF VALLEY RESERVOIR, NEAR NORTH POWDER, OR

LOCATION.--Lat 45°00'20", long 117°46'50", in NE¼NW¼ sec.35, T.6 S., R.40 E., Baker County, Hydrologic Unit 17050203, on right bank 0.6 mi downstream from Thief Valley Reservoir, 7.0 mi east of North Powder, and at mile 69.4.

DRAINAGE AREA.--910 mi^2, approximately.

PERIOD OF RECORD.--March 1909 to June 1912, July to September 1932, August 1978 to current year. Prior to July 1932, published as Powder River near North Powder.

REVISED RECORDS.--WSP 1317: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,080.166 ft above National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark). Prior to Aug. 18, 1978, nonrecording gage at site 0.5 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 10-28, Dec. 3. Records good except those for estimated periods, which are poor. Flow regulated by Phillips Lake since October 1967, usable capacity, 90,540 acre-ft, by Wolf Creek Reservoir since April 1975, usable capacity, 10,400 acre-ft, and by Thief Valley Reservoir since February 1932, usable capacity, 17,400 acre-ft and by Pilcher Creek Reservoir since April 1984, usable capacity 5,560 acre-ft. Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--8 years (water years 1979-86), 290 ft^3/s, 210,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 2,920 ft^3/s Mar. 21, 1910, gage height, 10.0 ft, site and datum then in use, from rating curve extended above 1,000 ft^3/s; maximum gage height, 10.05 ft July 2, 1982; no flow Aug. 9 to Sept. 10, 1910.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,670 ft^3/s Feb. 23, gage height, 9.06 ft; minimum discharge, 1.2 ft^3/s Nov. 15, Dec. 2, but may have been less during period of ice effect, Nov. 10-28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	4.2	2.2	60	436	725	595	284	912	155	124	116
2	63	4.3	1.9	65	496	669	595	259	791	153	124	116
3	63	4.9	2.1	60	574	626	579	241	711	153	122	115
4	63	5.7	2.3	68	559	583	579	243	955	152	122	114
5	63	6.0	2.4	71	468	564	562	260	808	151	121	113
6	63	6.0	78	68	375	558	549	300	676	151	120	112
7	63	6.4	131	79	296	604	551	297	691	122	69	111
8	63	6.3	146	74	235	783	562	257	579	60	43	110
9	63	6.1	141	63	213	890	572	225	501	60	43	109
10	63	5.0	123	73	211	844	572	215	464	60	43	108
11	63	4.1	110	67	216	745	505	201	451	60	97	107
12	63	3.6	100	88	194	683	575	195	414	82	121	106
13	63	3.3	103	89	199	650	553	198	342	116	121	105
14	63	3.1	102	81	205	617	507	168	264	116	120	104
15	49	3.3	101	94	272	561	421	168	244	124	120	103
16	36	3.6	97	93	575	565	406	176	261	136	120	103
17	37	3.3	95	106	719	548	427	162	244	135	119	102
18	37	3.0	92	136	662	494	400	145	213	124	121	101
19	37	3.1	89	178	607	509	365	130	208	103	125	100
20	37	3.2	86	228	478	509	333	143	212	110	124	100
21	37	2.8	83	203	397	526	307	253	179	116	124	100
22	38	2.6	78	180	462	527	358	339	141	119	123	100
23	38	2.4	75	151	1320	528	407	328	116	128	122	99
24	38	2.3	74	147	1470	528	394	325	131	128	122	100
25	38	2.4	73	145	1430	523	398	338	112	128	120	100
26	38	2.7	70	133	1160	506	384	416	118	128	120	100
27	39	2.6	67	127	973	497	378	604	159	126	120	100
28	20	2.8	64	132	819	531	373	813	158	126	119	100
29	4.4	3.0	62	166	---	553	348	915	155	126	118	100
30	3.8	2.6	60	263	---	596	304	941	155	125	118	100
31	3.8	---	59	354	---	586	---	947	---	124	117	---
TOTAL	1413.0	114.7	2369.9	3842	16021	18628	13859	10486	11365	3697	3442	3154
MEAN	45.6	3.82	76.4	124	572	601	462	338	379	119	111	105
MAX	63	6.4	146	354	1470	890	595	947	955	155	125	116
MIN	3.8	2.3	1.9	60	194	494	304	130	112	60	43	99
AC-FT	2800	228	4700	7620	31780	36950	27490	20800	22540	7330	6830	6260

CAL YR 1985	TOTAL	79914.6	MEAN	219	MAX	1230	MIN	1.9	AC-FT	158500
WTR YR 1986	TOTAL	88391.6	MEAN	242	MAX	1470	MIN	1.9	AC-FT	175300

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 mi^2, approximately.

PERIOD OF RECORD.--October 1957 to current year.

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

REMARKS.--Estimated daily discharges: Nov. 11 to Feb. 3. Records good except for period of ice effect Nov. 11 to Feb. 3, Feb. 23, which are poor. Flow regulated by Phillips Lake since October 1967, usable capacity, 90,540 acre-ft, Wolf Creek Reservoir since April 1975, usable capacity, 10, 400 acre-ft, Thief Valley Reservoir since February 1932, usable capacity, 17,400 acre-ft, and Pilcher Creek Reservoir since April 1984, usable capacity, 5,560 acre-ft. Diversions for irrigation upstream and downstream from station.

AVERAGE DISCHARGE.--29 years, 284 ft^3/s, 205,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,090 ft^3/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 ft^3/s Aug. 11, 12, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,880 ft^3/s Feb. 23, gage height, 7.24 ft, from floodmark, and from ice jam breaking loose upstream; maximum gage height, 8.3 ft date unknown (backwater from ice jam); minimum, 13 ft^3/s July 30, 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	97	48	52	84	600	1270	870	293	854	73	39	71
2	98	49	56	90	700	1180	852	270	820	65	77	75
3	102	49	54	86	820	1110	805	253	723	53	68	67
4	97	49	52	94	876	1040	792	244	711	62	60	64
5	95	53	50	98	791	983	776	250	939	72	59	72
6	97	56	54	100	629	954	753	277	747	82	47	69
7	101	60	88	120	500	1080	749	296	750	85	44	69
8	98	71	165	110	399	1410	756	264	684	83	55	72
9	98	77	170	96	321	1470	774	228	565	57	44	79
10	99	71	160	100	298	1410	777	205	486	58	32	76
11	102	56	140	110	292	1300	750	192	480	63	33	78
12	104	50	120	120	286	1150	702	183	450	50	30	76
13	101	48	125	125	260	1070	730	156	385	44	35	88
14	101	50	125	120	265	1010	679	159	307	45	41	87
15	102	52	120	125	435	926	592	141	231	49	35	95
16	97	54	120	130	734	900	529	132	202	41	37	107
17	78	52	115	140	1020	870	526	134	204	51	49	118
18	76	50	115	180	1130	790	530	121	186	60	54	118
19	76	47	110	250	1060	744	482	115	159	58	44	107
20	78	50	105	310	815	748	444	99	160	47	43	126
21	78	47	100	280	668	764	415	100	150	42	48	127
22	78	44	98	250	753	778	454	211	123	46	59	124
23	81	41	94	230	1700	777	540	299	92	46	68	122
24	84	42	92	210	2400	790	518	267	66	27	60	128
25	82	50	90	200	2060	781	451	256	51	37	55	164
26	81	47	86	190	1960	769	443	265	56	27	58	153
27	80	44	82	180	1670	751	416	357	39	42	61	141
28	80	43	80	190	1440	775	415	554	47	43	64	133
29	80	42	79	230	---	841	397	760	65	26	62	130
30	59	45	78	350	---	896	350	846	70	17	65	148
31	49	---	79	490	---	909	---	854	---	32	66	---
TOTAL	2729	1537	3054	5388	24882	30246	18267	8781	10802	1583	1592	3084
MEAN	88.0	51.2	98.5	174	889	976	609	283	360	51.1	51.4	103
MAX	104	77	170	490	2400	1470	870	854	939	85	77	164
MIN	49	41	50	84	260	744	350	99	39	17	30	64
AC-FT	5410	3050	6060	10690	49350	59990	36230	17420	21430	3140	3160	6120

CAL YR 1985	TOTAL	103981	MEAN	285	MAX	1570	MIN	18	AC-FT	206200
WTR YR 1986	TOTAL	111945	MEAN	307	MAX	2400	MIN	17	AC-FT	222000

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, Wallowa-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 mi^2.

PERIOD OF RECORD.--October 1957 to current year.

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

REMARKS.--Estimated daily discharges: Nov. 20 to Dec. 8, Dec. 10 to Jan. 23, Jan. 26, 27. Records fair except those for Nov. 20 to Jan. 31, which are poor. No regulation. Some diversions upstream from 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.--29 years, 328 ft^3/s, 237,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,310 ft^3/s July 12, 1975, gage height, 5.06 ft, from rating curve extended above 2,500 ft^3/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 ft^3/s Nov. 28, 1976.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 7	1800	1,710	3.26	May 31	2100	*2,640	*3.97

Minimum discharge, 76 ft^3/s Jan. 25, but may have been less during period of estimated daily discharges.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	91	122	110	110	150	414	531	469	2230	393	156	99
2	91	131	130	105	153	454	483	518	1990	387	152	97
3	89	131	120	110	148	449	456	613	1860	381	149	95
4	88	131	115	115	136	438	453	606	2060	372	144	93
5	89	142	110	110	131	446	462	552	1890	345	140	91
6	89	138	110	100	119	460	498	536	1480	297	143	90
7	98	171	110	96	104	1070	563	499	1220	274	142	90
8	92	157	105	100	98	1110	654	476	1060	262	140	92
9	87	139	94	105	125	820	731	469	987	267	136	91
10	91	134	88	110	128	704	738	460	980	261	133	89
11	93	129	82	100	115	621	709	448	1060	266	131	88
12	97	112	88	96	105	561	644	428	1100	252	130	87
13	95	114	92	100	104	495	573	437	1010	238	129	89
14	94	129	98	105	105	447	519	450	971	228	127	89
15	93	147	96	105	112	404	494	441	918	214	124	88
16	92	146	100	110	118	384	480	442	843	216	121	91
17	91	120	100	120	123	353	446	490	882	207	121	114
18	91	115	105	115	139	330	423	600	841	193	118	118
19	90	104	100	125	136	317	414	777	700	184	116	110
20	89	110	100	135	126	323	485	1090	626	181	114	121
21	97	100	96	130	123	341	693	1350	580	179	123	113
22	108	98	100	125	138	335	1140	956	560	175	117	104
23	112	82	96	110	296	331	975	802	568	171	111	100
24	118	84	100	92	342	360	806	752	603	166	106	126
25	143	110	98	87	417	358	727	897	636	180	103	138
26	143	100	98	84	445	356	643	1300	604	180	100	124
27	137	96	96	94	400	382	614	1810	550	176	98	121
28	145	90	94	97	376	460	560	2090	522	171	96	112
29	130	88	98	110	---	568	519	2160	461	167	103	113
30	126	96	94	125	---	623	486	2260	416	164	102	121
31	121	---	100	144	---	573	---	2330	---	160	100	---
TOTAL	3210	3566	3123	3370	5012	15287	17919	27508	30208	7307	3825	3094
MEAN	104	119	101	109	179	493	597	887	1007	236	123	103
MAX	145	171	130	144	445	1110	1140	2330	2230	393	156	138
MIN	87	82	82	84	98	317	414	428	416	160	96	87
AC-FT	6370	7070	6190	6680	9940	30320	35540	54560	59920	14490	7590	6140

CAL YR 1985	TOTAL	95095	MEAN	261	MAX	1910	MIN	54	AC-FT	188600
WTR YR 1986	TOTAL	123429	MEAN	338	MAX	2330	MIN	82	AC-FT	244800

13290190 PINE CREEK NEAR OXBOW, OR

LOCATION.--Lat 44°57'13", long 116°52'21", in NE¼SW¼ sec.17, T.7 S., R.48 E., Baker County, Hydrologic Unit 17050201, 1.8 mi south of Oxbow, and at mile 1.9.

DRAINAGE AREA.--230 mi^2, approximately.

PERIOD OF RECORD.--November 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,850.48 ft above National Geodetic Vertical Datum of 1929 (levels by Idaho Power Co.). Prior to Aug. 24, 1967, nonrecording gage at site 1.7 mi downstream at different datum.

REMARKS.--Estimated daily discharges: Dec. 18 to Jan. 18. Records good. Diversions upstream from station for irrigation of about 19,000 acres (1966 determination).

AVERAGE DISCHARGE.--19 years, 388 ft^3/s, 281,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,110 ft^3/s Feb. 21, 1968, gage height, 9.82 ft; minimum discharge, 10 ft^3/s Aug. 17-24, 1977, gage height, 2.12 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,460 ft^3/s Feb. 23, gage height, 8.74 ft; minimum discharge, 29 ft^3/s Aug. 28, 29, gage height, 2.46 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	120	128	110	495	1360	789	514	1910	163	42	39
2	66	124	132	107	575	1410	688	534	1640	141	41	43
3	64	125	156	114	614	1350	618	590	1430	127	41	38
4	62	121	173	105	578	1190	603	680	1370	116	41	34
5	62	131	165	108	554	1110	595	633	1380	116	40	33
6	62	127	162	112	489	1100	623	648	989	116	40	32
7	74	151	165	108	418	2330	679	598	875	114	40	32
8	74	188	179	108	362	3350	754	586	765	110	40	38
9	70	162	168	108	315	2470	869	573	687	104	38	41
10	73	160	144	111	294	1950	848	568	654	102	37	42
11	74	157	104	109	276	1590	792	530	637	102	36	41
12	75	146	120	106	257	1460	719	491	623	100	36	42
13	73	136	129	104	246	1220	632	474	597	95	36	48
14	73	130	131	106	244	1060	565	474	559	88	36	50
15	73	139	124	108	345	886	519	436	546	84	36	52
16	73	145	122	117	1170	855	520	404	498	82	36	56
17	72	141	122	160	1660	754	506	394	453	84	36	62
18	70	139	122	149	1970	652	479	433	425	84	36	84
19	69	115	120	158	1320	598	451	502	391	82	36	80
20	68	140	118	164	873	578	452	616	348	78	35	115
21	72	139	112	152	724	601	529	1030	303	72	36	114
22	110	137	110	151	1320	605	1050	854	269	65	38	93
23	156	94	112	153	3450	587	1140	668	247	61	36	81
24	135	131	108	147	2940	631	894	578	234	56	34	109
25	148	171	106	143	2290	649	780	605	220	52	32	115
26	162	148	100	138	2140	614	674	787	211	50	32	125
27	152	137	95	143	1780	627	645	1140	202	48	31	113
28	145	149	93	149	1490	724	632	1540	195	47	30	101
29	136	145	94	167	---	889	590	1700	186	45	31	94
30	130	133	89	236	---	989	540	1970	176	44	32	102
31	123	---	90	353	---	893	---	1990	---	43	36	---
TOTAL	2862	4181	3893	4304	29189	35082	20175	23540	19020	2671	1127	2049
MEAN	92.3	139	126	139	1042	1132	672	759	634	86.2	36.4	68.3
MAX	162	188	179	353	3450	3350	1140	1990	1910	163	42	125
MIN	62	94	89	104	244	578	451	394	176	43	30	32
AC-FT	5680	8290	7720	8540	57900	69590	40020	46690	37730	5300	2240	4060

CAL YR 1985 TOTAL 104430 MEAN 286 MAX 1410 MIN 29 AC-FT 207100
WTR YR 1986 TOTAL 148093 MEAN 406 MAX 3450 MIN 30 AC-FT 293700

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 current year.

REVISED RECORDS.--WSP 833: 1938. WSP 1397: 1929, 1932(M), 1949. WSP 1737: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,941.14 ft above 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.--Estimated daily discharges: Nov. 25, 27-30, Dec. 11-15, 21-31, Jan. 1-3. Records excellent except for periods with ice effect Nov. 25, 27-30, Dec. 11-15, 21-31, Jan. 1-3, which are poor. No regulation. Diversions for irrigation upstream from station. Water is diverted from Big Sheep Creek and tributaries upstream from station for irrigation in Wallowa River basin.

AVERAGE DISCHARGE.--58 years, 522 ft³/s, 378,200 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 discharge observed, 16 ft³/s Nov. 22, 1931, result of freezeup; minimum daily, 25 ft³/s Nov. 22, 23, 1931.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Feb. 24	1730	1,890	4.37	May 21	1100	1,930	4.41
Mar. 7	2400	2,490	4.88	June 1	0430	*2,840	*5.17
Apr. 22	2400	1,750	4.25				

Minimum daily discharge, 70 ft³/s Dec. 11, but may have been less during period of ice effect Dec. 11-15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	157	188	174	190	439	990	1050	855	2590	540	208	154
2	156	185	200	180	498	1030	936	912	2380	517	204	154
3	152	187	264	200	506	957	839	1080	2210	510	203	143
4	148	186	198	191	445	864	806	1260	2340	526	200	138
5	148	208	200	185	406	839	809	1210	2510	514	192	135
6	149	193	197	178	360	853	831	1210	2130	448	187	135
7	177	206	196	159	315	1360	904	1170	1800	411	185	135
8	166	225	198	158	269	2080	1020	1260	1570	396	183	140
9	153	213	182	171	239	1590	1180	1290	1430	402	177	149
10	153	213	153	180	262	1260	1170	1270	1370	384	174	143
11	156	212	70	161	287	1140	1100	1180	1380	390	172	138
12	157	201	78	153	263	1100	1020	1090	1410	370	165	135
13	153	160	100	162	253	1040	914	1060	1350	351	161	139
14	149	152	120	161	248	959	823	1030	1310	336	157	151
15	148	196	150	166	273	878	772	966	1320	323	154	153
16	149	238	175	177	346	834	794	907	1170	347	155	173
17	150	226	183	214	482	788	768	881	1190	367	156	178
18	148	208	216	207	515	734	723	927	1170	318	151	204
19	146	146	175	232	493	708	699	1040	1020	299	147	195
20	146	179	161	255	443	717	710	1300	911	289	144	247
21	150	184	150	251	409	775	864	1780	838	282	161	241
22	183	161	160	243	417	798	1490	1550	793	276	166	201
23	185	133	170	249	852	775	1610	1360	764	268	156	187
24	181	126	170	234	1330	841	1400	1260	761	259	151	206
25	197	150	160	205	1480	859	1260	1250	781	251	146	256
26	247	175	150	197	1490	815	1110	1470	759	246	141	219
27	222	160	145	208	1230	798	1020	1850	707	242	138	245
28	213	150	150	217	1050	917	976	2220	692	236	135	233
29	203	140	165	227	---	1110	939	2420	638	227	133	231
30	194	160	160	315	---	1220	880	2550	588	222	138	228
31	189	---	165	371	---	1160	---	2600	---	215	159	---
TOTAL	5225	5461	5135	6397	15600	30789	29417	42208	39882	10762	5099	5386
MEAN	169	182	166	206	557	993	981	1362	1329	347	164	180
MAX	247	238	264	371	1490	2080	1610	2600	2590	540	208	256
MIN	146	126	70	153	239	708	699	855	588	215	133	135
AC-FT	10360	10830	10190	12690	30940	61070	58350	83720	79110	21350	10110	10680

CAL YR 1985	TOTAL	159982	MEAN	438	MAX	2150	MIN	70	AC-FT	317300
WTR YR 1986	TOTAL	201361	MEAN	552	MAX	2600	MIN	70	AC-FT	399400

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 Fivepoint Creek, and at mile 164.0.

DRAINAGE AREA.--678 mi^2.

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

REVISED RECORDS.--WSP 768: 1933. WSP 1397: 1904-11, 1913, 1915, 1919-20, 1922-23, 1926, 1929-31, 1936-37, 1939, 1942. WSP 1737: Drainage area. WRD Oreg. 1974: 1973(M).

GAGE.--Water-stage recorder. Datum of gage is 2,826.25 ft above 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.--Estimated daily discharges: Nov. 11 to Feb. 17. Records good except for period of ice effect Nov. 11 to Feb. 17, which are poor. Since 1915, slight regulation by city of La Grande reservoir on Beaver Creek, capacity, about 900 acre-ft. Diversions for irrigation upstream from station. Since 1909, city of La Grande has diverted about 3 ft^3/s from Beaver Creek upstream from station for domestic water supply.

AVERAGE DISCHARGE.--78 years, 391 ft^3/s, 283,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,100 ft^3/s Jan. 30, 1965, gage height, 11.44 ft, site and datum then in use, from rating curve extended above 7,200 ft^3/s; minimum discharge, 3.9 ft^3/s Aug. 26, 1940.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,100 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 23	1400	*7,830	*10.51	Mar. 7	2330	3,390	7.55

Minimum discharge, 22 ft^3/s Aug. 20, 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	58	50	62	320	2680	1230	608	573	86	33	29
2	40	59	70	68	350	2570	1090	596	522	79	31	28
3	39	65	100	70	370	2230	951	652	494	77	31	26
4	38	64	86	76	330	2000	872	670	501	82	30	26
5	37	65	88	72	300	2020	814	639	420	107	29	24
6	38	62	84	70	260	2000	784	695	378	101	27	24
7	48	96	78	70	220	2690	777	713	393	83	26	24
8	61	203	74	74	190	3040	800	713	334	75	26	24
9	45	149	68	76	170	2990	852	711	300	76	26	27
10	45	124	64	80	155	2490	883	702	274	73	25	28
11	49	80	50	81	160	2100	843	667	252	83	24	28
12	56	60	45	80	150	1840	820	620	231	77	24	27
13	54	50	48	79	145	1600	760	595	212	66	25	27
14	48	43	56	80	140	1400	678	586	199	61	25	27
15	47	50	55	84	170	1210	636	558	209	57	24	30
16	48	60	54	88	250	1110	656	528	183	58	24	33
17	50	70	56	95	1300	998	621	517	167	66	23	40
18	49	62	56	120	1650	890	591	551	157	62	23	39
19	46	56	54	170	1170	857	550	607	157	54	23	44
20	45	52	52	165	879	873	545	687	144	50	22	50
21	46	48	56	150	765	965	613	843	135	46	22	52
22	52	44	54	130	1850	966	858	729	127	44	23	48
23	65	40	52	125	6930	916	887	639	119	42	28	43
24	76	36	50	120	5640	1130	794	587	110	40	28	47
25	79	50	50	115	4290	1130	742	596	104	39	26	80
26	82	60	48	110	3500	1070	676	654	98	38	24	67
27	73	76	52	110	3010	1140	654	716	96	37	24	60
28	66	64	54	110	2690	1270	695	753	95	36	23	57
29	62	56	56	130	---	1420	657	723	106	35	23	61
30	56	52	60	230	---	1480	627	679	98	34	24	79
31	56	---	61	290	---	1380	---	632	---	34	28	---
TOTAL	1635	2054	1881	3380	37354	50455	22956	20166	7188	1898	794	1199
MEAN	52.7	68.5	60.7	109	1334	1628	765	651	240	61.2	25.6	40.0
MAX	82	203	100	290	6930	3040	1230	843	573	107	33	80
MIN	37	36	45	62	140	857	545	517	95	34	22	24
AC-FT	3240	4070	3730	6700	74090	100100	45530	40000	14260	3760	1570	2380

CAL YR 1985	TOTAL	142073	MEAN	389	MAX	3620	MIN	29	AC-FT	281800
WTR YR 1986	TOTAL	150960	MEAN	414	MAX	6930	MIN	22	AC-FT	299400

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 mi^2.

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 current year. Monthly discharge only for some periods, published in WSP 1317.

REVISED RECORDS.--WSP 1397: 1912-13, 1919, 1926, 1928-33, 1937, 1939, 1940(M), 1941-43, 1950.

GAGE.--Water-stage recorder. Datum of gage is 3,081.76 ft above 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.--Estimated daily discharges: Nov. 11 to Dec. 31, Jan. 1-9, 16-18, 25-27, Feb. 8-12. Records good except for estimated daily discharges, which are poor. No regulation. Several small diversions for irrigation upstream from 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.--63 years (water years 1912, 1919, 1926-86), 120 ft^3/s, 86,940 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,740 ft^3/s May 27, 1948, gage height, 4.57 ft; minimum discharge, 6.5 ft^3/s Feb. 4, 1955, result of freezeup; minimum daily, 8 ft^3/s Nov. 7, 1925.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 7	1900	549	2.72	May 31	2030	*707	*3.06

Minimum discharge, 18 ft^3/s Oct. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	42	41	62	140	311	289	216	617	81	37	27
2	27	49	60	52	146	318	260	249	560	77	36	27
3	26	50	78	70	133	301	237	280	509	77	36	26
4	26	51	70	60	114	285	226	294	495	86	35	26
5	26	57	60	56	100	284	225	278	449	94	34	24
6	27	55	52	70	84	292	237	276	390	77	34	24
7	37	86	54	64	71	421	256	260	341	70	34	24
8	30	82	62	76	56	488	289	248	301	68	33	25
9	25	69	44	95	48	418	331	242	278	68	32	26
10	30	62	35	107	52	368	343	235	268	68	31	26
11	30	50	30	88	56	322	323	219	267	73	32	26
12	30	43	26	76	52	299	295	206	263	63	32	26
13	28	40	30	74	49	268	269	212	245	60	32	27
14	28	42	38	70	50	248	239	210	234	58	31	27
15	29	50	39	70	58	227	221	202	225	55	30	28
16	29	55	42	80	60	216	209	199	201	58	30	30
17	28	52	41	90	65	198	199	214	192	58	30	31
18	27	45	40	100	76	183	184	245	183	53	29	34
19	27	40	39	116	76	176	177	289	163	50	28	32
20	27	48	39	92	72	174	198	360	149	48	28	36
21	35	47	40	46	68	185	258	434	138	46	38	33
22	39	41	41	44	93	184	381	364	128	46	33	30
23	45	37	43	43	292	181	347	319	121	45	31	28
24	52	36	44	39	375	190	315	300	117	44	30	45
25	63	38	43	38	393	185	296	334	115	43	28	46
26	59	54	42	36	381	184	264	417	108	43	27	40
27	58	48	41	37	340	202	258	534	101	42	27	39
28	59	45	40	40	311	253	250	607	99	40	27	43
29	48	43	42	56	---	305	239	626	96	40	27	45
30	44	40	42	91	---	333	223	649	87	39	27	57
31	41	---	50	122	---	310	---	655	---	38	28	---
TOTAL	1107	1497	1388	2160	3811	8309	7838	10173	7440	1808	967	958
MEAN	35.7	49.9	44.8	69.7	136	268	261	328	248	58.3	31.2	31.9
MAX	63	86	78	122	393	488	381	655	617	94	38	57
MIN	25	36	26	36	48	174	177	199	87	38	27	24
AC-FT	2200	2970	2750	4280	7560	16480	15550	20180	14760	3590	1920	1900

CAL YR 1985	TOTAL	38842	MEAN	106	MAX	562	MIN	19	AC-FT	77040
WTR YR 1986	TOTAL	47456	MEAN	130	MAX	655	MIN	24	AC-FT	94130

13324300 LOOKINGGLASS CREEK NEAR LOOKING GLASS, OR

LOCATION.--Lat 45°43'55", long 117°51'50", in NW¼NW¼ sec.19, T.3 N., R.40 E., Union County, Hydrologic Unit 17060104, on left bank at Oregon State Fish and Wildlife Service fish hatchery, 310 ft upstream from Jarboe Creek, 2.3 mi northwest of Looking Glass, and at mile 2.3.

DRAINAGE AREA.--78.3 mi^2.

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 2,530 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 22-25, 27-30, Dec. 1, 2, 11-15, 19-31, July 8, 13-15, 21, 22, 29. Records good except for periods of ice effect Nov. 22-25, 27-30, Dec. 1, 2, 11-15, 19-31, and no gage-height record July 8, 13-15, 21, 22, 29, and fragmentary record Feb. 23-25, Mar. 7, which are fair. Records include a diversion by the fish hatchery 0.3 mi upstream from station of up to 50 ft^3/s that is returned through the fish ladder to the gage pool.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,100 ft^3/s May 30, 1984, gage height, 6.52 ft; minimum discharge, 25 ft^3/s Oct. 11, 1983, result of regulation at fish hatchery upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 380 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 24	1400	547	5.68	Mar. 30	1630	397	5.36
Mar. 7	unknown	*941	*a6.24	Apr. 9	2100	412	5.37

Minimum discharge, 45 ft^3/s Aug. 13, but may have been lower during summer months when once-daily gage heights were used.

a From crest-stage gage.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	81	57	61	112	313	328	224	221	69	56	54
2	60	75	60	61	120	314	304	234	203	69	56	55
3	60	73	64	61	127	293	289	242	194	68	56	54
4	59	72	64	59	119	365	283	240	182	69	56	55
5	59	81	64	60	113	312	285	232	160	72	56	78
6	61	106	62	59	106	302	291	235	149	71	56	77
7	65	92	64	58	99	602	303	226	139	69	57	74
8	62	84	64	58	94	561	324	224	129	68	56	66
9	60	79	64	59	90	493	361	224	118	66	55	55
10	60	73	64	59	87	453	364	223	111	64	55	52
11	61	70	63	57	84	392	322	212	120	64	55	53
12	61	68	60	58	83	349	303	209	111	64	55	53
13	60	67	60	59	82	308	282	214	99	63	53	53
14	60	68	62	58	82	279	265	207	95	63	53	53
15	61	70	63	59	88	255	255	196	95	63	54	53
16	62	69	64	63	107	244	253	198	91	62	53	54
17	64	69	64	70	146	230	241	207	91	64	52	55
18	65	69	64	70	150	216	233	227	88	63	53	56
19	65	67	64	76	132	216	234	267	88	62	53	57
20	66	69	63	78	119	220	255	297	84	60	53	56
21	66	68	63	73	113	229	287	302	82	59	55	55
22	76	67	63	72	144	229	319	263	79	56	53	54
23	81	64	63	74	321	224	301	242	81	56	54	56
24	83	62	62	71	535	238	275	236	79	56	53	71
25	98	64	61	69	479	229	261	243	72	56	53	60
26	83	68	59	66	388	229	244	263	72	56	53	60
27	73	64	57	66	347	266	248	281	71	56	53	57
28	69	60	55	67	314	310	244	285	69	57	53	66
29	69	58	55	73	---	340	237	282	69	57	54	65
30	70	58	57	99	---	362	227	269	69	56	55	67
31	70	---	58	113	---	355	---	246	---	56	55	---
TOTAL	2069	2135	1907	2086	4781	9728	8418	7450	3311	1934	1684	1774
MEAN	66.7	71.2	61.5	67.3	171	314	281	240	110	62.4	54.3	59.1
MAX	98	106	64	113	535	602	364	302	221	72	57	78
MIN	59	58	55	57	82	216	227	196	69	56	52	52
AC-FT	4100	4230	3780	4140	9480	19300	16700	14780	6570	3840	3340	3520

CAL YR 1985	TOTAL	48124	MEAN	132	MAX	687	MIN	54	AC-FT	95450
WTR YR 1986	TOTAL	47277	MEAN	130	MAX	602	MIN	52	AC-FT	93770

13326000 WALLOWA LAKE NEAR JOSEPH, OR

LOCATION.--Lat 45°20'10", long 117°13'15", in NW¼ sec.5, T.3 S., R.45 E., Wallowa County, Hydrologic Unit 17060105, at spillway near right end of Wallowa Lake dam on Wallowa River, 1.3 mi southeast of Joseph, and at mile 50.2.

DRAINAGE AREA.--50.8 mi^2.

PERIOD OF RECORD.--November 1903 to July 1906 (gage height only), January 1912 to March 1914, May to September 1915 (gage heights and change in contents only), October 1925 to June 1926, December 1926 to current year. Monthend contents only for some periods, published in WSP 1317. November 1903 to March 1905 published as Wallowa River at Joseph. Change in contents for January 1912 to March 1914 and May to September 1915 published with records for Wallowa River at Joseph.

REVISED RECORDS.--WSP 1737: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,355.66 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1925, nonrecording gage at several sites within 0.5 mi of present site at different datums. Oct. 1, 1925, to June 30, 1926, Dec. 1, 1926, to May 18, 1961, nonrecording gage near left end of dam at same datum.

REMARKS.--Reservoir is formed by concrete dam. Capacity, 42,750 acre-ft between gage heights 0.0 (sill of outlet gates) and 26.8 ft, spillway crest. About 5,300 acre-ft dead storage above outlet gates, because channel is about 3.4 ft above outlet gates. Dead storage below outlet gates not known. Records are based on capacities above outlet gates.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 47,830 acre-ft June 5-7, 1957, gage height, 29.85 ft; minimum contents observed, 4,790 acre-ft Oct. 10, 1929, gage height, 3.10 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 44,960 acre-ft June 5, gage height, 28.13 ft; minimum contents, 13,740 acre-ft Sept. 18-20, gage height, 8.85 ft.

MONTHEND GAGE-HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Gage Height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	12.10	18,860	--
Oct. 31	12.88	20,100	+1,240
Nov. 30	13.39	20,910	+810
Dec. 31	13.61	21,260	+350
CAL YR 1985	--	--	-1,630
Jan. 31	13.95	21,800	+540
Feb. 28	14.95	23,400	+1,600
Mar. 31	17.46	27,430	+4,030
Apr. 30	21.18	33,480	+6,050
May 31	27.43	43,790	+10,310
June 30	a26.02	41,450	-2,340
July 31	18.75	29,520	-11,930
Aug. 31	10.38	16,150	-13,370
Sept.30	9.18	14,260	-1,890
WTR YR 1986	--	--	-4,600

a Interpolated.

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 mi^2.

PERIOD OF RECORD.--November 1903 to August 1907, June 1908 to March 1914, May to September 1915, December 1926 to current year. Monthly discharge only for some periods, published in WSP 1317. Published as "near Joseph" 1911.

REVISED RECORDS.--WSP 1397: 1906. WSP 1737: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,326.86 ft above 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.--No estimated daily discharges. Records excellent. Monthly discharge adjusted for storage in Wallowa Lake (see station 13326000) 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 ft^3/s from Wallowa Lake for municipal use.

AVERAGE DISCHARGE.--59 years (water years 1928-86), 135 ft^3/s, 36.02 in/yr, 97,810 acre-ft/yr, adjusted for storage and diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,550 ft^3/s June 10, 1969, gage height, 5.15 ft; no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 752 ft^3/s June 2, gage height, 4.48 ft; minimum discharge, 22 ft^3/s Oct. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	39	37	36	35	37	31	34	564	299	342	136
2	26	39	36	35	35	37	31	34	651	298	336	128
3	26	39	36	35	35	38	31	34	729	298	332	113
4	26	39	36	35	36	39	30	34	725	297	327	113
5	26	39	35	36	36	39	30	34	740	296	323	112
6	26	39	35	36	36	39	30	34	744	269	319	111
7	26	39	35	36	36	39	31	35	721	261	303	111
8	26	39	35	36	36	39	31	35	691	260	294	111
9	26	39	35	36	36	40	31	35	668	259	281	102
10	36	38	35	36	36	40	31	35	653	257	274	98
11	41	38	35	36	36	37	31	35	473	256	266	97
12	40	38	35	36	36	31	31	35	393	256	255	96
13	40	38	35	36	36	31	31	35	390	255	250	95
14	40	38	35	36	36	31	31	35	394	254	242	94
15	40	38	35	36	36	31	31	35	406	253	238	94
16	40	38	36	35	36	31	31	35	420	270	235	72
17	40	38	36	36	36	31	31	51	480	276	232	52
18	40	38	36	36	36	31	31	57	524	301	221	46
19	40	38	36	36	36	31	31	58	518	307	221	45
20	40	38	36	36	36	31	31	62	507	325	221	45
21	40	37	36	36	36	31	32	91	499	331	221	36
22	40	37	36	36	36	31	32	97	495	340	219	28
23	40	37	36	36	37	31	33	98	492	339	211	28
24	39	37	36	36	37	31	33	194	423	337	206	28
25	39	37	36	36	37	31	33	232	373	347	196	27
26	39	37	36	36	37	31	33	233	364	352	179	27
27	39	37	36	36	37	31	33	231	364	340	163	27
28	39	37	36	36	37	31	34	268	339	329	150	27
29	39	37	36	36	---	31	34	340	308	325	148	27
30	39	37	36	36	---	31	34	405	299	335	147	26
31	39	---	36	35	---	31	---	508	---	343	146	---
TOTAL	1103	1139	1106	1111	1011	1044	948	3479	15347	9265	7498	2152
MEAN	35.6	38.0	35.7	35.8	36.1	33.7	31.6	112	512	299	242	71.7
MAX	41	39	37	36	37	40	34	508	744	352	342	136
MIN	26	37	35	35	35	31	30	34	299	253	146	26
AC-FT	2190	2260	2190	2200	2010	2070	1880	6900	30440	18380	14870	4270
MEAN†	59.7	56.3	45.0	47.8	67.3	101	135	290	518	152	64.9	56.1
CFSM†	1.17	1.11	0.88	0.94	1.32	1.98	2.65	5.70	10.2	2.99	1.28	1.10
IN.†	1.35	1.23	1.02	1.08	1.38	2.29	2.95	6.57	11.36	3.43	1.47	1.23
AC-FT†	3670	3350	2770	2940	3740	6210	8010	17820	30830	9320	3990	3340

CAL YR 1985 TOTAL 39782 MEAN 109 MAX 454 MIN 23 AC-FT 78910 MEAN† 121 CFSM† 2.38 IN.† 32.19 AC-FT† 87360
WTR YR 1986 TOTAL 45203 MEAN 124 MAX 744 MIN 26 AC-FT 89660 MEAN† 133 CFSM† 2.61 IN.† 35.37 AC-FT† 95990

† Adjusted for change in contents of Wallowa Lake and diversion by Silver Lake ditch.

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 mi^2.

PERIOD OF RECORD.--August 1912 to March 1914, April to September 1915, July 1925 to current year. Monthly discharge only for some periods, published in WSP 1317.

REVISED RECORDS.--WSP 1397: 1913, 1942. WSP 1737: Drainage area.

GAGE.--Water-stage recorder. Elevation 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.--Estimated daily discharges: Dec. 15, 17-23, 25-31; Jan. 1-17; Feb. 8-13. Records excellent except for periods of ice effect Dec. 15, 17-23, 25-31; Jan. 1-17; Feb. 8-13, which are poor. Minam Lake Reservoir, capacity 440 acre-ft, has stored and diverted flow from Minam River since 1917 for irrigation in Lostine River basin. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--62 years (water years 1913, 1926-86), 196 ft^3/s, 142,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,550 ft^3/s June 16, 1974, gage height, 8.59 ft, present datum; minimum discharge, 7.5 ft^3/s Mar. 2, 1966, result of freezeup; minimum daily, 10 ft^3/s Nov. 28-30, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
May 31	2230	*2,130	*8.05	No other peak greater than base discharge.			

Minimum discharge, 23 ft^3/s Sept. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	66	39	42	56	210	165	181	1790	308	72	43
2	43	70	42	40	56	213	153	269	1590	314	71	42
3	43	69	46	43	55	197	144	377	1450	299	69	39
4	41	69	47	40	53	187	140	348	1380	284	69	37
5	39	76	49	37	52	183	139	298	1360	252	64	33
6	39	73	50	41	50	182	143	274	1050	214	61	27
7	48	84	49	39	43	310	158	247	835	192	60	26
8	43	79	49	42	42	338	184	228	693	188	57	26
9	40	71	47	44	40	274	212	215	690	201	56	28
10	44	68	42	43	39	234	222	208	716	206	54	28
11	47	64	44	44	40	208	217	195	799	243	54	29
12	45	58	44	42	41	190	204	180	858	208	53	29
13	41	53	46	40	42	173	187	184	811	186	58	31
14	41	51	41	36	43	160	172	175	861	173	59	32
15	42	54	40	35	50	149	163	166	823	160	57	34
16	42	57	39	34	58	141	158	162	751	155	56	36
17	41	54	38	34	63	131	148	176	784	144	55	35
18	41	50	37	35	58	122	139	232	741	128	53	35
19	41	43	35	35	52	117	133	364	565	120	52	35
20	42	49	34	36	48	113	153	566	471	124	50	42
21	45	43	33	35	46	112	227	710	437	127	64	41
22	48	42	34	35	65	108	467	503	427	124	57	38
23	51	38	35	36	163	104	429	407	448	118	53	37
24	55	31	36	36	251	112	346	376	506	110	51	43
25	89	33	36	33	244	106	301	513	562	106	48	46
26	85	36	35	36	226	103	264	872	504	101	47	42
27	81	37	34	37	198	111	244	1310	457	94	44	41
28	84	39	34	39	194	137	224	1620	425	86	44	39
29	74	39	35	43	---	165	208	1680	366	82	44	39
30	72	39	37	57	---	182	190	1860	327	79	44	44
31	68	---	39	55	---	174	---	1850	---	75	44	---
TOTAL	1599	1635	1246	1224	2368	5246	6234	16746	23477	5201	1720	1077
MEAN	51.6	54.5	40.2	39.5	84.6	169	208	540	783	168	55.5	35.9
MAX	89	84	50	57	251	338	467	1860	1790	314	72	46
MIN	39	31	33	33	39	103	133	162	327	75	44	26
AC-FT	3170	3240	2470	2430	4700	10410	12370	33220	46570	10320	3410	2140

CAL YR 1985	TOTAL	61912	MEAN	170	MAX	1390	MIN	23	AC-FT	122800
WTR YR 1986	TOTAL	67773	MEAN	186	MAX	1860	MIN	26	AC-FT	134400

13331500 MINAM RIVER AT MINAM, OR
(Hydrologic bench-mark station)

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 mi^2, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1912 to March 1914, September 1965 to current year. Monthly discharge only for some periods, published in WSP 1317.

GAGE.--Water-stage recorder. Datum of gage is 2,540.48 ft above National Geodetic Vertical Datum of 1929. June 1912 to March 1914, nonrecording gage at approximately same site at different datum.

REMARKS.--Estimated daily discharges: Dec. 3-10, 12-14, 16-31, Jan. 1-31, Feb. 1-14. Water-discharge records good except for period Dec. 3 to Feb. 14, which is poor. No regulation. Minam Lake, capacity 440 acre-ft, has stored and diverted flow from Minam River since 1917 for irrigation in Lostine River basin.

AVERAGE DISCHARGE.--22 years, 478 ft^3/s, 27.05 in/yr, 346,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,260 ft^3/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 ft^3/s Dec. 6, 1972, Jan. 10, 1973, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,450 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 1	2400	ice jam	*5.69	May 21	0800	1,760	3.31
Feb. 23	1630	2,690	4.11	May 31	2330	*4,240	5.23
Mar. 7	2200	1,570	3.13				

Minimum discharge, 26 ft^3/s Nov. 24, 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	145	92	90	350	967	651	547	3620	425	134	84
2	77	147	108	96	400	957	587	694	3250	403	130	81
3	76	162	130	105	420	852	530	919	2910	396	127	79
4	75	158	120	98	390	772	505	923	2810	392	124	77
5	74	177	115	92	350	763	494	852	2660	399	121	73
6	77	171	120	98	280	746	502	823	2140	342	118	71
7	93	219	120	92	210	1110	551	761	1770	292	115	70
8	88	261	115	90	185	1380	632	714	1470	278	113	73
9	76	225	105	96	175	1210	733	682	1380	280	110	73
10	80	202	92	105	170	1070	777	658	1380	274	107	72
11	88	186	57	98	160	944	747	606	1450	310	105	71
12	92	164	70	94	150	853	698	561	1520	282	103	69
13	85	153	82	92	150	757	634	577	1450	260	103	70
14	81	136	86	94	160	684	569	567	1410	243	101	72
15	84	148	81	98	181	616	534	536	1380	229	97	72
16	87	182	90	105	269	570	519	515	1230	223	95	80
17	88	167	95	130	538	516	481	544	1250	229	94	77
18	83	152	90	170	647	466	441	669	1220	209	91	83
19	82	121	86	230	467	432	416	882	999	196	88	85
20	82	125	84	240	325	412	432	1280	858	188	87	89
21	87	116	80	200	280	415	608	1640	771	185	96	102
22	125	108	76	165	654	404	1080	1360	725	182	110	88
23	131	76	80	170	2100	386	1020	1180	709	178	98	83
24	134	37	84	180	1990	423	895	1080	744	173	92	102
25	187	147	84	185	1570	404	837	1250	800	167	87	130
26	213	133	82	165	1300	391	742	1760	776	162	85	114
27	178	133	78	160	1060	423	709	2640	681	157	82	105
28	181	125	74	170	939	552	675	3240	641	152	80	104
29	164	106	78	250	---	686	628	3450	563	147	81	104
30	154	96	80	330	---	747	575	3750	478	143	81	128
31	147	---	84	360	---	701	---	3780	---	138	83	---
TOTAL	3346	4478	2818	4648	15870	21609	19202	39440	43045	7634	3138	2581
MEAN	108	149	90.9	150	567	697	640	1272	1435	246	101	86.0
MAX	213	261	130	360	2100	1380	1080	3780	3620	425	134	130
MIN	74	37	57	90	150	386	416	515	478	138	80	69
CFSM	.45	.62	.38	.62	2.36	2.90	2.67	5.30	5.98	1.02	.42	.36
IN.	.52	.69	.44	.72	2.46	3.35	2.98	6.11	6.67	1.18	.49	.40
AC-FT	6640	8880	5590	9220	31480	42860	38090	78230	85380	15140	6220	5120

CAL YR 1985	TOTAL	148705	MEAN	407	MAX	2510	MIN	35	CFSM	1.70	IN.	23.05	AC-FT	295000
WTR YR 1986	TOTAL	167809	MEAN	460	MAX	3780	MIN	37	CFSM	1.92	IN.	26.01	AC-FT	332800

13331500 MINAM RIVER AT MINAM, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1966 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1965 to September 1985.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS NONCARB DIS-SOLVED (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)
NOV											
14...	0845	136	59	--	0.0	13.1	64	K8	24	0	6.7
FEB											
05...	1027	351	54	--	2.0	12.6	K7	K5	22	0	5.8
JUN											
02...	1420	3120	19	--	9.0	10.2	K2	K6	8	0	2.4
AUG											
04...	1405	116	46	8.3	23.5	8.0	K4	K6	17	0	5.1

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WATER DISSOLV FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)
NOV										
14...	1.8	2.5	1.0	35	2.1	0.4	<0.1	0.04	<0.1	<0.2
FEB										
05...	1.9	2.5	1.2	32	5.1	3.5	<0.1	0.08	<0.1	0.6
JUN										
02...	0.5	1.0	0.7	14	1.5	0.9	<0.1	<0.01	<0.1	0.3
AUG										
04...	1.1	2.1	1.2	25	1.4	0.4	<0.1	<0.01	<0.1	0.4

DATE	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, TOTAL (MG/L AS P)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	TUR-BID-ITY (NTU)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV										
14...	0.02	<0.01	0.02	23	53	59	19	0.3	2	0.73
FEB										
05...	0.02	0.03	0.04	27	61	67	58	10	5	4.7
JUN										
02...	<0.01	0.01	0.06	11	27	26	227	7.5	82	691
AUG										
04...	<0.01	0.01	0.02	16	47	42	15	0.4	<1	--

K - Results based on colony count outside acceptable range (non-ideal colony count).

13331500 MINAM RIVER AT MINAM, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)
NOV 14...	100	<1	5	<0.5	1	3	<3	<1	96	1
FEB 05...	--	<1	8	<0.5	<1	<1	<3	<1	--	<1
JUN 02...	--	--	--	--	--	--	--	--	--	--
AUG 04...	--	--	--	--	--	--	--	--	--	--

DATE	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)
NOV 14...	<4	<1	<0.1	<10	1	<1	<1	24	<6	14
FEB 05...	<4	3	<0.1	<10	<1	<1	<1	27	<6	8
JUN 02...	--	--	--	--	--	--	--	--	--	--
AUG 04...	--	--	--	--	--	--	--	--	--	--

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 mi^2.

PERIOD OF RECORD.--October 1926 to current year.

REVISED RECORDS.--WSP 1093: 1928-29, 1932-33, 1936, 1938, 1939(M), 1943. WSP 1397: 1927. WSP 1447: 1927.

GAGE.--Water-stage recorder. Datum of gage is 2,281.87 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records excellent. Flow slightly regulated by Wallowa Lake (station 13326000) and small reservoirs. Diversions for irrigation upstream from 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.--60 years, 2,183 ft^3/s, 1,582,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,700 ft^3/s Jan. 30, 1965, gage height, 10.93 ft; minimum discharge, 179 ft^3/s Aug. 24, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 23	1630	*22,000	*a10.41	May 31	0330	9,490	6.26
Mar. 7	1900	13,300	a7.68				

Minimum discharge, 388 ft^3/s Aug. 10-13.

a From floodmark.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	585	814	812	607	2800	8910	4620	2800	8610	1310	502	466
2	587	830	801	613	3090	8560	4280	2890	7960	1230	481	449
3	579	860	908	686	3240	7850	3930	3470	7320	1220	473	442
4	567	840	796	640	2900	7310	3670	3660	6990	1220	465	425
5	566	914	755	612	2710	6960	3480	3500	6920	1370	451	427
6	570	900	755	632	2390	6690	3370	3470	6200	1260	429	412
7	615	1070	767	577	2020	9840	3360	3390	5190	1120	414	411
8	608	1320	771	605	1740	10800	3490	3250	4460	1010	409	435
9	584	1260	738	647	1490	10600	3740	3180	4080	1010	417	440
10	584	1150	706	666	1380	9340	3900	3130	3900	980	399	445
11	607	1070	570	659	1390	8420	3820	3000	3850	1100	404	448
12	630	919	561	641	1350	7690	3730	2830	3850	1080	414	465
13	620	794	587	644	1280	6910	3530	2760	3640	1010	406	474
14	617	793	675	657	1230	6210	3270	2700	3450	946	413	465
15	609	814	603	678	1500	5580	3060	2580	3640	883	411	499
16	618	881	574	712	3120	5150	2990	2470	3230	830	419	557
17	614	879	580	861	5450	4720	2860	2440	3240	841	421	534
18	598	855	553	1070	5550	4290	2700	2610	3180	792	430	528
19	594	753	547	1730	4470	3990	2570	3050	2830	749	423	541
20	594	780	539	1740	3420	3810	2530	3980	2450	707	412	574
21	606	748	521	1390	2960	3750	2800	5290	2200	702	418	611
22	707	718	518	1200	6260	3710	3900	4840	2100	682	482	575
23	803	631	530	1220	17000	3580	4200	4240	2050	650	467	545
24	793	522	537	1210	16400	3740	3910	3870	2060	632	499	602
25	900	676	529	1110	13000	3800	3690	4060	2090	607	486	679
26	1040	715	515	1030	11200	3700	3390	5150	2020	596	480	668
27	956	727	515	992	10100	3770	3240	6800	1810	583	463	672
28	948	762	507	993	9320	4140	3250	7970	1700	586	453	667
29	881	775	508	1150	---	4560	3080	8300	1580	576	450	658
30	840	804	543	1960	---	4860	2910	8840	1440	542	459	706
31	816	---	551	2510	---	4860	---	8880	---	530	471	---
TOTAL	21236	25574	19372	30442	138760	188100	103270	129400	114040	27354	13721	15820
MEAN	685	852	625	982	4956	6068	3442	4174	3801	882	443	527
MAX	1040	1320	908	2510	17000	10800	4620	8880	8610	1370	502	706
MIN	566	522	507	577	1230	3580	2530	2440	1440	530	399	411
AC-FT	42120	50730	38420	60380	275200	373100	204800	256700	226200	54260	27220	31380

CAL YR 1985	TOTAL	730256	MEAN	2001	MAX	9400	MIN	404	AC-FT	1448000
WTR YR 1986	TOTAL	827089	MEAN	2266	MAX	17000	MIN	399	AC-FT	1641000

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 mi^2.

PERIOD OF RECORD.--August 1944 to current year. Monthly discharge only August 1944, published in WSP 1317.

REVISED RECORDS.--WSP 1397: 1946(M), 1948-50.

GAGE.--Water-stage recorder. Datum of gage is 1,585.98 ft above 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.--Estimated daily discharges: Nov. 24 to Jan. 15. Records excellent except for estimated daily discharges, which are poor. Flow slightly regulated by Wallowa Lake (station 13326000) and small reservoirs. Diversions for irrigation upstream from 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.--42 years, 3,141 ft^3/s, 2,276,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,200 ft^3/s Dec. 23, 1964, gage height, 11.25 ft; minimum discharge, 344 ft^3/s Aug. 19-21, 23, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 9,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 23	2030	*28,500	*9.93	May 31	0530	10,300	6.60
Mar. 7	2300	18,800	8.35				

Minimum discharge, 568 ft^3/s Aug. 8, 10, 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	765	1050	850	670	3570	12000	6590	3700	9390	1610	690	675
2	765	1070	870	700	3930	11800	6060	3660	8780	1510	665	664
3	760	1120	960	740	4250	10800	5560	4400	8100	1480	657	641
4	743	1100	1050	780	3890	9980	5240	4660	7700	1480	645	632
5	739	1130	950	770	3610	9740	5010	4520	7570	1690	633	616
6	740	1150	920	750	3250	9330	4890	4470	6960	1570	609	623
7	784	1250	910	720	2780	13100	4850	4390	5990	1410	601	613
8	809	1620	900	680	2400	16000	4990	4210	5230	1310	591	622
9	772	1580	890	700	2090	14500	5270	4130	4810	1270	595	642
10	756	1470	850	720	1900	12700	5430	4080	4560	1260	584	652
11	781	1370	780	720	1840	11300	5270	3880	4480	1330	576	651
12	817	1240	700	740	1810	10300	5160	3690	4450	1360	600	658
13	812	1090	650	740	1720	9360	4880	3580	4230	1260	600	677
14	797	1020	710	750	1670	8440	4520	3530	4010	1200	603	687
15	793	1040	750	740	1740	7600	4230	3380	4250	1130	600	695
16	795	1120	710	723	2960	7000	4160	3220	3810	1100	602	751
17	802	1120	670	968	6950	6460	3970	3170	3790	1120	604	766
18	786	1100	650	1110	7770	5890	3760	3350	3710	1060	609	764
19	770	1040	640	1930	6560	5510	3560	3800	3390	998	614	781
20	770	1030	620	2610	4860	5430	3520	4760	2960	948	598	799
21	772	1010	600	2290	3970	5470	3810	6190	2640	924	593	847
22	886	1020	600	1940	6480	5430	4940	6040	2530	918	643	833
23	1050	945	590	1950	19200	5220	5410	5330	2470	876	648	787
24	1050	890	600	2010	24400	5430	5100	4890	2470	847	680	869
25	1170	750	600	1810	19500	5480	4850	4940	2470	818	684	965
26	1360	850	600	1640	16300	5320	4480	5850	2430	805	676	964
27	1240	920	590	1570	14300	5490	4260	7540	2180	793	666	941
28	1190	860	590	1560	12700	6140	4320	8890	2050	793	647	943
29	1140	850	590	1670	---	6790	4070	9310	1930	779	648	932
30	1070	850	580	2190	---	7080	3840	9720	1760	738	659	981
31	1050	---	630	3210	---	7040	---	9700	---	718	671	---
TOTAL	27534	32655	22600	40101	186400	262130	142000	156980	131100	35105	19491	22671
MEAN	888	1089	729	1294	6657	8456	4733	5064	4370	1132	629	756
MAX	1360	1620	1050	3210	24400	16000	6590	9720	9390	1690	690	981
MIN	739	750	580	670	1670	5220	3520	3170	1760	718	576	613
AC-FT	54610	64770	44830	79540	369700	519900	281700	311400	260000	69630	38660	44970

CAL YR 1985	TOTAL	986492	MEAN	2703	MAX	13900	MIN	572	AC-FT	1957000
WTR YR 1986	TOTAL	1078767	MEAN	2956	MAX	24400	MIN	576	AC-FT	2140000

13353000 SNAKE RIVER BELOW ICE HARBOR DAM, WA

LOCATION.--Lat 46°14'53", long 118°52'43", in NE¼SE¼, sec.24, T.9 N., R.31 E., Walla Walla County, Hydrologic Unit 17060110, in powerhouse forebay pier P-1 on south side of Bay 1 at Ice Harbor Dam, 8.0 mi northeast of Burbank, and at mile 9.7.

DRAINAGE AREA.--108,500 mi^2, approximately.

PERIOD OF RECORD.--October 1907 to March 1917 (gage heights only October 1907 to August 1909), March 1962 to current year. Published as "at Burbank" prior to 1911 and as "near Burbank" 1912-17.

REVISED RECORDS.--WSP 1317: Drainage area.

GAGE.--Watt-hour meters on each turbine in Ice Harbor Dam powerhouse. Elevations are National Geodetic Vertical Datum of 1929. Oct. 2, 1907, to Mar. 31, 1917, nonrecording gage at site approximately 2 mi downstream at datum 300 ft higher. Mar. 23, 1962, to Sept. 30, 1968, water-stage recorder 1.0 mi downstream at National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records computed from power output, flow over spillway, flow through fish ladder, and lockage records at Ice Harbor Dam. Diversions upstream from station for irrigation of over 4,090,000 acres. Flow regulated by Lake Sacajawea and many upstream storage reservoirs and powerplants. Chemical analyses October 1965 to September 1969, October 1971 to September 1972. For records collected at site 7.5 mi downstream see station 13353200.

COOPERATION.--Records furnished by U.S. Corps of Engineers. Records not reviewed.

AVERAGE DISCHARGE.--31 years (water years 1910-16, 1963-86), 56,550 ft^3/s, 40,970,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 312,000 ft^3/s June 19, 1974; no flow momentarily Aug. 27, 1965 (result of testing at Ice Harbor Dam).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 30, 1948, reached an elevation of 361.9 ft at a site 0.7 mi downstream, from information by U.S. Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum hourly discharge, 230,000 ft^3/s June 1; maximum forebay elevation, 440.05 ft Mar. 28; minimum hourly discharge, 300 ft^3/s Dec. 15; minimum forebay elevation, 437.00 ft Feb. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31100	36000	32300	19900	54800	141000	104000	89200	212000	42500	29800	14900
2	27100	30700	48400	25700	42300	140000	112000	88000	209000	36200	17600	33800
3	25900	23700	38400	39900	57000	136000	119000	78200	204000	39700	18500	31800
4	27100	36100	42000	29900	51500	127000	112000	90400	205000	35500	19100	34000
5	23900	33700	35600	28000	48700	127000	100000	99700	190000	41900	20500	28300
6	14300	34600	43000	29300	43900	138000	103000	117000	180000	30100	15100	25600
7	34400	33800	26500	31400	42500	137000	103000	101000	178000	40800	16700	23900
8	27500	33600	18800	31100	41100	160000	94900	102000	155000	33600	23000	34400
9	28700	26700	43400	36600	37600	170000	96100	90200	151000	33800	14800	28000
10	22800	31000	34800	27500	48700	164000	101000	107000	140000	45200	12000	38200
11	28000	42600	43700	34800	40200	151000	110000	96000	121000	33900	18900	34600
12	24300	38400	40300	28000	36800	158000	102000	109000	114000	25600	19300	42700
13	16500	41600	39200	25100	48000	149000	99600	98200	115000	24100	16700	41300
14	22100	29600	21800	26600	37100	154000	100000	92400	123000	42400	28300	36500
15	30800	38400	8800	29700	33100	141000	94500	95600	105000	37500	17500	22900
16	28400	20500	42000	31700	37800	134000	86700	95300	106000	26000	14300	27900
17	31500	32600	24100	25500	62900	143000	93000	93100	105000	24000	12400	49800
18	32300	41800	37700	30700	81400	139000	96900	86000	96500	23800	17600	49100
19	26100	40300	33200	39800	80800	123000	79200	97900	96100	23500	20500	38400
20	26200	33100	35900	46100	82400	118000	89300	99900	75800	20600	20500	47500
21	38400	35400	37800	39900	79200	114000	93500	117000	78700	39500	17100	38400
22	33500	27700	29200	43200	80400	95300	78200	131000	64800	26300	23300	28800
23	24800	41200	30600	38600	81400	92500	109000	127000	64800	13800	20200	43100
24	25600	41400	36500	38900	165000	84500	120000	93300	63200	24500	21300	43000
25	30200	17600	21500	35500	163000	117000	107000	95300	62000	24800	27300	44800
26	33300	30000	22100	37200	155000	105000	105000	107000	55300	16500	28800	29700
27	29700	32800	34200	39700	150000	99000	93000	134000	64200	14800	21700	24700
28	37500	28700	34600	32600	156000	113000	95300	167000	43400	24000	14800	35900
29	33000	31200	26800	29500	---	108000	97000	184000	45500	19900	24900	44800
30	32800	40200	28100	37000	---	113000	85300	202000	47000	22700	14500	38600
31	31000	---	32700	50700	---	111000	---	214000	---	24700	14600	---
TOTAL	878800	1005000	1024000	1040100	2038600	4002300	2979500	3497700	3470300	912200	601600	1055400
MEAN	28350	33500	33030	33550	72810	129100	99320	112800	115700	29430	19410	35180
MAX	38400	42600	48400	50700	165000	170000	120000	214000	212000	45200	29800	49800
MIN	14300	17600	8800	19900	33100	84500	78200	78200	43400	13800	12000	14900
AC-FT	1743000	1993000	2031000	2063000	4044000	7939000	5910000	6938000	6883000	1809000	1193000	2093000

CAL YR 1985	TOTAL	16938900	MEAN	46410	MAX	132000	MIN	8800	AC-FT	33598000
WTR YR 1986	TOTAL	22505500	MEAN	61660	MAX	214000	MIN	8800	AC-FT	44640000

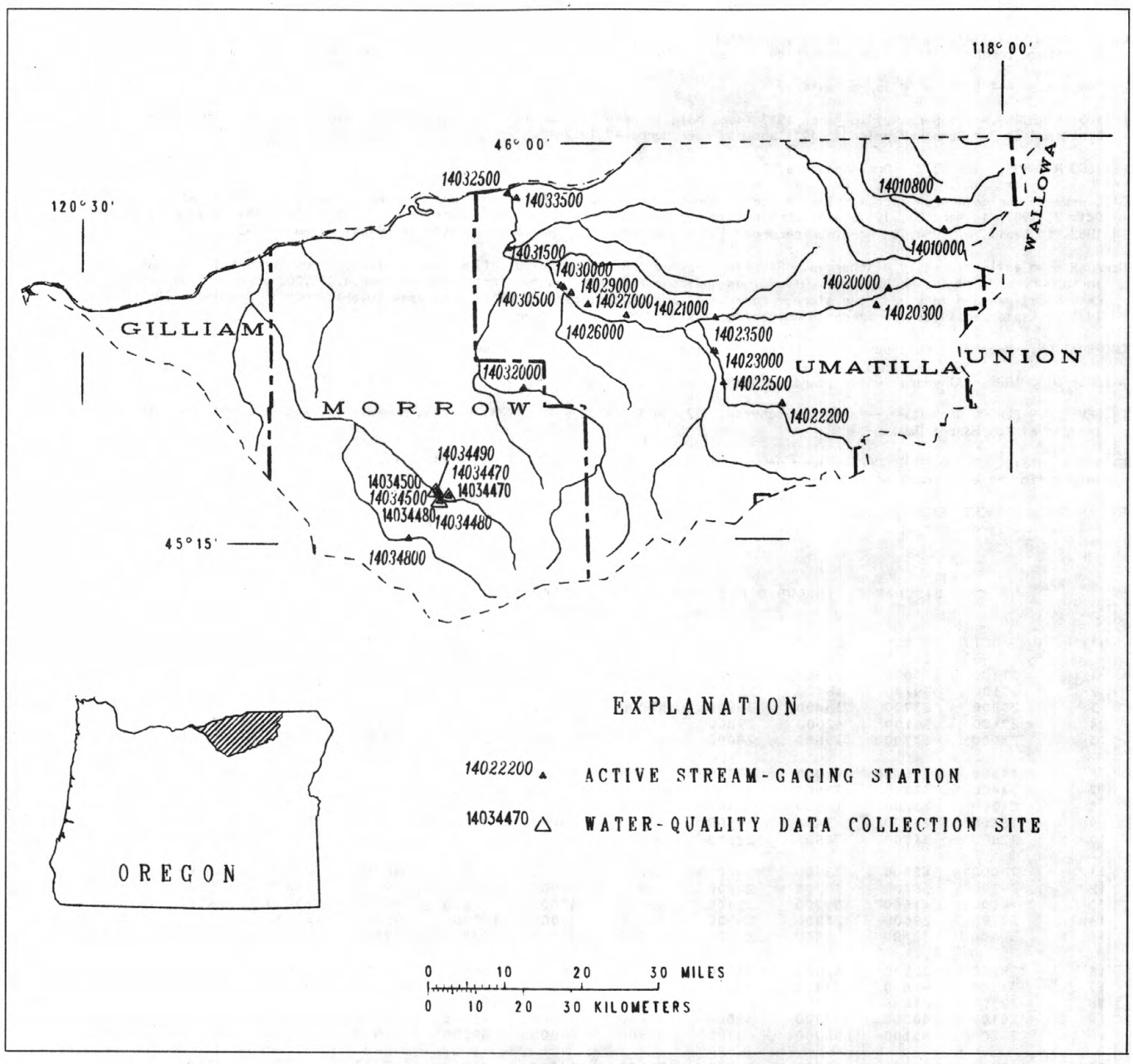

Figure 4.--Location of surface-water and water-quality stations in the Walla Walla River, Umatilla River, and Willow Creek basins.

WALLA WALLA RIVER BASIN

14010000 SOUTH FORK WALLA WALLA RIVER NEAR MILTON-FREEWATER, 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-Freewater, and at mile 59.1.

DRAINAGE AREA.--63 mi^2, approximately.

PERIOD OF RECORD.--February to October 1903, August 1906 to November 1917, May 1931 to current year. Monthly discharge only for some periods, published in WSP 1318. Published as "12 mi above Milton" 1903, as "above Pacific Power & Light Co.'s intake near Milton" 1907-10, and as "near Milton" 1911-17, 1931-85.

REVISED RECORDS.--WSP 964: Drainage area. WSP 1398: 1912, 1940, drainage area at former site.

GAGE.--Water-stage recorder. Elevation 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.--Estimated daily discharges: Oct. 21 to Dec. 5, Dec. 11-15, Sept. 22-30. Records good except those for period Oct. 1 to Feb. 22, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--65 years (water years 1908-17, 1932-86), 179 ft^3/s, 38.58 in/yr, 129,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,530 ft^3/s Jan. 29, 1965, gage height, 5.60 ft; minimum discharge, 72 ft^3/s Feb. 14, 1932.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage about 6 ft Mar. 31, 1931, present site and datum.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 23	1800	*1,740	*4.25	Mar. 7	1500	602	2.27

Minimum daily discharge, 105 ft^3/s Nov. 28 to Dec. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	109	125	105	117	295	412	271	173	222	124	113	110
2	109	125	105	119	287	391	246	181	210	123	113	110
3	109	125	110	119	294	364	232	186	198	123	112	110
4	109	135	120	119	248	350	227	184	192	138	111	109
5	109	150	135	119	207	342	225	177	183	132	111	109
6	115	175	143	119	178	340	224	180	176	124	111	109
7	130	200	145	119	166	492	228	171	170	121	110	109
8	121	300	143	119	150	490	239	174	164	121	110	109
9	120	250	135	122	142	452	242	180	160	121	110	109
10	122	200	128	128	137	423	227	187	156	125	110	109
11	125	180	123	130	133	378	216	178	151	124	110	108
12	126	150	121	133	158	358	208	175	150	121	110	108
13	124	140	114	137	178	332	200	183	147	120	110	109
14	122	130	111	140	175	300	188	178	148	120	110	109
15	122	120	111	142	186	272	191	177	146	119	110	110
16	124	130	109	164	239	257	194	177	143	121	109	110
17	122	145	109	206	356	237	189	187	139	127	109	110
18	119	135	109	168	372	225	179	204	138	121	108	112
19	119	125	110	174	317	223	179	220	136	118	108	112
20	119	120	111	170	256	225	191	230	135	117	108	112
21	130	120	111	147	238	239	221	249	132	117	109	111
22	150	110	111	139	333	230	246	225	131	116	108	113
23	165	110	111	148	1190	224	218	214	129	116	111	115
24	147	110	111	143	1120	248	200	211	128	115	109	125
25	137	110	111	137	703	233	194	226	127	115	108	120
26	130	110	111	133	563	231	180	248	126	115	108	120
27	130	110	114	134	472	254	193	259	126	115	108	117
28	125	105	116	136	427	284	191	259	126	115	108	117
29	125	105	116	149	---	296	179	257	126	115	109	130
30	125	105	116	266	---	311	172	250	124	114	110	140
31	125	---	116	303	---	294	---	237	---	113	111	---
TOTAL	3864	4255	3641	4599	9520	9707	6290	6337	4539	3726	3402	3401
MEAN	125	142	117	148	340	313	210	204	151	120	110	113
MAX	165	300	145	303	1190	492	271	259	222	138	113	140
MIN	109	105	105	117	133	223	172	171	124	113	108	108
CFSM	1.98	2.25	1.86	2.35	5.40	4.97	3.33	3.24	2.40	1.90	1.75	1.79
IN.	2.28	2.51	2.15	2.72	5.62	5.73	3.71	3.74	2.68	2.20	2.01	2.01
AC-FT	7660	8440	7220	9120	18880	19250	12480	12570	9000	7390	6750	6750

CAL YR 1985	TOTAL	65242	MEAN	179	MAX	602	MIN	82	CFSM	2.84	IN.	38.52	AC-FT	129400
WTR YR 1986	TOTAL	63281	MEAN	173	MAX	1190	MIN	105	CFSM	2.75	IN.	37.37	AC-FT	125500

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 mi^2.

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,940 ft, from topographic map.

REMARKS.--Estimated daily discharges: Oct. 30 to Nov. 25. Records fair. No regulation; one diversion upstream from station.

AVERAGE DISCHARGE.--17 years, 54.1 ft^3/s, 21.36 in/yr, 39,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,240 ft^3/s Feb. 23, 1986, gage height, 7.02 ft; minimum discharge, 3.3 ft^3/s Aug. 26-28, 1986.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 23	1230	*1,240	*7.02	No other peak greater than base discharge.			

Minimum discharge, 3.3 ft^3/s Aug. 26-28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	12	16	13	138	212	135	74	40	8.5	3.9	3.7
2	10	12	15	13	125	184	113	74	36	7.5	3.8	3.6
3	10	13	16	13	116	160	97	77	32	5.0	3.8	3.6
4	10	13	20	13	101	143	89	77	29	7.0	3.8	3.6
5	10	17	32	15	91	136	84	72	26	7.9	3.8	3.5
6	11	24	36	18	77	137	82	75	24	5.9	3.8	3.5
7	17	34	39	16	64	201	82	75	23	5.3	3.8	3.5
8	14	50	36	16	54	217	84	74	21	5.0	3.7	3.6
9	12	40	31	23	48	257	87	74	19	5.0	3.7	3.6
10	11	30	28	35	43	249	83	85	18	5.5	3.7	3.6
11	12	27	24	40	40	216	77	76	16	5.8	3.7	3.5
12	13	24	22	37	37	205	75	71	16	5.0	3.8	3.5
13	12	21	19	36	35	184	70	68	14	4.8	3.8	3.5
14	12	18	18	37	33	155	65	63	14	4.6	3.7	3.6
15	12	16	17	36	35	132	71	58	14	4.5	3.7	3.8
16	13	17	16	39	50	116	80	53	13	4.7	3.6	3.8
17	12	21	15	59	98	100	81	50	13	5.8	3.6	3.7
18	11	19	14	53	134	89	81	50	12	5.1	3.6	4.0
19	11	18	14	62	104	88	79	51	12	4.6	3.6	3.9
20	11	16	14	73	76	87	81	52	11	4.5	3.6	3.9
21	12	15	14	56	67	94	89	75	11	4.4	3.6	3.9
22	16	15	14	49	135	91	104	75	10	4.2	3.6	4.6
23	20	15	14	73	872	90	95	76	10	4.2	3.7	7.1
24	16	16	13	69	612	114	83	70	9.7	4.2	3.6	11
25	15	16	13	52	370	109	79	65	9.5	4.2	3.6	11
26	15	17	13	45	291	108	67	64	9.5	4.2	3.5	10
27	13	16	13	41	262	118	83	62	9.2	4.2	3.4	9.4
28	13	16	13	41	227	131	83	57	9.2	4.1	3.5	15
29	12	16	13	53	---	139	83	53	9.4	4.1	3.7	18
30	12	16	13	124	---	164	78	49	9.1	4.0	3.7	19
31	12	---	13	151	---	154	---	44	---	4.0	3.8	---
TOTAL	391	600	588	1401	4335	4580	2540	2039	499.6	157.8	114.2	182.0
MEAN	12.6	20.0	19.0	45.2	155	148	84.7	65.8	16.7	5.09	3.68	6.07
MAX	20	50	39	151	872	257	135	85	40	8.5	3.9	19
MIN	10	12	13	13	33	87	65	44	9.1	4.0	3.4	3.5
CFSM	.37	.58	.55	1.31	4.51	4.30	2.46	1.91	.49	.15	.11	.18
IN.	.42	.65	.64	1.52	4.69	4.95	2.75	2.20	.54	.17	.12	.20
AC-FT	776	1190	1170	2780	8600	9080	5040	4040	991	313	227	361

CAL YR 1985	TOTAL	15676.5	MEAN	42.9	MAX	339	MIN	7.5	CFSM	1.25	IN.	16.95	AC-FT	31090
WTR YR 1986	TOTAL	17427.6	MEAN	47.7	MAX	872	MIN	3.4	CFSM	1.39	IN.	18.85	AC-FT	34570

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 mi^2.

PERIOD OF RECORD.--April 1933 to current year.

REVISED RECORDS.--WSP 1935: 1946-48(M), 1950(M), 1953(M), 1956-59(M), drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,854.81 ft above National Geodetic Vertical Datum of 1929. Prior to June 27, 1939, at site 1 mi downstream at datum 43.94 ft lower.

REMARKS.--Estimated daily discharges: Oct. 7-9, Nov. 22 to Dec. 2, Dec. 8-11, 19-31, Jan. 1, Feb. 26 to Mar. 18. Records good except for estimated daily discharges, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--53 years, 228 ft^3/s, 23.64 in/yr, 165,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,930 ft^3/s Jan. 25, 1975, gage height, 9.18 ft, from rating curve extended above 3,500 ft^3/s; maximum gage height, 9.50 ft Jan. 29, 1965; minimum discharge, 16 ft^3/s Nov. 9, 1965, momentary regulation from unknown source.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,400 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 23	1300	*4,560	*8.10	Mar. 8	unknown	unknown	unknown

Minimum discharge, 40 ft^3/s several days in August and September.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	78	75	66	702	670	484	243	148	51	44	42
2	48	79	80	71	618	560	408	247	135	51	43	42
3	48	83	83	72	582	480	356	254	124	52	43	41
4	48	84	116	67	489	470	333	248	115	64	43	41
5	48	94	133	71	454	460	320	233	109	76	43	41
6	50	103	155	71	387	460	316	240	101	58	43	41
7	65	216	139	70	323	800	318	227	97	55	43	42
8	63	331	135	70	271	1100	331	221	91	53	42	42
9	60	238	130	86	234	1000	343	220	86	53	42	42
10	59	196	130	119	210	950	327	223	82	55	42	41
11	63	169	115	132	189	680	297	210	78	58	42	41
12	65	145	105	133	177	540	283	197	75	54	42	42
13	62	131	98	134	163	510	271	201	72	52	42	42
14	61	124	93	137	154	500	249	194	71	51	42	43
15	60	122	87	132	178	450	262	186	73	49	42	43
16	62	138	83	160	299	420	303	179	68	50	42	44
17	62	143	80	315	635	380	303	181	65	56	42	43
18	60	133	78	341	723	350	290	194	64	52	42	46
19	59	124	74	433	567	342	278	206	65	49	41	44
20	59	123	72	430	418	344	282	219	63	48	41	45
21	62	116	72	313	386	380	321	280	61	47	41	45
22	94	110	71	248	1160	367	374	256	59	47	42	44
23	122	105	71	270	3490	350	324	249	58	47	43	45
24	99	94	70	269	2630	437	283	236	57	46	42	64
25	107	105	68	229	1700	419	266	233	55	46	42	55
26	111	115	66	196	1350	404	235	235	55	45	42	53
27	97	100	64	177	1100	459	253	228	54	45	43	51
28	88	83	62	173	800	532	277	214	53	44	41	63
29	80	77	60	228	---	563	264	197	54	44	41	68
30	76	75	58	786	---	598	249	179	53	44	42	73
31	75	---	54	812	---	554	---	163	---	44	42	---
TOTAL	2161	3834	2777	6811	20389	16529	9200	6793	2341	1586	1307	1409
MEAN	69.7	128	89.6	220	728	533	307	219	78.0	51.2	42.2	47.0
MAX	122	331	155	812	3490	1100	484	280	148	76	44	73
MIN	48	75	54	66	154	342	235	163	53	44	41	41
CFSM	.53	.98	.68	1.68	5.56	4.07	2.34	1.67	.60	.39	.32	.36
IN.	.61	1.09	.79	1.93	5.79	4.69	2.61	1.93	.66	.45	.37	.40
AC-FT	4290	7600	5510	13510	40440	32790	18250	13470	4640	3150	2590	2790

CAL YR 1985	TOTAL	71556	MEAN	196	MAX	1400	MIN	45	CFSM	1.50	IN.	20.32	AC-FT	141900
WTR YR 1986	TOTAL	75137	MEAN	206	MAX	3490	MIN	41	CFSM	1.57	IN.	21.34	AC-FT	149000

14020300 MEACHAM CREEK AT GIBBON, OR

LOCATION.--Lat 45°41'20", long 118°21'20", in SE¼SE¼ sec.31, T.3. N., R.36 E., Umatilla County, Hydrologic Unit 17070103, on left bank 250 ft downstream from Union Pacific railroad bridge, 0.9 mi southeast of Gibbon, and at mile 1.4.

DRAINAGE AREA.--176 mi^2.

PERIOD OF RECORD.--August 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,803.05 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 6-31, Nov. 1-6, 22, 28-30, Dec. 1, 23-31, Jan. 1-3. Records fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--11 years, 209 ft^3/s, 16.13 in/yr, 151,400 acre-ft.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,750 ft^3/s Feb. 20, 1982, gage height, 6.60 ft, from floodmark, from rating curve extended above 2,600 ft^3/s; minimum discharge, 6.6 ft^3/s Aug. 29, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 25, 1975, reached a stage of 7.21 ft, from floodmark, discharge, about 8,200 ft^3/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 23	1700	*5,750	*7.56	No other peak greater than base discharge.			

Minimum daily discharge, 7.5 ft^3/s Aug. 10, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	26	58	38	946	1110	422	191	81	20	9.0	9.0
2	12	27	60	39	749	928	363	184	76	20	9.6	9.0
3	11	28	65	41	612	696	310	188	72	20	9.6	9.6
4	11	28	68	42	507	642	279	181	66	26	9.0	9.6
5	10	29	92	44	487	668	257	171	62	23	8.5	9.6
6	10	31	108	47	428	748	247	176	59	19	8.5	9.6
7	10	53	126	47	360	1010	236	176	58	19	8.5	9.6
8	19	145	126	46	298	986	235	171	55	20	8.5	9.6
9	17	145	115	57	252	898	239	171	51	19	8.5	9.6
10	16	128	103	80	233	894	225	177	47	20	7.5	9.0
11	16	113	91	94	216	730	206	172	44	19	8.5	9.0
12	17	96	82	102	205	631	195	163	41	17	8.0	8.5
13	16	84	76	112	192	543	194	157	38	16	8.5	8.5
14	16	76	70	119	180	513	173	152	37	16	9.0	9.0
15	16	75	64	123	189	459	176	143	38	16	9.0	9.0
16	17	89	59	135	251	393	208	131	36	17	8.5	9.6
17	17	95	55	184	686	395	218	122	34	17	8.5	9.6
18	17	91	53	219	1180	384	227	123	33	16	8.5	12
19	18	85	50	264	882	380	217	126	32	15	8.5	11
20	20	83	47	304	574	396	212	135	30	15	8.0	13
21	25	79	45	269	469	465	226	167	28	14	8.0	14
22	30	72	44	246	1480	467	260	155	27	15	9.6	13
23	35	63	41	244	4220	435	228	137	26	13	7.5	13
24	30	65	39	240	3880	485	194	127	26	12	8.0	20
25	33	73	38	233	2470	470	182	122	24	11	8.5	19
26	37	71	36	228	1800	434	164	124	23	12	8.5	17
27	34	69	37	223	1530	455	164	120	22	11	8.0	17
28	31	63	37	225	1330	515	198	110	22	9.6	8.0	20
29	28	55	37	262	---	539	199	105	22	10	8.0	23
30	27	54	38	812	---	533	196	97	21	10	8.0	25
31	25	---	38	1130	---	492	---	90	---	9.6	8.5	---
TOTAL	633	2191	1998	6249	26606	18694	6850	4564	1231	497.2	262.8	374.4
MEAN	20.4	73.0	64.5	202	950	603	228	147	41.0	16.0	8.48	12.5
MAX	37	145	126	1130	4220	1110	422	191	81	26	9.6	25
MIN	10	26	36	38	180	380	164	90	21	9.6	7.5	8.5
CFSM	.12	.41	.37	1.15	5.40	3.43	1.30	.84	.23	.09	.05	.07
IN.	.13	.46	.42	1.32	5.62	3.95	1.45	.96	.26	.11	.06	.08
AC-FT	1260	4350	3960	12390	52770	37080	13590	9050	2440	986	521	743

CAL YR 1985	TOTAL	61560.2	MEAN	169	MAX	1870	MIN	9.0	CFSM	.96	IN.	13.01	AC-FT	122100
WTR YR 1986	TOTAL	70150.4	MEAN	192	MAX	4220	MIN	7.5	CFSM	1.09	IN.	14.83	AC-FT	139100

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 mi^2.

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 current year. Monthly discharge only February 1891 to July 1892, published in WSP 1318.

REVISED RECORDS.--WSP 1398: 1904, 1937.

GAGE.--Water-stage recorder. Datum of gage is 1,054.3 ft above 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 datum of 1,067.01 ft above 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 datum of 1,067.60 ft above National Geodetic Vertical Datum of 1929 Nov. 19, 1965, to Mar. 28, 1967, and at datum of 1,064.02 ft above National Geodetic Vertical Datum of 1929 Mar. 29, 1967, to Sept. 30, 1969. See WSP 1738 for history of changes prior to Apr. 24, 1959.

REMARKS.--Estimated daily discharges: Oct. 15-17, Nov. 13-15, 22-30, Dec. 1-7, 11-31, Jan. 1-9, 13-15. Records good except those for discharges between 630 and 4,600 ft^3/s, which are fair. No regulation. Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--52 years (water years 1935-86), 508 ft^3/s, 368,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,500 ft^3/s Jan. 30, 1965, gage height, 9.40 ft, datum then in use; minimum discharge, 10 ft^3/s July 13-16, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 17,000 ft^3/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 ft^3/s, estimated by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 23	2000	*16,200	*10.16

No other peak greater than base discharge.

Minimum discharge, 27 ft^3/s Aug. 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	98	200	155	1660	1840	860	480	215	59	39	35
2	59	101	180	175	1480	1450	840	480	199	59	38	35
3	59	104	220	175	1310	1180	820	495	188	58	38	35
4	59	107	300	175	1120	1180	749	495	182	76	35	34
5	59	124	400	165	1100	1200	698	468	160	98	35	33
6	62	124	500	175	1000	1180	681	495	152	86	35	32
7	81	144	664	188	860	2250	664	468	144	74	33	33
8	86	480	525	193	766	2850	664	456	136	71	28	33
9	76	468	456	182	681	2580	681	444	128	66	31	36
10	71	384	384	292	615	2490	664	456	117	66	33	40
11	69	326	300	432	555	1700	630	432	110	69	32	40
12	74	263	250	408	510	1340	615	396	101	59	31	40
13	74	220	200	396	468	1270	615	384	94	56	32	40
14	71	200	150	408	432	1200	540	372	88	54	33	42
15	69	210	130	408	444	1120	525	360	91	54	31	44
16	68	233	130	456	664	1080	615	326	91	56	27	61
17	69	292	130	766	1410	1000	630	318	86	58	28	54
18	69	275	130	800	2420	900	630	318	83	59	30	54
19	69	251	130	920	1880	880	600	343	83	53	31	54
20	69	239	130	960	1310	880	585	372	81	44	33	54
21	69	215	133	840	1080	900	615	510	76	45	32	53
22	76	160	137	732	3210	880	681	495	76	43	33	54
23	124	150	137	783	11500	860	664	444	76	43	35	54
24	128	160	137	749	10900	1000	585	420	71	43	35	59
25	117	199	137	681	5880	1000	540	396	69	43	32	69
26	132	239	137	600	3810	940	480	384	69	40	28	71
27	132	292	137	525	2810	900	480	372	69	39	28	69
28	120	290	137	510	2130	1000	540	352	62	39	28	69
29	114	210	137	570	---	1080	525	326	61	38	33	78
30	107	200	137	1520	---	1100	495	292	62	38	33	91
31	101	---	137	2250	---	1000	---	245	---	40	35	---
TOTAL	2592	6758	7012	17589	62005	40230	18911	12594	3220	1726	1005	1496
MEAN	83.6	225	226	567	2214	1298	630	406	107	55.7	32.4	49.9
MAX	132	480	664	2250	11500	2850	860	510	215	98	39	91
MIN	59	98	130	155	432	860	480	245	61	38	27	32
AC-FT	5140	13400	13910	34890	123000	79800	37510	24980	6390	3420	1990	2970

CAL YR 1985	TOTAL	159841	MEAN	438	MAX	4460	MIN	35	AC-FT	317000
WTR YR 1986	TOTAL	175138	MEAN	480	MAX	11500	MIN	27	AC-FT	347400

14022200 NORTH FORK MCKAY CREEK NEAR PILOT ROCK, OR

LOCATION.--Lat 45°30'24", long 118°36'57", in NE¼SE¼ sec.1, T.1 S., R.33 E., Umatilla County, Hydrologic Unit 17070103, Umatilla Indian Reservation, on left bank 10 mi northeast of Pilot Rock and at mile 0.5.

DRAINAGE AREA.--48.6 mi².

PERIOD OF RECORD.--May 1973 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,870 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 11-13, 22-26, 28-30, Dec. 1-4, 15-31, Jan. 1-3, Feb. 7-20, July 7-15, July 30 to Sept. 2. Records good except for flows above 300 ft³/s, which are fair, and estimated daily discharges, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--13 years, 45.9 ft³/s, 33,250 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,980 ft³/s Jan. 25, 1975, gage height, 8.48 ft, from floodmark, from rating curve extended above 150 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 0.22 ft³/s June 26, 1985 (result of temporary construction upstream).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 290 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Jan. 30	0900	319	3.17	Mar. 9	1530	298	2.90
Feb. 23	0100	*1,480	*7.01				

Minimum discharge, 0.91 ft³/s Sept. 5, 6, but may have been lower during period of no gage-height record July 30 to Sept. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	3.8	9.0	4.6	175	149	50	26	9.9	3.1	1.2	1.1
2	1.2	3.9	9.4	5.4	155	125	50	24	8.6	3.0	1.2	1.0
3	1.2	3.8	12	5.8	134	106	48	24	7.6	3.0	1.2	1.0
4	1.1	4.5	19	5.2	122	94	46	22	6.8	3.5	1.1	.99
5	1.1	6.3	31	5.8	138	85	39	23	6.3	3.6	1.1	.96
6	1.5	5.7	42	7.3	125	86	33	37	7.4	3.4	1.1	.98
7	3.0	9.8	61	8.0	116	137	29	56	9.2	2.9	1.1	.98
8	2.3	18	52	8.4	100	131	25	53	8.3	2.6	1.0	1.0
9	2.1	16	41	18	90	252	21	51	7.4	2.3	1.0	1.0
10	2.0	16	33	53	78	239	18	52	6.6	2.2	1.0	1.1
11	2.4	14	28	61	66	199	16	47	5.8	2.4	1.0	1.1
12	2.5	13	27	54	56	181	18	41	5.2	2.1	1.0	1.1
13	2.7	14	22	48	50	162	23	38	4.8	1.9	1.0	1.1
14	2.7	18	17	44	46	163	27	33	4.7	1.8	.98	1.1
15	2.6	15	14	39	62	148	34	29	4.9	1.7	.98	1.2
16	2.8	37	12	62	110	144	40	24	4.5	1.8	.98	1.2
17	2.8	38	11	89	160	137	51	21	4.1	1.9	.96	1.2
18	2.6	31	9.2	104	200	124	58	19	4.0	1.7	.94	1.2
19	2.5	25	8.0	114	175	113	53	17	4.0	1.6	.94	1.3
20	2.5	24	7.2	118	156	98	47	17	3.9	1.6	.92	1.6
21	2.9	22	6.8	94	148	90	40	44	3.8	1.5	.92	1.4
22	3.1	18	6.4	77	638	79	37	53	3.8	1.5	.92	1.3
23	4.8	15	6.2	79	1070	72	32	44	3.6	1.5	.92	1.3
24	5.4	13	6.0	76	579	101	28	36	3.6	1.5	.92	2.1
25	4.8	15	5.8	65	346	93	26	30	3.5	1.4	.95	1.8
26	4.5	17	5.4	55	263	83	22	26	3.4	1.4	1.0	1.5
27	3.9	14	5.1	50	207	75	29	23	3.3	1.3	1.1	1.5
28	3.8	12	4.7	57	175	67	30	20	3.3	1.2	1.2	2.2
29	3.8	10	4.5	102	---	57	29	17	3.3	1.2	1.2	2.5
30	3.7	9.2	4.3	267	---	58	28	14	3.2	1.2	1.2	4.2
31	3.6	---	4.1	210	---	51	---	12	---	1.2	1.1	---
TOTAL	87.2	462.0	524.1	1986.5	5740	3699	1027	973	158.8	63.0	32.13	42.01
MEAN	2.81	15.4	16.9	64.1	205	119	34.2	31.4	5.29	2.03	1.04	1.40
MAX	5.4	38	61	267	1070	252	58	56	9.9	3.6	1.2	4.2
MIN	1.1	3.8	4.1	4.6	46	51	16	12	3.2	1.2	.92	.96
AC-FT	173	916	1040	3940	11390	7340	2040	1930	315	125	64	83

CAL YR 1985	TOTAL	10229.66	MEAN	28.0	MAX	252	MIN	.54	AC-FT	20290
WTR YR 1986	TOTAL	14794.74	MEAN	40.5	MAX	1070	MIN	.92	AC-FT	29350

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 mi^2.

PERIOD OF RECORD.--May to August 1921, October 1926 to June 1928, December 1928 to July 1929, October 1929 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1398: 1928-29, 1933, 1940.

GAGE.--Water-stage recorder. Datum of gage is 1,343.60 ft above 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.--Estimated daily discharges: Nov. 14 to Jan. 2, Mar. 13-17, Apr. 24 to July 6. Records good except those for periods of estimated daily discharges, which are fair. No regulation. Many small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--58 years (water years 1927, 1930-86), 103 ft^3/s, 74,620 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,400 ft^3/s Jan. 30, 1965, gage height, 8.40 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 840 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 18	1030	867	5.31	Feb. 23	0830	*5,280	*8.27

Minimum discharge, 0.84 ft^3/s Aug. 15, 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.6	15	28	26	381	457	171	109	33	2.6	1.5	1.0
2	7.6	15	29	27	328	402	168	82	28	2.4	1.6	1.1
3	7.6	15	33	28	276	345	156	90	26	2.4	1.6	1.1
4	7.6	15	48	22	237	302	148	94	23	3.0	1.5	1.1
5	7.6	17	65	22	280	283	139	92	21	3.5	1.5	1.0
6	7.7	17	88	26	271	276	130	132	20	3.1	1.5	1.1
7	13	18	120	27	231	363	120	178	20	2.8	1.5	1.1
8	15	33	110	31	186	362	111	202	20	2.8	1.3	1.1
9	15	37	100	39	141	494	103	187	15	2.9	1.1	1.1
10	13	38	90	85	115	533	95	184	14	3.0	1.0	1.1
11	12	39	78	103	100	478	88	172	13	3.2	.94	1.1
12	12	39	60	99	91	433	89	156	11	3.2	1.0	1.2
13	12	58	52	88	82	400	96	118	9.5	3.4	.99	1.2
14	11	35	42	82	75	400	95	105	8.0	3.0	.97	1.3
15	11	35	32	77	78	370	106	92	8.0	2.9	.94	1.4
16	11	55	24	87	222	350	126	82	6.7	2.7	.88	1.4
17	11	78	23	135	511	330	139	71	5.6	3.0	1.1	1.3
18	11	64	23	144	755	302	162	64	5.0	2.9	1.4	1.3
19	11	53	24	176	584	293	155	59	4.4	2.9	1.3	1.3
20	9.8	46	24	187	437	271	143	54	3.8	2.9	1.2	1.4
21	9.7	40	24	152	401	258	130	92	3.7	2.7	1.1	1.4
22	11	35	24	125	1070	240	121	120	3.6	2.7	1.1	1.4
23	13	30	24	117	3880	222	112	102	3.5	2.7	1.0	1.5
24	15	30	24	109	1840	272	102	88	3.4	2.5	1.0	1.6
25	15	37	24	97	1060	263	96	88	3.2	2.2	1.1	1.6
26	16	58	24	88	778	245	90	75	3.1	2.1	1.0	1.6
27	16	45	24	82	624	234	88	64	3.0	1.9	.97	1.7
28	15	35	24	84	523	224	125	59	3.0	1.8	.99	1.7
29	15	30	24	113	---	213	114	52	3.0	1.6	1.1	2.0
30	15	29	24	406	---	207	120	45	2.8	1.7	1.0	2.6
31	15	---	24	448	---	189	---	39	---	1.6	1.1	---
TOTAL	369.2	1091	1357	3332	15557	10011	3638	3147	327.3	82.1	36.28	40.8
MEAN	11.9	36.4	43.8	107	556	323	121	102	10.9	2.65	1.17	1.36
MAX	16	78	120	448	3880	533	171	202	33	3.5	1.6	2.6
MIN	7.6	15	23	22	75	189	88	39	2.8	1.6	.88	1.0
AC-FT	732	2160	2690	6610	30860	19860	7220	6240	649	163	72	81

CAL YR 1985	TOTAL	27172.88	MEAN	74.4	MAX	585	MIN	.00	AC-FT	53900
WTR YR 1986	TOTAL	38988.68	MEAN	107	MAX	3880	MIN	.88	AC-FT	77330

14023000 MCKAY RESERVOIR NEAR PENDLETON, OR

LOCATION.--Lat 45°36'28", long 118°47'30", in SE¼ sec.34, T.2 N., R.32 E., Umatilla County, Hydrologic Unit 17070103, on Bureau of Reclamation land, near right end of McKay Dam on McKay Creek, 4.0 mi south of Pendleton, and at mile 4.9.

DRAINAGE AREA.--186 mi^2.

PERIOD OF RECORD.--December 1927 to current year. Prior to Oct. 1, 1982, monthend contents and change in contents only.

REVISED RECORDS.--WSP 1154: Drainage area. WDR OR-79-1: 1978.

GAGE.--Water-stage recorder. Datum of gage is 0.16 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 6, 1973, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by gravel-fill dam with concrete facing, completed in 1926; storage began in 1927. Usable capacity, 73,830 acre-ft, between gage heights 1,182.0 ft, floor of trashrack structure, and 1,322.0 ft top of spillway gates. Dead storage, about 6 acre-ft included in records. Water is used for irrigation of land along McKay Creek and Umatilla River.

COOPERATION.--Capacity tables furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 73,840 acre-ft June 9, 1950, gage height, 1,322.0 ft; no usable contents Sept. 7, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 68,140 acre-ft May 1, gage height, 1,317.37 ft; minimum contents, 9,720 acre-ft Sept. 23, gage height, 1,236.76 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)

1,182	6	1,210	1,610	1,260	20,880
1,185	24	1,220	3,720	1,280	33,540
1,190	117	1,230	7,120	1,300	49,840
1,200	565	1,240	11,060	1,322	73,840

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1241.47	1242.76	---	1257.15	1272.61	1311.06	1317.07	1317.34	1316.18	1302.15	---	1246.96
2	1241.50	1242.80	---	1257.29	1273.65	1311.79	1317.12	1317.33	1316.01	1301.53	---	---
3	1241.51	1242.84	---	1257.41	1274.54	1312.38	1317.17	1317.30	1315.76	1300.93	---	---
4	1241.55	1242.91	---	1257.59	1275.35	1312.91	1317.18	1317.33	1315.50	1300.43	---	---
5	1241.54	1242.96	---	1258.02	1276.22	1313.40	1317.19	1317.25	1315.20	1299.90	1277.28	---
6	1241.64	1243.02	1250.46	1258.56	1277.06	1313.88	1317.20	1317.07	1314.89	1299.40	1276.55	---
7	1241.66	1243.10	1251.23	1259.09	1277.74	1314.27	1317.20	1317.01	1314.54	1298.88	---	---
8	1241.70	1243.22	1251.93	1259.55	1278.31	1314.35	1317.20	1317.04	1314.24	1298.32	---	---
9	1241.73	1243.38	1252.52	1259.97	1278.81	1314.41	1317.21	1317.00	1313.86	1297.85	---	---
10	1244.80	1243.56	1252.99	1259.38	1279.29	1314.32	1317.21	1316.98	1313.47	1297.26	---	---
11	1241.84	1243.72	1253.39	1259.84	1279.68	1314.31	1317.16	1317.00	1312.97	1296.71	---	1239.56
12	1241.85	---	1253.73	1259.09	1280.09	1314.29	1317.22	1317.03	1312.43	1296.15	---	1239.19
13	1241.91	---	1253.98	1259.55	1280.10	1314.37	1317.25	1316.98	1311.85	1295.56	---	1238.82
14	1241.96	---	1254.23	1259.97	1280.70	1314.44	1317.28	1317.01	1311.30	1294.97	---	1238.44
15	1242.00	---	1254.45	1260.38	1281.01	1314.61	1317.24	1317.01	1310.78	1294.37	---	1238.08
16	1242.03	---	1254.66	1260.84	1281.76	1314.88	1317.28	1316.88	1310.28	1293.71	---	1237.79
17	1242.08	---	1254.82	1261.93	1283.13	1315.11	1317.27	1316.80	1309.77	1293.06	---	1237.40
18	1242.18	1245.50	1254.99	1262.13	1285.14	1315.33	1317.28	1316.64	1309.30	1292.39	---	1237.05
19	1242.23	1245.86	1255.12	1262.97	1286.66	1315.60	1317.30	1316.46	1308.83	1291.73	---	1236.82
20	1242.28	1246.19	1255.21	1263.82	1288.14	1315.85	1317.26	1316.31	1308.35	1291.05	---	1236.80
21	1242.31	1246.48	1255.36	1264.56	1289.15	1316.05	1317.28	1316.36	1307.86	---	---	1236.79
22	1242.36	1246.77	1255.50	1265.25	1291.47	1316.26	1317.15	1316.50	1307.41	---	---	1236.78
23	1242.39	1246.92	1255.63	1265.85	1299.16	1316.48	1317.13	1316.64	1306.87	---	---	1236.77
24	1242.44	1247.08	1255.75	1266.40	1303.93	1316.63	1317.19	1316.76	1306.31	1287.50	---	1236.80
25	1242.48	1247.31	1255.86	---	1306.09	1316.79	1317.19	1316.79	1305.74	---	---	1236.79
26	1242.54	1247.58	1255.99	1267.32	1307.85	1316.90	1317.21	1316.79	1305.21	---	---	1236.79
27	1242.58	---	1256.07	1267.73	1309.09	1316.97	1317.29	1316.75	1304.60	---	---	1236.78
28	1242.61	---	1256.17	1268.18	1310.10	1316.98	1317.32	1316.68	1303.94	---	---	1236.78
29	1242.64	---	1256.25	1268.70	---	1317.00	1317.32	1316.57	1303.30	---	---	1236.80
30	1242.68	---	1256.33	1270.04	---	1317.02	1317.31	1316.43	1302.72	---	---	1236.80
31	1242.72	---	1256.43	1271.45	---	1317.11	---	1316.31	---	---	---	---
MAX	1244.80	---	---	---	1310.10	1317.11	1317.32	1317.34	1316.18	---	---	---
MIN	1241.47	---	---	---	1272.61	1311.06	1317.07	1316.31	1302.72	---	---	---
(†)	12210	*14990	18900	27760	59970	67830	68070	66890	52400	*34770	*14800	9740
(‡)	+540	+2780	+3910	+8860	+32210	+7860	+240	-1180	-14490	-17630	-19970	-4980

CAL YR 1985 AC-FT‡ -11890
WTR YR 1986 AC-FT‡ -1850

† Contents, in acre-feet, at 2400, on last day of month.
‡ Change in contents, in acre-feet.
* Estimated.

14023500 MCKAY CREEK NEAR PENDLETON, OR

LOCATION.--Lat 45°36'34", long 118°47'55", in SE¼NW¼ sec.34, T.2 N., R.32 E., Umatilla County, Hydrologic Unit 17070103, on right bank 35 ft upstream from diversion dam, 0.2 mi downstream from McKay Dam, 4.5 mi south of Pendleton, and at mile 4.7.

DRAINAGE AREA.--186 mi^2.

PERIOD OF RECORD.--November 1918 to May 1919, October 1919 to September 1923, October 1924 to September 1927, November 1927 to September 1943, April 1944 to October 1947 (irrigation seasons only), March 1948 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1154: Drainage area. WSP 1398: 1923.

GAGE.--Water-stage recorder. Concrete control since Mar. 23, 1928. Datum of gage is above 1,163.71 ft above National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark). See WSP 1318 or 1738 for history of changes prior to Nov. 16, 1948.

REMARKS.--Estimated daily discharges: Oct. 17 to Feb. 5. Records good except for estimated daily discharges, and flows below 0.5 ft^3/s, which are poor. Flow completely regulated since 1927 by McKay Reservoir (see sta 14023000). Many diversions for irrigation upstream from station. From 1932 to 1970, records excluded flow in Elder ditch, which diverts water between the gage and the control. Since 1971, records include flow in Elder ditch. During the irrigation season, from 1953 to 1982, Elder ditch diverted a maximum of 1.5 ft^3/s; since 1982, diversion has been less than 1.0 ft^3/s.

AVERAGE DISCHARGE.--49 years (water years 1933-43, 1949-86), 98.6 ft^3/s, 71,440 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 3,250 ft^3/s Feb. 10, 1921, gage height, 4.4 ft, site and datum then in use, from rating curve extended above 1,200 ft^3/s; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 626 ft^3/s Mar. 10, gage height, 2.07 ft; no flow Oct. 1-16, Sept. 21-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.20	.20	.46	.89	5.0	162	82	85	272	338	253
2	.00	.20	.20	.47	.90	5.5	132	72	103	273	336	241
3	.00	.20	.22	.48	.92	4.6	124	69	135	274	337	232
4	.00	.20	.23	.49	.94	5.0	123	69	149	246	335	223
5	.00	.20	.25	.50	.97	5.0	123	125	162	229	334	214
6	.00	.20	.27	.51	1.0	5.3	111	228	178	229	332	211
7	.00	.20	.29	.52	1.0	167	103	188	177	237	329	169
8	.00	.20	.31	.53	1.2	358	103	161	177	244	329	67
9	.00	.20	.33	.54	1.4	481	86	143	199	243	328	76
10	.00	.20	.35	.55	1.4	602	80	138	216	252	336	76
11	.00	.20	.37	.56	1.4	583	69	130	248	245	342	76
12	.00	.20	.38	.57	1.7	465	59	111	275	244	339	76
13	.00	.20	.40	.58	1.8	400	67	98	294	244	323	76
14	.00	.20	.43	.60	1.9	351	81	57	277	243	312	76
15	.00	.20	.45	.62	1.9	270	95	71	266	250	323	76
16	.00	.20	.45	.63	2.6	219	99	99	259	268	336	76
17	.01	.20	.45	.64	2.8	219	114	129	249	268	340	76
18	.01	.20	.45	.66	2.7	190	137	129	246	268	338	75
19	.01	.20	.45	.67	2.3	172	137	130	232	267	335	44
20	.02	.20	.45	.68	2.5	134	139	130	232	266	333	.20
21	.02	.20	.45	.70	2.8	121	125	53	238	277	317	.00
22	.03	.20	.45	.72	2.8	120	120	16	237	282	304	.00
23	.04	.20	.45	.73	3.3	120	93	16	256	294	303	.00
24	.05	.20	.45	.75	3.7	174	67	16	266	322	300	.00
25	.06	.20	.45	.77	4.4	193	68	49	265	335	298	.00
26	.07	.20	.45	.78	5.0	194	46	63	264	338	306	.00
27	.08	.20	.45	.80	5.0	216	40	63	289	318	297	.00
28	.10	.20	.45	.81	5.0	231	79	77	320	317	289	.00
29	.13	.20	.45	.83	---	196	85	86	288	321	282	.00
30	.16	.20	.45	.85	---	168	84	86	272	323	270	.00
31	.20	---	.45	.87	---	158	---	86	---	339	259	---
TOTAL	.99	6.00	11.88	19.87	64.22	6532.4	2951	2970	6854	8528	9880	2413.20
MEAN	.03	.20	.38	.64	2.29	211	98.4	95.8	228	275	319	80.4
MAX	.20	.20	.45	.87	5.0	602	162	228	320	339	342	253
MIN	.00	.20	.20	.46	.89	4.6	40	16	85	229	259	.00
AC-FT	2.0	12	24	39	127	12960	5850	5890	13590	16920	19600	4790

CAL YR 1985	TOTAL	34266.77	MEAN	93.9	MAX	445	MIN	.00	AC-FT	67970
WTR YR 1986	TOTAL	40231.56	MEAN	110	MAX	602	MIN	.00	AC-FT	79800

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 mi^2, approximately.

PERIOD OF RECORD.--May 1903 to current year. Records published as "above Furnish Reservoir, near Yoakum" October 1916 to September 1934 are equivalent.

REVISED RECORDS.--WSP 794: 1906(M). WSP 1398: 1904-6, 1908-9, 1922-23, 1926, 1936.

GAGE.--Water-stage recorder. Datum of gage is 768.21 ft above National Geodetic Vertical Datum of 1929. See WSP 1318 or 1738 for history of changes prior to Oct. 21, 1948.

REMARKS.--Estimated daily discharges: Nov. 13-15, 22-30; Dec. 1-3, 9-31; Jan. 1-9, 12-15, Feb. 19, 20. Records good. 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 (see sta 14023000). Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--83 years, 683 ft^3/s, 494,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft^3/s May 30, 1906, gage height, about 15.0 ft, site and datum then in use, from floodmarks, from rating curve extended about 6,600 ft^3/s; minimum discharge, 12 ft^3/s Aug. 10-12, 1908, Aug. 4, 1910.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 23	2400	*13,800	*10.86	Mar. 8	0130	4,300	6.07

Minimum discharge, 70 ft^3/s Oct. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76	123	190	160	2000	3000	1440	666	395	345	379	276
2	76	123	180	170	1800	2700	1320	650	379	342	371	270
3	74	122	230	175	1630	2320	1190	665	387	341	371	257
4	72	126	301	175	1430	1990	1110	664	393	348	365	250
5	73	141	421	170	1360	1910	1030	673	379	339	364	231
6	77	141	526	175	1260	1840	984	862	390	334	360	228
7	108	154	739	190	1120	2590	943	799	377	313	353	228
8	119	384	684	190	949	3860	923	767	365	313	346	119
9	104	472	500	180	805	3550	915	750	364	312	347	115
10	97	395	400	350	718	3640	878	741	374	317	354	118
11	94	339	300	444	641	3160	812	731	385	317	363	118
12	96	299	200	400	592	2740	773	678	400	313	361	118
13	98	265	170	360	540	2410	773	633	421	309	350	119
14	96	240	150	360	493	2220	742	567	405	302	333	120
15	94	250	140	400	484	1920	728	537	391	302	332	121
16	92	267	140	454	845	1800	791	532	385	333	343	170
17	95	329	140	740	1690	1690	832	554	369	339	358	133
18	95	321	140	870	2600	1530	852	549	367	342	357	136
19	94	289	140	1030	2300	1430	824	563	362	332	354	133
20	94	281	140	1150	1900	1370	795	587	346	318	354	88
21	93	274	145	1010	1510	1370	804	733	351	324	343	81
22	99	250	150	841	2970	1390	871	657	342	331	325	81
23	140	200	150	917	9480	1320	863	580	343	341	327	79
24	161	170	150	860	10900	1500	739	547	353	365	321	82
25	144	180	150	753	7020	1540	691	537	346	381	314	97
26	151	220	150	661	4850	1460	627	549	337	379	314	95
27	155	250	150	583	3860	1450	576	526	353	364	315	91
28	145	240	150	555	3230	1620	694	519	388	353	302	89
29	136	210	150	609	---	1650	706	503	375	356	303	103
30	131	210	150	1380	---	1630	688	474	353	351	289	115
31	125	---	150	2320	---	1600	---	434	---	373	285	---
TOTAL	3304	7265	7476	18632	68977	64200	25914	19227	11175	10429	10553	4261
MEAN	107	242	241	601	2463	2071	864	620	373	336	340	142
MAX	161	472	739	2320	10900	3860	1440	862	421	381	379	276
MIN	72	122	140	160	484	1320	576	434	337	302	285	79
AC-FT	6550	14410	14830	36960	136800	127300	51400	38140	22170	20690	20930	8450

CAL YR 1985	TOTAL	216495	MEAN	593	MAX	4770	MIN	72	AC-FT	429400
WTR YR 1986	TOTAL	251413	MEAN	689	MAX	10900	MIN	72	AC-FT	498700

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 mi^2.

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 current year. Prior to October 1945, monthly discharge only, published in WSP 1318.

REVISED RECORDS.--WSP 1218: 1950(M).

GAGE.--Water-stage recorder. Elevation 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.--Estimated daily discharges: Nov. 11, 12, 15-18, 21-26, 28-30; Dec. 1-31. Records good except for estimated daily discharges, which are fair. No regulation. Several small diversions for irrigation upstream from station. Water is diverted into headwaters of Butter Creek from Fivemile Creek, a tributary of Camas Creek in John Day River basin, for irrigation downstream from station.

AVERAGE DISCHARGE.--54 years (water years 1930, 1932, 1934-41, 1943-86), 28.5 ft^3/s, 20,650 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,800 ft^3/s Feb. 21, 1949, gage height, 12.4 ft, present datum, from floodmark, from rating curve extended above 440 ft^3/s on basis of computation of peak flow over dam; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 17	0600	353	3.82	Mar. 13	2200	224	3.13
Feb. 23	0930	*1,540	*6.18				

Minimum discharge, 5.3 ft^3/s Aug. 15-18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.7	14	14	19	133	224	80	38	22	9.9	6.8	7.6
2	9.7	13	14	29	122	204	74	36	20	9.8	6.9	7.7
3	8.8	13	18	27	111	180	68	37	20	10	7.0	7.7
4	8.8	14	25	22	96	159	66	40	18	13	7.0	7.7
5	8.8	14	35	22	89	148	63	39	18	14	7.3	7.7
6	9.7	15	50	38	81	148	60	44	18	13	7.5	7.7
7	13	15	58	26	72	166	58	42	18	11	7.7	7.7
8	14	17	45	25	55	170	56	38	17	9.5	7.3	7.7
9	13	18	25	67	49	160	55	36	16	9.5	7.0	7.7
10	12	17	17	115	58	149	55	36	16	9.9	6.7	7.9
11	12	16	12	95	49	137	54	37	15	10	6.7	8.1
12	13	15	12	70	45	123	55	35	14	9.8	6.7	8.3
13	13	14	12	56	45	124	54	34	14	9.6	6.9	8.5
14	12	14	12	56	40	112	51	33	13	9.5	6.7	8.5
15	12	15	12	52	45	98	49	32	13	9.6	5.7	8.9
16	13	15	13	64	201	100	49	31	14	9.4	5.4	10
17	13	18	13	114	308	95	46	29	13	9.1	5.6	10
18	13	21	13	91	292	86	44	27	14	7.7	5.6	11
19	13	20	13	114	197	84	42	27	14	7.9	5.6	11
20	13	18	13	95	148	81	41	27	14	7.8	5.6	12
21	13	15	13	74	138	81	41	43	13	7.7	6.2	12
22	14	13	13	65	404	79	42	43	13	7.9	6.3	12
23	14	13	13	70	1110	78	43	38	12	7.5	6.8	11
24	16	12	13	64	777	97	42	36	12	7.4	6.4	13
25	16	13	13	56	488	87	42	33	11	7.6	6.7	14
26	15	17	13	49	346	82	41	30	11	7.4	6.7	13
27	15	21	13	46	282	84	42	28	11	7.4	6.7	12
28	14	20	13	47	246	86	50	26	11	7.6	6.9	12
29	13	16	13	68	---	87	43	26	11	7.1	7.3	13
30	13	15	13	134	---	87	41	24	11	7.1	7.4	14
31	14	---	13	153	---	82	---	22	---	7.2	7.4	---
TOTAL	391.5	471	569	2023	6027	3678	1547	1047	437	281.9	206.5	299.4
MEAN	12.6	15.7	18.4	65.3	215	119	51.6	33.8	14.6	9.09	6.66	9.98
MAX	16	21	58	153	1110	224	80	44	22	14	7.7	14
MIN	8.8	12	12	19	40	78	41	22	11	7.1	5.4	7.6
AC-FT	777	934	1130	4010	11950	7300	3070	2080	867	559	410	594

CAL YR 1985	TOTAL	11841.7	MEAN	32.4	MAX	187	MIN	2.8	AC-FT	23490
WTR YR 1986	TOTAL	16978.3	MEAN	46.5	MAX	1110	MIN	5.4	AC-FT	33680

PRINCIPAL DIVERSIONS FROM UMATILLA RIVER BETWEEN YOAKUM AND UMATILLA GAGING STATIONS, OR

The following canals divert water from Umatilla River between Yoakum and Umatilla, in Umatilla County, Hydrologic Unit 17070103:

14027000 FURNISH CANAL NEAR ECHO diverts from right bank of Umatilla River in SW¼SW¼ sec. 31, T.3 N., R.30 E., for irrigation in vicinity of Stanfield. Records available March 1921 to current year (prior to October 1929 and March 1935 to September 1937 irrigation seasons only). Monthly figures only for irrigation seasons 1921-25, published in WSP 1318.

14029000 UMATILLA PROJECT FEED CANAL NEAR ECHO diverts from right bank of Umatilla River in SW¼ sec.22, T.3 N., R.29 E., and delivers water to Cold Springs Reservoir (Bureau of Reclamation), capacity, 52,380 acre-ft. Records available October 1920 to current year (incomplete 1928, 1943-44).

14030000 ALLEN CANAL AT ECHO diverts from right bank of Western Land Canal, 0.5 mi downstream from headgate of that canal in SW¼ sec.16, T.3 N., R.29 E., for irrigation west of Echo. Records available May 1921 to current year (irrigation seasons only in most years). Monthly figures only October to December 1923, published in WSP 1318. Published as Western Land & Irrigation Co.'s canal at Echo 1921-39.

14030500 WESTERN LAND CANAL NEAR ECHO diverts from left bank of Umatilla River in NE¼ sec.21, T.3 N., R.29 E., for irrigation west of Echo and Stanfield and during non-irrigation seasons since 1978, ground-water recharge near Ordnance. Gage is 1 mi downstream from intake. Records available May 1921 to current year (irrigation seasons only in many years). Published as Western Land & Irrigation Co.'s canal at Echo 1921-39.

14031500 MAXWELL CANAL NEAR HERMISTON diverts from right bank of Umatilla River in SW¼ sec.28, T.4 N., R.28 E., for irrigation near Hermiston; at times it receives water from Cold Springs Reservoir. Records available March 1921 to current year (irrigation seasons only in most years). REVISIONS (WATER YEARS).--WSP 1398: 1921.

14032500 WEST DIVISION MAIN CANAL NEAR UMATILLA diverts from left bank of Umatilla River in SW¼ sec.28, T.5 N., R.28 E., for irrigation near Irrigon and Boardman. Records of monthly figures April 1921 to current year (incomplete October 1925 to March 1927). Published as "Main canal, west division Umatilla project" 1921, 1923. REVISIONS (WATER YEARS).--WSP 1398: 1923.

Water diverted by all of these canals is used for irrigation of lands on both sides of Umatilla River near and below Echo, except that diverted by West Division main canal which is applied to land along Columbia River in vicinity of Irrigon.

Several small canals also divert water between Yoakum and Umatilla, but no records for these were obtained.

DIVERSIONS, IN ACRE-FEET, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

MONTH	FURNISH CANAL	UMATILLA PROJECT FEED CANAL	ALLEN CANAL	WESTERN LAND CANAL	MAXWELL CANAL	WEST DIVISION MAIN CANAL
OCTOBER	0	0	12	136	795	825
NOVEMBER	0	0	0	135	0	0
DECEMBER	0	0	0	129	0	0
JANUARY	0	5,430	0	2,530	0	0
FEBRUARY	0	11,400	0	2,380	0	0
MARCH	0	13,850	0	4,550	0	0
APRIL	2,930	12,580	592	8,810	1,750	4,400
MAY	6,580	11,640	601	11,460	2,730	6,920
JUNE	7,550	32	755	12,190	2,460	5,830
JULY	6,770	0	572	11,070	2,200	6,950
AUGUST	7,070	0	658	11,530	2,690	6,980
SEPTEMBER	3,590	0	544	3,620	1,440	4,330
WTR YR 1986	34,490	54,930	3,730	68,550	14,060	36,220

NOTE.--No gage-height record for months of little or no flow and short periods at other times.

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 mi^2, approximately.

PERIOD OF RECORD.--October 1903 to current year.

REVISED RECORDS.--WSP 794: Drainage area. WSP 1398: 1909, 1911, 1914, 1928, 1935.

GAGE.--Water-stage recorder. Datum of gage is 330.47 ft above National Geodetic Vertical Datum of 1929. Oct. 21, 1903 to Jan. 25, 1931, nonrecording gage.

REMARKS.--Estimated daily discharges: Nov. 24 to Dec. 2, Dec. 21-30. Records good except those for periods of ice effect Nov. 24 to Dec. 2, and those below 100 ft^3/s, which are poor. Some regulation since 1927 by McKay Reservoir (station 14023000). Many diversions upstream from station for irrigation of lands upstream and downstream from station; Brownell Canal diverts downstream from station. Diversions since 1908 to Cold Springs Reservoir, an off-channel reservoir, capacity, 52,380 acre-ft.

AVERAGE DISCHARGE.--59 years (water years 1928-86), 465 ft^3/s, 336,900 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 ft^3/s Jan. 30, 1965, gage height, 10.75 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,100 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 24	1630	*13,200	*7.97	Mar. 8	1030	3,810	5.52

Minimum discharge, 0.65 ft^3/s Aug. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	159	160	245	1870	3320	1160	270	2.5	1.6	1.3	1.3
2	43	157	170	276	1720	3010	1070	124	2.5	2.2	1.2	1.4
3	74	158	188	270	1540	2430	914	88	2.1	1.7	1.3	1.5
4	86	161	253	280	1330	2010	786	91	1.9	2.1	1.4	1.2
5	83	172	322	260	1170	1840	701	77	1.8	14	1.2	1.3
6	84	191	447	273	1120	1740	648	173	1.7	23	1.5	1.2
7	115	204	566	313	997	1990	571	256	2.0	7.3	1.4	1.2
8	154	237	753	297	841	3660	500	220	1.8	2.2	1.2	1.0
9	160	517	729	320	673	3490	475	216	2.0	3.0	1.1	.95
10	151	481	604	452	557	3520	412	212	4.4	2.1	1.2	.85
11	144	441	501	552	486	3390	373	191	2.2	1.8	1.1	.81
12	137	381	425	555	435	2910	266	152	1.8	2.5	1.3	.82
13	137	324	385	515	386	2440	268	115	1.6	2.2	1.4	.83
14	148	298	363	485	342	2240	232	99	1.6	1.7	5.2	.79
15	157	297	343	443	313	1850	174	60	1.8	1.9	1.2	.85
16	164	323	316	365	503	1620	162	41	2.1	2.0	.94	1.1
17	164	381	289	643	1540	1530	198	37	1.7	4.5	.97	1.4
18	161	424	263	806	2640	1330	204	50	1.6	2.4	.88	59
19	160	398	253	946	2730	1200	186	30	1.6	1.3	.83	97
20	159	376	238	1050	1880	1130	433	18	1.5	1.4	1.2	99
21	158	358	220	982	1570	1080	311	116	1.6	1.7	.94	77
22	151	330	210	777	2120	1120	200	271	1.6	1.4	.97	71
23	143	307	200	785	6550	1080	254	178	1.6	1.7	1.3	65
24	190	290	195	778	12000	1140	148	157	1.7	1.4	1.3	66
25	195	240	190	672	10800	1270	101	74	1.5	1.3	1.5	65
26	184	260	190	559	5700	1190	85	39	1.5	1.7	1.4	96
27	198	250	190	482	4200	1160	55	26	1.9	1.2	1.6	123
28	193	200	195	431	3480	1240	34	25	1.8	1.1	1.0	113
29	182	170	195	423	---	1310	82	15	1.8	1.3	1.2	114
30	172	160	195	717	---	1280	189	6.9	1.8	2.1	1.3	146
31	163	---	200	2180	---	1300	---	2.5	---	1.3	1.2	---
TOTAL	4452	8645	9748	18132	69493	59820	11192	3430.4	57.0	97.1	41.53	1209.50
MEAN	144	288	314	585	2482	1930	373	111	1.90	3.13	1.34	40.3
MAX	198	517	753	2180	12000	3660	1160	271	4.4	23	5.2	146
MIN	42	157	160	245	313	1080	34	2.5	1.5	1.1	.83	.79
AC-FT	8830	17150	19340	35960	137800	118700	22200	6800	113	193	82	2400

CAL YR 1985	TOTAL 161975.96	MEAN 444	MAX 3940	MIN .57	AC-FT 321300				
WTR YR 1986	TOTAL 186317.53	MEAN 510	MAX 12000	MIN .79	AC-FT 369600				

14034470 WILLOW CREEK ABOVE WILLOW CREEK LAKE, NEAR HEPPNER, OR

LOCATION.--Lat 45°20'27", long 119°30'53", in NE¼NE¼ sec.1, T.3 S., R.26 E., Morrow County, Hydrologic Unit 17070104, on right bank 1.5 mi southeast of Heppner, 1.7 mi upstream from Willow Creek dam, and at mile 54.1.

DRAINAGE AREA--67.6 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 2,085.41 ft above National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Estimated daily discharges: Nov. 12-15, 23-30, Dec. 1-5, 11-31, Jan. 1, Feb. 18-24. Records good except for those affected by ice Nov. 12-15, 23-30, Dec. 1-5, 11-31, Jan. 1, and during period of no gage-height record Feb. 18-24, which are poor. Many diversions for irrigation upstream from station. Part of flow of Ditch Creek (John Day River basin) is diverted to Willow Creek upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 445 ft^3/s Mar. 4, 1983, gage height, 6.93 ft; minimum discharge, 0.23 ft^3/s July 27-29, Aug. 28 to Sept. 1, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 140 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 17	1400	197	5.63	Feb. 23	unknown	*330	a*6.63

Minimum discharge, 0.25 ft^3/s Sept. 6.

a From crest-stage gage.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	6.0	6.7	8.0	60	105	46	15	9.7	2.2	.85	.40
2	2.0	5.6	7.5	10	58	96	43	14	8.8	1.3	.77	.36
3	2.0	5.4	9.7	8.9	51	84	40	17	9.3	1.4	.70	.51
4	1.9	6.0	11	8.1	46	75	37	18	11	2.1	.70	.28
5	1.8	6.0	13	8.1	44	71	35	18	10	3.5	.70	.28
6	2.1	5.9	29	14	43	72	33	19	10	2.9	.56	.29
7	9.7	8.6	44	10	40	77	32	20	9.6	2.2	.56	.37
8	7.8	10	41	14	30	78	31	19	9.3	1.9	.56	.43
9	6.4	8.6	32	21	29	79	31	18	8.8	1.8	.51	.60
10	6.5	7.3	26	29	27	72	31	20	8.2	2.1	.51	.69
11	7.2	5.3	21	29	26	67	29	19	7.6	2.7	.51	.70
12	7.9	5.1	17	26	24	63	29	18	6.6	2.7	.51	.74
13	6.8	5.3	15	23	24	59	28	17	6.1	3.1	.51	.92
14	6.3	5.6	13	23	22	56	26	16	6.1	2.4	.51	.90
15	6.1	6.3	11	21	40	53	25	16	5.9	2.1	.51	.66
16	5.9	17	10	23	97	52	25	14	5.4	1.9	.45	1.2
17	5.9	15	9.4	27	159	49	23	13	5.4	2.2	.51	1.4
18	5.6	14	9.0	27	165	46	21	13	5.3	2.1	.51	.79
19	5.5	13	8.8	32	150	45	20	13	4.5	1.9	.45	.71
20	5.4	12	8.6	32	120	43	18	12	5.8	1.5	.36	1.4
21	5.1	12	8.4	27	100	43	16	26	5.0	1.1	.32	1.5
22	6.0	8.2	8.3	27	170	43	20	23	4.5	1.0	.32	1.5
23	9.1	5.8	8.0	35	300	43	20	21	4.5	.94	.32	2.2
24	8.6	5.0	7.8	30	250	50	19	20	2.8	.94	.28	4.7
25	7.6	5.3	7.5	26	196	46	21	20	2.7	1.4	.28	4.5
26	7.0	5.8	7.4	24	157	42	19	19	3.8	1.0	.32	2.9
27	6.5	6.7	7.2	22	131	45	23	17	3.9	.94	.32	3.1
28	6.1	6.2	7.2	23	115	48	23	16	3.0	.94	.28	4.5
29	6.1	6.0	7.1	25	---	49	19	15	2.6	.85	.28	4.6
30	5.9	6.0	7.2	46	---	51	17	13	2.7	.85	.28	5.9
31	5.7	---	7.4	60	---	49	---	10	---	.85	.36	---
TOTAL	178.3	235.0	426.2	739.1	2674	1851	800	529	188.9	54.81	14.61	49.03
MEAN	5.75	7.83	13.7	23.8	95.5	59.7	26.7	17.1	6.30	1.77	.47	1.63
MAX	9.7	17	44	60	300	105	46	26	11	3.5	.85	5.9
MIN	1.8	5.0	6.7	8.0	22	42	16	10	2.6	.85	.28	.28
AC-FT	354	466	845	1470	5300	3670	1590	1050	375	109	29	97

CAL YR 1985	TOTAL	6333.51	MEAN	17.4	MAX	124	MIN	.23	AC-FT	12560
WTR YR 1986	TOTAL	7739.95	MEAN	21.2	MAX	300	MIN	.28	AC-FT	15350

14034470 WILLOW CREEK ABOVE WILLOW CREEK LAKE, NEAR HEPPNER, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1985 to current year.

REMARKS.--Local identifier 452027119305300 Willow Creek site.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	TEMPERATURE WATER (DEG C)	TURBIDITY (NTU)	SPECIFIC CONDUCTANCE (US/CM)	SAMPLING DEPTH (M)	OXYGEN, DISSOLVED (MG/L)	PH (STANDARD UNITS)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	COLIFORM, TOTAL, DELAYED (COLS. PER 100 ML)
OCT									
09...	1715	--	--	--	0.0	--	--	110	730
23...	1615	--	--	--	0.0	--	--	280	--
31...	1545	--	--	--	0.0	--	--	80	1500
MAY									
14...	1800	12.5	3.5	272	0.0	--	8.4	53	200
28...	1025	--	--	295	0.0	--	8.2	680	930
JUN									
11...	1735	--	3.2	353	0.0	9.4	8.2	130	110
25...	1535	15.0	4.5	400	0.0	10.2	8.1	--	74
JUL									
09...	1740	17.0	1.9	495	0.0	8.7	7.9	120	140
23...	1830	20.0	2.9	527	0.0	--	7.9	200	280
AUG									
06...	1550	22.0	2.5	533	0.0	--	8.0	42	330
13...	1700	21.5	2.5	499	0.0	7.9	8.2	72	120
20...	1720	18.0	6.3	555	0.0	8.8	8.0	91	160
27...	1614	20.5	5.7	491	0.0	8.6	8.1	70	240
SEP									
03...	1745	19.0	5.2	466	0.0	8.3	8.1	120	150
10...	1640	15.5	4.2	459	0.0	9.7	8.3	150	200
17...	1745	13.0	2.8	427	0.0	9.1	8.2	290	2200
23...	1550	11.5	16	422	0.0	9.7	8.2	110	4800

14034480 BALM FORK NEAR HEPPNER, OR

LOCATION.--Lat 45°19'56", long 119°32'24", in NW¼SE¼ sec.2, T.3 S., R.26 E., Morrow County, Hydrologic Unit 17070104, on right bank, 0.7 mi upstream from bridge on Willow Creek Road, 1.0 mi southeast of Heppner, 1.2 mi upstream from Willow Creek dam, and at mile 1.1.

DRAINAGE AREA.--26.3 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1982 to current year.

REVISED RECORDS.--WDR OR-83-1: Drainage area.

GAGE.--Water-stage recorder. Concrete control since Aug. 24, 1982. Datum of gage is 2,101.52 ft above National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark).

REMARKS.--Estimated daily discharges: Nov. 7-14, 20-25, 30, Dec. 1, 2, 16-31, Jan. 1, Feb. 16-18, 22, 23. Records fair except those for periods of ice effect Nov. 7-14, 20-25, 30, Dec. 1, 2, 16-31, Jan. 1, and fragmentary record Feb. 16-18, 22-23., which are poor. Diversion for irrigation of about 170 acres upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 190 ft^3/s Mar. 4, 1983, gage height, 4.90 ft, from rating curve extended above 82 ft^3/s on basis of slope-area measurement of peak flow; no flow for part of each day Sept. 8, 9, 1982.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, about 36,000 ft^3/s June 14, 1903, result of slope-area measurement (see WSP 96).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 60 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 22	2400	*186	*a4.96				

Minimum discharge, 0.16 ft^3/s Sept. 5.

a From floodmark.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.69	1.2	1.5	2.0	6.1	15	5.6	2.4	1.2	.45	.29	.22
2	.68	1.2	1.6	2.6	6.1	14	5.3	2.4	1.4	.43	.32	.22
3	.68	1.2	2.1	2.4	6.1	12	5.1	2.6	1.4	.40	.29	.21
4	.65	1.2	2.5	2.2	6.1	12	4.7	2.6	1.9	.54	.27	.20
5	.36	1.2	4.4	6.7	6.1	11	4.6	2.9	1.8	.53	.28	.19
6	.32	1.2	12	4.8	6.1	11	4.6	2.8	1.8	.53	.29	.19
7	1.1	1.2	14	3.4	6.1	11	4.4	2.6	1.8	.49	.29	.20
8	1.1	1.2	13	4.9	5.5	10	4.1	2.6	1.8	.47	.29	.20
9	1.0	1.1	10	8.1	5.4	11	4.1	2.6	1.6	.45	.30	.22
10	.96	1.1	8.0	8.2	5.4	11	3.8	2.9	1.4	.67	.26	.22
11	1.0	1.0	6.5	7.5	5.0	10	3.6	3.5	1.2	.51	.24	.20
12	.98	1.0	5.7	6.6	4.4	9.8	3.2	3.4	1.0	.48	.29	.20
13	1.0	1.0	5.4	6.1	4.4	9.7	2.8	3.0	.96	.56	.29	.20
14	1.0	1.2	5.0	5.8	4.5	9.2	2.8	2.9	.99	.55	.30	.21
15	1.0	1.5	4.6	5.4	5.4	9.2	2.9	3.0	.96	.60	.30	.22
16	1.0	3.5	4.2	5.5	19	9.4	3.1	2.8	.93	.78	.29	.25
17	1.0	3.5	4.0	4.9	28	9.1	3.0	2.4	.87	1.0	.27	.26
18	1.1	3.1	3.7	4.9	36	9.2	2.7	2.5	.83	.88	.26	.26
19	1.1	2.9	3.2	4.7	29	9.0	2.8	2.5	.83	.92	.24	.50
20	1.1	2.5	2.5	4.9	22	8.7	2.5	2.5	.89	.90	.22	.61
21	1.1	1.8	2.2	4.7	20	8.3	1.8	2.8	.81	.79	.21	.65
22	1.1	1.6	2.0	5.7	80	7.8	2.1	2.7	.63	.58	.22	.67
23	1.2	1.4	1.9	6.1	79	7.9	2.5	2.5	.59	.54	.22	.69
24	1.2	1.3	1.8	5.6	21	8.3	2.5	2.5	.57	.57	.22	.78
25	1.2	1.5	1.8	5.4	16	7.3	2.4	2.4	.54	.67	.24	.77
26	1.2	2.2	1.8	5.3	16	6.8	2.5	2.4	.51	.45	.26	.72
27	1.2	2.2	1.8	5.2	16	6.9	2.8	2.3	.52	.44	.22	.77
28	1.2	2.1	1.8	5.1	15	6.4	2.9	1.8	.52	.40	.22	.84
29	1.2	1.8	1.7	5.0	---	6.1	2.7	.89	.51	.34	.23	.89
30	1.2	1.5	1.7	5.8	---	6.0	2.6	1.2	.47	.33	.22	.90
31	1.2	---	1.7	6.1	---	5.6	---	1.2	---	.31	.23	---
TOTAL	30.82	50.4	134.1	161.6	479.7	288.7	100.5	77.59	31.23	17.56	8.07	12.66
MEAN	.99	1.68	4.33	5.21	17.1	9.31	3.35	2.50	1.04	.57	.26	.42
MAX	1.2	3.5	14	8.2	80	15	5.6	3.5	1.9	1.0	.32	.90
MIN	.32	1.0	1.5	2.0	4.4	5.6	1.8	.89	.47	.31	.21	.19
AC-FT	61	100	266	321	951	573	199	154	62	35	16	25

CAL YR 1985	TOTAL	1265.34	MEAN	3.47	MAX	19	MIN	.16	AC-FT	2510
WTR YR 1986	TOTAL	1392.93	MEAN	3.82	MAX	80	MIN	.19	AC-FT	2760

14034480 BALM FORK NEAR HEPPNER, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1985 to current year.

REMARKS.--Local identifier 452013119324000.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	TEMPERATURE WATER (DEG C)	TURBIDITY (NTU)	SPECIFIC CONDUCTANCE (US/CM)	SAMPLING DEPTH (M)	OXYGEN, DISSOLVED (MG/L)	PH (STANDARD UNITS)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	COLIFORM, TOTAL, DELAYED (COLS. PER 100 ML)
OCT									
09...	1700	--	--	--	0.0	--	--	190	260
23...	1600	--	--	--	0.0	--	--	38	--
31...	1530	--	--	--	0.0	--	--	50	71
MAY									
14...	1900	13.0	2.4	554	0.0	--	8.8	140	170
28...	1050	--	--	608	0.0	--	8.1	1100	1500
JUN									
11...	1755	--	17	602	0.0	9.0	8.6	390	1300
25...	1500	17.0	8.8	630	0.0	9.4	8.6	64	--
JUL									
09...	1915	19.0	2.9	660	0.0	9.4	8.6	91	250
23...	1800	19.5	4.6	655	0.0	8.6	8.4	580	780
AUG									
06...	1530	22.0	5.2	714	0.0	--	8.5	340	880
13...	1829	21.0	7.6	740	0.0	7.0	8.4	390	700
20...	1813	18.0	3.6	814	0.0	7.9	8.4	110	560
27...	1715	20.0	5.1	743	0.0	7.4	8.4	130	430
SEP									
03...	1800	19.0	7.3	748	0.0	6.8	8.2	230	420
10...	1725	15.5	5.0	740	0.0	8.3	8.4	250	220
17...	1830	12.5	4.0	721	0.0	8.6	8.3	670	1500
23...	1625	11.0	5.2	617	0.0	9.3	8.4	230	610

14034490 WILLOW CREEK LAKE AT HEPPNER, OR

LOCATION.--Lat 45°20'50", long 119°32'37", in NW¼SE¼ sec.35, T.2 S., R.26 E., Morrow County, Hydrologic Unit 17070104, U.S. Corps of Engineers land, on top left side of spillway on dam on Willow Creek, 2,000 ft upstream from Court Street bridge and at mile 52.4.

DRAINAGE AREA.--96.6 mi².

MONTH-END ELEVATIONS

PERIOD OF RECORD.--February 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Dec. 22, 1983, nonrecording gage at nearby site at present datum.

REMARKS.--Lake is formed behind roller-compacted, concrete dam; storage began Feb. 16, 1983. Capacity, 14,020 acre-ft between elevations 2,000.0 ft, sill of outlet gates, and 2,113.5 ft, crest of spillway. Average minimum lake elevation 2,047.0 ft, storing 2,540 acre-ft. Dead storage, 73 acre-ft below elevation 2,000.0 ft. Reservoir used for flood control. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 5,550 acre-ft Feb. 24, 25, 1986, elevation, 2,071.87 ft; no usable contents at times.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 5,550 acre-ft Feb. 24, 25, elevation, 2,071.87 ft; minimum contents, 3,530 acre-ft Oct. 6, elevation, 2,056.45 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

2,050	2,840	2,065	4,590
2,055	3,370	2,070	5,280
2,060	3,950	2,075	6,020

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2056.56	2058.02	2061.13	2061.90	2062.99	2064.52	2062.30	2063.26	2063.27	2062.71	2061.72	2059.75
2	2056.54	2058.05	2061.25	2061.96	2062.97	2063.01	2062.28	2063.18	2063.13	2062.66	2061.66	2059.69
3	2056.52	2058.10	2061.35	2061.98	2062.84	2062.62	2062.29	2063.15	2063.07	2062.62	2061.60	2059.64
4	2056.50	2058.13	2061.46	2061.98	2062.66	2062.60	2062.29	2063.12	2063.07	2062.62	2061.55	2059.56
5	2056.48	2058.18	2061.71	2062.12	2062.47	2062.48	2062.26	2063.14	2063.07	2062.62	2061.49	2059.49
6	2056.50	2058.22	2062.23	2062.23	2062.28	2062.56	2062.19	2063.15	2063.07	2062.61	2061.43	2059.43
7	2056.67	2058.29	2062.76	2062.28	2062.14	2062.91	2062.15	2063.16	2063.04	2062.59	2061.38	2059.36
8	2056.76	2058.44	2062.81	2062.44	2061.90	2063.28	2062.19	2063.16	2063.03	2062.56	2061.32	2059.27
9	2056.81	2058.55	2062.69	2062.70	2061.72	2063.68	2062.23	2063.14	2063.01	2062.52	2061.26	2059.21
10	2056.88	2058.66	2062.57	2062.83	2061.65	2063.83	2062.26	2063.14	2062.98	2062.52	2061.17	2059.15
11	2056.95	2058.70	2062.54	2062.83	2061.55	2063.70	2062.27	2063.15	2063.00	2062.50	2061.09	2059.09
12	2057.03	2058.74	2062.57	2062.76	2061.42	2063.49	2062.29	2063.15	2063.02	2062.49	2061.03	2059.03
13	2057.09	2058.78	2062.54	2062.66	2061.38	2063.21	2062.27	2063.11	2063.01	2062.48	2060.97	2058.97
14	2057.14	2058.84	2062.48	2062.54	2061.42	2062.95	2062.28	2063.08	2062.98	2062.44	2060.91	2058.92
15	2057.19	2058.96	2062.40	2062.43	2061.69	2062.79	2062.40	2063.03	2062.97	2062.40	2060.84	2058.87
16	2057.23	2059.24	2062.37	2062.31	2062.63	2062.62	2062.55	2062.97	2062.95	2062.37	2060.77	2058.84
17	2057.26	2059.50	2062.38	2062.27	2062.95	2062.59	2062.66	2062.96	2062.93	2062.36	2060.71	2058.82
18	2057.31	2059.71	2062.39	2062.19	2062.59	2062.67	2062.75	2062.94	2062.91	2062.35	2060.64	2058.77
19	2057.34	2059.91	2062.38	2062.19	2062.10	2062.74	2062.82	2062.98	2062.91	2062.33	2060.56	2058.72
20	2057.37	2060.10	2062.35	2062.18	2061.95	2062.75	2062.86	2063.06	2062.90	2062.30	2060.50	2058.70
21	2057.41	2060.25	2062.29	2062.10	2061.92	2062.76	2062.86	2063.31	2062.91	2062.26	2060.44	2058.67
22	2057.46	2060.35	2062.24	2062.09	2064.31	2062.76	2062.91	2063.47	2062.90	2062.20	2060.37	2058.64
23	2057.54	2060.37	2062.15	2062.12	2070.07	2062.80	2063.00	2063.61	2062.89	2062.17	2060.30	2058.64
24	2057.63	2060.43	2062.07	2062.10	2071.87	2062.92	2063.07	2063.72	2062.85	2062.13	2060.24	2058.65
25	2057.70	2060.56	2061.97	2062.03	2071.30	2062.90	2063.13	2063.82	2062.81	2062.06	2060.16	2058.67
26	2057.76	2060.68	2061.91	2061.91	2070.08	2062.76	2063.19	2063.92	2062.79	2062.01	2060.11	2058.66
27	2057.81	2060.78	2061.89	2061.92	2068.45	2062.65	2063.31	2063.92	2062.79	2061.96	2060.05	2058.65
28	2057.84	2060.87	2061.88	2062.01	2066.06	2062.56	2063.39	2063.86	2062.77	2061.91	2059.97	2058.67
29	2057.89	2060.96	2061.86	2062.14	---	2062.49	2063.37	2063.76	2062.75	2061.86	2059.91	2058.71
30	2057.93	2061.04	2061.84	2062.57	---	2062.42	2063.33	2063.65	2062.74	2061.81	2059.85	2058.75
31	2057.96	---	2061.83	2062.88	---	2062.36	---	2063.46	---	2061.76	2059.79	---
MAX	2057.96	2061.04	2062.81	2062.88	2071.87	2064.52	2063.39	2063.92	2063.27	2062.71	2061.72	2059.75
MIN	2056.48	2058.02	2061.13	2061.90	2061.38	2062.36	2062.15	2062.94	2062.74	2061.76	2059.79	2058.64
(†)	3710	4080	4180	4310	4730	4240	4370	4380	4290	4170	3930	3800
(‡)	+160	+370	+100	+130	+420	-490	+130	+10	-90	-120	-240	-130

CAL YR 1985 MAX 2062.81 MIN 2050.99 AC-FT‡ +240
WTR YR 1986 MAX 2071.87 MIN 2056.48 AC-FT‡ +250

† Contents in acre-feet, at 2400, on last day of month.
‡ Change in contents, in acre-feet.

14034490 WILLOW CREEK LAKE AT HEPPNER, OR--Continued

WATER QUALITY RECORDS

LOCATION.--Lat 45°20'37", long 119°32'10", in SE¼SE¼ sec.35, T.2 S., R.26 E., Morrow County, Hydrologic Unit 17070104, U.S. Corps of Engineer's land, 0.4 mi southeast of outlet structure on Willow Creek Dam, 200 ft northeast of boat launch, and 1.0 mi southeast of Heppner.

PERIOD OF RECORD.--June 1984 to current year.

REMARKS.--Local identifier 452037119321000 Willow Creek Lake Site 2.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	SAMPLING DEPTH (M)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	OXYGEN, DISSOLVED (MG/L)	TURBIDITY (NTU)	TRANSPARENCY (SECCHI DISK) (M)
OCT								
10...	1135	0.0	273	8.3	12.0	9.0	--	1.6
10...	1140	1.0	277	8.3	11.5	8.8	--	--
10...	1145	2.0	277	8.4	11.5	8.7	4.0	--
10...	1150	3.0	279	8.3	11.5	8.7	--	--
10...	1155	4.0	278	8.3	11.5	8.6	--	--
10...	1200	5.0	278	8.3	11.5	8.5	--	--
10...	1205	6.0	278	8.4	11.5	8.6	--	--
10...	1210	7.0	278	8.3	11.5	8.5	--	--
10...	1215	8.0	283	8.1	11.0	5.8	0.6	--
10...	1220	9.0	287	7.8	10.0	5.8	--	--
10...	1225	10.0	258	7.5	9.0	2.8	--	--
10...	1230	11.0	--	--	--	--	1.6	--
10...	1235	12.0	240	7.2	8.5	0.8	--	--
10...	1240	13.0	242	7.1	8.5	1.0	--	--
24...	1305	0.0	268	7.8	10.0	7.6	--	1.7
24...	1310	1.0	268	7.8	10.0	7.4	--	--
24...	1315	2.0	266	7.8	10.0	7.4	--	--
24...	1320	3.0	266	7.8	10.0	7.5	--	--
24...	1325	4.0	266	7.8	9.5	7.8	--	--
24...	1330	5.0	266	7.8	9.5	7.9	--	--
24...	1335	6.0	266	7.8	9.5	8.0	--	--
24...	1340	7.0	266	7.8	9.5	7.9	--	--
24...	1345	8.0	266	7.8	9.5	7.7	--	--
24...	1350	9.0	266	7.7	9.5	6.9	--	--
24...	1355	10.0	265	7.6	9.5	6.2	--	--
24...	1400	12.0	263	7.5	9.5	4.4	--	--
24...	1405	13.0	263	7.4	9.5	4.2	--	--
NOV								
01...	1105	0.0	269	7.8	9.5	8.5	--	1.5
01...	1110	1.0	267	7.7	9.5	8.5	--	--
01...	1115	2.0	267	7.7	9.5	8.5	4.1	--
01...	1120	3.0	267	7.7	9.5	8.5	--	--
01...	1125	4.0	267	7.7	9.5	8.5	--	--
01...	1130	5.0	267	7.7	9.5	8.5	--	--
01...	1135	6.0	267	7.7	9.5	8.6	--	--
01...	1140	7.0	267	7.7	9.5	8.6	--	--
01...	1145	8.0	269	7.7	9.5	8.8	--	--
01...	1150	10.0	271	7.7	9.0	9.0	--	--
01...	1155	11.0	--	--	--	--	.5	--
01...	1200	12.0	271	7.7	9.0	9.3	--	--
01...	1205	13.0	271	7.7	9.0	8.3	--	--

14034490 WILLOW CREEK LAKE AT HEPPNER, OR--Continued

452037119321000 WILLOW CREEK LAKE SITE 2--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	SAMPLING DEPTH (M)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	OXYGEN, DISSOLVED (MG/L)	ALKALINITY WH WAT TOTAL FIELD MG/L AS CACO3	TURBIDITY (NTU)	TRANSPARENCY (SECCHI DISK) (M)
MAY									
15...	1155	0.0	225	8.8	12.0	12.4	--	--	1.6
15...	1200	1.0	222	8.8	12.0	12.4	--	--	--
15...	1205	2.0	221	8.8	11.5	12.0	116	7.7	--
15...	1210	3.0	223	8.8	11.5	11.9	--	7.7	--
15...	1215	4.0	222	8.7	11.0	11.4	--	--	--
15...	1220	6.0	225	8.6	11.0	10.6	--	--	--
15...	1225	8.0	224	8.6	10.5	10.5	--	--	--
15...	1230	12.0	227	8.5	10.5	9.6	--	--	--
15...	1235	14.0	226	7.7	9.0	7.1	--	4.0	--
28...	1815	0.0	246	8.8	23.5	8.9	--	--	3.5
28...	1818	1.0	245	8.6	21.5	8.2	--	--	--
28...	1821	2.0	260	8.3	18.5	8.6	--	2.0	--
28...	1824	4.0	237	8.4	13.5	8.9	--	--	--
28...	1827	6.0	232	8.3	12.0	8.5	--	--	--
28...	1830	10.0	232	8.1	10.5	7.4	--	--	--
28...	1833	12.0	231	7.9	10.0	6.7	--	--	--
JUN									
12...	0957	0.0	265	8.9	23.0	12.9	--	--	--
12...	1007	2.0	265	8.8	21.5	12.4	142	5.7	--
12...	1017	4.0	258	7.8	16.0	3.7	--	--	--
12...	1027	6.0	235	8.0	13.0	9.5	--	--	--
12...	1037	8.0	221	7.9	11.0	6.8	--	--	--
12...	1047	10.0	231	7.7	10.5	5.8	--	--	--
12...	1057	12.0	231	7.5	10.0	4.7	--	--	--
12...	1107	14.0	227	7.3	9.5	4.3	--	--	--
26...	1315	0.0	245	9.2	22.5	14.1	--	--	0.5
26...	1320	2.0	249	9.0	21.5	11.1	129	19	--
26...	1325	4.0	275	8.4	18.0	4.2	--	--	--
26...	1330	6.0	244	7.7	13.0	3.2	--	--	--
26...	1335	8.0	235	7.7	11.5	4.7	--	--	--
26...	1340	10.0	235	7.5	10.5	3.7	--	--	--
26...	1345	12.0	236	7.4	10.0	3.0	--	--	--
JUL									
10...	1345	0.0	244	8.9	20.0	9.9	--	--	0.7
10...	1350	2.0	244	8.9	20.0	9.8	123	9.5	--
10...	1355	4.0	253	8.7	18.0	7.0	--	--	--
10...	1400	6.0	254	7.8	14.0	0.4	--	--	--
10...	1405	8.0	245	7.6	11.5	1.5	--	--	--
10...	1410	10.0	245	7.5	10.5	0.9	--	--	--
10...	1415	12.0	243	7.3	10.0	0.1	--	--	--
24...	1355	0.0	258	8.8	22.0	10.1	--	--	0.8
24...	1400	2.0	255	8.8	21.0	9.3	126	11	--
24...	1405	4.0	264	8.4	18.5	5.8	--	--	--
24...	1410	6.0	266	7.9	16.0	0.1	--	--	--
24...	1415	8.0	249	7.5	12.0	0.1	--	--	--
24...	1420	10.0	249	7.3	10.5	0.1	--	--	--
24...	1425	12.0	248	7.3	10.0	0.1	--	--	--

WILLOW CREEK BASIN

14034490 WILLOW CREEK LAKE AT HEPPNER, OR--Continued

452037119321000 WILLOW CREEK LAKE SITE 2--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	SAMPLING DEPTH (M)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	OXYGEN, DISSOLVED (MG/L)	ALKALINITY WH WAT TOTAL FIELD MG/L AS CACO3	TURBIDITY (NTU)	TRANSPARENCY (SECCHI DISK) (M)
AUG									
07...	1510	0.0	248	8.9	24.0	10.8	--	--	0.4
07...	1515	2.0	246	8.1	23.0	8.8	116	22	--
07...	1520	4.0	270	8.2	19.5	3.3	--	--	--
07...	1522	6.0	265	7.6	15.0	0.1	--	--	--
07...	1524	8.0	254	7.4	11.5	0.1	--	--	--
07...	1525	10.0	251	7.3	10.5	0.1	--	--	--
07...	1527	12.0	251	7.2	10.0	0.1	--	--	--
14...	1833	0.0	253	9.0	23.0	12.7	--	--	0.4
14...	1838	2.0	252	8.8	22.0	10.8	--	12	--
14...	1841	4.0	277	8.0	18.5	0.7	--	--	--
14...	1844	6.0	278	7.6	14.0	0.1	--	2.6	--
14...	1847	8.0	266	7.3	11.0	0.1	--	--	--
14...	1849	10.0	264	7.3	10.0	0.1	--	--	--
14...	1851	12.0	262	7.3	9.0	0.1	--	--	--
21...	1310	0.0	255	8.7	21.5	7.2	--	20	0.5
21...	1312	2.0	255	8.7	21.0	6.8	--	20	--
21...	1315	4.0	270	8.0	19.0	0.3	--	--	--
21...	1318	5.0	276	7.7	16.0	0.1	--	--	--
21...	1321	6.0	266	7.4	13.0	0.1	--	--	--
21...	1327	8.0	264	7.3	10.5	0.1	--	--	--
21...	1330	9.0	259	7.3	10.0	0.1	--	--	--
21...	1333	10.0	258	7.3	9.5	0.1	--	--	--
21...	1335	12.0	261	7.2	9.5	0.1	--	3.5	--
28...	1436	0.0	266	8.5	22.5	8.2	--	--	1.2
28...	1440	2.0	265	8.5	22.0	7.0	125	11	--
28...	1444	4.0	270	7.9	20.5	0.4	--	--	--
28...	1448	6.0	277	7.5	14.5	0.1	--	--	--
28...	1451	8.0	268	7.3	12.0	0.1	--	--	--
28...	1454	10.0	262	7.2	10.0	0.1	--	12	--
28...	1457	12.0	263	6.9	10.0	0.1	--	--	--
SEP									
04...	1400	0.0	265	8.8	22.5	11.5	--	--	1.4
04...	1405	2.0	266	8.6	21.0	8.8	127	4.8	--
04...	1410	4.0	274	8.0	20.0	3.0	--	--	--
04...	1415	6.0	271	7.5	14.5	0.2	--	--	--
04...	1420	8.0	269	7.3	11.0	0.1	--	--	--
04...	1425	10.0	264	7.3	10.0	0.1	--	--	--
04...	1430	12.0	261	7.2	10.0	0.1	--	8.8	--
11...	1420	0.0	269	8.7	19.5	10.1	--	--	0.9
11...	1425	1.0	271	8.5	18.0	8.0	--	14	--
11...	1433	2.0	270	8.5	18.0	7.2	130	15	--
11...	1437	4.0	270	8.4	18.0	6.8	--	--	--
11...	1443	6.0	275	7.7	16.0	0.2	--	--	--
11...	1447	8.0	269	7.4	11.0	0.2	--	--	--
11...	1452	10.0	266	7.3	10.5	0.2	--	--	--
11...	1456	12.0	264	7.2	10.0	0.2	--	11	--
18...	1505	0.0	267	8.6	17.5	8.3	--	--	1.7
18...	1510	1.0	267	8.6	17.5	8.3	--	--	--
18...	1517	2.0	269	8.5	16.5	7.4	131	3.2	--
18...	1520	4.0	268	8.5	16.5	7.2	--	--	--
18...	1525	6.0	276	7.9	16.0	3.0	--	--	--
18...	1535	8.0	264	7.5	11.5	0.1	--	--	--
18...	1540	10.0	262	7.4	10.5	0.1	--	--	--
18...	1542	12.0	262	7.3	10.0	0.1	--	--	--
24...	1345	0.0	277	8.0	14.5	6.5	--	--	2.2
24...	1352	1.0	277	8.1	14.5	6.4	--	4.5	--
24...	1353	2.0	277	8.1	14.5	6.4	134	3.1	--
24...	1356	4.0	277	8.1	14.5	6.4	--	--	--
24...	1402	6.0	277	8.1	14.5	6.2	--	--	--
24...	1409	8.0	274	7.5	12.5	1.6	--	--	--
24...	1414	10.0	265	7.3	10.5	0.1	--	--	--
24...	1420	12.0	264	7.2	10.0	0.1	--	15	--

14034490 WILLOW CREEK LAKE AT HEPPNER, OR--Continued

452037119321000 WILLOW CREEK LAKE SITE 2--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	SAMPLING DEPTH (M)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)
OCT							
10...	1145	2.0	--	--	0.5	<0.1	0.04
10...	1230	11.0	--	--	0.7	<0.1	0.22
24...	1315	2.0	--	--	0.5	<0.1	0.09
24...	1400	12.0	--	--	0.5	<0.1	0.11
NOV							
01...	1115	2.0	--	--	0.6	<0.1	0.10
01...	1155	11.0	--	--	0.5	<0.1	0.09
MAY							
15...	1210	3.0	--	0.01	0.7	<0.1	0.03
AUG							
07...	1510	0.0	--	--	--	--	--
07...	1515	2.0	--	--	--	--	--
14...	1500	1.0	--	--	--	--	--
14...	1833	0.0	--	--	--	--	--
21...	1310	0.0	--	--	--	--	--
28...	1436	0.0	--	--	--	--	--
28...	1440	2.0	--	--	--	--	--
SEP							
04...	1400	0.0	--	--	--	--	--
04...	1405	2.0	0.02	<0.01	--	<0.1	--
11...	1425	1.0	--	--	--	--	--
18...	1505	0.0	--	--	--	--	--
18...	1510	1.0	--	--	--	--	--
24...	1352	1.0	--	--	--	--	--

DATE	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	SULFIDE TOTAL (MG/L AS S)	CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L)	PHEOPHYTIN A FLUOROMETRIC METHOD (UG/L)
OCT						
10...	--	--	--	--	--	--
10...	--	--	--	--	--	--
24...	--	--	--	11.5	--	0.5
24...	--	--	<0.5	--	--	--
NOV						
01...	--	--	--	21.8	--	--
01...	--	--	--	--	--	--
MAY						
15...	0.03	<0.01	--	--	--	--
AUG						
07...	--	--	--	--	--	3
07...	--	--	--	50	0.4	--
14...	--	--	--	45	1.4	--
14...	--	--	--	--	--	3
21...	--	--	--	41	3.1	5
28...	--	--	--	--	--	8
28...	--	--	--	53	1.5	--
SEP						
04...	--	--	--	37	0.6	3
04...	--	--	--	--	--	--
11...	--	--	--	59	0.4	--
18...	--	--	--	--	--	4
18...	--	--	--	22	0.6	--
24...	--	--	--	6.3	0.1	--

14034490 WILLOW CREEK LAKE AT HEPPNER, OR--Continued

452037119321000 WILLOW CREEK LAKE SITE 2--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

PHYTOPLANKTON

DATE	86/08/07		86/08/14		86/08/21		86/08/28		86/09/04		86/09/18	
SPECIES DIVERSITY	1.24		1.55		1.35		1.12		1.07		1.31	
TOTAL COUNT (#/ML)	5591.		3315.		3647.		7313.		6766.		2092.	
	COUNT	PCT	COUNT	PCT	COUNT	PCT	COUNT	PCT	COUNT	PCT	COUNT	PCT
CHLOROPHYTA GREEN ALGAE												
-CHLOROPHYCEAE												
--VOLVOCALES												
---CHLAMYDOMONADACEAE												
----CHLAMYDOMONAS SPP.	--	--	--	--	27	0.7	--	--	--	--	--	--
---VOLVOCACEAE												
----EUDORINA ELEGANS	37	0.7	25	0.8	54	1.5	93	1.3	--	--	--	--
--CHLOROCOCCALES												
---OOCYSTACEAE												
----ANKISTRODESMUS FALCATUS	37	0.7	25	0.8	54	1.5	231	3.2	762	11.3	104	5.0
----OOCYSTIS LACUSTRIS	148	2.6	25	0.8	--	--	--	--	48	0.7	--	--
----OOCYSTIS PARVA	--	--	25	0.8	--	--	46	0.6	--	--	--	--
----OOCYSTIS PUSILLA	--	--	--	--	--	--	--	--	48	0.7	--	--
PYRRHOPHYTA												
-DINOPHYCEAE DINOFLAGELLATES												
--PERIDINIALES												
---PERIDINIACEAE												
----PERIDINIUM CINCTUM	--	--	25	0.8	--	--	--	--	--	--	--	--
-MISCELLANEOUS DINOFLAGELLATES	--	--	--	--	--	--	46	0.6	--	--	--	--
CRYPTOPHYTA												
-CRYPTOPHYCEAE												
--CRYPTOMONADALES												
---CRYPTOCHRYSIDACEAE												
----RHODOMONAS MINUTA	74	1.3	50	1.5	80	2.2	231	3.2	--	--	163	7.8
---CRYPTOMONADACEAE												
----CRYPTOMONAS SPP.	--	--	--	--	--	--	--	--	--	--	15	0.7
----CRYPTOMONAS EROSA	259	4.6	199	6.0	107	2.9	602	8.2	191	2.8	59	2.8
----CRYPTOMONAS OVATA	74	1.3	--	--	--	--	46	0.6	48	0.7	--	--
CHRYSOPHYTA YELLOW-BROWN ALGAE												
-BACILLARIOPHYCEAE DIATOMS												
--CENTRALES CENTRIC DIATIOMS												
---COSCINODISCACEAE												
----MELOSIRA GRANULATA	--	--	--	--	--	--	--	--	--	--	30	1.4
----MELOSIRA GRANULATA ANGUSTISSIMA	--	--	--	--	--	--	--	--	95	1.4	--	--
----STEPHANODISCUS ASTREA MINUTULA	--	--	--	--	27	0.7	--	--	--	--	--	--
--PENNALES PENNATE DIATOMS												
---FRAGILARIACEAE												
----FRAGILARIA CROTONENSIS	74	1.3	25	0.8	--	--	46	0.6	95	1.4	59	2.8
---ACHNANTHACEAE												
----ACHNANTHES LANCEOLATA	--	--	--	--	--	--	--	--	--	--	15	0.7
---NAVICULACEAE												
----NAVICULA PUPULA	--	--	--	--	--	--	--	--	--	--	15	0.7
----NAVICULA VIRIDULA	--	--	--	--	27	0.7	--	--	--	--	--	--
---GOMPHONEMACEAE												
----GOMPHONEMA OLIVACEUM	--	--	--	--	27	0.7	--	--	--	--	--	--
---EPITHEMIACEAE												
----EPITHEMIA SOREX	--	--	25	0.8	--	--	--	--	--	--	--	--
CYANOPHYTA BLUE-GREEN ALGAE												
-MYXOPHYCEAE												
--OSCILLATORIALES												
---NOSTOCACEAE												
----ANABAENA CIRCINALIS	444	7.9	648	19.5	483	13.2	--	--	--	--	--	--
----APHANIZOMENON FLOS-AQUAE	443	79.5	2243	67.7	2762	75.7	5971	81.6	5479	81.0	1632	78.0

14034490 WILLOW CREEK LAKE AT HEPPNER, OR--Continued

452037119321000 WILLOW CREEK LAKE SITE 2--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

PHYTOPLANKTON

DATE	86/09/24	
SPECIES		
DIVERSITY	1.34	
TOTAL COUNT (#/ML)	1017.	
	COUNT	PCT
CHLOROPHYTA GREEN ALGAE		
-CHLOROPHYCEAE		
--VOLVOCALES		
---VOLVOCACEAE		
----EUDORINA ELEGANS	10	1.0
--CHLOROCOCCALES		
---OOCYSTACEAE		
----ANKISTRODESMUS FALCATUS	90	8.8
CRYPTOPHYTA		
-CRYPTOPHYCEAE		
--CRYPTOMONADALES		
---CRYPTOCHRYSIDACEAE		
----RHODOMONAS MINUTA	30	2.9
---CRYPTOMONADACEAE		
----CRYPTOMONAS EROSA	30	2.9
CHRYSOPHYTA YELLOW-BROWN ALGAE		
-BACILLARIOPHYCEAE DIATOMS		
--PENNALES PENNATE DIATOMS		
---FRAGILARIACEAE		
----FRAGILARIA CROTONENSIS	60	5.9
---NAVICULACEAE		
----NAVICULA CAPITATA	10	1.0
----NAVICULA CRYPTOCEPHALA	10	1.0
CYANOPHYTA BLUE-GREEN ALGAE		
-MYXOPHYCEAE		
--OSCILLATORIALES		
---NOSTOCACEAE		
----APHANIZOMENON FLOS-AQUAE	778	76.5

14034490 WILLOW CREEK LAKE AT HEPPNER, OR--Continued

WATER QUALITY RECORDS

LOCATION.--Lat 45°20'46", long 119°32'32", in SW¼SE¼ sec.35, T.2 S., R.26 E., Morrow County, Hydrologic Unit 17070104, U.S. Corps of Engineer's land, 0.1 mi southeast of outlet structure on Willow Creek Dam, and 0.6 mi southeast of Heppner.

PERIOD OF RECORD.--June 1984 to current year.

REMARKS.--Local identifier 452046119323200 Willow Creek Lake Site 3.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	SAMPLING DEPTH (M)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	OXYGEN, DISSOLVED (MG/L)	TURBIDITY (NTU)	TRANSPARENCY (SECCHI DISK) (M)
OCT								
10...	1000	0.0	275	8.3	11.5	9.0	--	--
10...	1005	1.0	275	8.3	11.5	9.0	--	--
10...	1010	2.0	275	8.3	11.5	8.8	2.9	--
10...	1015	3.0	275	8.3	11.5	8.8	--	--
10...	1020	4.0	277	8.3	11.5	8.5	--	--
10...	1025	5.0	277	8.3	11.5	8.6	--	--
10...	1030	6.0	277	8.3	11.5	8.5	--	--
10...	1035	7.0	279	8.1	11.5	7.4	3.0	--
10...	1040	8.0	278	7.8	11.0	4.0	--	--
10...	1045	9.0	248	7.5	10.0	1.1	--	--
10...	1050	10.0	235	7.2	9.0	0.8	--	1.8
10...	1055	12.0	236	7.0	8.5	0.5	--	--
10...	1100	14.0	234	7.0	8.0	0.5	3.0	--
10...	1105	16.0	236	6.9	8.0	0.5	--	--
10...	1110	18.0	240	6.9	8.0	0.5	2.8	--
10...	1115	20.0	--	--	--	--	1.8	--
10...	1730	0.0	--	--	--	--	--	--
24...	1100	0.0	266	7.7	10.0	7.0	--	--
24...	1105	1.0	266	7.7	9.5	7.0	--	--
24...	1110	2.0	266	7.6	9.5	7.0	1.4	--
24...	1115	3.0	266	7.6	9.5	7.0	--	--
24...	1120	4.0	266	7.6	9.5	7.0	--	--
24...	1125	5.0	266	7.6	9.5	7.0	--	--
24...	1130	6.0	266	7.6	9.5	7.0	--	--
24...	1135	7.0	265	7.6	9.5	7.0	--	--
24...	1140	8.0	265	7.7	9.5	7.0	--	--
24...	1145	9.0	265	7.7	9.5	7.0	--	--
24...	1150	10.0	265	7.6	9.5	7.0	--	--
24...	1155	12.0	265	7.7	9.5	6.9	--	--
24...	1200	14.0	264	7.6	9.5	5.8	--	--
24...	1205	15.0	263	7.4	9.0	4.7	--	--
24...	1210	16.0	254	7.3	9.0	0.1	--	--
24...	1215	17.0	241	7.1	8.5	0.1	--	--
24...	1220	18.0	237	7.0	8.5	0.1	--	--
24...	1225	19.0	234	6.9	7.0	0.1	--	--
24...	1230	19.7	--	--	--	--	1.4	--
NOV								
01...	0930	0.0	267	7.6	9.5	8.1	--	1.5
01...	0935	1.0	267	7.6	9.5	8.0	--	--
01...	0940	2.0	267	7.6	9.5	8.0	4.3	--
01...	0945	3.0	267	7.6	9.5	8.0	--	--
01...	0950	4.0	267	7.6	9.5	8.0	--	--
01...	0955	5.0	267	7.6	9.5	8.0	--	--
01...	1000	6.0	267	7.6	9.5	8.0	--	--
01...	1005	7.0	267	7.6	9.5	8.0	--	--
01...	1010	8.0	267	7.6	9.5	7.9	--	--
01...	1015	10.0	267	7.6	9.5	8.0	--	--
01...	1020	12.0	269	7.6	9.5	8.4	--	--
01...	1025	14.0	269	7.6	9.5	8.7	--	--
01...	1030	16.0	269	7.7	9.0	8.8	--	--
01...	1035	17.0	269	7.7	9.0	8.9	--	--
01...	1040	18.0	269	7.7	9.0	9.3	4.9	--
01...	1045	19.0	267	7.7	9.0	8.8	--	--
01...	1050	19.5	--	--	--	--	1.4	--

14034490 WILLOW CREEK LAKE AT HEPPNER, OR--Continued

452046119323200 WILLOW CREEK LAKE SITE 3--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	SAMPLING DEPTH (M)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	OXYGEN, DISSOLVED (MG/L)	ALKALINITY WH WAT TOTAL FIELD MG/L AS CACO3	TURBIDITY (NTU)	TRANSPARENCY (SECCHI DISK) (M)
MAY									
15...	1345	0.0	219	8.8	12.0	12.6	--	--	--
15...	1350	2.0	222	8.8	11.5	12.4	117	4.4	--
15...	1355	4.0	221	8.8	11.0	11.7	--	--	--
15...	1400	6.0	225	8.6	10.5	10.6	--	--	--
15...	1405	8.0	225	8.5	10.5	10.1	--	--	--
15...	1410	12.0	231	8.4	10.0	9.7	--	3.4	--
15...	1415	13.0	236	8.1	9.5	8.2	--	--	--
15...	1420	14.0	229	7.9	9.0	7.4	--	--	--
15...	1430	16.0	220	7.6	8.5	7.0	--	5.0	--
15...	1435	18.0	219	7.5	8.5	6.4	--	3.7	--
15...	1437	21.0	219	7.4	8.5	6.1	--	--	--
28...	1620	0.0	245	8.5	22.0	9.0	--	--	4.1
28...	1624	1.0	247	8.6	20.5	9.2	--	--	--
28...	1628	2.0	254	8.5	20.0	9.0	124	1.4	--
28...	1632	3.0	247	8.5	18.5	9.1	--	--	--
28...	1636	4.0	237	8.4	14.5	9.3	117	2.0	--
28...	1640	5.0	235	8.4	13.0	9.0	--	--	--
28...	1644	6.0	233	8.3	12.0	9.0	--	--	--
28...	1648	8.0	230	8.2	11.0	8.8	--	--	--
28...	1652	10.0	231	8.0	10.0	7.8	--	--	--
28...	1656	12.0	228	7.8	10.0	7.5	--	--	--
28...	1700	14.0	227	7.6	9.5	7.0	--	--	--
28...	1704	16.0	225	7.4	9.0	6.2	--	--	--
28...	1708	18.0	226	7.3	9.0	5.5	105	4.2	--
28...	1712	20.0	225	7.3	9.0	5.0	--	--	--
28...	1716	20.5	225	7.2	9.0	4.9	--	--	--
JUN									
12...	0832	0.0	266	8.8	22.0	12.2	--	--	1.8
12...	0837	1.0	265	8.8	22.0	12.2	--	1.0	--
12...	0842	2.0	265	8.9	22.0	12.1	137	10	--
12...	0847	3.0	271	8.4	19.5	8.2	--	--	--
12...	0852	4.0	265	8.0	16.5	4.5	--	--	--
12...	0857	5.0	239	7.9	13.0	5.5	--	--	--
12...	0902	6.0	233	8.1	12.0	7.6	--	5.2	--
12...	0907	8.0	230	8.0	11.0	7.3	--	--	--
12...	0912	10.0	231	7.7	10.0	6.3	--	--	--
12...	0917	12.0	230	7.6	9.5	5.4	--	--	--
12...	0922	14.0	229	7.4	9.5	4.7	--	--	--
12...	0927	16.0	229	7.4	9.0	4.1	--	--	--
12...	0932	18.0	229	7.3	9.0	3.7	108	2.0	--
12...	0937	20.0	231	7.3	9.0	2.9	--	--	--
26...	1100	0.0	250	9.0	21.5	11.7	--	--	0.6
26...	1105	1.0	250	9.0	21.5	11.3	--	--	--
26...	1110	2.0	254	8.9	21.0	10.5	129	16	--
26...	1115	3.0	273	8.6	18.5	5.4	--	13	--
26...	1120	4.0	276	8.3	17.5	3.8	--	--	--
26...	1125	5.0	272	7.8	16.0	1.2	--	--	--
26...	1130	6.0	243	7.7	13.0	4.2	--	--	--
26...	1135	7.0	235	7.8	11.5	5.3	--	4.7	--
26...	1140	8.0	236	7.7	11.0	5.0	--	--	--
26...	1145	10.0	235	7.5	10.5	4.4	--	--	--
26...	1150	12.0	234	7.4	9.5	3.2	--	--	--
26...	1155	14.0	235	7.3	9.5	2.6	--	--	--
26...	1200	16.0	235	7.2	9.5	1.9	--	--	--
26...	1205	18.0	235	7.2	9.0	1.4	--	--	--
26...	1210	20.0	238	7.2	9.0	1.0	112	2.6	--
26...	1220	21.0	238	7.1	9.0	1.1	--	--	--
JUL									
10...	1135	0.0	243	9.0	20.0	10.6	--	--	0.7
10...	1145	1.0	243	9.0	20.0	10.6	--	--	--
10...	1150	2.0	245	8.9	19.5	8.9	124	7.3	--
10...	1155	3.0	253	8.7	18.5	7.7	--	--	--
10...	1200	4.0	254	8.6	17.5	5.4	--	6.3	--
10...	1210	5.0	260	8.4	17.0	3.7	--	--	--
10...	1220	6.0	259	7.7	14.0	0.7	--	--	--
10...	1230	7.0	246	7.6	11.5	1.7	--	--	--
10...	1240	8.0	242	7.6	11.0	2.3	--	3.0	--
10...	1245	10.0	245	7.4	10.0	0.8	--	--	--
10...	1250	12.0	242	7.3	10.0	0.5	--	--	--
10...	1255	14.0	243	7.3	9.5	0.1	--	--	--
10...	1300	16.0	242	7.2	9.5	0.1	--	--	--
10...	1310	18.0	242	7.2	9.5	0.1	116	1.3	--
10...	1315	20.0	242	7.2	9.5	0.1	--	--	--
24...	1147	0.0	257	8.7	21.5	10.3	--	--	0.8
24...	1150	1.0	255	8.8	21.0	10.4	--	--	--
24...	1155	2.0	256	8.7	20.5	9.1	131	15	--
24...	1200	3.0	260	8.6	20.5	8.9	--	--	--
24...	1205	4.0	259	8.4	18.5	5.2	--	--	--
24...	1210	5.0	262	8.2	17.5	4.1	--	5.3	--
24...	1215	6.0	264	7.9	16.5	1.5	--	--	--
24...	1225	7.0	252	7.5	13.0	0.1	--	--	--
24...	1235	8.0	247	7.4	11.5	0.1	--	--	--
24...	1240	10.0	247	7.3	10.5	0.1	--	1.7	--
24...	1245	12.0	245	7.2	10.0	0.1	--	--	--
24...	1250	14.0	246	7.2	10.0	0.1	--	--	--
24...	1255	16.0	246	7.2	9.5	0.1	--	--	--
24...	1300	18.0	247	7.2	9.5	0.1	--	--	--
24...	1305	20.0	247	7.2	9.5	0.1	117	1.8	--
24...	1310	20.0	247	7.2	9.5	0.1	117	1.7	--

14034490 WILLOW CREEK LAKE AT HEPPNER, OR--Continued

452046119323200 WILLOW CREEK LAKE SITE 3--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	SAMPLING DEPTH (M)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	OXYGEN, DISSOLVED (MG/L)	ALKALINITY WH WAT TOTAL FIELD MG/L AS CACO3	TURBIDITY (NTU)	TRANSPARENCY (SECCHI DISK) (M)
AUG									
07...	1300	0.0	248	8.8	22.5	10.0	--	--	0.5
07...	1310	1.0	248	8.8	22.0	9.5	--	--	--
07...	1313	2.0	260	8.5	21.5	5.8	119	9.2	--
07...	1316	3.0	266	8.3	20.0	4.0	--	5.7	--
07...	1319	4.0	266	8.1	19.0	1.6	--	--	--
07...	1322	5.0	268	7.7	16.5	0.1	--	--	--
07...	1325	6.0	267	7.6	15.5	0.1	--	--	--
07...	1329	7.0	257	7.4	12.5	0.1	--	--	--
07...	1335	8.0	252	7.3	11.0	0.1	--	--	--
07...	1343	10.0	250	7.1	10.0	0.1	--	--	--
07...	1347	12.0	248	7.1	10.0	0.1	--	--	--
07...	1349	14.0	248	7.1	10.0	0.1	--	--	--
07...	1353	16.0	250	7.0	9.5	0.1	--	--	--
07...	1357	18.0	250	7.1	9.5	0.1	115	1.5	--
07...	1400	20.0	250	7.1	9.5	0.1	--	--	--
14...	1436	1.0	256	8.7	21.0	8.8	--	--	--
14...	1700	0.0	257	8.9	22.0	11.6	--	--	0.4
14...	1706	1.0	256	8.8	21.0	8.9	--	--	--
14...	1709	2.0	256	8.7	21.0	7.7	--	23	--
14...	1712	3.0	256	8.5	20.5	6.8	--	7.1	--
14...	1715	4.0	278	7.8	18.0	0.3	--	--	--
14...	1717	5.0	280	7.7	17.0	0.2	--	--	--
14...	1719	6.0	281	7.6	14.0	0.2	--	--	--
14...	1725	7.0	276	7.5	12.5	0.1	--	--	--
14...	1728	8.0	271	7.4	11.0	0.1	--	--	--
14...	1731	9.0	261	7.3	11.0	0.1	--	--	--
14...	1732	10.0	261	7.3	10.0	0.1	--	2.1	--
14...	1738	12.0	263	7.2	9.0	0.1	--	--	--
14...	1741	14.0	261	7.1	9.0	0.1	--	--	--
14...	1743	15.0	--	7.1	9.0	0.1	--	--	--
14...	1746	16.0	260	7.2	9.0	0.1	--	--	--
14...	1749	18.0	260	7.1	9.0	0.1	--	4.8	--
14...	1752	20.0	263	7.1	9.0	0.1	--	--	--
21...	1120	0.0	252	8.7	21.5	7.0	--	--	0.5
21...	1131	1.0	255	8.7	21.0	6.9	--	24	--
21...	1134	2.0	257	8.5	20.5	4.7	122	22	--
21...	1138	3.0	264	8.3	20.0	2.5	--	--	--
21...	1142	4.0	271	8.0	19.0	0.2	131	3.6	--
21...	1145	5.0	277	7.7	16.0	0.1	--	--	--
21...	1155	6.0	273	7.5	13.5	0.1	--	--	--
21...	1158	7.0	267	7.4	12.0	0.1	--	--	--
21...	1201	8.0	263	7.3	11.0	0.1	--	--	--
21...	1205	9.0	258	7.3	10.0	0.2	--	9.8	--
21...	1210	10.0	256	7.2	9.5	0.2	--	--	--
21...	1212	12.0	256	7.2	9.5	0.1	--	--	--
21...	1215	14.0	256	7.2	9.5	0.1	--	--	--
21...	1217	16.0	256	7.1	9.0	0.1	--	--	--
21...	1220	18.0	260	7.1	9.0	0.1	126	6.4	--
21...	1223	20.0	261	7.1	9.0	0.1	--	--	--
28...	1247	0.0	265	8.4	22.0	6.5	--	--	1.5
28...	1253	1.0	264	8.4	22.0	6.5	--	--	--
28...	1300	2.0	264	8.4	22.0	6.4	126	6.1	--
28...	1311	3.0	264	8.4	22.0	6.2	--	7.0	--
28...	1316	4.0	277	7.9	19.0	0.1	--	3.8	--
28...	1321	5.0	276	7.8	18.0	0.1	--	--	--
28...	1327	6.0	276	7.5	14.5	0.1	--	--	--
28...	1332	7.0	268	7.4	13.5	0.1	--	--	--
28...	1335	8.0	265	7.3	11.5	0.1	--	--	--
28...	1345	9.0	263	7.2	11.0	0.1	--	--	--
28...	1348	10.0	259	7.2	10.5	0.1	--	3.2	--
28...	1353	12.0	259	7.2	10.0	0.1	--	--	--
28...	1357	14.0	260	7.2	10.0	0.1	--	5.4	--
28...	1403	16.0	260	7.1	9.5	0.1	--	--	--
28...	1406	18.0	261	7.1	9.5	0.1	127	7.9	--
28...	1408	20.0	265	7.1	9.5	0.1	--	--	--
SEP									
04...	1150	0.0	267	8.8	22.5	12.1	--	--	1.0
04...	1155	1.0	264	8.8	21.5	12.9	--	12	--
04...	1205	2.0	273	8.5	20.0	9.9	130	4.5	--
04...	1213	3.0	274	8.2	19.5	4.1	--	7.5	--
04...	1220	4.0	274	8.0	19.5	3.0	--	--	--
04...	1225	5.0	278	7.8	18.0	0.2	--	--	--
04...	1240	6.0	272	7.5	14.5	0.2	--	--	--
04...	1245	7.0	267	7.4	12.5	0.2	--	--	--
04...	1250	8.0	265	7.3	11.0	0.1	--	--	--
04...	1255	9.0	261	7.3	10.5	0.1	--	--	--
04...	1258	10.0	260	7.2	10.5	0.1	--	2.9	--
04...	1305	12.0	259	7.2	10.0	0.1	--	--	--
04...	1310	14.0	261	7.2	10.0	0.1	--	--	--
04...	1315	16.0	261	7.2	9.5	0.1	--	--	--
04...	1325	18.0	265	7.1	9.5	0.1	129	12	--

14034490 WILLOW CREEK LAKE AT HEPPNER, OR--Continued

452046119323200 WILLOW CREEK LAKE SITE 3--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	SAMPLING DEPTH (M)	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	OXYGEN, DISSOLVED (MG/L)	ALKALINITY WH WAT TOTAL FIELD MG/L AS CACO3	TURBIDITY (NTU)	TRANSPARENCY (SECCHI DISK) (M)
SEP									
11...	1205	0.0	270	8.5	18.5	8.6	--	--	1.7
11...	1215	1.0	270	8.5	18.0	7.3	--	8.0	--
11...	1220	2.0	270	8.4	18.0	7.0	130	5.5	--
11...	1227	3.0	270	8.5	18.0	6.9	--	--	--
11...	1233	4.0	270	8.5	18.0	6.8	--	8.2	--
11...	1240	5.0	272	8.4	17.5	6.1	--	--	--
11...	1247	6.0	275	7.6	15.0	1.1	--	--	--
11...	1253	7.0	269	7.4	12.0	0.2	--	--	--
11...	1300	8.0	266	7.3	11.5	0.2	--	--	--
11...	1310	9.0	264	7.3	10.5	0.2	--	--	--
11...	1315	10.0	260	7.3	10.0	0.2	--	--	--
11...	1320	12.0	259	7.2	10.0	0.2	--	11	--
11...	1327	14.0	261	7.2	10.0	0.2	--	--	--
11...	1335	16.0	263	7.2	9.5	0.2	--	--	--
11...	1340	18.0	264	7.1	9.5	0.2	134	17	--
18...	1255	0.0	280	8.5	16.5	8.0	--	--	1.8
18...	1258	1.0	270	8.5	16.5	8.1	--	--	--
18...	1302	2.0	270	8.5	16.5	8.0	131	4.5	--
18...	1308	3.0	272	8.5	16.5	6.9	--	--	--
18...	1315	4.0	270	8.5	16.5	7.2	--	--	--
18...	1322	5.0	270	8.5	16.5	7.5	--	3.0	--
18...	1327	6.0	274	7.8	15.5	0.4	--	--	--
18...	1337	7.0	267	7.5	12.5	0.1	--	--	--
18...	1342	8.0	260	7.4	11.5	0.1	--	--	--
18...	1345	10.0	260	7.3	10.5	0.1	--	--	--
18...	1350	12.0	259	7.3	10.0	0.1	--	2.1	--
18...	1355	14.0	259	7.3	10.0	0.1	--	--	--
18...	1400	16.0	263	7.2	10.0	0.1	--	--	--
18...	1405	18.0	266	7.2	10.0	0.1	131	5.0	--
24...	1200	0.0	284	8.0	14.5	6.1	--	--	2.6
24...	1208	1.0	278	8.1	14.5	6.0	--	4.2	--
24...	1215	2.0	278	8.0	14.5	6.0	134	3.3	--
24...	1219	3.0	278	8.0	14.5	5.9	--	--	--
24...	1223	4.0	278	8.0	14.5	5.8	--	--	--
24...	1232	5.0	278	8.0	14.5	5.6	--	--	--
24...	1237	6.0	278	7.9	14.0	4.5	--	--	--
24...	1242	7.0	275	7.6	13.5	2.6	--	2.5	--
24...	1245	8.0	276	7.5	12.5	1.1	--	--	--
24...	1249	9.0	266	7.4	11.0	0.1	--	--	--
24...	1254	10.0	261	7.3	10.5	0.1	--	--	--
24...	1304	11.0	262	7.2	10.0	0.1	--	--	--
24...	1308	12.0	261	7.2	10.0	0.1	--	--	--
24...	1313	14.0	263	7.2	9.5	0.1	--	12	--
24...	1315	16.0	263	7.2	9.5	0.1	--	--	--
24...	1320	18.0	267	7.1	9.5	0.1	132	22	--

WILLOW CREEK BASIN

14034490 WILLOW CREEK LAKE AT HEPPNER, OR--Continued

452046119323200 WILLOW CREEK LAKE SITE 3--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	SAMPLING DEPTH (M)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)
OCT							
10...	1010	2.0	--	--	--	0.6	<0.1
10...	1100	14.0	--	--	--	--	--
10...	1110	18.0	--	--	--	0.9	<0.1
10...	1115	20.0	--	--	--	--	--
24...	1110	2.0	--	--	--	0.5	<0.1
24...	1205	15.0	--	--	--	--	--
24...	1220	18.0	--	--	--	0.9	<0.1
24...	1230	19.7	--	--	--	--	--
NOV							
01...	0940	2.0	--	--	--	0.5	<0.1
01...	1040	18.0	--	--	--	0.5	<0.1
01...	1050	19.5	--	--	--	--	--
MAY							
15...	1350	2.0	0.01	<0.01	0.3	0.8	<0.1
15...	1415	13.0	--	0.01	--	0.4	0.3
15...	1430	16.0	--	0.02	--	0.5	0.6
15...	1435	18.0	0.15	0.02	0.4	0.5	0.6
JUN							
12...	0842	2.0	0.01	<0.01	--	--	<0.1
12...	0932	18.0	0.26	0.01	--	--	0.4
JUL							
10...	1135	0.0	--	--	--	--	--
10...	1150	2.0	0.02	<0.01	--	--	<0.1
10...	1310	18.0	0.30	0.01	--	--	0.4
10...	1315	20.0	--	--	--	--	--
24...	1147	0.0	--	--	--	--	--
24...	1155	2.0	--	--	--	--	--
24...	1310	20.0	--	--	--	--	--

DATE	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	SULFIDE TOTAL (MG/L AS S)	CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L)	PHEOPHYTIN A FLUOROMETRIC METHOD (UG/L)
OCT							
10...	0.05	--	--	--	--	--	--
10...	--	--	--	<0.5	--	--	--
10...	0.37	--	--	11	--	--	--
10...	--	--	--	<0.5	--	--	--
24...	0.09	--	--	--	8.0	--	1.0
24...	--	--	--	<0.5	6.9	--	<0.1
24...	0.27	--	--	<0.5	--	--	--
24...	--	--	--	<0.5	--	--	--
NOV							
01...	0.10	--	--	--	17	--	1.7
01...	0.09	--	--	<0.5	--	--	--
01...	--	--	--	<0.5	--	--	--
MAY							
15...	0.05	0.03	<0.01	--	--	--	--
15...	0.02	0.02	<0.01	--	--	--	--
15...	0.06	0.07	0.04	--	--	--	--
15...	0.06	0.07	0.05	--	--	--	--
JUN							
12...	0.06	0.02	0.01	--	--	--	--
12...	0.10	0.09	0.07	--	--	--	--
JUL							
10...	--	--	--	--	--	--	6.0
10...	0.04	0.02	<0.01	--	--	--	--
10...	0.12	0.10	0.11	<0.5	--	--	--
10...	--	--	--	<0.5	--	--	--
24...	--	--	--	--	--	--	5.0
24...	--	--	--	--	5.6	<0.1	--
24...	--	--	--	<0.5	0.1	<0.1	--

14034490 WILLOW CREEK LAKE AT HEPPNER, OR--Continued

452046119323200 WILLOW CREEK LAKE SITE 3--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	SAMPLING DEPTH (M)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	ARSENIC DISSOLVED (UG/L AS AS)
AUG											
07...	1100	2.0	18	10	19	3.7	9.9	7.0	0.3	26	1
07...	1100	--	--	--	--	--	--	--	--	--	--
07...	1357	18.0	27	8.7	14	2.9	9.3	5.3	0.2	32	1

DATE	CADMIUM DISSOLVED (UG/L AS CD)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	ARSENIC TOTAL IN BOTTOM MATERIAL (UG/G AS AS)	CADMIUM RECOV. FM BOTTOM MATERIAL (UG/G AS CD)	CHROMIUM, RECOV. FM BOTTOM MATERIAL (UG/G)	COPPER, RECOV. FM BOTTOM MATERIAL (UG/G AS CU)	LEAD, RECOV. FM BOTTOM MATERIAL (UG/G AS PB)
AUG											
07...	<1	2	38	<5	5	0.2	--	--	--	--	--
07...	--	--	--	--	--	--	4	<1	10	30	10
07...	<1	1	150	<5	590	0.1	--	--	--	--	--

DATE	TIME	SAMPLING DEPTH (M)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC DIS. (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)
AUG								
07...	1100	2.0	0.03	1.0	--	<0.1	0.03	0.03
07...	1357	18.0	0.59	1.0	--	<0.1	0.19	0.19
SEP								
04...	1205	2.0	0.05	--	<0.01	1.3	--	--
04...	1325	18.0	0.86	--	<0.01	<0.1	--	--

DATE	TIME	SULFIDE TOTAL (MG/L AS S)	CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L)
AUG				
07...	1100	--	6.3	0.3
07...	1130	--	6.0	0.3
07...	1349	<0.5	--	--
07...	1353	<0.5	--	--
07...	1357	<0.5	--	--
07...	1400	<0.5	--	--
14...	1436	--	120	1.8
14...	1732	<0.5	--	--
14...	1743	<0.5	--	--
14...	1752	<0.5	--	--
21...	1131	--	34	2.1
21...	1134	--	40	2.1
21...	1210	<0.5	--	--
21...	1220	<0.5	--	--
21...	1223	<0.5	--	--
28...	1253	--	21	1.3
28...	1300	--	24	0.9
28...	1348	<0.5	--	--
28...	1357	0.8	--	--
28...	1406	1.0	--	--

DATE	TIME	SULFIDE TOTAL (MG/L AS S)	CHLOR-A PHYTOPLANKTON CHROMO FLUOROM (UG/L)	CHLOR-B PHYTOPLANKTON CHROMO FLUOROM (UG/L)
SEP				
04...	1155	--	49	0.6
04...	1250	<0.5	--	--
04...	1310	<0.5	--	--
04...	1325	1.3	--	--
11...	1215	--	37	0.3
11...	1300	1.3	--	--
11...	1315	2.7	--	--
11...	1327	0.6	--	--
11...	1340	2.1	--	--
18...	1258	--	17	0.3
18...	1342	1.8	--	--
18...	1350	1.4	--	--
18...	1400	2.7	--	--
18...	1405	1.9	--	--
24...	1208	--	1.5	<0.1
24...	1254	1.3	--	--
24...	1313	1.4	--	--
24...	1320	1.8	--	--

14034490 WILLOW CREEK LAKE AT HEPPNER, OR--Continued

452046119323200 WILLOW CREEK LAKE SITE 3--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

PHYTOPLANKTON

DATE	86/05/15		86/05/28		86/06/26		86/07/10		86/07/24		86/08/07	
SPECIES DIVERSITY	2.31		2.00		0.45		0.14		0.73		1.06	
TOTAL COUNT (#/ML)	3978.		69.		13508.		9482.		5349.		3836.	
	COUNT	PCT	COUNT	PCT	COUNT	PCT	COUNT	PCT	COUNT	PCT	COUNT	PCT
CHLOROPHYTA GREEN ALGAE												
-CHLOROPHYCEAE												
--VOLVOCALES												
---CHLAMYDOMONADACEAE												
----CHLAMYDOMONAS SPP.	--	--	--	--	111	0.8	--	--	--	--	--	--
---VOLVOCACEAE												
----EUDORINA ELEGANS	--	--	--	--	--	--	--	--	--	--	52	1.4
--TETRASPORALES												
---PALMELLACEAE												
----SPHAEROCYSTIS SCHROETERI	--	--	--	--	--	--	--	--	87	1.6	--	--
--CHLOROCOCCALES												
---OOCYSTACEAE												
----ANKISTRODESMUS FALCATUS	--	--	17	25.0	199	1.5	79	0.8	43	0.8	26	0.7
----OOCYSTIS SPP.	--	--	--	--	--	--	--	--	--	--	26	0.7
----OOCYSTIS LACUSTRIS	--	--	--	--	--	--	79	0.8	43	0.8	26	0.7
----OOCYSTIS PUSILLA	--	--	--	--	166	1.2	--	--	--	--	--	--
EUGLENOPHYTA EUGLENOIDS												
-EUGLENOPHYCEAE												
--EUGLENALES												
---EUGLENACEAE												
----TRACHELOMONAS SPP.	30	0.8	--	--	--	--	--	--	--	--	--	--
----TRACHELOMONAS VOLVOCINA	30	0.8	--	--	--	--	--	--	--	--	--	--
CRYPTOPHYTA												
-CRYPTOPHYCEAE												
--CRYPTOMONADALES												
---CRYPTOCHRYSIDACEAE												
----RHODOMONAS MINUTA	--	--	4	6.3	--	--	--	--	43	0.8	26	0.7
---CRYPTOMONADACEAE												
----CRYPTOMONAS EROSA	150	3.8	--	--	--	--	--	--	43	0.8	209	5.4
----CRYPTOMONAS OVATA	120	3.0	--	--	55	0.4	--	--	--	--	--	--
CHRYSOPHYTA YELLOW-BROWN ALGAE												
-CHRYSOPHYCEAE												
--CHRYSOMONADALES												
---SYNURACEAE												
----MALLOMONAS SPP.	90	2.3	4	6.3	--	--	--	--	--	--	--	--
-BACILLARIOPHYCEAE DIATOMS												
--CENTRALES CENTRIC DIATIOMS												
---COSCINODISCACEAE												
----CYCLOTELLA MENEGHINIANA	1376	34.6	4	6.3	--	--	--	--	--	--	--	--
----MELOSIRA GRANULATA ANGUSTISSIMA	--	--	--	--	--	--	--	--	43	0.8	--	--
----STEPHANODISCUS ASTREA MINUTULA	1615	40.6	--	--	--	--	--	--	43	0.8	--	--
----STEPHANODISCUS HANTZSCHII	60	1.5	--	--	--	--	--	--	--	--	--	--
--PENNALES PENNATE DIATOMS												
---FRAGILARIACEAE												
----FRAGILARIA CROTONENSIS	--	--	--	--	55	0.4	--	--	174	3.3	52	1.4
----FRAGILARIA VAUCHERIAE	30	0.8	--	--	--	--	--	--	--	--	--	--
----SYNEDRA ACUS	329	8.3	--	--	--	--	--	--	--	--	--	--
----SYNEDRA ULNA	30	0.8	--	--	--	--	--	--	--	--	--	--
---ACHNANTHACEAE												
----ACHNANTHES LANCEOLATA	--	--	--	--	50	0.4	--	--	--	--	--	--
---NAVICULACEAE												
----NAVICULA SPP.	30	0.8	--	--	--	--	--	--	--	--	--	--
---NITZSCHIACEAE												
----NITZSCHIA DISSIPATA	--	--	4	6.3	--	--	--	--	--	--	--	--
CYANOPHYTA BLUE-GREEN ALGAE												
-MYXOPHYCEAE												
--OSCILLATORIALES												
---NOSTOCACEAE												
----ANABAENA CIRCINALIS	--	--	--	--	--	--	--	--	--	--	235	6.1
----ANABAENA SPP.	--	--	35	50.0	--	--	--	--	--	--	--	--
----APHANIZOMENON FLOS-AQUAE	30	0.8	--	--	13292	97.2	9323	98.3	4827	90.2	3183	83.0

WILLOW CREEK BASIN

14034490 WILLOW CREEK LAKE AT HEPPNER, OR--Continued

452046119323200 WILLOW CREEK LAKE SITE 3--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

PHYTOPLANKTON

DATE	86/08/14		86/08/21		86/08/28		86/09/04		86/09/11		86/09/18	
SPECIES DIVERSITY	1.32		1.35		1.11		0.74		0.83		0.92	
TOTAL COUNT (#/ML)	6116.		3749.		3278.		9061.		7788.		2802.	
	COUNT	PCT	COUNT	PCT	COUNT	PCT	COUNT	PCT	COUNT	PCT	COUNT	PCT
CHLOROPHYTA GREEN ALGAE												
-CHLOROPHYCEAE												
--VOLVOCALES												
---CHLAMYDOMONADACEAE												
----CHLAMYDOMONAS SPP.	--	--	83	2.4	--	--	--	--	--	--	--	--
---VOLVOCACEAE												
----EUDORINA ELEGANS	--	--	56	1.6	--	--	--	--	--	--	19	0.7
--CHLOROCOCCALES												
---OOCYSTACEAE												
----ANKISTRODESMUS FALCATUS	81	1.3	83	2.4	90	2.8	659	7.3	357	4.6	76	2.7
----CLOSTERIOPSIS LONGISSIMA	41	0.7	--	--	--	--	--	--	--	--	--	--
----OOCYSTIS LACUSTRIS	--	--	56	1.6	45	1.4	55	0.6	--	--	--	--
----OOCYSTIS PARVA	--	--	28	0.7	--	--	--	--	--	--	--	--
----OOCYSTIS PUSILLA	--	--	--	--	45	1.4	55	0.6	--	--	--	--
EUGLENOPHYTA EUGLENOIDS												
-EUGLENOPHYCEAE												
--EUGLENALES												
---EUGLENACEAE												
----TRACHELOMONAS SPP.	--	--	28	0.8	--	--	--	--	--	--	--	--
----TRACHELOMONAS VOLVOCINA	--	--	28	0.8	45	1.4	--	--	--	--	--	--
PYRRHOPHYTA												
-DINOPHYCEAE DINOFLAGELLATES												
--PERIDINIALES												
---PERIDINIACEAE												
----PERIDINIUM CINCTUM	--	--	28	0.7	23	0.7	--	--	--	--	--	--
CRYPTOPHYTA												
-CRYPTOPHYCEAE												
--CRYPTOMONADALES												
---CRYPTOCHRYSIDACEAE												
----RHODOMONAS MINUTA	--	--	56	1.6	90	2.8	220	2.4	119	1.5	114	4.1
---CRYPTOMONADACEAE												
----CRYPTOMONAS EROSA	446	7.3	28	0.8	158	4.8	110	1.2	238	3.1	76	2.7
----CRYPTOMONAS OVATA	--	--	--	--	--	--	--	--	59	0.8	19	0.7
CHRYSOPHYTA YELLOW-BROWN ALGAE												
-BACILLARIOPHYCEAE DIATOMS												
--CENTRALES CENTRIC DIATIOMS												
---COSCINODISCACEAE												
----MELOSIRA GRANULATA	--	--	--	--	--	--	--	--	59	0.8	--	--
----MELOSIRA GRANULATA ANGUSTISSIMA	--	--	--	--	--	--	--	--	--	--	19	0.7
--PENNALES PENNATE DIATOMS												
---FRAGILARIACEAE												
----ASTERIONELLA FORMOSA	--	--	--	--	--	--	--	--	59	0.8	--	--
----FRAGILARIA CROTONENSIS	41	0.7	56	1.6	45	1.4	--	--	59	0.8	57	2.0
----FRAGILARIA VAUCHERIAE	--	--	28	0.7	--	--	--	--	--	--	--	--
---ACHNANTHACEAE												
----ACHNANTHES MINUTISSIMA	--	--	28	0.7	--	--	--	--	--	--	--	--
---NAVICULACEAE												
----NAVICULA MINIMA	41	0.7	--	--	--	--	--	--	--	--	--	--
CYANOPHYTA BLUE-GREEN ALGAE												
-MYXOPHYCEAE												
--OSCILLATORIALES												
---NOSTOCACEAE												
----ANABAENA CIRCINALIS	1175	19.2	417	12.1	--	--	--	--	--	--	--	--
----APHANIZOMENON FLOS-AQUAE	4293	70.2	2555	74.2	2735	83.4	7963	87.9	6837	87.8	2420	86.4

14034490 WILLOW CREEK LAKE AT HEPPNER, OR--Continued

452046119323200 WILLOW CREEK LAKE SITE 3--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

PHYTOPLANKTON

DATE	86/09/24	
SPECIES		
DIVERSITY	2.06	
TOTAL COUNT	279.	
(#/ML)		
	COUNT	PCT
CHLOROPHYTA GREEN ALGAE		
-CHLOROPHYCEAE		
--CHLOROCOCCALES		
---OOCYSTACEAE		
----ANKISTRODESMUS FALCATUS	14	4.9
----OOCYSTIS LACUSTRIS	3	1.2
CRYPTOPHYTA		
-CRYPTOPHYCEAE		
--CRYPTOMONADALES		
---CRYPTOCHRYSIDACEAE		
----RHODOMONAS MINUTA	31	11.0
---CRYPTOMONADACEAE		
----CRYPTOMONAS EROSA	14	4.9
CHRYSOPHYTA YELLOW-BROWN ALGAE		
-BACILLARIOPHYCEAE DIATOMS		
--CENTRALES CENTRIC DIATIOMS		
---COSCINODISCACEAE		
----STEPHANODISCUS ASTREA MINUTULA	7	2.4
----STEPHANODISCUS HANTZSCHII	3	1.2
--PENNALES PENNATE DIATOMS		
---FRAGILARIACEAE		
----FRAGILARIA CROTONENSIS	27	9.8
----MERIDION CIRCULARE	3	1.2
---ACHNANTHACEAE		
----ACHNANTHES LINEARIS	3	1.2
---CYMBELLACEAE		
----AMPHORA OVALIS	3	1.2
CYANOPHYTA BLUE-GREEN ALGAE		
-MYXOPHYCEAE		
--OSCILLATORIALES		
---NOSTOCACEAE		
----APHANIZOMENON FLOS-AQUAE	170	61.0

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, 0.2 mi downstream from Willow Creek Dam and at mile 52.2.

DRAINAGE AREA.--96.8 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1951 to current year.

REVISED RECORDS.--WDR OR-83-1: Drainage area.

GAGE.--Water-stage recorder. Concrete control since September 1985. Datum of gage is 1,952.73 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Willow Creek Lake, 0.2 mi upstream, since Feb. 16, 1983. Many diversions for irrigation upstream from station. Part of flow of Ditch Creek (John Day River basin) is diverted to Willow Creek upstream from station.

AVERAGE DISCHARGE.--31 years (water years 1951-82), 19.1 ft^3/s, 13,840 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 812 ft^3/s May 10, 1957, gage height, 6.15 ft, from rating curve extended above 230 ft^3/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 ft^3/s June 14, 1903, result of slope-area measurement (see WSP 96). Discharge for flood of Feb. 22, 1949, was 1,700 ft^3/s, result of slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 313 ft^3/s Feb. 24, gage height, 5.35 ft; minimum discharge, 1.7 ft^3/s July 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	4.4	5.1	12	57	236	58	23	23	3.6	3.7	2.9
2	4.4	4.4	5.1	12	61	197	52	23	20	3.6	3.8	3.7
3	4.4	4.4	5.1	12	62	123	47	23	16	3.6	3.8	4.2
4	4.4	4.4	5.1	12	62	92	45	23	13	3.7	3.4	4.1
5	4.4	4.4	5.1	12	62	92	44	23	13	3.4	4.1	4.1
6	4.5	4.4	11	12	59	83	44	23	13	3.4	3.8	4.2
7	4.5	4.4	25	12	53	72	40	23	13	3.3	3.8	4.2
8	4.4	4.5	50	12	51	72	33	23	13	3.5	3.8	4.2
9	4.4	4.5	51	17	47	72	33	23	13	3.7	3.8	4.2
10	4.4	4.5	44	32	40	79	33	23	13	3.7	3.8	4.2
11	4.4	4.5	31	40	40	89	32	23	6.8	3.7	3.8	4.2
12	4.4	4.5	26	40	39	88	32	23	6.6	3.7	3.9	4.2
13	4.4	4.5	26	40	32	89	31	23	7.5	3.8	3.4	4.2
14	4.4	4.5	26	40	26	84	28	23	7.4	3.8	4.2	4.2
15	4.4	4.5	26	40	26	75	22	23	7.5	3.4	3.9	4.2
16	3.9	4.5	22	40	62	75	20	21	7.3	4.1	3.8	4.2
17	5.0	4.5	19	40	151	62	20	18	6.0	3.7	3.9	3.9
18	4.4	4.0	19	40	211	55	20	18	5.5	3.7	3.8	3.8
19	4.4	4.9	19	40	175	55	20	15	5.5	3.6	3.8	4.2
20	4.4	4.5	19	40	123	55	20	13	5.5	3.6	3.8	4.2
21	4.4	4.5	19	40	104	55	20	16	5.3	3.6	3.7	4.2
22	4.5	4.5	19	40	96	55	18	18	5.3	3.6	4.1	4.9
23	4.5	4.5	19	40	100	55	18	18	5.2	3.7	3.9	4.2
24	4.4	4.5	19	40	199	55	19	18	4.7	3.7	3.9	4.2
25	4.4	4.8	19	40	264	60	20	18	4.7	3.7	3.9	4.2
26	4.4	5.1	16	40	254	63	20	18	4.5	3.7	3.9	4.1
27	4.4	5.1	13	31	242	63	20	21	3.9	3.7	3.9	4.1
28	4.4	5.1	13	26	242	63	22	23	3.7	3.7	3.9	4.1
29	4.4	5.1	13	26	---	63	23	23	3.7	3.7	3.9	4.2
30	4.4	5.1	13	26	---	63	23	23	3.6	3.7	3.7	4.2
31	4.4	---	13	42	---	60	---	23	---	3.7	3.3	---
TOTAL	136.9	137.5	615.5	936	2940	2500	877	649	260.2	113.1	118.2	123.7
MEAN	4.42	4.58	19.9	30.2	105	80.6	29.2	20.9	8.67	3.65	3.81	4.12
MAX	5.0	5.1	51	42	264	236	58	23	23	4.1	4.2	4.9
MIN	3.9	4.0	5.1	12	26	55	18	13	3.6	3.3	3.3	2.9
AC-FT	272	273	1220	1860	5830	4960	1740	1290	516	224	234	245

CAL YR 1985	TOTAL	6879.0	MEAN	18.8	MAX	99	MIN	2.8	AC-FT	13640
WTR YR 1986	TOTAL	9407.1	MEAN	25.8	MAX	264	MIN	2.9	AC-FT	18660

14034500 WILLOW CREEK AT HEPPNER, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1984 to current year.

REMARKS.--Local identifier 452057119324800.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	TEMPERATURE WATER (DEG C)	TURBIDITY (NTU)	SPECIFIC CONDUCTANCE (US/CM)	SAMPLING DEPTH (M)	OXYGEN, DISSOLVED (MG/L)	PH (STANDARD UNITS)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	COLIFORM, TOTAL, DELAYED (COLS. PER 100 ML)
OCT									
09...	1745	10.5	--	217	0.0	12.0	8.3	--	--
23...	1645	--	--	--	0.0	--	--	2	--
24...	1300	11.0	--	269	0.0	11.6	7.5	--	--
31...	1615	--	--	--	0.0	--	--	1	4
NOV									
01...	1100	--	3.5	248	0.0	--	7.8	--	--
MAY									
14...	1850	11.0	7.0	224	0.0	--	9.0	4	11
28...	1108	23.0	--	253	0.0	--	8.7	4	26
JUN									
11...	1735	--	5.7	269	0.0	10.8	9.2	24	56
25...	1415	16.0	8.8	272	0.0	10.8	9.2	--	12
JUL									
09...	1810	19.0	6.0	248	0.0	9.4	9.2	6	10
23...	1745	20.5	7.8	266	0.0	8.8	9.1	17	33
AUG									
06...	1610	22.0	10	259	0.0	--	9.3	24	130
13...	1842	20.0	9.0	274	0.0	7.0	8.9	24	150
20...	1840	20.0	18	285	0.0	7.3	9.1	42	150
27...	1736	21.0	5.6	267	0.0	7.3	8.9	21	85
SEP									
03...	1830	19.5	5.9	271	0.0	7.5	8.9	58	81
10...	1805	--	10	273	0.0	8.3	8.8	18	21
17...	1850	15.5	6.5	279	0.0	7.6	8.6	14	54
23...	1645	14.0	4.7	277	0.0	8.1	9.0	19	210

14034800 RHEA CREEK NEAR HEPPNER, OR

LOCATION.--Lat 45°15'46", long 119°36'51", in NW¼SW¼ sec.32, T.3 S., R.26 E., Morrow County, Hydrologic Unit 17070104, on left bank 150 ft downstream from road bridge, 0.8 mi downstream from Sanford Canyon, 8 mi southwest of Heppner, and at mile 25.6. Prior to Nov. 4, at site 1,000 ft downstream.

DRAINAGE AREA.--120 mi^2, approximately.

PERIOD OF RECORD.--August 1960 to current year.

REVISED RECORD.--WDR OR-84-1: 1983.

GAGE.--Water-stage recorder. Elevation of gage is 2,320 ft, from topographic map. Prior to May 28, 1976, at site 0.6 mi downstream at different datum and May 28, 1976 to Nov. 3, 1982, at site 1,000 ft downstream at datum 10.5 ft lower.

REMARKS.--Estimated daily discharges: Nov. 11-16, 21-26, 28-30, Dec. 1, 2, 17-31, Jan. 1. Records good except those for periods of estimated daily discharges, and those above 250 ft^3/s, which are poor. No regulation. Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--26 years, 23.3 ft^3/s, 16,880 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,280 ft^3/s June 10, 1969, gage height, 7.05 ft, site and datum then in use, from rating curve extended above 130 ft^3/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.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 230 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 16	1900	297	4.35	Feb. 23	0100	*509	*a5.40

Minimum discharge, 2.9 ft^3/s Aug. 14, 15.

a From floodmark.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	8.1	10	12	98	127	49	20	16	6.1	4.1	3.9
2	6.1	7.9	11	16	100	115	45	20	15	6.5	4.0	3.7
3	6.4	7.8	13	15	94	105	42	21	14	7.2	4.3	3.7
4	6.1	8.2	17	13	83	96	40	21	13	8.7	4.2	3.6
5	6.1	8.2	41	33	81	89	37	21	13	9.3	4.2	3.1
6	6.4	8.3	88	23	75	87	34	24	13	8.6	4.0	3.1
7	16	10	108	19	66	90	32	23	13	7.7	3.9	3.1
8	10	12	84	23	53	89	31	22	12	6.9	3.8	3.1
9	8.7	10	65	51	48	104	29	21	12	7.0	3.7	3.4
10	8.9	8.9	48	90	47	99	28	22	12	7.7	3.6	3.4
11	9.7	8.5	38	80	41	93	27	21	11	8.1	3.6	3.7
12	9.6	8.2	36	64	38	87	29	20	10	7.1	3.5	4.1
13	8.7	8.0	28	55	37	83	28	19	7.5	6.6	3.1	4.3
14	8.3	8.4	25	53	35	81	26	18	6.6	6.1	3.1	4.6
15	8.1	9.0	23	48	57	80	27	17	7.7	6.0	3.0	4.8
16	8.0	12	21	62	228	84	26	16	7.9	6.0	3.1	5.7
17	7.8	21	20	86	235	85	23	15	8.6	6.5	3.1	5.5
18	7.7	17	19	83	219	83	23	14	8.7	5.7	3.2	7.1
19	7.6	16	18	89	181	80	20	14	8.7	5.4	3.2	6.2
20	7.5	15	17	79	135	73	18	15	8.6	5.1	3.2	6.8
21	8.1	12	16	62	111	70	20	32	8.4	4.9	3.3	8.2
22	10	9.0	15	61	279	66	21	29	8.2	4.8	3.3	7.0
23	11	8.0	15	79	390	65	22	27	7.3	4.6	3.4	6.6
24	9.4	8.2	14	66	262	76	21	25	6.5	4.5	3.5	9.3
25	8.9	8.7	14	54	207	67	22	23	6.2	4.1	3.4	9.6
26	8.6	10	14	46	187	63	21	22	6.4	4.3	3.3	8.9
27	8.2	13	13	42	162	60	23	21	6.3	4.5	3.2	9.1
28	8.0	12	13	43	140	57	23	20	7.1	4.5	3.4	9.6
29	8.0	11	12	59	---	55	21	19	7.5	4.3	3.9	9.7
30	8.0	10	12	87	---	54	20	18	6.7	4.3	4.0	10
31	8.2	---	12	92	---	50	---	17	---	4.3	4.1	---
TOTAL	260.2	314.4	880	1685	3689	2513	828	637	288.9	187.4	110.7	174.9
MEAN	8.39	10.5	28.4	54.4	132	81.1	27.6	20.5	9.63	6.05	3.57	5.83
MAX	16	21	108	92	390	127	49	32	16	9.3	4.3	10
MIN	6.1	7.8	10	12	35	50	18	14	6.2	4.1	3.0	3.1
AC-FT	516	624	1750	3340	7320	4980	1640	1260	573	372	220	347

CAL YR 1985	TOTAL	10502.4	MEAN	28.8	MAX	168	MIN	3.8	AC-FT	20830
WTR YR 1986	TOTAL	11568.5	MEAN	31.7	MAX	390	MIN	3.0	AC-FT	22950

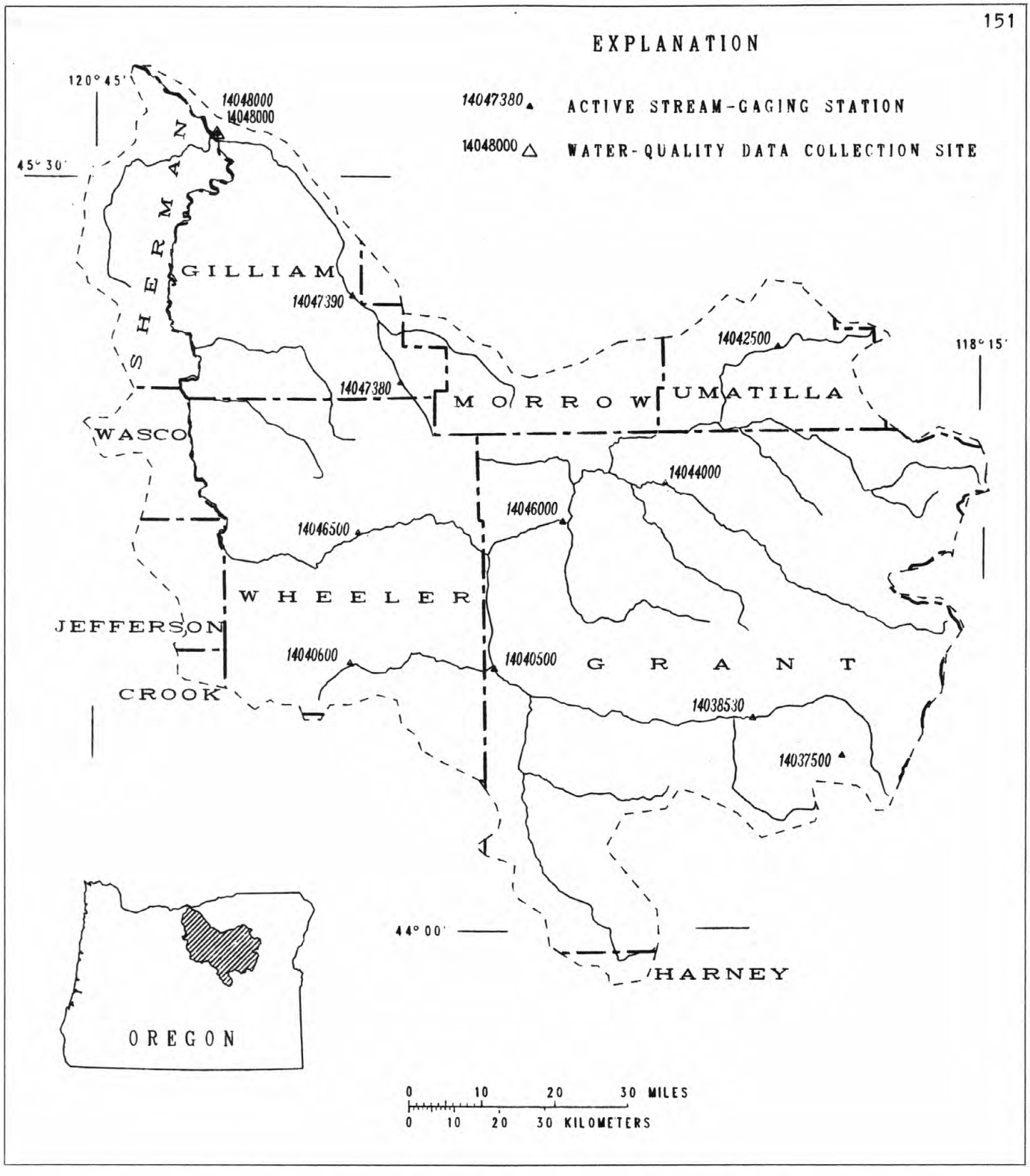

Figure 5.--Location of surface-water and water-quality stations in the John Day River basin.

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 mi^2.

PERIOD OF RECORD.--October 1930 to current year. Prior to October 1944, published as "above South Fork, near Prairie City."

REVISED RECORDS.--WSP 1488: 1932-33. WSP 1738: Drainage area.

GAGE.--Water-stage recorder and log control. Datum of gage is 4,909.57 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Nov. 21 to Dec. 3, Dec. 10-13, Feb. 8-12. Records fair except for estimated daily discharges, which are poor. Flow affected by natural storage in Strawberry Lake. No diversion upstream from station.

AVERAGE DISCHARGE.--56 years, 13.0 ft^3/s, 25.22 in/yr, 9,420 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 354 ft^3/s May 31, 1983, gage height, 2.45 ft, from rating curve extended above 190 ft^3/s; maximum gage height, 3.23 ft May 24, 1956 (backwater from logs); minimum discharge, 1.0 ft^3/s Mar. 20, 1955.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 205 ft^3/s May 31, gage height, 1.94 ft; minimum discharge, 2.2 ft^3/s several days in January.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	3.3	2.9	2.3	4.6	14	14	18	74	19	7.9	4.2
2	2.9	3.6	3.0	2.2	4.6	14	14	18	86	19	7.5	4.2
3	2.9	3.6	3.1	2.2	4.2	14	13	19	88	18	7.3	4.1
4	2.9	3.8	3.1	2.2	4.1	13	13	19	103	18	7.0	4.0
5	2.9	3.7	2.9	2.3	3.6	12	12	19	96	17	6.8	3.9
6	3.0	3.7	2.9	2.2	3.5	12	12	18	87	16	6.7	3.9
7	3.1	3.8	2.9	2.2	3.2	27	12	18	83	16	6.4	3.9
8	2.8	3.9	2.9	2.3	3.1	35	13	17	75	16	6.3	4.0
9	2.7	3.8	2.9	2.7	3.0	30	14	17	67	15	6.0	3.9
10	2.7	3.9	2.8	2.6	3.0	25	15	16	59	15	5.9	3.9
11	2.8	3.9	2.7	2.4	2.9	22	16	15	53	14	5.6	3.9
12	2.8	3.9	2.8	2.6	2.9	21	16	15	52	14	5.4	3.9
13	2.7	3.9	2.8	2.7	2.9	19	15	15	53	14	5.3	3.9
14	2.7	3.9	2.9	2.5	3.1	17	15	15	52	14	5.0	3.9
15	2.7	3.9	2.9	2.4	3.3	16	15	14	49	13	5.0	3.9
16	2.7	3.9	2.9	2.9	3.2	15	14	14	49	13	5.0	3.9
17	2.7	3.6	2.8	3.0	3.2	14	14	14	48	12	4.8	4.0
18	2.7	3.6	2.7	3.2	3.5	14	14	16	46	12	4.6	3.9
19	2.7	3.6	2.7	3.2	3.3	13	14	20	44	11	4.6	3.9
20	2.7	3.6	2.8	3.4	3.2	12	14	25	41	11	4.6	3.9
21	2.8	3.5	2.9	3.3	3.2	12	15	27	37	11	4.6	3.9
22	2.8	3.2	2.8	3.2	3.9	11	18	26	34	11	4.6	3.7
23	3.1	2.8	2.7	3.2	4.9	11	21	25	31	10	4.6	3.7
24	3.1	2.6	2.7	3.2	6.7	12	22	25	29	10	4.5	4.1
25	3.3	2.7	2.7	3.1	8.6	12	21	29	28	9.9	4.4	3.9
26	3.3	2.8	2.7	3.1	9.8	11	21	41	26	9.6	4.2	3.9
27	3.6	2.8	2.7	3.1	10	12	20	59	24	9.1	4.2	3.9
28	3.5	2.8	2.7	3.2	12	14	21	91	23	8.8	4.2	3.9
29	3.2	2.8	2.4	3.5	---	13	19	105	23	8.5	4.2	4.0
30	3.2	2.8	2.4	4.1	---	14	19	140	20	8.2	4.2	3.9
31	3.2	---	2.4	4.5	---	14	---	142	---	7.9	4.2	---
TOTAL	91.1	103.7	86.5	89.0	127.5	495	476	1052	1580	401.0	165.6	118.0
MEAN	2.94	3.46	2.79	2.87	4.55	16.0	15.9	33.9	52.7	12.9	5.34	3.93
MAX	3.6	3.9	3.1	4.5	12	35	22	142	103	19	7.9	4.2
MIN	2.7	2.6	2.4	2.2	2.9	11	12	14	20	7.9	4.2	3.7
CFSM	.42	.49	.40	.41	.65	2.29	2.27	4.84	7.53	1.84	.76	.56
IN.	.48	.55	.46	.47	.68	2.63	2.53	5.59	8.40	2.13	.88	.63
AC-FT	181	206	172	177	253	982	944	2090	3130	795	328	234

CAL YR 1985	TOTAL	3887.3	MEAN	10.7	MAX	82	MIN	1.8	CFSM	1.53	IN.	20.66	AC-FT	7710
WTR YR 1986	TOTAL	4785.4	MEAN	13.1	MAX	142	MIN	2.2	CFSM	1.87	IN.	25.43	AC-FT	9490

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 mi^2.

PERIOD OF RECORD.--October 1968 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,130.56 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 20-24, 27, July 29 to Aug. 3, Aug. 16-23, Sept. 2, 3-8. Records good. No regulation upstream. Many diversions upstream from station for irrigation.

AVERAGE DISCHARGE.--18 years, 224 ft^3/s, 162,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,830 ft^3/s June 9, 1969, gage height, 10.80 ft, from floodmark; minimum discharge, 3.5 ft^3/s Aug. 26-28, 1969.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 15	1630	885	5.26	Feb. 23	0030	*2,680	*7.59
Feb. 18	1930	885	5.25	Mar. 7	2330	1,690	6.36

Minimum daily discharge, 15 ft^3/s Aug. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	102	125	204	148	281	691	407	227	653	66	38	36
2	101	124	249	131	257	653	381	209	623	58	37	36
3	100	124	267	129	245	584	351	221	570	57	37	34
4	100	125	183	122	232	533	332	241	483	72	35	33
5	99	135	170	128	230	512	318	244	425	91	40	29
6	99	131	165	146	212	523	308	274	381	83	39	28
7	113	141	173	127	188	942	308	252	348	76	32	30
8	109	168	166	125	171	1360	312	235	285	80	35	40
9	108	156	150	230	160	1130	332	239	243	85	34	50
10	109	151	139	197	169	867	348	288	219	93	28	53
11	110	141	129	173	168	752	344	270	197	101	26	53
12	115	136	126	156	168	652	345	247	174	87	28	53
13	110	124	149	156	166	579	332	238	165	78	32	54
14	110	135	153	155	173	532	303	227	169	74	31	53
15	110	138	149	153	627	479	285	214	167	72	28	63
16	110	142	172	208	510	448	270	202	158	74	21	69
17	110	146	141	325	375	412	268	185	140	86	19	85
18	109	136	124	282	728	377	249	193	136	79	17	113
19	109	133	122	251	648	358	236	213	138	78	16	112
20	108	136	115	253	477	342	232	233	123	70	15	119
21	108	132	110	190	426	337	244	358	114	68	17	111
22	122	129	105	183	1480	333	304	310	110	66	19	103
23	153	102	105	214	2210	329	328	263	95	70	18	102
24	161	127	110	182	1220	358	315	223	73	60	17	131
25	148	187	118	157	889	346	307	232	67	62	17	142
26	141	148	120	149	792	336	286	340	62	62	21	137
27	136	160	120	150	724	344	285	443	68	62	21	123
28	131	188	125	159	699	378	283	537	70	55	26	122
29	128	221	133	211	---	420	262	601	74	50	32	122
30	126	211	132	383	---	442	243	667	71	44	33	135
31	124	---	145	331	---	428	---	673	---	38	38	---
TOTAL	3619	4352	4569	5904	14625	16777	9118	9299	6601	2197	847	2371
MEAN	117	145	147	190	522	541	304	300	220	70.9	27.3	79.0
MAX	161	221	267	383	2210	1360	407	673	653	101	40	142
MIN	99	102	105	122	160	329	232	185	62	38	15	28
AC-FT	7180	8630	9060	11710	29010	33280	18090	18440	13090	4360	1680	4700

CAL YR 1985	TOTAL	70818	MEAN	194	MAX	740	MIN	29	AC-FT	140500
WTR YR 1986	TOTAL	80279	MEAN	220	MAX	2210	MIN	15	AC-FT	159200

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 mi^2, approximately.

PERIOD OF RECORD.--April 1926 to current year. Monthly discharge only April 1926, published in WSP 1318.

REVISED RECORDS.--WSP 1218: 1950. WSP 1348: Drainage area. WSP 1448: 1926, 1928, 1932(M), 1936.

GAGE.--Water-stage recorder. Datum of gage is 2,229.84 ft above 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.--Estimated daily discharges: Nov. 25 to Dec. 5, Aug. 11-15. Records good except those for period of no gage-height record Aug. 11-15, which are fair, and period of ice effect Nov. 25 to Dec. 5, which are poor. The period Dec. 16-28 is rated fair due to slight effect from ice. No regulation. Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--60 years, 505 ft^3/s, 365,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,170 ft^3/s Dec. 22, 1964, gage height, 14.97 ft; minimum discharge, 1.0 ft^3/s for several days in August and September 1930, Aug. 8, 9, 1936, Sept. 9, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 19	0300	2,260	8.32	Mar. 8	1000	4,910	11.29
Feb. 23	2330	*5,710	*11.98				

Minimum discharge, 28 ft^3/s Aug. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	184	274	275	301	1040	2820	1530	707	934	143	47	40
2	186	272	300	323	926	2690	1440	670	863	136	50	45
3	182	268	320	304	876	2430	1330	667	864	127	48	48
4	180	266	325	289	784	2230	1260	728	775	127	49	47
5	176	275	340	295	744	2130	1190	714	701	144	51	46
6	178	280	346	318	687	2120	1150	776	640	155	48	44
7	200	279	360	308	606	2960	1130	760	626	150	50	47
8	215	321	360	297	545	4630	1120	713	571	143	47	48
9	215	339	341	320	484	4080	1140	684	505	141	46	50
10	208	325	309	442	499	3350	1160	774	454	149	44	60
11	210	305	273	411	514	2980	1130	775	411	155	42	72
12	213	291	263	379	504	2640	1120	749	367	152	41	79
13	213	268	274	366	508	2390	1080	709	336	141	40	77
14	225	272	295	378	486	2250	1010	664	314	133	38	84
15	225	296	296	377	796	2070	935	632	312	132	37	89
16	223	311	305	439	1390	1940	906	597	301	135	35	99
17	222	320	301	866	1330	1800	861	560	280	138	35	115
18	220	313	296	727	1780	1650	830	543	255	146	36	146
19	220	296	287	791	1930	1570	762	556	257	145	36	175
20	219	296	291	714	1430	1520	722	582	249	144	34	180
21	217	283	289	577	1290	1500	711	794	229	133	33	199
22	234	299	290	526	3020	1490	845	850	212	120	29	189
23	290	276	288	557	5220	1460	910	756	190	112	31	187
24	336	271	290	535	4630	1550	881	677	177	111	31	206
25	335	270	301	457	3690	1540	849	626	164	106	30	239
26	319	275	316	429	3290	1460	814	635	156	108	32	263
27	304	280	300	426	3010	1460	802	725	152	102	30	257
28	293	290	296	431	2860	1530	848	802	142	91	33	247
29	284	285	303	530	---	1620	783	889	141	86	37	245
30	279	280	317	1210	---	1650	746	939	141	68	39	254
31	275	---	309	1220	---	1620	---	955	---	52	40	---
TOTAL	7280	8676	9456	15543	44869	67130	29995	22208	11719	3925	1219	3877
MEAN	235	289	305	501	1602	2165	1000	716	391	127	39.3	129
MAX	336	339	360	1220	5220	4630	1530	955	934	155	51	263
MIN	176	266	263	289	484	1460	711	543	141	52	29	40
AC-FT	14440	17210	18760	30830	89000	133200	59500	44050	23240	7790	2420	7690

CAL YR 1985	TOTAL	193179	MEAN	529	MAX	2950	MIN	26	AC-FT	383200
WTR YR 1986	TOTAL	225897	MEAN	619	MAX	5220	MIN	29	AC-FT	448100

14040600 MOUNTAIN CREEK NEAR MITCHELL, OR

LOCATION.--Lat 44°32'06", long 120°01'45", in NW¼NE¼ sec.13, T.12 S., R.22 E., Wheeler County, Hydrologic Unit 17070201, on left bank about 1.5 mi southwest of Highway 26, and about 7 mi southeast of Mitchell.

DRAINAGE AREA.--20.0 mi^2.

PERIOD OF RECORD.--October 1985 to September 1986. May 1966 to September 1985 available from Oregon Water Resources Department.

GAGE.--Water-stage recorder.

REMARKS.--Estimated daily discharges: Oct. 30, Nov. 5, 8-21, Nov. 23 to Feb. 16, Feb. 20, June 2 to July 24. Records good except those for Nov. 8-21, Nov. 23 to Feb. 20, June 2 to July 24, which are poor. Several diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--20 years (1966-86), 11.8 ft^3/s, 8,550 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 538 ft^3/s June 9, 1969, gage height, 2.46 ft; maximum gage height, 3.57 ft Feb. 14, 1981, backwater from ice; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 82 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 18	1300	a	*2.62	Mar. 7	1530	*107	1.98
Feb. 24	2200	84	1.85				

Minimum discharge, 0.40 ft^3/s Aug 24.

a Backwater from ice.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	2.7	3.8	6.0	16	52	35	19	11	2.5	1.1	.61
2	1.4	2.6	4.7	7.0	12	47	31	21	10	2.5	1.1	.61
3	1.5	2.6	15	10	11	40	28	26	9.5	2.5	1.1	.61
4	1.5	2.7	14	8.0	10	39	27	26	9.0	4.5	1.1	.61
5	1.3	3.0	12	8.0	9.5	39	26	22	8.5	7.0	.98	.61
6	1.4	3.2	12	7.6	9.5	43	27	23	8.0	5.0	.98	.61
7	2.6	3.2	12	7.5	9.5	81	27	21	7.5	4.0	.98	.61
8	2.1	3.2	9.0	8.4	9.5	74	28	17	7.0	2.5	.98	.61
9	1.6	3.2	6.8	9.4	9.7	66	28	19	6.6	2.3	.98	.79
10	1.8	3.1	6.5	11	9.7	57	27	22	6.2	3.0	.98	.79
11	2.5	3.1	6.0	9.0	10	49	25	20	5.8	2.9	.79	.79
12	2.4	3.1	4.8	7.6	12	43	25	18	5.4	2.5	.79	.69
13	2.0	3.1	4.8	7.6	12	42	26	17	5.1	2.0	.98	.79
14	2.2	3.4	5.1	7.6	12	37	23	17	4.8	1.9	.79	.79
15	2.2	3.5	5.4	8.5	15	33	22	16	4.5	2.1	.79	1.1
16	2.3	3.5	5.4	12	22	31	22	16	4.2	2.3	.79	1.1
17	2.2	3.5	5.4	20	25	29	21	16	4.0	2.3	.79	1.5
18	2.0	3.5	5.2	15	27	26	20	17	3.7	2.2	.69	1.5
19	1.9	3.5	5.2	8.5	20	25	19	17	3.5	1.9	.69	1.3
20	2.1	3.1	5.2	8.0	17	27	19	22	3.2	1.7	.69	1.5
21	1.7	2.8	5.2	8.0	15	31	21	37	3.0	1.5	.69	1.3
22	2.3	2.4	5.2	8.0	42	29	24	24	2.9	1.3	.61	1.6
23	3.7	2.4	5.2	8.0	55	32	24	20	2.7	1.3	.53	1.5
24	3.4	4.0	5.2	8.0	68	43	22	17	2.5	1.3	.46	2.1
25	2.9	3.5	5.2	8.0	66	33	24	16	2.5	1.3	.46	1.7
26	3.4	3.3	5.2	8.0	60	31	22	16	2.5	1.5	.53	2.1
27	2.8	3.5	5.2	8.0	56	37	24	16	2.5	1.5	.53	2.4
28	2.8	3.6	5.2	8.0	55	40	23	15	2.5	1.3	.61	2.1
29	2.7	3.6	5.4	9.0	---	42	21	13	2.5	1.3	.79	2.4
30	2.7	3.7	5.5	11	---	41	20	12	2.5	1.2	.69	2.4
31	2.7	---	5.6	18	---	36	---	11	---	1.1	.61	---
TOTAL	69.5	95.6	206.4	288.7	695.4	1275	731	589	153.6	72.2	24.58	37.12
MEAN	2.24	3.19	6.66	9.31	24.8	41.1	24.4	19.0	5.12	2.33	.79	1.24
MAX	3.7	4.0	15	20	68	81	35	37	11	7.0	1.1	2.4
MIN	1.3	2.4	3.8	6.0	9.5	25	19	11	2.5	1.1	.46	.61
AC-FT	138	190	409	573	1380	2530	1450	1170	305	143	49	74

CAL YR 1985	TOTAL	4608.56	MEAN	12.6	MAX	109	MIN	.88	AC-FT	9140
WTR YR 1986	TOTAL	4238.10	MEAN	11.6	MAX	81	MIN	.46	AC-FT	8410

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 mi^2.

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 current year. Monthly discharge only for some periods, published in WSP 1318. Published as "above Cable Creek, near Ukiah" 1914-17, 1919-24.

REVISED RECORDS.--WSP 1448: 1916, 1920, 1922(M), 1924.

GAGE.--Water-stage recorder. Datum of gage is 3,588.61 ft above 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.--Estimated daily discharges: Nov. 11-22, 24-30, Dec. 1-6, 12-31, Jan. 1-23, 25-27, Feb. 9-12. Records good except those for periods of ice effect Nov. 11-22, 24-30, Dec. 1-6, 12-31, Jan. 1-23, 25-27, Feb. 9-12, and those above 950 ft^3/s, which are poor. No regulation. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--50 years (water years 1915-17, 1922-23, 1942-86), 97.3 ft^3/s, 70,490 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,840 ft^3/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 ft^3/s Aug. 9, 1932, June 24 to July 2, 1940.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 550 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
unknown	unknown	(a)	*4.15	Mar. 7	1730	1,110	3.21
Feb. 23	2230	*1,560	3.70				

Minimum discharge, 3.6 ft^3/s Aug. 17-21, 27, 28.

(a) From outside high-water mark; backwater from ice jam.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.8	15	25	37	328	575	277	118	58	10	5.1	5.0
2	5.8	14	26	38	263	542	235	116	50	9.6	4.9	4.9
3	6.0	14	27	41	219	460	197	125	45	9.1	4.9	4.9
4	6.0	14	30	42	186	414	178	126	43	13	4.7	4.3
5	6.0	14	37	43	163	416	169	122	37	16	4.5	4.2
6	6.0	14	65	45	134	438	166	147	33	12	4.4	4.3
7	8.3	22	161	47	114	800	166	174	32	9.8	4.4	4.3
8	14	42	150	50	90	857	169	177	28	9.3	4.4	4.6
9	14	29	129	56	70	725	173	167	25	9.1	4.2	5.3
10	14	26	96	70	45	600	167	164	23	10	4.1	5.2
11	13	25	80	80	45	495	157	159	21	11	4.1	5.2
12	13	23	40	72	50	415	156	143	19	9.6	4.2	5.2
13	13	20	36	66	55	342	140	133	18	8.9	4.3	5.2
14	13	19	35	63	55	293	121	123	18	8.1	4.4	5.3
15	12	17	36	66	83	246	116	115	22	7.6	4.1	5.5
16	12	24	37	84	217	219	116	106	17	8.6	4.0	5.7
17	12	27	38	120	398	195	116	98	16	9.8	4.0	6.2
18	11	30	37	230	328	176	110	97	15	8.7	3.9	7.5
19	11	31	36	220	230	170	104	103	15	7.6	3.8	7.2
20	11	32	35	140	175	179	106	116	14	7.3	3.7	11
21	11	31	34	120	148	208	118	151	13	6.5	3.7	12
22	11	30	33	100	279	207	168	129	12	6.5	3.9	9.0
23	14	29	34	95	1070	197	171	110	11	6.1	4.9	8.2
24	17	21	35	80	1190	302	144	95	11	5.9	4.6	11
25	19	14	35	85	904	274	132	88	9.7	5.8	4.3	13
26	18	17	34	76	761	267	116	100	10	5.8	4.4	11
27	18	22	33	70	644	310	125	112	9.6	5.8	4.1	11
28	17	26	32	67	581	365	142	102	10	5.7	3.9	15
29	16	27	33	169	---	397	134	89	14	5.7	4.5	14
30	16	26	34	414	---	380	125	78	11	5.2	4.7	17
31	15	---	36	385	---	320	---	69	---	5.3	5.3	---
TOTAL	378.9	695	1529	3271	8825	11784	4514	3752	660.3	259.4	134.4	232.2
MEAN	12.2	23.2	49.3	106	315	380	150	121	22.0	8.37	4.34	7.74
MAX	19	42	161	414	1190	857	277	177	58	16	5.3	17
MIN	5.8	14	25	37	45	170	104	69	9.6	5.2	3.7	4.2
AC-FT	752	1380	3030	6490	17500	23370	8950	7440	1310	515	267	461

CAL YR 1985	TOTAL	32230.5	MEAN	88.3	MAX	990	MIN	4.1	AC-FT	63930
WTR YR 1986	TOTAL	36035.2	MEAN	98.7	MAX	1190	MIN	3.7	AC-FT	71480

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 mi^2.

PERIOD OF RECORD.--October 1929 to current year.

REVISED RECORDS.--WSP 739: 1931. WSP 1218: 1950. WSP 1448: 1930-32, 1937, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,544.56 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Nov. 23 to Dec. 7, Dec. 12 to Jan. 10, Jan. 17, Feb. 10-13. Records good except those for periods of ice effect, Nov. 23 to Dec. 7, Dec. 12 to Jan. 10, Jan. 17, Feb. 10-13, which are poor. No regulation. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--57 years, 257 ft^3/s, 186,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,730 ft^3/s Jan. 30, 1965, gage height, 8.39 ft, from rating curve extended above 2,200 ft^3/s; maximum gage height, 9.13 ft Feb. 1, 1963, ice jam; minimum discharge, 0.90 ft^3/s Aug. 19, 20, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 23	0800	2,710	6.61	Mar. 8	0700	(a)	*7.29
Mar. 8	0700	*3,330	7.16	Mar. 30	0500	1,020	4.94

Minimum discharge, 27 ft^3/s Aug. 21, 22.

(a) From outside high-water mark.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	58	65	60	536	1520	875	469	776	88	43	36
2	44	59	64	64	464	1450	797	464	694	81	42	37
3	44	58	66	67	483	1270	713	489	653	79	42	37
4	44	57	73	72	393	1190	678	506	589	82	41	36
5	43	62	95	70	356	1160	645	477	526	111	39	34
6	44	64	110	66	295	1190	642	533	460	104	38	32
7	63	85	130	64	221	1680	657	518	465	89	37	32
8	68	157	166	70	184	2890	689	476	386	83	37	35
9	54	123	147	77	165	2320	731	457	339	83	36	37
10	51	100	122	84	150	1860	743	491	301	84	35	39
11	53	79	99	111	130	1540	717	469	274	91	35	40
12	55	68	90	104	140	1280	695	442	250	84	35	39
13	53	56	73	95	145	1110	645	427	231	75	34	39
14	51	50	70	90	151	1030	586	419	215	71	34	39
15	50	63	77	88	257	914	538	404	214	67	35	41
16	51	77	74	101	364	858	514	387	191	65	34	42
17	50	81	73	170	514	790	494	386	174	73	34	46
18	50	76	71	261	671	705	461	427	160	71	34	53
19	48	69	70	331	613	671	426	472	159	64	33	55
20	48	72	69	279	449	690	415	552	147	60	31	53
21	48	66	66	200	431	743	467	645	138	56	29	56
22	53	68	68	148	1080	756	667	606	129	54	32	53
23	68	58	70	144	2460	739	657	530	121	53	43	53
24	92	52	64	140	2160	845	591	489	113	52	41	62
25	89	43	63	131	1930	822	576	540	105	51	36	88
26	81	52	66	115	1810	774	546	670	100	49	35	79
27	73	56	60	118	1650	793	547	810	99	48	33	75
28	67	62	56	130	1560	870	593	866	99	47	32	70
29	63	68	55	272	---	974	535	890	97	46	35	75
30	58	67	56	596	---	1000	499	887	92	45	37	92
31	57	---	58	588	---	951	---	846	---	44	36	---
TOTAL	1756	2106	2486	4906	19762	35385	18339	17044	8297	2150	1118	1505
MEAN	56.6	70.2	80.2	158	706	1141	611	550	277	69.4	36.1	50.2
MAX	92	157	166	596	2460	2890	875	890	776	111	43	92
MIN	43	43	55	60	130	671	415	386	92	44	29	32
AC-FT	3480	4180	4930	9730	39200	70190	36380	33810	16460	4260	2220	2990

CAL YR 1985	TOTAL	87497	MEAN	240	MAX	1740	MIN	27	AC-FT	173600
WTR YR 1986	TOTAL	114854	MEAN	315	MAX	2890	MIN	29	AC-FT	227800

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 mi^2, approximately.

PERIOD OF RECORD.--March 1925 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 754: 1932(M). WSP 1448: 1927, 1931(M), 1949.

GAGE.--Water-stage recorder. Datum of gage is 1,959.64 ft above 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.--Estimated daily discharges: Nov. 24-30, Dec. 1-10, 13-31, Jan. 1-19, Feb. 10-13. Records good except those for periods of ice effect, Nov. 24-30, Dec. 1-10, 13-31, Jan. 1-19, Feb. 10-13, which are poor. Very slight regulation by small reservoirs upstream. Many small diversions for irrigation upstream from station. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--61 years, 1,297 ft^3/s, 939,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,400 ft^3/s Jan. 30, 1965, gage height, 18.45 ft, from rating curve extended above 17,000 ft^3/s; minimum discharge, 6 ft^3/s sometime during period Nov. 2-13, 1936 (result of freezeup); minimum daily, 17 ft^3/s Dec. 12, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 30	1400	6,680	8.27	Mar. 8	0100	14,100	11.42
Feb. 18	2400	6,090	7.98	Mar. 30	0700	6,070	7.97
Feb. 23	1100	*19,700	*13.53				

Minimum discharge, 103 ft^3/s Sept. 6-8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	160	248	200	260	4300	7780	4720	2300	3400	387	151	118
2	163	244	190	290	3820	7420	4110	2240	3040	357	146	120
3	163	246	200	340	3600	6600	3560	2430	2870	343	145	119
4	163	248	230	330	2860	6010	3340	2580	2690	350	143	116
5	163	244	280	330	2540	5930	3200	2430	2380	411	137	112
6	161	260	350	340	2110	5920	3220	2560	2050	472	131	107
7	181	265	450	350	1720	9270	3340	2570	2050	397	129	104
8	247	520	640	370	1350	12900	3570	2400	1780	346	128	105
9	236	588	580	380	1130	11400	3910	2270	1570	331	126	114
10	198	449	480	430	1000	9070	4020	2380	1430	355	124	121
11	190	386	386	540	900	7520	3740	2300	1320	351	121	125
12	212	282	307	510	920	6440	3480	2170	1230	362	118	123
13	222	231	270	470	950	5560	3180	2070	1150	321	118	123
14	209	180	250	450	960	5220	2830	2080	1060	288	118	121
15	195	199	260	540	1360	4620	2620	2020	1080	263	115	123
16	194	316	270	950	2760	4350	2560	1940	989	253	113	137
17	195	391	270	1050	5280	3920	2420	1900	896	267	113	144
18	196	365	260	2000	5380	3460	2290	2020	821	287	111	170
19	195	321	240	2500	4580	3300	2110	2260	780	261	111	178
20	189	307	250	2070	3300	3290	2100	2610	721	238	107	197
21	188	298	260	1410	2990	3510	2380	3220	660	220	107	198
22	210	263	260	1200	7590	3610	3430	3160	613	205	106	209
23	258	193	260	1320	17100	3520	3670	2670	567	193	112	195
24	312	170	260	1160	13900	4290	3170	2400	526	186	124	216
25	386	160	270	906	11600	4330	2930	2430	491	180	126	280
26	381	170	260	780	10100	4030	2740	2810	458	176	117	331
27	360	190	250	790	8800	4280	2600	3390	440	173	111	293
28	315	220	250	888	7990	4950	2840	3750	435	171	109	267
29	293	220	260	1530	---	5630	2580	3880	436	166	116	271
30	268	210	250	5680	---	5810	2430	3810	418	160	113	294
31	248	---	250	5180	---	5270	---	3680	---	154	120	---
TOTAL	7051	8384	9193	35344	130890	179210	93090	80730	38351	8624	3766	5131
MEAN	227	279	297	1140	4675	5781	3103	2604	1278	278	121	171
MAX	386	588	640	5680	17100	12900	4720	3880	3400	472	151	331
MIN	160	160	190	260	900	3290	2100	1900	418	154	106	104
AC-FT	13990	16630	18230	70100	259600	355500	184600	160100	76070	17110	7470	10180

CAL YR 1985	TOTAL	453647	MEAN	1243	MAX	10300	MIN	105	AC-FT	899800
WTR YR 1986	TOTAL	599764	MEAN	1643	MAX	17100	MIN	104	AC-FT	1190000

14046500 JOHN DAY RIVER AT SERVICE CREEK, OR

LOCATION.--Lat 44°47'38", long 120°00'20", in 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 mi^2, approximately.

PERIOD OF RECORD.--March 1925 to September 1926, October 1929 to current year. Monthly discharge only March 1925 to September 1926, published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 1,632.42 ft above National Geodetic Vertical Datum of 1929. See WSP 1738 for history of changes prior to Feb. 24, 1957.

REMARKS.--Estimated daily discharges: Nov. 22-30, Dec. 1-7, 11-31, Jan. 1, 2, Feb. 11-13. Records excellent except those for periods of ice effect Nov. 22-30, Dec. 1-7, 11-31, Jan. 1, 2, Feb. 11-13, which are poor. Very slight regulation by several small reservoirs upstream from station. Many small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--58 years, 1,947 ft^3/s, 1,411,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,200 ft^3/s Dec. 23, 1964, gage height, 17.85 ft, from rating curve extended above 14,000 ft^3/s on basis of slope-area measurement of peak flow; minimum discharge, 6.0 ft^3/s Aug. 23, 24, 1973.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,300 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 30	2130	8,640	8.36	Feb. 23	1930	(a)	*14.15
Feb. 19	0630	9,060	8.53	Mar. 8	1030	18,200	11.67
Feb. 23	1930	*25,400	13.77				

Minimum discharge, 119 ft^3/s Aug. 24.

(a) From floodmark.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	421	610	460	560	6080	11400	6860	3210	4590	576	220	172
2	421	597	360	640	5340	10900	6220	3080	4190	555	211	176
3	424	590	430	716	5230	9950	5480	3160	3910	524	207	171
4	421	584	470	692	4370	8960	5060	3430	3660	515	197	170
5	421	584	520	696	3870	8620	4790	3390	3330	541	190	168
6	414	588	700	722	3400	8470	4710	3410	2910	628	191	164
7	425	601	1050	759	2940	10100	4760	3530	2690	635	186	155
8	455	622	1370	747	2390	17700	4950	3340	2590	567	179	150
9	531	989	1200	783	1970	16500	5260	3160	2190	520	172	155
10	521	898	1010	970	1830	14200	5530	3180	1950	502	165	172
11	486	800	800	1200	1600	11800	5320	3310	1750	545	157	184
12	486	702	580	1090	1650	10100	5030	3130	1620	542	158	204
13	502	599	540	1010	1700	8860	4750	2940	1500	543	159	215
14	514	532	520	1020	1710	8220	4300	2870	1390	491	153	215
15	515	530	540	1090	1770	7480	3910	2820	1320	450	152	217
16	515	605	530	1230	3940	6970	3750	2700	1320	430	151	233
17	508	710	520	2180	6520	6470	3590	2570	1180	435	148	262
18	508	771	510	3190	7610	5840	3430	2570	1090	444	147	305
19	501	709	500	3900	7990	5420	3160	2810	1030	465	143	355
20	501	666	520	3590	5850	5260	3010	3140	1000	439	143	397
21	499	644	540	2690	5100	5340	3130	3970	939	418	137	434
22	499	520	530	2080	9210	5560	3910	4510	873	382	134	451
23	538	460	540	2210	21900	5470	4940	3840	815	346	131	453
24	618	420	550	2170	21700	5830	4490	3390	749	322	124	459
25	710	400	560	1800	17000	6550	4080	3170	701	311	140	491
26	758	430	540	1500	14600	6030	3880	3390	657	300	153	586
27	747	450	530	1450	13300	6060	3610	4020	640	296	149	622
28	731	440	540	1510	11900	6680	3830	4600	613	284	145	585
29	688	460	540	1830	---	7470	3670	4890	608	267	166	565
30	657	450	530	5810	---	7880	3430	4910	603	261	169	581
31	632	---	520	7700	---	7560	---	4850	---	244	162	---
TOTAL	16567	17961	19050	57535	192470	263650	132840	107290	52408	13778	5039	9467
MEAN	534	599	615	1856	6874	8505	4428	3461	1747	444	163	316
MAX	758	989	1370	7700	21900	17700	6860	4910	4590	635	220	622
MIN	414	400	360	560	1600	5260	3010	2570	603	244	124	150
AC-FT	32860	35630	37790	114100	381800	522900	263500	212800	104000	27330	9990	18780

CAL YR 1985	TOTAL	707379	MEAN	1938	MAX	13600	MIN	165	AC-FT	1403000
WTR YR 1986	TOTAL	888055	MEAN	2433	MAX	21900	MIN	124	AC-FT	1761000

14047380 LONE ROCK CREEK NEAR LONEROCK, OR

LOCATION.--Lat 45°05'30", long 119°53'10", in SE¼NE¼ sec.36, T.5 S., R.23 E., Gilliam County, Hydrologic Unit 17070204, on left bank about 800 ft downstream from road bridge in Lonerock.

DRAINAGE AREA.--69 mi^2, approximately.

PERIOD OF RECORD.--January 1966 to September 1974, October 1975 to current year. Prior to October 1985, in reports of Oregon Water Resources Department.

GAGE.--Water-stage recorder. Elevation of gage is 2,810 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Sept. 9, 1975, at datum approximately 0.5 ft higher.

REMARKS.--Estimated daily discharges: Oct. 1, 2, 9-31, Nov. 1-7, 10-30, Dec. 1-3, 11-14, 16-31, Jan. 1-7. Records good except for periods of no gage-height record Oct. 1, 2, 9-31, Nov. 1-7, 10-30, Dec. 1-3, and ice effect Dec. 11-14, 16-31, Jan. 1-7, which are poor.

AVERAGE DISCHARGE.--19 years (1966-74, 1975-86), 19.8 ft^3/s, 3.90 in/yr, 14,340 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum recorded discharge, 1,210 ft^3/s Jan. 23, 1970, gage height, 5.78 ft, datum then in use; minimum discharge, no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 220 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 30	0630	327	3.57	Feb. 22	2130	*634	*4.34
Feb. 17	1600	265	3.33	Mar. 7	1430	244	3.23

Minimum discharge, 0.07 ft^3/s Aug. 27, 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	2.9	2.1	2.3	134	159	35	11	2.9	.82	.17	.10
2	1.8	2.9	2.2	2.4	132	139	33	10	3.1	.68	.19	.10
3	1.9	2.9	3.0	2.6	99	124	29	11	3.2	.86	.16	.10
4	1.9	2.9	4.6	3.0	77	112	28	12	3.3	1.5	.15	.10
5	1.9	2.9	4.8	3.5	64	106	26	11	3.6	2.1	.15	.09
6	2.1	2.6	7.8	4.3	52	112	24	12	3.5	1.5	.15	.09
7	4.6	3.7	14	5.6	43	181	21	11	3.5	.92	.12	.09
8	3.7	4.4	11	8.0	33	153	19	10	3.4	.30	.11	.09
9	3.5	4.4	7.5	21	31	168	19	10	3.0	.29	.11	.10
10	3.4	4.0	5.8	26	28	167	18	11	2.6	.39	.10	.10
11	3.4	3.0	5.5	21	26	156	17	10	2.3	.41	.09	.11
12	3.4	2.0	5.4	18	24	136	18	10	2.2	.26	.11	.11
13	3.3	2.1	5.2	17	23	122	18	9.7	1.9	.25	.10	.12
14	3.2	2.1	5.0	18	23	118	17	8.8	1.8	.20	.10	.14
15	3.0	2.3	4.9	16	29	105	16	7.6	1.5	.18	.11	.18
16	2.9	2.7	4.5	58	100	100	16	6.9	1.7	.21	.11	.28
17	2.9	5.7	4.3	72	214	92	16	5.0	1.6	.22	.11	.47
18	2.9	5.2	4.2	74	182	86	15	4.3	1.6	.22	.10	.98
19	2.8	4.7	4.0	87	116	85	13	3.4	1.7	.37	.10	.91
20	2.8	3.7	3.3	54	91	73	12	3.6	1.7	.27	.10	.99
21	3.0	2.5	2.9	36	83	68	13	11	1.6	.23	.10	.91
22	3.5	2.0	2.7	40	375	61	13	11	1.2	.20	.10	.94
23	4.0	1.9	2.7	52	460	63	13	7.4	1.0	.18	.09	1.2
24	4.3	1.9	2.6	33	373	82	12	5.5	.82	.19	.11	2.2
25	3.9	2.2	2.6	26	260	61	12	4.0	.75	.18	.09	2.1
26	3.6	2.5	2.5	23	220	55	12	3.9	.57	.21	.08	1.9
27	3.2	2.7	2.4	24	194	52	14	4.3	.78	.21	.07	1.8
28	3.1	2.4	2.4	34	174	49	14	3.9	.78	.19	.08	1.8
29	3.0	2.1	2.3	99	---	46	12	3.7	.94	.18	.12	2.0
30	2.9	2.0	2.2	249	---	42	11	3.3	.83	.18	.11	2.3
31	2.9	---	2.2	166	---	37	---	2.7	---	.17	.11	---
TOTAL	94.5	89.3	136.6	1295.7	3660	3110	536	239.0	59.37	14.07	3.50	22.40
MEAN	3.05	2.98	4.41	41.8	131	100	17.9	7.71	1.98	.45	.11	.75
MAX	4.6	5.7	14	249	460	181	35	12	3.6	2.1	.19	2.3
MIN	1.7	1.9	2.1	2.3	23	37	11	2.7	.57	.17	.07	.09
CFSM	.04	.04	.06	.61	1.90	1.45	.26	.11	.03	.01	.00	.01
IN.	.05	.05	.07	.70	1.97	1.68	.29	.13	.03	.01	.00	.01
AC-FT	187	177	271	2570	7260	6170	1060	474	118	28	6.9	44

CAL YR 1985	TOTAL	6854.46	MEAN	18.8	MAX	260	MIN	.11	CFSM	.27	IN.	3.70	AC-FT	13600
WTR YR 1986	TOTAL	9260.44	MEAN	25.4	MAX	460	MIN	.07	CFSM	.37	IN.	4.99	AC-FT	18370

14047390 ROCK CREEK ABOVE WHYTE PARK, NEAR CONDON, OR

LOCATION.--Lat 45°15'53", long 120°01'15", in NE¼SW¼ sec.36, T.3 S., R.22 E., Gilliam County, Hydrologic Unit 17070204, on left bank 0.2 mi upstream from Whyte Park, 8.0 mi northeast of Condon, and at mile 40.8.

DRAINAGE AREA.--297 mi^2.

PERIOD OF RECORD.--October 1975 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,714.50 ft above National Geodetic Vertical Datum of 1929 (Soil Conservation Service temporary bench mark).

REMARKS.--Estimated daily discharges: Nov. 10-30; Dec. 1, 2, 6, 8-17, 19-26, 28, 29; Jan.29; Mar. 13 to June 25. Records fair except those for Feb. 23, 24, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--11 years, 64.1 ft^3/s, 46,440 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,360 ft^3/s May 5, 1983, gage height, 9.17 ft; maximum gage height, 9.4 ft Feb. 6, 1979; minimum discharge, 0.08 ft^3/s Aug. 17, 19, 20, 22, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 220 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 19	0030	259	6.01	Feb. 23	0430	*2,400	8.57
Jan. 30	1100	532	6.61	Feb. 23	2400	(a)	*8.91
Feb. 17	2000	777	7.02	Mar. 7	1700	657	7.32

Minimum discharge, 1.3 ft^3/s Aug. 18, 19.

(a) Backwater from debris.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	13	10	19	369	551	95	36	16	5.1	2.2	2.9
2	7.3	13	14	23	339	430	88	35	17	4.7	2.2	2.5
3	7.3	13	21	24	334	338	80	36	18	4.6	2.1	2.5
4	7.5	13	21	22	228	279	74	37	19	6.0	2.0	2.5
5	7.5	13	25	20	185	275	67	37	20	6.8	2.1	2.4
6	7.7	13	40	38	149	251	63	37	19	6.0	2.1	2.5
7	12	13	69	28	124	366	58	37	18	5.1	2.1	2.7
8	16	14	56	27	94	410	54	36	17	4.9	2.0	2.6
9	13	15	40	73	87	390	52	35	15	4.6	2.0	3.0
10	12	14	35	134	91	352	50	35	14	4.3	1.8	3.1
11	12	12	30	105	82	338	52	35	13	4.7	1.7	3.3
12	12	9.0	35	86	70	299	52	34	12	4.6	1.8	3.3
13	12	10	30	73	70	290	50	32	10	4.4	1.9	3.3
14	11	11	27	69	68	270	47	30	9.4	3.9	1.8	3.4
15	11	11	25	65	70	250	47	28	8.5	3.8	1.7	4.0
16	11	11	23	79	369	230	49	25	8.7	3.7	1.7	4.9
17	11	13	22	186	673	220	51	22	9.0	3.9	1.8	6.3
18	11	15	19	151	618	210	52	20	9.4	3.7	1.7	6.1
19	11	17	17	244	420	190	45	19	9.7	3.5	1.7	5.5
20	11	13	16	188	295	180	40	25	10	3.2	1.7	6.5
21	11	11	16	134	259	160	40	35	8.0	3.0	1.8	7.6
22	12	10	16	121	785	150	40	35	6.0	2.8	1.7	6.8
23	15	8.5	16	141	1760	200	40	29	5.0	2.6	1.7	7.1
24	18	8.0	16	123	1410	210	40	24	4.3	2.5	1.8	8.5
25	17	8.0	16	97	981	175	40	21	3.8	2.4	2.0	8.7
26	15	11	16	90	894	155	41	22	3.9	2.4	1.9	8.5
27	14	13	15	85	644	145	43	19	4.8	2.4	2.0	8.5
28	14	10	14	90	690	135	43	17	7.4	2.5	6.0	8.6
29	13	9.0	13	100	---	125	41	16	6.3	2.3	7.2	9.2
30	13	9.0	14	437	---	115	38	15	6.0	2.3	4.1	9.7
31	13	---	15	434	---	100	---	15	---	2.3	3.4	---
TOTAL	365.6	353.5	742	3506	12158	7789	1572	879	328.2	119.0	71.7	156.5
MEAN	11.8	11.8	23.9	113	434	251	52.4	28.4	10.9	3.84	2.31	5.22
MAX	18	17	69	437	1760	551	95	37	20	6.8	7.2	9.7
MIN	7.3	8.0	10	19	68	100	38	15	3.8	2.3	1.7	2.4
AC-FT	725	701	1470	6950	24120	15450	3120	1740	651	236	142	310

CAL YR 1985	TOTAL	22583.6	MEAN	61.9	MAX	663	MIN	1.3	AC-FT	44790
WTR YR 1986	TOTAL	28040.5	MEAN	76.8	MAX	1760	MIN	1.7	AC-FT	55620

14048000 JOHN DAY RIVER AT MCDONALD FERRY, OR
(National stream quality accounting network station)

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 mi^2, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1904 to current year. Prior to Oct. 1, 1930, published as "at McDonald."

REVISED RECORDS.--WSP 1094: 1894(M), 1932(M). WSP 1448: 1908-9, 1912, 1916, 1920(M), 1922, 1932.

GAGE.--Water-stage recorder. Datum of gage is 392.27 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 30, 1930, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 26, 27, Dec. 2-8, 11-31, Jan. 1, 2, Feb. 12, 13. Water-discharge records good except for estimated daily discharges, which are poor. No regulation. Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--81 years (water years 1906-86), 2,108 ft^3/s, 1,527,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,800 ft^3/s Dec. 24, 1964, gage height, 13.59 ft, from floodmark, from rating curve extended above 11,000 ft^3/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 ft^3/s, from rating curve extended above 22,000 ft^3/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,900 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Jan. 31	2100	9,120	7.04	Mar. 9	0800	19,900	10.60
Feb. 18	0830	10,800	7.66	Mar. 31	1300	8,190	6.87
Feb. 24	1600	*29,200	*12.75				

Minimum discharge, 122 ft^3/s Aug. 25, 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	447	696	401	580	8310	13000	7630	3380	4770	536	254	213
2	445	668	400	600	6740	12400	6950	3190	4530	523	251	208
3	446	652	380	606	6110	11800	6320	3080	4150	495	238	200
4	442	650	340	621	5910	10700	5620	3080	3850	491	219	195
5	448	646	400	591	5080	9750	5190	3330	3560	478	209	199
6	445	649	500	615	4540	9350	4910	3390	3270	477	197	188
7	471	648	640	685	4050	9330	4800	3340	2880	476	187	186
8	461	655	1200	728	3550	12700	4830	3460	2580	527	185	180
9	460	691	1340	768	2990	19300	4980	3320	2590	544	168	179
10	491	740	1550	1060	2560	17500	5250	3150	2200	498	159	179
11	559	1090	1100	1150	2320	14300	5500	3110	1940	458	168	173
12	570	961	800	1230	2100	12300	5340	3300	1730	438	165	182
13	534	872	660	1250	2200	10800	5060	3130	1560	452	159	186
14	521	819	620	1150	2290	9590	4790	2940	1450	459	152	193
15	539	703	640	1100	2190	8920	4390	2860	1350	457	146	220
16	559	634	660	1480	2520	8110	3990	2830	1260	418	142	252
17	558	636	600	2160	6920	7560	3770	2730	1230	398	142	286
18	547	713	580	2170	10100	6940	3620	2630	1160	386	157	297
19	544	820	600	4370	10200	6290	3450	2600	1070	378	156	305
20	545	878	620	4370	9570	5850	3220	2780	985	371	153	332
21	544	848	580	4210	7360	5640	3020	3090	934	384	143	380
22	541	817	600	3320	8690	5630	3060	3880	899	372	137	396
23	548	660	620	3000	18000	5860	3680	4570	838	350	133	445
24	555	408	580	2840	27700	5870	4820	3990	771	333	133	472
25	602	364	600	2740	24300	6180	4470	3490	718	310	125	481
26	672	350	580	2380	19000	6750	4050	3190	659	298	131	490
27	766	340	560	2020	16200	6250	3870	3330	617	280	131	504
28	815	362	580	1850	14300	6250	3580	3890	587	274	131	581
29	796	386	560	1920	---	6830	3690	4510	567	265	147	657
30	759	397	580	2400	---	7630	3640	4820	557	267	265	634
31	715	---	560	6290	---	7990	---	4840	---	257	225	---
TOTAL	17345	19753	20431	60254	235800	287370	137490	105230	55262	12650	5308	9393
MEAN	560	658	659	1944	8421	9270	4583	3395	1842	408	171	313
MAX	815	1090	1550	6290	27700	19300	7630	4840	4770	544	265	657
MIN	442	340	340	580	2100	5630	3020	2600	557	257	125	173
AC-FT	34400	39180	40520	119500	467700	570000	272700	208700	109600	25090	10530	18630

CAL YR 1985	TOTAL	792005	MEAN	2170	MAX	14100	MIN	202	AC-FT	1571000
WTR YR 1986	TOTAL	966286	MEAN	2647	MAX	27700	MIN	125	AC-FT	1917000

14048000 JOHN DAY RIVER AT MCDONALD FERRY, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1911-12, 1960-68, 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: December 1975 to September 1981.
WATER TEMPERATURES: October 1962 to September 1968, October 1975 to September 1981.
SEDIMENT CONCENTRATIONS: October 1962 to September 1968.
SEDIMENT DISCHARGE: October 1962 to September 1968.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS NONCARB DIS-SOLVED (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)
NOV											
06...	1330	653	265	8.4	9.5	12.1	28	59	110	0	25
FEB											
12...	1140	2430	187	8.1	1.0	14.2	K2	K21	80	0	19
JUN											
10...	1225	2200	147	--	22.5	8.9	K11	290	60	0	14
JUL											
29...	0845	270	279	8.8	18.5	9.0	K14	310	120	0	27

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WATER DISSOLV FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)
NOV										
06...	11	15	1.8	128	9.7	3.3	0.2	0.02	<0.1	0.5
FEB										
12...	7.9	9.8	1.3	89	9.2	2.4	0.1	0.05	0.3	0.4
JUN										
10...	6.1	7.3	1.4	71	6.9	1.4	<0.1	0.02	<0.1	0.3
JUL										
29...	13	21	2.6	134	14	3.1	0.2	0.03	<0.1	0.4

DATE	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, TOTAL (MG/L AS P)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	TUR-BID-ITY (NTU)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV										
06...	0.01	<0.01	0.01	25	147	170	259	3.5	6	11
FEB										
12...	0.04	0.06	0.07	32	133	140	873	13	28	184
JUN										
10...	0.02	0.02	0.04	23	101	100	600	2.2	14	83
JUL										
29...	<0.01	<0.01	0.02	22	188	180	137	1.5	4	2.9

K - Results based on colony count outside acceptable range (non-ideal colony count).

14048000 JOHN DAY RIVER AT MCDONALD FERRY, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)
NOV 06...	<10	1	13	<0.5	<1	<1	<3	1	7	1
FEB 12...	--	<1	12	<0.5	<1	<1	<3	1	--	3
JUN 10...	--	--	--	--	--	--	--	--	--	--
JUL 29...	<10	1	12	<0.5	<1	<1	<3	2	6	<5

DATE	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)
NOV 06...	<4	2	<0.1	<10	1	<1	<1	110	8	4
FEB 12...	<4	5	<0.1	<10	<1	<1	<1	81	7	8
JUN 10...	--	--	--	--	--	--	--	--	--	--
JUL 29...	<4	<1	<0.1	<10	1	<1	<1	120	10	<3

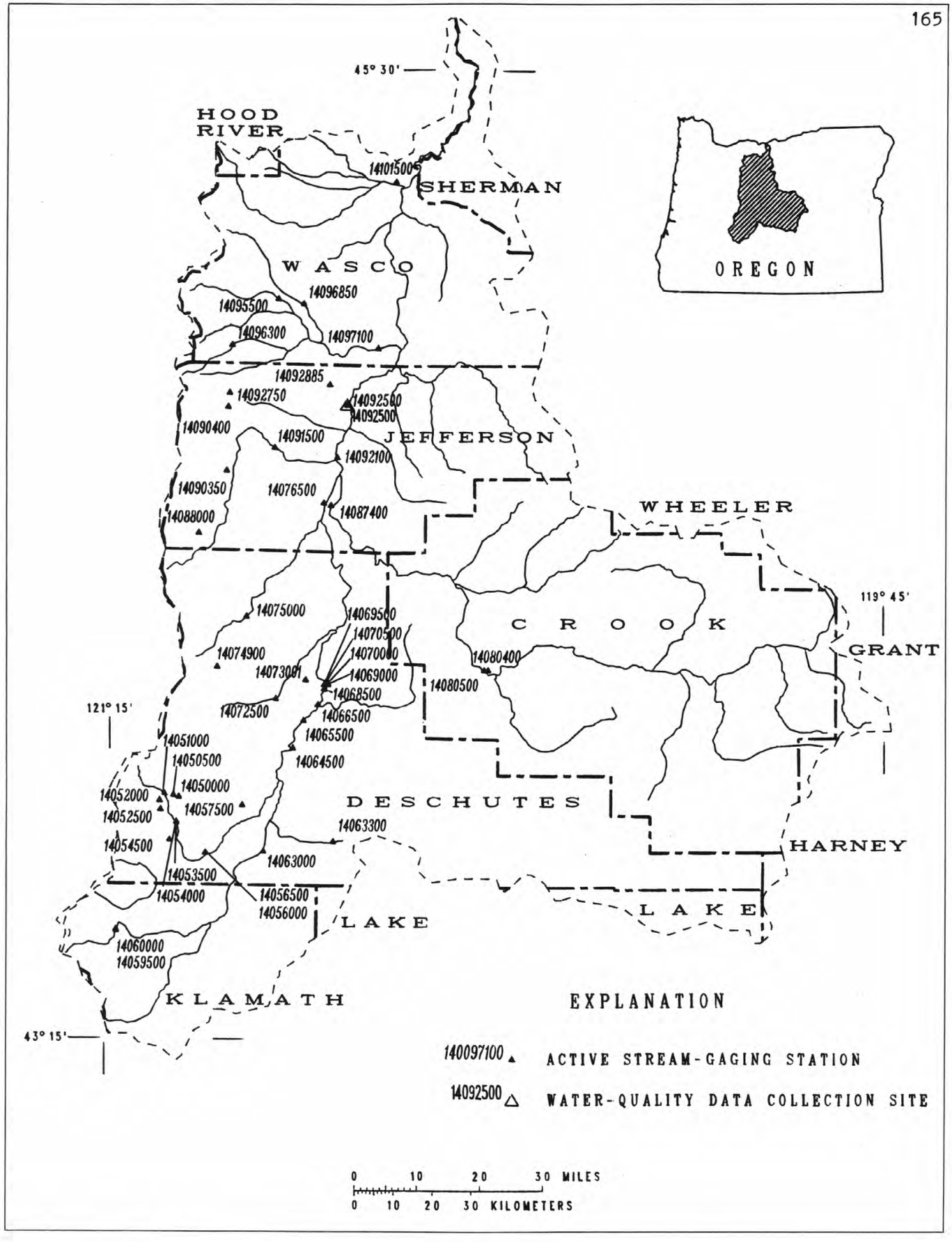

Figure 6.--Location of surface-water and water-quality stations in the Deschutes River and Crooked River basins.

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, 200 ft upstream from highway bridge, and 17 mi northwest of La Pine.

DRAINAGE AREA.--132 mi^2, including Sparks, Elk, and Mud Lake basins, which have no surface outflow to Deschutes River; hydrologic drainage boundary uncertain because of interbasin ground-water exchange.

PERIOD OF RECORD.--October 1937 to current year. Monthly discharge only October 1937, published in WSP 1318. Published as "near Lapine" 1937-64.

REVISED RECORDS.--WSP 1248: 1951.

GAGE.--Water-stage recorder. Elevation 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.--Estimated daily discharges: Nov. 22-30, Dec. 1-4, 10-14, Jan. 26-30. Records excellent except for estimated daily discharges, which are good. 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.--49 years, 152 ft^3/s, 110,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 480 ft^3/s Aug. 19, 1974, gage height, 3.17 ft; maximum gage height, 4.12 ft Jan. 21, 1943 (ice jam); minimum discharge, 40 ft^3/s sometime during period Dec. 22, 1959, to Mar. 2, 1960, result of freezeup; minimum daily, 55 ft^3/s for many days April to June 1941.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 224 ft^3/s Aug. 22, gage height, 1.68 ft; maximum gage height, 3.19 ft Dec. 2, backwater from ice; minimum discharge, 85 ft^3/s Feb. 7-14, 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	183	148	110	104	88	97	108	133	158	164	209	207
2	181	147	110	101	90	96	107	140	158	165	210	206
3	179	143	115	99	89	96	108	139	159	165	208	204
4	178	143	115	98	89	97	109	138	158	173	206	203
5	176	140	117	99	90	98	112	140	158	174	207	201
6	176	139	121	97	87	100	114	138	158	175	208	201
7	178	138	119	94	86	111	114	136	159	177	210	200
8	174	140	115	96	85	112	115	135	158	177	211	200
9	171	141	113	100	85	113	116	135	158	178	210	199
10	170	139	112	96	85	114	118	137	158	177	209	198
11	171	137	110	94	85	114	121	136	158	177	208	196
12	169	136	110	94	88	114	124	135	158	178	207	196
13	166	135	110	93	87	115	124	136	158	178	207	195
14	164	133	110	93	88	114	121	135	159	179	207	194
15	161	133	113	94	88	110	123	138	160	184	208	196
16	160	132	112	100	93	110	123	139	160	186	210	195
17	159	132	110	100	96	109	125	139	161	188	210	199
18	158	130	109	96	98	106	123	141	161	190	206	197
19	156	128	108	95	94	106	123	142	160	190	202	196
20	155	128	108	93	93	106	125	146	160	193	200	195
21	156	126	108	91	93	106	129	150	159	194	200	192
22	170	125	106	94	103	105	131	149	159	193	207	190
23	179	120	106	93	111	105	127	150	159	195	215	191
24	170	120	105	91	103	106	129	150	159	197	214	197
25	167	120	104	90	100	102	133	151	159	201	213	199
26	161	120	104	88	100	103	133	152	160	200	213	199
27	158	120	102	88	99	104	137	152	160	199	212	194
28	156	120	102	86	97	106	136	151	161	200	212	190
29	152	115	100	88	---	107	132	151	160	205	210	189
30	151	110	99	88	---	107	131	166	162	207	210	188
31	150	---	98	88	---	106	---	165	---	207	208	---
TOTAL	5155	3938	3381	2921	2590	3295	3671	4445	4775	5766	6467	5907
MEAN	166	131	109	94.2	92.5	106	122	143	159	186	209	197
MAX	183	148	121	104	111	115	137	166	162	207	215	207
MIN	150	110	98	86	85	96	107	133	158	164	200	188
AC-FT	10220	7810	6710	5790	5140	6540	7280	8820	9470	11440	12830	11720

CAL YR 1985	TOTAL	52867	MEAN	145	MAX	226	MIN	91	AC-FT	104900
WTR YR 1986	TOTAL	52311	MEAN	143	MAX	215	MIN	85	AC-FT	103800

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 mi^2, hydrologic drainage boundry uncertain owing to ground-water exchange.

PERIOD OF RECORD.--October 1922 to September 1925, October 1937 to current year. Monthly discharge only October 1937, published in WSP 1318. Prior to Oct. 1, 1964, published as "near Lapine."

REVISED RECORDS.--WSP 1448: 1923-25, 1947.

GAGE.--Water-stage recorder and cement bag control. Elevation 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.--Estimated daily discharges: Nov. 22 to Dec. 1. Records good. No regulation or diversions upstream from station.

AVERAGE DISCHARGE.--52 years, 63.3 ft^3/s, 45,860 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 178 ft^3/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 ft^3/s May 26-31, Nov. 23 to Dec. 4, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 118 ft^3/s May 30, gage height, 0.89 ft; minimum discharge, 46 ft^3/s Jan. 10-15, Feb. 11-17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	62	56	48	48	50	55	75	84	77	80	77
2	66	62	56	48	48	50	54	76	82	77	80	77
3	66	62	56	48	48	50	54	77	82	77	79	77
4	66	62	56	48	48	50	55	77	81	77	78	77
5	66	62	56	48	48	50	58	77	79	77	78	77
6	66	62	56	48	48	50	58	76	77	77	77	77
7	66	62	56	48	48	51	58	75	77	77	78	77
8	66	62	56	48	48	52	60	77	77	77	80	77
9	66	63	56	48	48	52	60	77	76	77	80	77
10	66	62	56	48	48	52	60	77	74	77	80	76
11	66	62	56	47	47	52	64	77	74	78	80	75
12	66	62	55	46	47	52	64	77	73	80	80	75
13	65	62	54	46	47	52	64	77	72	80	80	75
14	64	62	54	46	47	52	64	78	72	80	79	75
15	64	62	54	47	46	52	64	77	72	80	77	76
16	64	62	54	48	47	51	64	78	72	80	77	75
17	64	62	54	48	47	50	66	80	74	80	77	75
18	64	62	54	48	48	50	65	81	72	80	77	76
19	64	62	52	48	48	50	64	82	72	80	77	75
20	64	62	52	48	48	50	66	84	73	80	77	75
21	64	60	52	48	48	51	66	83	75	80	77	75
22	66	60	52	48	49	52	66	82	75	80	77	75
23	66	60	52	48	50	52	66	80	75	80	77	76
24	66	58	52	48	50	52	66	80	75	80	77	77
25	64	58	51	48	50	52	68	82	75	80	77	77
26	64	58	50	48	50	52	68	83	77	80	77	76
27	64	56	50	48	50	52	68	83	77	80	77	75
28	64	56	50	48	50	54	68	83	77	80	77	75
29	64	56	50	48	---	54	70	83	77	80	77	75
30	63	56	50	48	---	55	72	88	77	80	77	75
31	62	---	48	48	---	54	---	89	---	80	77	---
TOTAL	2014	1819	1656	1480	1349	1598	1895	2471	2275	2448	2418	2277
MEAN	65.0	60.6	53.4	47.7	48.2	51.5	63.2	79.7	75.8	79.0	78.0	75.9
MAX	68	63	56	48	50	55	72	89	84	80	80	77
MIN	62	56	48	46	46	50	54	75	72	77	77	75
AC-FT	3990	3610	3280	2940	2680	3170	3760	4900	4510	4860	4800	4520

CAL YR 1985	TOTAL	24029	MEAN	65.8	MAX	81	MIN	48	AC-FT	47660
WTR YR 1986	TOTAL	23700	MEAN	64.9	MAX	89	MIN	46	AC-FT	47010

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 mi^2, hydrologic drainage boundary uncertain because of interbasin ground-water exchange.

PERIOD OF RECORD.--March to September 1924 (published as "above Crane Prairie, near Lapine"), October 1937 to current year. 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.

REVISED RECORDS.--WSP 1568: 1957. WRD Oreg. 1973: 1972. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Elevation 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.--Estimated daily discharges: Nov. 11-13, 22-30; Dec. 1-3, 21-30; Mar. 27-31; Apr. 1-17, 20-30; May 1-21; June 6-16; July 4-28; Aug. 13-31; Sept. 1-16. Records good except those for November, December, April to September, which are poor. Some regulation by fish screens at Cultus Lake since 1962. No diversion upstream from station.

AVERAGE DISCHARGE.--49 years (water years 1938-86), 22.8 ft^3/s, 16,520 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 336 ft^3/s Dec. 25, 1964, gage height, 4.15 ft, from floodmark, from rating curve extended above 90 ft^3/s; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 124 ft^3/s June 2, gage height, 2.80 ft; minimum daily discharge, 0.08 ft^3/s Nov. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	.11	1.0	5.4	12	60	34	38	118	27	7.9	2.5
2	.68	.12	10	5.9	13	59	35	37	122	25	7.9	2.0
3	.64	.12	20	6.4	13	57	35	37	120	24	7.3	1.5
4	.80	.13	6.8	6.3	13	56	34	37	117	23	6.0	1.2
5	.78	.10	6.4	6.5	14	56	31	37	112	18	5.8	1.0
6	.73	.10	8.1	6.9	13	56	31	35	110	17	5.6	.97
7	.45	.08	9.6	7.0	13	64	31	33	100	17	5.5	1.2
8	.37	.10	9.6	7.1	13	73	34	31	96	17	5.2	1.4
9	.37	.12	9.5	8.0	12	79	36	31	90	17	4.9	1.4
10	.43	.11	8.8	8.2	11	79	36	31	85	19	4.5	1.6
11	.40	.20	8.0	8.0	11	77	36	31	80	16	4.2	.81
12	.37	.35	7.6	7.9	11	74	36	31	75	12	3.4	.76
13	.37	.50	7.3	7.6	14	71	36	31	70	14	3.0	.79
14	.37	1.3	7.1	7.5	15	65	34	31	66	13	2.6	.90
15	.40	1.6	6.9	7.5	15	60	32	31	61	13	2.2	1.0
16	.40	2.2	6.5	9.5	17	56	31	31	56	13	1.9	1.3
17	.43	.51	6.2	12	22	50	30	35	54	13	1.7	1.5
18	.50	.44	6.0	12	30	46	29	40	52	13	1.5	1.4
19	.50	.53	5.6	12	33	43	28	45	49	14	1.4	1.6
20	.50	.63	5.6	12	33	40	29	50	46	13	1.3	1.6
21	.42	.45	5.4	12	34	36	31	57	45	12	1.2	1.6
22	1.1	.44	5.2	12	42	36	34	58	44	13	1.1	1.4
23	1.1	.42	5.0	14	44	33	36	60	42	8.9	1.0	1.5
24	.64	.45	4.8	14	45	32	38	60	41	9.6	.90	1.6
25	.79	.50	4.5	13	49	32	40	64	39	9.5	.80	2.3
26	1.2	.55	4.5	12	52	32	40	70	36	8.9	.80	2.7
27	1.2	.60	4.5	12	56	31	40	82	35	8.7	.86	2.4
28	.19	.60	4.5	12	59	30	40	90	33	8.5	2.0	2.3
29	.12	.50	4.5	12	---	31	40	90	30	8.3	3.4	2.3
30	.12	.43	4.5	13	---	32	40	104	28	8.3	3.2	2.2
31	.10	---	4.5	12	---	34	---	112	---	8.2	2.9	---
TOTAL	17.47	14.29	208.5	301.7	709	1580	1037	1550	2052	441.9	101.96	46.73
MEAN	.56	.48	6.73	9.73	25.3	51.0	34.6	50.0	68.4	14.3	3.29	1.56
MAX	1.2	2.2	20	14	59	79	40	112	122	27	7.9	2.7
MIN	.10	.08	1.0	5.4	11	30	28	31	28	8.2	.80	.76
AC-FT	35	28	414	598	1410	3130	2060	3070	4070	877	202	93

CAL YR 1985	TOTAL	5785.56	MEAN	15.9	MAX	103	MIN	.08	AC-FT	11480
WTR YR 1986	TOTAL	8060.55	MEAN	22.1	MAX	122	MIN	.08	AC-FT	15990

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 mi^2, hydrologic drainage boundary uncertain because of interbasin ground-water exchange.

PERIOD OF RECORD.--February to September 1924 (published as "above Crane Prairie, near Lapine"). October 1937 to current year. 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.

REVISED RECORDS.--See PERIOD OF RECORD.

GAGE.--Water-stage recorder and sharp-crested weir control. Elevation 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.--Estimated daily discharges: Nov. 11-15, 17-30; Dec. 1-17, 20-31; Jan. 1-6; Feb. 18, 19. Records good except those for Nov. 11 to Jan. 6, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--49 years (water years 1938-86), 7.55 ft^3/s, 5,470 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 200 ft^3/s, estimated, Dec. 25, 1964; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 34 ft^3/s May 30, gage height, 2.30 ft; maximum gage height, 2.58 ft Feb. 18, backwater from ice; minimum discharge, no flow Aug. 21, 23-26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.09	.65	.64	1.1	2.5	26	18	21	29	1.7	.14	.03
2	.11	.65	.64	1.2	2.6	25	18	22	27	1.6	.13	.05
3	.12	.65	.85	1.3	2.7	22	18	22	26	1.4	.11	.05
4	.12	.67	1.2	1.2	2.7	21	17	22	23	1.9	.13	.05
5	.12	.66	1.8	1.2	3.0	20	16	21	20	1.7	.17	.05
6	.12	.65	2.2	1.2	3.2	19	16	21	18	1.6	.14	.05
7	.14	.67	2.2	1.2	3.1	24	16	20	16	1.9	.13	.09
8	.14	.74	1.9	1.3	2.7	29	17	19	15	1.7	.12	.09
9	.12	.89	1.7	1.6	2.8	31	18	18	13	1.4	.12	.09
10	.12	1.0	1.6	1.6	2.3	30	19	19	12	1.4	.11	.09
11	.14	.90	1.5	1.5	1.9	29	19	18	11	1.3	.10	.09
12	.15	.75	1.4	1.5	2.1	26	20	18	9.7	1.2	.08	.09
13	.13	.66	1.4	1.4	3.0	24	20	18	8.6	1.1	.08	.06
14	.10	.68	1.3	1.4	3.1	22	19	17	7.6	.98	.08	.06
15	.09	.90	1.2	1.4	3.3	20	18	18	6.6	.84	.08	.10
16	.09	1.1	1.1	2.0	3.3	18	18	18	5.7	.73	.07	.11
17	.09	1.1	1.1	3.0	3.9	17	18	18	5.3	.64	.05	.18
18	.09	1.0	1.0	2.8	8.0	16	17	20	5.0	.59	.04	.16
19	.09	1.2	.98	2.7	9.0	15	16	22	4.8	.57	.06	.20
20	.09	1.2	.97	2.7	8.9	14	16	26	4.5	.52	.06	.20
21	.11	1.1	.95	2.5	8.4	14	18	31	4.1	.47	.04	.15
22	.24	.95	.92	2.7	12	14	18	31	3.8	.21	.05	.15
23	.80	.74	.91	3.2	19	14	19	29	3.5	.32	.02	.16
24	.47	.64	.91	2.9	19	15	20	26	3.2	.26	.02	.24
25	.56	.64	.86	2.6	19	14	21	25	2.8	.22	.02	.28
26	.65	.64	.86	2.5	22	14	22	26	2.6	.21	.03	.33
27	.65	.64	.86	2.2	25	14	23	29	2.4	.20	.05	.22
28	.65	.70	.84	2.2	26	15	24	32	2.3	.19	.05	.18
29	.65	.70	.83	2.4	---	16	24	33	2.0	.18	.05	.19
30	.65	.68	.83	2.5	---	17	22	32	1.8	.19	.04	.19
31	.64	---	.90	2.4	---	18	---	32	---	.18	.02	---
TOTAL	8.33	24.15	36.35	61.4	224.5	613	565	724	296.3	27.40	2.39	3.98
MEAN	.27	.80	1.17	1.98	8.02	19.8	18.8	23.4	9.88	.88	.08	.13
MAX	.80	1.2	2.2	3.2	26	31	24	33	29	1.9	.17	.33
MIN	.09	.64	.64	1.1	1.9	14	16	17	1.8	.18	.02	.03
AC-FT	17	48	72	122	445	1220	1120	1440	588	54	4.7	7.9

CAL YR 1985	TOTAL	1981.67	MEAN	5.43	MAX	45	MIN	.09	AC-FT	3930
WTR YR 1986	TOTAL	2586.80	MEAN	7.09	MAX	33	MIN	.02	AC-FT	5130

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 current year. 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.

REVISED RECORDS.--WSP 1448: 1939, 1941.

GAGE.--Water-stage recorder and log control. Datum of gage is 4,442.1 ft above 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.--Estimated daily discharges: Oct. 4-6, Feb. 22 to May 13. Records excellent except those for February to May, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--52 years, 24.3 ft^3/s, 17,610 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59 ft^3/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.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 43 ft^3/s July 20, gage height, 1.88 ft; maximum gage height, 2.92 ft Mar. 14 (backwater from Crane Prairie Reservoir); minimum discharge, 19 ft^3/s Jan. 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	23	23	22	20	23	30	34	36	36	35	29
2	26	23	23	22	21	23	30	35	36	36	35	31
3	26	23	22	23	22	23	30	35	36	37	35	30
4	26	23	23	23	24	23	30	35	36	37	35	29
5	26	23	23	22	25	23	30	35	36	36	35	28
6	26	23	23	20	20	23	30	35	36	36	35	28
7	26	23	23	20	20	24	31	35	37	37	35	29
8	26	23	23	20	20	24	32	35	36	38	35	28
9	26	23	23	20	20	24	32	35	35	38	36	28
10	26	23	25	21	20	24	32	35	36	36	35	28
11	26	23	24	20	20	24	32	35	36	36	35	28
12	26	23	23	20	20	24	32	35	35	36	35	28
13	27	23	23	20	20	24	32	35	36	37	35	28
14	25	23	22	20	21	24	32	35	36	38	36	28
15	24	23	22	20	21	24	32	36	36	36	34	28
16	24	23	22	20	20	24	33	36	37	36	33	27
17	24	23	22	21	20	24	33	35	35	37	33	26
18	24	23	22	22	21	24	33	35	35	37	34	26
19	24	23	22	23	22	25	33	36	36	38	33	26
20	24	23	22	25	24	26	33	35	36	40	33	26
21	25	23	22	21	29	26	33	35	36	36	33	26
22	25	23	22	20	23	26	33	36	36	36	33	26
23	24	23	22	19	23	26	33	36	36	36	33	26
24	24	23	22	20	23	27	33	36	36	36	33	24
25	26	23	22	20	23	27	33	36	36	36	33	24
26	28	23	22	20	23	27	33	36	36	36	32	24
27	31	23	22	20	23	27	33	36	37	36	32	24
28	23	23	22	20	23	28	33	36	37	36	32	24
29	23	23	23	20	---	29	33	36	37	36	32	24
30	23	23	23	20	---	30	33	36	36	35	30	23
31	23	---	22	20	---	30	---	36	---	35	29	---
TOTAL	783	690	699	644	611	780	962	1097	1081	1132	1044	804
MEAN	25.3	23.0	22.5	20.8	21.8	25.2	32.1	35.4	36.0	36.5	33.7	26.8
MAX	31	23	25	25	29	30	33	36	37	40	36	31
MIN	23	23	22	19	20	23	30	34	35	35	29	23
AC-FT	1550	1370	1390	1280	1210	1550	1910	2180	2140	2250	2070	1590

CAL YR 1985	TOTAL	9823	MEAN	26.9	MAX	36	MIN	18	AC-FT	19480
WTR YR 1986	TOTAL	10327	MEAN	28.3	MAX	40	MIN	19	AC-FT	20480

14053500 CRANE PRAIRIE RESERVOIR NEAR LA PINE, OR

LOCATION.--Lat 43°45'20", long 121°47'00", in SW¼NW¼ sec.16, T.21 S., R.8 E., Deschutes County, Hydrologic Unit 17070301, in Deschutes National Forest, on control structure at Crane Prairie Dam on Deschutes River, 15.0 mi northwest of La Pine, and at mile 238.3.

DRAINAGE AREA.--254 mi^2, hydrologic drainage boundary uncertain owing to ground-water exchange.

PERIOD OF RECORD.--November 1922 to November 1935, April to December 1936, April 1937 to current year. Prior to Oct. 1, 1964, published as "near Lapine."

REVISED RECORDS.--WSP 1218: Drainage area. WSP 1318: 1925, 1940-41, 1950. WSP 1448: 1925(M,m), 1940(m), 1950(m).

GAGE.--Water-stage recorder. Datum of gage is 4,400.0 ft above National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation); gage readings have been reduced to elevations NGVD. Prior to July 13, 1940, nonrecording gage, at site 150 ft upstream at same datum. July 13, 1940, to Sept. 15, 1966, nonrecording gage, at present site and datum.

REMARKS.--Reservoir originally formed by earthfill dam completed in 1922, reconstructed as rock-faced, earthfill dam in 1940. Capacity, 55,340 acre-ft between elevation 4,424.0 ft lip of fish-screen structure and 4,445.0 ft crest of spillway. Some dead storage in isolated pools in reservoir at stages below 4,428 ft and natural flow passing through reservoir when outlet gates are open prevents withdrawal of remaining storage to elevation of sill of gates. Crater Creek Canal diverts water to Tumalo Creek basin from tributaries of Soda Creek upstream from station. Released water diverted from Deschutes River near Bend for irrigation near Bend and Redmond.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 60,500 acre-ft June 5-7, 1943, elevation, 4,446.0 ft; no usable contents at times.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 55,230 acre-ft Mar. 14, elevation, 4,444.98 ft; minimum contents, 25,930 acre-ft Sept. 30, elevation, 4,438.31 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	4,439.87	32,130	-
Oct. 31	4,442.18	42,050	+9,920
Nov. 30	4,443.22	46,800	+4,750
Dec. 31	4,442.88	45,220	-1,580
CAL YR 1985	-	-	+6,220
Jan. 31	4,442.85	45,080	-140
Feb. 28	4,444.40	52,400	+7,320
Mar. 31	4,444.64	53,570	+1,170
Apr. 30	4,444.45	52,650	-920
May 31	4,442.83	44,990	-7,660
June 30	4,441.76	40,180	-4,810
July 31	4,441.40	38,610	-1,570
Aug. 31	4,439.77	31,730	-6,880
Sept.30	4,438.31	25,930	-5,800
WTR YR 1986	-	-	-6,200

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 mi^2, hydrologic drainage boundary uncertain because of interbasin 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 current year. 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.

REVISED RECORDS.--WSP 1218: Drainage area. WSP 1318: 1929(M).

GAGE.--Water-stage recorder. Datum of gage is 4,419.78 ft above 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.--Estimated daily discharges: Dec. 11-17, Mar. 4 to Apr. 15, Apr. 21, 22, May 25-28. Records good. Flow regulated since 1922 by Crane Prairie Reservoir (see sta 14053500). No diversion upstream from station.

AVERAGE DISCHARGE.--68 years, 215 ft^3/s, 155,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,170 ft^3/s July 28, 1947, gage height, 3.34 ft; no flow Nov. 15, 1978, when gates in Crane Prairie Dam were closed.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 599 ft^3/s Sept. 12, gage height, 2.13 ft; minimum daily discharge, 33 ft^3/s Feb. 11 to Mar. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	163	63	167	170	167	33	227	397	470	301	297	456
2	161	63	167	170	167	33	227	493	470	299	295	458
3	121	63	167	170	167	33	227	493	470	299	295	464
4	60	63	167	170	167	34	227	493	470	299	295	462
5	60	63	167	169	167	96	227	493	470	299	295	464
6	60	63	170	167	167	157	227	492	470	301	295	470
7	60	63	170	167	167	157	198	487	470	304	295	463
8	60	63	170	167	167	157	157	487	470	304	350	448
9	60	63	170	167	167	157	157	484	470	304	459	453
10	60	63	170	167	115	157	157	481	468	304	459	460
11	60	63	170	167	33	157	157	481	464	304	459	457
12	61	63	170	167	33	157	157	481	464	304	459	453
13	61	63	170	167	33	157	157	480	464	304	459	460
14	61	63	170	167	33	183	157	476	464	304	459	459
15	61	63	170	167	33	223	157	476	468	304	462	459
16	61	63	170	167	33	223	157	476	469	304	460	461
17	61	63	170	167	33	223	157	476	464	304	459	464
18	61	63	170	167	33	223	157	470	464	304	459	464
19	61	63	170	167	33	223	157	470	464	303	462	460
20	61	63	170	167	33	223	157	470	468	299	461	459
21	61	63	170	167	33	223	254	470	466	299	459	459
22	61	106	170	167	33	223	336	470	464	299	461	455
23	61	170	170	167	33	223	336	475	402	299	459	461
24	61	170	170	167	33	223	336	481	291	299	457	464
25	61	170	170	167	33	223	336	480	291	299	466	421
26	61	168	170	167	33	223	336	475	291	299	468	355
27	61	167	170	167	33	223	336	475	294	299	464	355
28	61	167	170	167	33	223	336	470	297	299	464	355
29	61	167	170	167	---	227	336	470	299	299	461	355
30	61	167	170	167	---	227	336	470	302	299	459	355
31	62	---	170	167	---	227	---	470	---	299	461	---
TOTAL	2146	2775	5255	5191	2212	5471	6879	14762	12748	9337	13013	13229
MEAN	69.2	92.5	170	167	79.0	176	229	476	425	301	420	441
MAX	163	170	170	170	167	227	336	493	470	304	468	470
MIN	60	63	167	167	33	33	157	397	291	299	295	355
AC-FT	4260	5500	10420	10300	4390	10850	13640	29280	25290	18520	25810	26240

CAL YR 1985	TOTAL	78017	MEAN	214	MAX	425	MIN	49	AC-FT	154700
WTR YR 1986	TOTAL	93018	MEAN	255	MAX	493	MIN	33	AC-FT	184500

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 mi^2, approximately, hydrologic drainage boundary uncertain owing to ground-water exchange.

PERIOD OF RECORD.--May 1922 to September 1925, July 1938 to current year. Monthly discharge only July 1938 to September 1949, published in WSP 1318. Prior to Oct. 1, 1964, published as "near Lapine."

REVISED RECORDS.--WSP 1448: 1922-24. WDR OR-78-1: 1977.

GAGE.--Water-stage recorder. Elevation 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 above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Nov. 25 to Dec. 3, Jan. 26 to Feb. 6, Feb. 22, 23. Records excellent. No regulation. No diversion upstream from station.

AVERAGE DISCHARGE.--51 years, 38.9 ft^3/s, 28,180 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 104 ft^3/s Aug. 4, 1956, gage height, 1.64 ft; maximum gage height, 3.50 ft Jan. 30, 1980, backwater from ice; minimum discharge, 16 ft^3/s July 22-25, 1941, and at times December 1941 to March 1942.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 57 ft^3/s June 1, gage height, 0.80 ft; maximum gage height, 0.82 ft Dec. 2, backwater from ice; minimum discharge, 34 ft^3/s Feb. 1-15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	41	40	38	34	39	42	40	44	43	48	49
2	44	41	40	38	34	39	41	42	46	43	48	49
3	43	41	40	37	34	38	41	41	44	43	48	49
4	43	41	40	37	34	38	41	41	42	44	48	49
5	43	41	40	37	34	39	41	41	41	44	48	49
6	43	41	40	37	34	39	42	41	41	44	48	48
7	44	41	39	36	34	43	42	40	41	44	48	48
8	44	41	39	37	34	42	43	40	42	44	48	48
9	43	41	39	37	34	41	43	40	42	44	48	48
10	43	41	39	36	34	40	42	40	42	44	48	48
11	43	41	39	36	34	40	42	40	42	44	49	48
12	43	41	39	36	34	39	42	40	42	44	48	48
13	43	41	39	36	34	39	42	40	42	44	49	48
14	43	41	39	36	34	38	41	40	42	44	49	48
15	43	41	39	36	34	38	42	40	42	44	49	49
16	43	41	39	37	36	38	41	40	43	44	49	48
17	43	41	39	38	37	38	41	40	43	45	49	49
18	43	40	38	37	36	38	41	40	43	47	49	49
19	43	40	38	37	36	39	41	40	43	48	49	50
20	43	40	38	36	35	40	41	40	43	48	49	50
21	43	40	38	36	35	41	41	40	43	48	49	49
22	46	40	38	36	38	40	41	40	43	48	49	49
23	47	40	38	36	40	41	40	40	43	48	49	49
24	43	40	38	35	39	42	40	40	43	48	49	50
25	43	40	38	35	39	41	41	40	43	48	49	51
26	43	40	38	35	39	42	41	40	43	48	49	50
27	42	40	38	35	39	43	41	41	43	48	49	49
28	42	40	38	35	39	44	41	41	43	48	49	49
29	42	40	38	35	---	44	41	41	43	48	49	49
30	41	40	38	35	---	43	40	41	43	48	49	49
31	41	---	38	35	---	42	---	41	---	48	49	---
TOTAL	1337	1217	1201	1123	998	1248	1239	1251	1280	1417	1508	1466
MEAN	43.1	40.6	38.7	36.2	35.6	40.3	41.3	40.4	42.7	45.7	48.6	48.9
MAX	47	41	40	38	40	44	43	42	46	48	49	51
MIN	41	40	38	35	34	38	40	40	41	43	48	48
AC-FT	2650	2410	2380	2230	1980	2480	2460	2480	2540	2810	2990	2910

CAL YR 1985	TOTAL	15060	MEAN	41.3	MAX	47	MIN	38	AC-FT	29870
WTR YR 1986	TOTAL	15285	MEAN	41.9	MAX	51	MIN	34	AC-FT	30320

14056000 WICKIUP RESERVOIR NEAR LA PINE, OR

LOCATION.--Lat 43°41'02", long 121°41'20", in SW¼NE¼ sec. 7, T.22 S., R.9 E., Deschutes County, Hydrologic Unit 17070301, in Deschutes National Forest, in gate-chamber structure at Wickiup Dam on Deschutes River, 9.0 mi west of La Pine, and at mile 226.8.

DRAINAGE AREA.--482 mi^2, hydrologic drainage boundary uncertain because of interbasin ground-water exchange.

PERIOD OF RECORD.--December 1942 to current year. Prior to Oct. 1, 1964, published as "near Lapine."

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to Jan. 15, 1945, nonrecording gage at nearby sites at same datum.

REMARKS.--Reservoir is formed by rock-faced, earthfill dam completed in 1949. Some storage began in December 1942, capacity, 182,100 acre-ft between elevations 4,265.0 ft, no storage, and 4,336.0 ft crest of spillway, with earth plug to elevation 4,339.0 ft. Crater Creek Canal diverts water upstream from station to Tumalo Creek basin. Released water is diverted from Deschutes River at Bend for irrigation near Madras.

COOPERATION.--Daily elevations furnished by North Unit Irrigation District, and capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 204,000 acre-ft Apr. 8,1974, elevation, 4,338.01 ft; minimum contents observed since reservoir first filled in March 1949, 534 acre-ft, revised on basis of computer expanded capacity table dated June 1970, Oct. 18, 1952, elevation, 4,270.86 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 200,500 acre-ft Feb. 9, elevation, 4,337.70 ft; minimum contents observed, 64,390 acre-ft Sept. 12, 13, elevation, 4,316.12 ft.

MONTHEND ELEVATION AND CONTENTS AT 0800, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	4,320.99	79,510	-
Oct. 31	4,325.50	99,250	+19,740
Nov. 30	4,330.56	132,400	+33,150
Dec. 31	4,334.45	166,500	+34,100
CAL YR 1985	-	-	-5,400
Jan. 31	4,337.12	194,100	+27,600
Feb. 28	4,337.44	197,600	+3,500
Mar. 31	4,337.63	199,700	+2,100
Apr. 30	4,336.99	192,600	-7,100
May 31	4,334.92	171,100	-21,500
June 30	4,330.79	134,200	-36,900
July 31	4,325.02	96,700	-37,500
Aug. 31	4,317.63	68,800	-27,900
Sept.30	4,320.75	78,710	+9,910
WTR YR 1986	-	-	-800

14056500 DESCHUTES RIVER BELOW WICKIUP RESERVOIR, NEAR LA PINE, OR

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.

DRAINAGE AREA.--483 mi^2, hydrologic drainage boundary uncertain because of interbasin ground-water exchange.

PERIOD OF RECORD.--June 1938 to current year. Monthly discharge only June 1938, published in WSP 1318. Published as "near Lapine" 1938-64.

REVISED RECORDS.--WSP 1448: 1944(m), 1947-51(m).

GAGE.--Water-stage recorder. Datum of gage is 4,257.41 ft above National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation).

REMARKS.--Estimated daily discharges: Nov. 10-13, Dec. 11-18, 21-25, Feb. 16-21. Records excellent except those for December and January, which are good. Flow regulated by Crane Prairie Reservoir (station 14053500), and since 1942 by Wickiup Reservoir (station 14056000). Some leakage from Crane Prairie and Wickiup Reservoirs does not pass station. Some spill bypassed station in 1955. Crater Creek canal diverts water upstream from station to Tumalo Creek basin.

AVERAGE DISCHARGE.--48 years, 744 ft^3/s, 539,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,280 ft^3/s July 28 to Aug. 1, 1956, July 31, Aug. 1, 2, 1962; minimum, 1.9 ft^3/s Nov. 10, 1973; minimum daily, 10 ft^3/s Jan. 17, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,820 ft^3/s July 22-24, gage height, 6.28 ft; minimum discharge, 26 ft^3/s Nov. 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	612	53	30	32	354	472	616	977	1700	1590	1470	1540
2	613	53	30	32	354	472	616	1020	1670	1580	1470	1510
3	614	53	30	33	354	471	616	1020	1650	1530	1530	1450
4	614	53	31	33	353	471	616	1020	1570	1460	1580	1430
5	614	54	31	34	353	471	617	875	1460	1390	1640	1440
6	615	54	31	33	352	471	616	738	1390	1380	1680	1440
7	615	54	31	34	352	472	597	675	1370	1350	1670	1430
8	584	54	31	34	354	471	533	694	1370	1310	1670	1440
9	562	54	32	36	356	471	533	752	1280	1260	1670	1430
10	532	54	32	57	357	528	538	795	1220	1230	1670	1370
11	515	55	32	37	358	574	540	824	1220	1290	1690	1330
12	515	52	32	37	358	573	540	825	1260	1350	1760	1250
13	517	40	32	37	358	572	540	840	1380	1390	1750	1190
14	493	33	31	84	357	572	540	1030	1440	1480	1750	1020
15	441	33	31	170	356	572	540	1220	1460	1580	1750	959
16	442	31	31	171	358	571	540	1250	1490	1610	1740	961
17	409	29	31	171	347	571	540	1350	1520	1630	1740	825
18	390	28	30	169	466	571	541	1340	1530	1670	1720	747
19	260	28	30	170	595	571	540	1340	1540	1670	1710	681
20	95	30	30	168	669	571	639	1350	1580	1660	1710	638
21	93	30	30	166	667	570	920	1410	1580	1680	1710	641
22	79	30	30	166	666	570	1170	1440	1530	1780	1710	642
23	70	29	29	166	664	569	1210	1440	1490	1810	1710	645
24	70	28	30	166	606	599	1170	1440	1490	1810	1710	581
25	70	28	31	166	569	618	1030	1440	1490	1770	1710	513
26	71	35	34	166	569	618	1030	1440	1560	1740	1710	475
27	72	34	33	166	568	617	1030	1440	1600	1750	1680	441
28	60	33	33	167	538	618	912	1440	1600	1640	1650	385
29	51	31	33	196	---	617	871	1480	1590	1590	1580	392
30	52	31	33	263	---	618	906	1610	1590	1520	1540	393
31	53	---	33	296	---	618	---	1700	---	1470	1540	---
TOTAL	10793	1204	968	3656	12608	17120	21647	36215	44620	47970	51620	29189
MEAN	348	40.1	31.2	118	450	552	722	1168	1487	1547	1665	973
MAX	615	55	34	296	669	618	1210	1700	1700	1810	1760	1540
MIN	51	28	29	32	347	471	533	675	1220	1230	1470	385
AC-FT	21410	2390	1920	7250	25010	33960	42940	71830	88500	95150	102400	57900

CAL YR 1985	TOTAL	273759	MEAN	750	MAX	1890	MIN	28	AC-FT	543000
WTR YR 1986	TOTAL	277610	MEAN	761	MAX	1810	MIN	28	AC-FT	550600

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 mi^2, hydrologic drainage boundary uncertain because of interbasin ground-water exchange.

PERIOD OF RECORD.--July 1938 to current year. 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."

REVISED RECORDS.--WSP 984: 1938-42(M,m).

GAGE.--Water-stage recorder. Elevation of gage is 4,220 ft, by barometer.

REMARKS.--No estimated daily discharge. Records excellent. Diversion only to ponds at fish hatchery 50 ft upstream from station, from which water returns to river upstream from station. Stream is spring fed and momentary extremes are caused by operation of fish hatchery.

AVERAGE DISCHARGE.--48 years, 150 ft^3/s, 108,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 254 ft^3/s June 5, 1965, gage height, 2.02 ft; minimum discharge, 67 ft^3/s sometime during period Sept. 20-30, 1969.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 186 ft^3/s Mar. 14, gage height, 1.58 ft; minimum discharge, 130 ft^3/s Feb. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	150	147	146	142	141	142	156	159	158	156	152	149
2	150	147	146	141	141	142	156	160	158	156	152	149
3	150	147	146	140	140	142	157	160	158	156	152	149
4	150	147	145	140	140	142	157	160	157	157	152	148
5	150	146	145	141	140	143	158	160	157	156	152	149
6	150	145	146	140	140	143	158	160	157	156	152	148
7	150	146	144	140	139	147	159	160	157	156	152	149
8	149	147	143	141	138	148	159	159	157	156	152	148
9	149	147	143	141	138	148	159	159	157	156	152	148
10	149	147	142	140	138	149	159	159	157	155	152	148
11	150	147	142	140	138	149	159	159	157	155	152	148
12	149	145	142	140	141	148	160	159	157	155	151	148
13	149	145	142	140	141	149	160	159	157	156	151	148
14	149	145	142	140	140	148	160	159	157	155	151	148
15	149	147	142	142	141	148	160	159	157	155	151	148
16	149	145	142	143	142	149	160	159	157	155	151	147
17	149	146	142	142	143	148	160	159	157	155	150	149
18	149	145	142	141	146	148	159	159	157	155	150	147
19	149	145	142	141	143	148	159	159	157	155	150	147
20	149	145	142	140	142	149	159	159	156	155	150	147
21	149	145	142	140	142	149	160	159	156	155	150	147
22	153	145	142	141	144	149	159	158	156	155	150	147
23	151	144	142	140	143	151	159	159	156	154	150	148
24	149	144	140	140	142	151	159	159	157	154	150	149
25	149	145	140	140	142	151	160	158	157	153	150	149
26	149	144	140	140	142	152	159	158	157	153	150	149
27	149	144	140	140	142	153	160	158	157	153	150	148
28	149	145	140	140	142	154	159	158	157	153	150	147
29	148	144	140	140	---	154	159	158	156	153	149	147
30	148	144	140	140	---	155	159	158	156	153	149	147
31	147	---	140	141	---	155	---	158	---	153	149	---
TOTAL	4629	4365	4412	4357	3951	4604	4767	4927	4707	4800	4674	4440
MEAN	149	146	142	141	141	149	159	159	157	155	151	148
MAX	153	147	146	143	146	155	160	160	158	157	152	149
MIN	147	144	140	140	138	142	156	158	156	153	149	147
AC-FT	9180	8660	8750	8640	7840	9130	9460	9770	9340	9520	9270	8810

CAL YR 1985	TOTAL	56660	MEAN	155	MAX	167	MIN	140	AC-FT	112400
WTR YR 1986	TOTAL	54633	MEAN	150	MAX	160	MIN	138	AC-FT	108400

14059500 CRESCENT LAKE NEAR CRESCENT, OR

LOCATION.--Lat 43°30'05", long 121°58'20", in SW¼ sec.11, T.24 S., R.6 E., Klamath County, Hydrologic Unit 17070302, Deschutes National Forest, on outlet works at dam on Crescent Creek, 0.8 mi south of town of Crescent Lake, 14.0 mi west of Crescent, and at mile 30.0.

DRAINAGE AREA.--60.7 mi^2, hydrologic drainage boundary uncertain because of interbasin ground-water exchange.

PERIOD OF RECORD.--August 1922 to current year.

REVISED RECORDS.--WSP 1218: Drainage area. WSP 1318: 1922-31. WSP 1448: 1923-31(M,m).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to Oct. 1, 1956, nonrecording gage at nearby site at datum 4,825.16 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1956, to Sept. 12, 1966, nonrecording gage, at present site and datum.

REMARKS.--Reservoir originally formed by dam of earth and logs completed in 1922, reconstructed as earthfill dam in 1956. Capacity, 117,200 acre-ft between elevations 4,821.5 ft, sill of outlet gate and 4,853.0 ft, crest of spillway. Maximum allowable storage, 86,050 acre-ft elevation, 4,845.32 ft. Dead storage about 500,000 acre-ft, Oregon Game Commission survey. Records given herein represent total contents (previously reported as usable contents) above elevation 4,821.5 ft, water surface probably cannot be lowered below elevation 4,823.4 ft, 5,360 acre-ft, because of natural flow through reservoir.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 93,010 acre-ft June 6, 1975, elevation, 4,847.09 ft; minimum contents observed, 9,640 acre-ft Oct. 21, 1931, elevation, 4,827.91 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 86,960 acre-ft June 3, elevation, 4,845.55 ft; minimum contents, 59,080 acre-ft Sept. 15, elevation, 4,838.33 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	4,839.56	63,770	-
Oct. 31	4,840.48	67,290	+3,520
Nov. 30	4,841.34	70,600	+3,310
Dec. 31	4,841.99	73,110	+2,510
CAL YR 1985	-	-	-13,450
Jan. 31	4,842.84	76,400	+3,290
Feb. 28	4,844.27	81,960	+5,560
Mar. 31	4,844.87	84,300	+2,340
Apr. 30	4,845.44	86,530	+2,230
May 31	4,845.44	86,530	0
June 30	4,844.00	80,910	-5,620
July 31	4,841.60	71,610	-9,300
Aug. 31	4,839.34	62,930	-8,680
Sept.30	4,838.80	60,870	-2,060
WTR YR 1986	-	-	-2,900

14060000 CRESCENT CREEK AT CRESCENT LAKE, NEAR CRESCENT, OR

LOCATION.--Lat 43°30'11", long 121°58'20", in SE¼SW¼ 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 mi^2, 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 current year. 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.

REVISED RECORDS.--WSP 1218: Drainage area.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 4,819.96 ft above National Geodetic Vertical Datum of 1929. See WSP 1935 for history of changes prior to Sept. 11, 1956.

REMARKS.--Estimated daily discharges: Oct. 10 to Nov. 8; Nov. 10 to Dec. 29; May 23 to July 9. Records excellent. Flow regulated since 1922 by Crescent Lake (see station 14059500). No diversion upstream from station.

AVERAGE DISCHARGE.--60 years (water years 1913-14, 1929-86), 58.3 ft^3/s, 42,240 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 313 ft^3/s July 9, 1929, Aug. 9, 1936; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 215 ft^3/s June 3-10; minimum daily, 6.0 ft^3/s Oct. 4-27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	6.4	6.8	7.2	7.2	7.6	61	62	109	209	194	182
2	51	6.4	6.8	7.2	7.2	7.6	61	109	164	209	193	182
3	29	6.4	6.8	7.2	7.2	7.6	61	109	215	209	193	181
4	6.0	6.4	6.8	7.2	7.2	7.6	61	109	215	208	193	181
5	6.0	6.4	6.8	7.2	7.2	7.6	61	109	215	208	192	181
6	6.0	6.8	6.8	7.2	7.2	7.6	61	108	215	208	192	181
7	6.0	7.2	6.8	7.2	7.2	7.6	40	108	215	206	192	180
8	6.0	7.2	6.8	7.2	7.2	7.6	21	108	215	205	191	180
9	6.0	6.8	6.8	7.2	7.2	7.6	21	108	215	203	191	179
10	6.0	6.8	6.8	7.2	7.2	7.6	21	108	215	203	191	178
11	6.0	6.8	6.8	7.2	7.2	33	21	108	214	202	190	178
12	6.0	6.8	6.8	7.2	7.2	61	21	108	214	202	189	178
13	6.0	6.8	6.8	7.2	7.2	61	21	108	214	202	189	177
14	6.0	6.8	7.2	7.2	7.2	61	21	108	214	202	188	177
15	6.0	6.8	7.2	7.2	7.2	61	20	108	214	201	188	111
16	6.0	6.8	7.2	7.2	7.2	61	20	108	212	201	188	49
17	6.0	6.8	7.2	7.2	7.2	61	20	108	212	200	187	49
18	6.0	6.8	7.2	7.2	7.2	61	20	108	212	200	186	49
19	6.0	6.8	7.2	7.2	7.2	61	20	108	212	199	186	49
20	6.0	6.8	7.2	7.2	7.2	61	20	109	214	199	186	49
21	6.0	6.8	7.2	7.2	7.2	61	20	109	212	198	185	49
22	6.0	6.8	7.2	7.2	7.2	61	20	109	212	198	185	49
23	6.0	6.8	7.2	7.2	7.6	61	20	108	212	198	185	49
24	6.0	6.8	7.2	7.2	7.6	61	20	108	212	198	186	28
25	6.0	6.8	7.2	7.2	7.6	61	20	108	211	197	184	6.8
26	6.0	6.8	7.2	7.2	7.6	61	20	108	211	196	184	6.8
27	6.0	6.8	7.2	7.2	7.6	61	21	108	211	196	185	6.8
28	6.4	6.8	7.2	7.2	7.6	61	21	109	211	195	184	6.8
29	6.4	6.8	7.2	7.2	---	61	21	109	209	195	184	7.0
30	6.4	6.8	7.2	7.2	---	61	21	109	209	195	183	7.0
31	6.4	---	7.2	7.2	---	61	---	109	---	194	183	---
TOTAL	300.6	202.8	218.0	223.2	204.0	1329.0	877	3313	6235	6236	5827	3087.2
MEAN	9.70	6.76	7.03	7.20	7.29	42.9	29.2	107	208	201	188	103
MAX	51	7.2	7.2	7.2	7.6	61	61	109	215	209	194	182
MIN	6.0	6.4	6.8	7.2	7.2	7.6	20	62	109	194	183	6.8
AC-FT	596	402	432	443	405	2640	1740	6570	12370	12370	11560	6120

CAL YR 1985	TOTAL	30468.4	MEAN	83.5	MAX	182	MIN	6.0	AC-FT	60430
WTR YR 1986	TOTAL	28052.8	MEAN	76.9	MAX	215	MIN	6.0	AC-FT	55640

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 mi^2, 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 current year. 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.

REVISED RECORDS.--WSP 1218: 1950.

GAGE.--Water-stage recorder. Datum of gage is 4,192.81 ft above 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.--Estimated daily discharges: Nov. 28 to Feb. 26. Records good except for estimated daily discharges, which are fair. Flow regulated since 1922 by Crescent Lake (see station 14059500). Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--62 years (water years 1925-86), 209 ft^3/s, 151,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,660 ft^3/s Dec. 25, 1964, gage height, 8.18 ft; minimum discharge, 8 ft^3/s Sept. 2, 3, 1931.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 732 ft^3/s Feb. 28, gage height, 6.38 ft; maximum gage height, 6.56 ft Feb. 24, backwater from ice; minimum discharge, 61 ft^3/s Nov. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	99	105	85	90	220	710	483	323	380	278	213	194
2	98	101	85	91	220	629	489	315	401	274	212	194
3	98	97	85	91	215	589	498	364	417	273	210	193
4	97	94	100	92	210	570	498	408	439	273	213	192
5	78	91	140	93	200	553	492	415	486	281	211	190
6	69	91	140	94	180	543	480	408	540	285	210	189
7	67	88	140	95	165	555	464	403	533	286	207	187
8	69	84	130	98	155	607	458	387	517	281	205	187
9	67	86	120	105	150	659	446	372	503	275	205	186
10	66	82	110	115	145	697	421	358	471	273	204	185
11	65	75	100	125	145	705	416	355	440	268	201	185
12	65	70	90	140	140	679	417	355	414	262	201	186
13	65	71	90	140	140	657	418	349	392	255	200	188
14	65	71	90	135	150	653	413	331	369	250	198	191
15	65	87	90	130	160	626	411	323	356	246	197	194
16	64	95	90	130	180	590	402	317	354	242	196	195
17	64	116	90	140	200	549	390	312	351	243	195	143
18	64	121	90	150	185	503	383	308	352	242	194	137
19	63	101	90	170	175	464	368	307	349	241	193	139
20	63	115	90	185	190	432	351	309	345	237	192	135
21	63	104	90	190	210	426	337	323	339	234	194	133
22	69	95	90	190	250	426	327	336	328	231	194	130
23	96	78	90	180	350	427	325	350	318	229	194	126
24	145	86	90	170	470	425	329	359	312	225	193	130
25	176	108	90	165	540	431	339	357	308	223	192	135
26	185	108	90	165	620	448	354	340	298	223	192	124
27	155	108	90	170	690	439	359	324	288	221	192	135
28	135	105	90	180	717	439	359	322	289	219	194	120
29	126	100	90	190	---	448	353	332	294	217	194	112
30	117	90	90	200	---	459	333	347	286	217	194	106
31	110	---	90	210	---	472	---	362	---	216	194	---
TOTAL	2828	2823	3035	4419	7372	16810	12113	10771	11469	7720	6184	4841
MEAN	91.2	94.1	97.9	143	263	542	404	347	382	249	199	161
MAX	185	121	140	210	717	710	498	415	540	286	213	195
MIN	63	70	85	90	140	425	325	307	286	216	192	106
AC-FT	5610	5600	6020	8770	14620	33340	24030	21360	22750	15310	12270	9600

CAL YR 1985	TOTAL	75306	MEAN	206	MAX	487	MIN	63	AC-FT	149400
WTR YR 1986	TOTAL	90385	MEAN	248	MAX	717	MIN	63	AC-FT	179300

14063300 PAULINA CREEK NEAR LA PINE, OR

LOCATION.--Lat 43°42'47", long 121°16'39", in SW¼NE¼ sec.34, T.21 S., R.12 E., Deschutes County, Hydrologic Unit 17070302, on right bank 180 ft downstream from dam at outlet of Paulina Lake and 12 mi east of La Pine.

DRAINAGE AREA.--10.1 mi^2, of which 2.2 mi^2 is lake surface at elevation 6,331 ft, hydrologic drainage boundary uncertain because of interbasin ground-water exchange.

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder. Datum of gage is 6,315.41 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 1 to Nov. 15, Dec. 12-31. Records good. Flow regulated by dam at outlet of Paulina Lake 180 ft upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 66 ft^3/s Apr. 29, 1983, gage height, 2.35 ft; minimum discharge, 0.19 ft^3/s Oct. 19, 1982, Nov. 22, 1983.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 56 ft^3/s Feb. 22, 23, gage height, 2.03 ft; minimum discharge, 0.31 ft^3/s Aug. 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	6.2	4.6	17	23	34	18	18	26	21	29	30
2	19	6.2	8.7	18	24	32	18	18	27	20	34	30
3	19	6.2	12	20	24	29	18	20	27	20	35	29
4	19	6.2	12	20	24	28	18	21	26	21	35	29
5	19	6.2	12	20	24	27	17	22	26	21	35	29
6	19	6.5	14	20	23	26	17	23	25	21	34	29
7	19	7.0	16	19	22	31	17	23	25	20	34	29
8	19	7.6	16	18	21	34	17	22	24	21	31	28
9	19	7.7	16	20	20	33	17	21	24	20	18	28
10	19	7.7	14	20	19	32	17	22	23	20	9.1	28
11	19	7.6	12	19	19	32	16	23	23	20	23	28
12	19	7.3	11	18	20	31	17	23	22	20	32	27
13	19	7.1	10	17	24	31	17	22	21	23	29	27
14	19	7.1	9.2	17	26	30	17	21	20	25	20	27
15	11	7.1	8.3	17	27	28	16	20	20	25	15	27
16	6.0	7.1	7.4	22	28	27	15	20	19	24	11	27
17	6.0	7.1	6.6	27	31	26	15	20	19	23	12	27
18	6.0	7.1	6.2	27	46	23	15	20	19	23	12	27
19	6.0	7.1	5.6	25	50	20	15	20	23	22	12	27
20	6.0	7.3	5.2	24	49	19	15	20	26	26	18	27
21	6.0	7.4	4.8	23	47	19	15	21	25	29	32	27
22	7.2	4.8	4.5	24	52	18	16	20	25	29	32	26
23	8.5	1.8	4.1	25	54	19	16	20	24	28	32	26
24	8.3	1.9	3.8	24	49	21	16	20	23	28	32	24
25	7.8	2.2	3.5	24	45	20	17	20	23	28	32	20
26	7.3	2.2	3.3	22	42	20	17	20	23	28	31	20
27	6.7	2.2	3.3	21	39	19	19	20	22	28	31	20
28	6.4	2.6	3.3	22	36	19	18	27	22	27	30	20
29	6.4	2.9	3.3	22	---	18	18	35	22	27	30	20
30	6.4	3.3	3.3	24	---	18	18	32	21	27	30	20
31	6.4	---	3.3	24	---	18	---	28	---	27	30	---
TOTAL	384.4	170.7	247.3	660	908	782	502	682	695	742	820.1	783
MEAN	12.4	5.69	7.98	21.3	32.4	25.2	16.7	22.0	23.2	23.9	26.5	26.1
MAX	19	7.7	16	27	54	34	19	35	27	29	35	30
MIN	6.0	1.8	3.3	17	19	18	15	18	19	20	9.1	20
AC-FT	762	339	491	1310	1800	1550	996	1350	1380	1470	1630	1550

CAL YR 1985	TOTAL	6828.4	MEAN	18.7	MAX	36	MIN	1.8	AC-FT	13540
WTR YR 1986	TOTAL	7376.5	MEAN	20.2	MAX	54	MIN	1.8	AC-FT	14630

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 mi^2.

PERIOD OF RECORD.--April 1906 to September 1913, April to September 1914, August to December 1920, April to September 1921, February 1924 to current year. 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.

REVISED RECORDS.--See PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 4,142.10 ft above National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark). See WSP 1738 for history of changes prior to Nov. 20, 1958.

REMARKS.--No estimated daily discharges. Records excellent. Flow regulated by Crane Prairie Reservoir, Crescent Lake, and Wickiup Reservoir (see elsewhere in this report). Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--69 years (water years 1907-13, 1925-86), 1,419 ft^3/s, 1,028,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,000 ft^3/s, estimated, Nov. 27, 1909 (gage height not determined); minimum discharge, 363 ft^3/s Jan. 20, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,550 ft^3/s June 2, 3, gage height, 6.19 ft; minimum daily discharge, 525 ft^3/s Dec. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1280	664	580	603	964	1770	1610	1800	2510	2330	2120	2050
2	1230	660	525	605	1040	1730	1610	1860	2540	2330	2110	2050
3	1230	654	625	603	1060	1710	1620	1900	2550	2310	2100	2030
4	1230	650	650	602	1060	1650	1630	1900	2540	2280	2140	2000
5	1230	646	640	610	1050	1610	1630	1940	2500	2220	2180	1970
6	1220	643	640	611	1040	1580	1640	1820	2420	2150	2220	1970
7	1210	644	640	609	1020	1610	1630	1710	2370	2130	2260	1970
8	1190	647	640	615	995	1630	1610	1640	2360	2110	2260	1960
9	1170	647	635	634	980	1610	1550	1650	2360	2060	2260	1960
10	1140	643	625	638	970	1630	1540	1680	2300	2000	2250	1950
11	1110	631	615	648	966	1740	1530	1710	2230	1980	2250	1920
12	1090	606	615	652	965	1810	1520	1720	2200	2010	2260	1880
13	1090	591	620	646	977	1820	1510	1720	2200	2040	2290	1820
14	1090	618	610	652	967	1800	1510	1730	2260	2070	2310	1770
15	1070	616	610	672	976	1780	1510	1880	2310	2140	2300	1650
16	1010	622	605	767	999	1770	1510	2040	2310	2230	2290	1600
17	1010	622	600	809	1040	1740	1500	2080	2330	2270	2290	1610
18	984	621	600	811	1090	1700	1490	2150	2350	2290	2290	1460
19	953	628	590	833	1200	1660	1480	2160	2360	2320	2270	1370
20	879	633	585	837	1320	1630	1470	2160	2370	2330	2250	1320
21	685	624	590	842	1370	1590	1540	2160	2380	2330	2250	1270
22	685	608	589	856	1400	1570	1770	2220	2380	2330	2250	1270
23	708	569	587	848	1510	1560	2000	2270	2340	2380	2250	1270
24	687	600	587	828	1560	1560	2040	2290	2290	2430	2240	1280
25	702	600	586	816	1570	1580	2000	2300	2280	2430	2240	1230
26	733	600	580	805	1670	1590	1880	2300	2270	2410	2240	1170
27	748	600	580	794	1800	1600	1870	2290	2300	2370	2240	1110
28	732	600	598	790	1810	1610	1890	2270	2340	2370	2220	1080
29	709	600	589	804	---	1600	1820	2270	2360	2310	2180	1010
30	683	600	587	836	---	1600	1790	2300	2350	2240	2120	1010
31	672	---	591	917	---	1610	---	2410	---	2180	2060	---
TOTAL	30160	18687	18714	22593	33369	51450	49700	62330	70660	69380	68990	48010
MEAN	973	623	604	729	1192	1660	1657	2011	2355	2238	2225	1600
MAX	1280	664	650	917	1810	1820	2040	2410	2550	2430	2310	2050
MIN	672	569	525	602	964	1560	1470	1640	2200	1980	2060	1010
AC-FT	59820	37070	37120	44810	66190	102100	98580	123600	140200	137600	136800	95230

CAL YR 1985	TOTAL	538797	MEAN	1476	MAX	2570	MIN	525	AC-FT	1069000
WTR YR 1986	TOTAL	544043	MEAN	1491	MAX	2550	MIN	525	AC-FT	1079000

DIVERSIONS FROM DESCHUTES RIVER NEAR BEND, OR

The following six canals, all in Deschutes County, Hydrologic Unit 17070301, are the only diversions from Deschutes River between gaging stations at Benham Falls (sta 14064500) and below Bend (sta 14070500).

14065500 ARNOLD CANAL NEAR BEND diverts at mile 174.5 from right bank at head of Lava Island, in SW¼ sec.27, T.18 S., R.11 E., water used for irrigation southeast of Bend. Records available, October 1912 to current year.

14066500 CENTRAL OREGON CANAL ABOVE PILOT BUTTE CANAL, NEAR BEND diverts at mile 169.5 from right bank in NE¼ sec.13, T.18 S., R.11 E., water used for irrigation east of Bend. Records available, October 1932 to current year.

14068500 DESCHUTES COUNTY MUNICIPAL IMPROVEMENT DISTRICT CANAL AT BEND diverts at mile 165.8 from left bank in SW¼SE¼ sec.29, T.17 S., R.12 E., at Bend, water stored in Crescent Lake for Tumalo project is diverted by this canal and supplements flow in Tumalo project feed canal for irrigation near Tumalo. Records available, May 1923 to current year.

14069000 NORTH UNIT MAIN CANAL NEAR BEND diverts at mile 164.8 from right bank in NE¼ sec.29, T.17 S., R.12 E., water used for irrigation near Madras. Records available, October 1945 to current year.

14069500 NORTH CANAL NEAR BEND diverts at mile 164.8 from right bank in NE¼ sec.29, T.17 S., R.12 E., water used for irrigation north of Bend, mostly near Redmond. Records available, June 1913 to current year.

14070000 SWALLEY CANAL NEAR BEND diverts at mile 164.8 from right bank in NE¼ sec.29, T.17 S., R.12 E., water used for irrigation north of Bend. Records available 1913, to current year.

Records of monthly discharge of these canals, published as a group, are available from October 1926 to current year; records for each canal published separately prior to 1926.

DIVERSIONS, IN ACRE-FEET, WATER YEAR OCTOBER 1985 to SEPTEMBER 1986

MONTH	ARNOLD CANAL	CENTRAL OREGON CANAL	DESCHUTES COUNTY MUNICIPAL IMPROVEMENT DISTRICT CANAL	NORTH UNIT MAIN CANAL	NORTH CANAL	SWALLEY CANAL	TOTAL
OCTOBER	1,850	10,340	0	13,570	9,630	3,470	38,900
NOVEMBER	0	1,950	0	0	1,170	0	3,120
DECEMBER	0	182	0	0	175	277	630
JANUARY	655	1,970	0	0	1,480	407	4,510
FEBRUARY	270	1,910	0	0	1,400	272	3,850
MARCH	262	2,030	0	0	1,720	424	4,440
APRIL	2,010	12,540	169	27,470	13,470	3,410	59,100
MAY	6,030	30,470	4,200	39,080	31,070	6,200	117,100
JUNE	7,400	34,120	3,010	46,460	33,310	7,240	131,500
JULY	7,540	34,860	8,320	37,000	34,960	7,580	130,300
AUGUST	7,070	35,680	9,460	35,420	35,750	7,410	130,800
SEPTEMBER	5,290	23,820	6,420	22,770	24,690	5,720	88,700
WTR YR 1986	38,370	189,900	31,590	221,800	188,800	42,410	712,900

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, at city limits of town of Bend, and at mile 164.4.

DRAINAGE AREA.--1,899 mi^2.

PERIOD OF RECORD.--October 1914 to current year.

REVISED RECORDS.--WSP 1318: 1916-18(M), 1926(M), 1931(M).

GAGE.--Water-stage recorder. Datum of gage is 3,503.96 ft above 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.--Estimated daily discharges: Oct. 8, 9; Nov. 14-18, 30; Dec. 1-3. Records good. Flow regulated by powerplant at Bend, Crescent Lake, Crane Prairie Reservoir, and Wickiup Reservoir (see elsewhere in this report). Six large canals and several small ditches divert water upstream from station for irrigation.

AVERAGE DISCHARGE.--72 years, 504 ft^3/s, 365,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,820 ft^3/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 ft^3/s Aug. 25, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge near this site since 1905, 4,820 ft^3/s Nov. 27, 1909.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,950 ft^3/s Feb. 28, gage height, 4.65 ft; minimum discharge, 14 ft^3/s Sept. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	98	630	580	540	884	1780	1560	44	66	63	57	49
2	89	621	550	466	975	1710	1540	45	108	63	56	51
3	83	613	600	405	997	1680	1560	46	139	61	55	84
4	79	608	609	408	1000	1640	1250	44	157	103	56	80
5	88	605	592	386	1000	1610	1180	47	172	159	59	51
6	88	601	581	340	989	1570	1230	45	133	110	58	48
7	88	596	567	309	969	1600	1170	43	87	110	59	50
8	95	602	554	315	941	1640	1120	43	60	143	59	49
9	100	604	549	317	919	1610	1060	42	69	130	59	51
10	102	600	582	320	629	1290	1040	42	68	69	58	104
11	100	593	568	541	434	1200	1030	43	67	56	58	129
12	73	567	577	544	462	1300	1030	43	62	57	55	137
13	65	557	571	526	524	1300	1010	42	63	57	59	110
14	65	620	570	535	746	1360	721	42	65	59	59	90
15	81	630	562	574	918	1750	461	45	65	59	57	136
16	87	620	558	662	945	1770	268	47	65	60	52	150
17	94	500	551	713	960	1760	175	48	66	62	53	199
18	93	330	484	715	1010	1720	112	50	64	61	52	180
19	66	217	425	733	1060	1670	111	50	63	62	50	100
20	551	166	547	754	1220	1630	65	48	64	60	54	103
21	628	233	541	778	1320	1580	36	50	62	58	53	53
22	606	482	545	798	1390	1540	46	50	64	61	56	56
23	620	535	541	796	1500	1530	51	50	63	63	53	53
24	595	564	540	772	1560	1530	52	50	59	64	52	105
25	598	568	540	753	1550	1540	52	73	58	62	53	127
26	640	557	533	745	1590	1580	47	76	46	60	52	103
27	660	560	530	736	1770	1580	48	68	54	61	53	77
28	649	565	549	729	1830	1590	47	63	63	62	53	56
29	618	561	545	739	---	1590	45	61	63	60	52	47
30	596	600	540	758	---	1590	43	64	65	59	52	57
31	609	---	543	845	---	1590	---	63	---	57	51	---
TOTAL	9004	16105	17124	18552	30092	48830	18160	1567	2300	2271	1705	2685
MEAN	290	537	552	598	1075	1575	605	50.5	76.7	73.3	55.0	89.5
MAX	660	630	609	845	1830	1780	1560	76	172	159	59	199
MIN	65	166	425	309	434	1200	36	42	46	56	50	47
AC-FT	17860	31940	33970	36800	59690	96850	36020	3110	4560	4500	3380	5330

CAL YR 1985	TOTAL	158778	MEAN	435	MAX	1600	MIN	41	AC-FT	314900
WTR YR 1986	TOTAL	168395	MEAN	461	MAX	1830	MIN	36	AC-FT	334000

14073001 TUMALO CREEK NEAR BEND, OR

LOCATION.--Lat 44°05'16", long 121°22'18", in NW¼SE¼ sec.23, T.17S. R.11 E., Deschutes County, Hydrologic Unit 17070301, on left bank 0.25 mi upstream from diversion to Tumalo feed canal, 3.0 mi northwest of Bend, and at mile 3.1.

DRAINAGE AREA.--47.3 mi^2.

PERIOD OF RECORD.--October 1913 to December 1921, February, April to November 1922, March 1923 to current year. Published as "below Bend" 1949-50.

REVISED RECORDS.--WSP 864: 1937. WSP 1218: Drainage area. WSP 1448: 1923(M), 1927-29(M), 1935(M), 1942(M). WDR OR-75-1: 1974(M).

GAGE.--Water-stage recorder. Datum of gage is 3,566.82 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 27, 1915, nonrecording gage and Apr. 27, 1915, to Sept. 30, 1918, water-stage recorder or nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 10-14, 18, 19, 21-30; Dec. 1-16, 20-22, 25-28; Jan. 3-6. Records good except for estimated daily discharges, which are fair. All records given herein include flow in Columbia Southern Canal, which diverts 8 mi upstream from station for irrigation of land near Tumalo. No flow in the canal Oct. 1 to Apr. 10. Crater Creek Canal diverts flow of tributaries of Soda Creek into head of Tumalo Creek. Diversion upstream from station for municipal supply of Bend since Dec. 15, 1926, 7,310 acre-ft during water year 1986.

AVERAGE DISCHARGE.--68 years (water years 1914, 1917-21, 1924-35, 1937-86), 102 ft^3/s, 73,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,140 ft^3/s Nov. 9, 1968 (no flow in canal), from rating curve extended above 780 ft^3/s on basis of slope-area measurement at 3.45 ft; minimum daily, 25 ft^3/s Jan. 3, 1924.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 469 ft^3/s May 30, 31; minimum daily, 45 ft^3/s Nov. 23-25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	67	47	57	71	171	118	102	378	117	69	59
2	62	79	47	54	74	161	116	113	369	128	70	57
3	62	83	47	51	72	152	114	111	362	114	71	57
4	61	78	47	50	69	147	114	106	362	116	71	56
5	62	71	70	51	69	148	113	105	319	97	67	56
6	62	69	80	52	67	155	113	101	270	89	66	56
7	64	73	76	53	65	228	113	96	228	88	68	57
8	65	70	74	54	66	209	111	93	215	93	69	57
9	65	68	64	67	74	177	113	95	203	92	68	59
10	63	66	51	67	65	159	114	96	208	110	67	58
11	66	63	51	62	65	147	112	93	219	108	67	56
12	64	60	58	59	66	136	112	89	224	89	65	57
13	63	60	68	57	66	133	111	95	220	78	64	58
14	62	70	80	57	65	127	111	98	224	73	63	58
15	62	80	65	59	72	122	110	94	215	70	63	61
16	62	71	60	65	74	119	109	100	203	71	61	62
17	62	65	55	61	77	116	105	115	205	69	60	53
18	61	65	54	67	76	113	103	139	202	66	60	66
19	61	72	54	70	69	111	105	154	152	65	60	63
20	61	67	52	65	67	111	110	191	141	68	61	64
21	62	60	52	60	68	111	124	173	136	67	59	63
22	73	53	53	64	99	109	160	142	145	65	58	60
23	109	45	53	61	174	110	146	131	161	64	57	67
24	107	45	53	58	214	115	134	147	185	62	58	97
25	113	45	52	58	190	110	127	202	194	61	57	74
26	100	48	49	58	208	110	118	247	178	64	56	75
27	88	54	46	61	190	113	118	276	150	64	57	73
28	82	52	46	68	182	117	113	306	136	63	59	72
29	73	47	54	72	---	123	107	370	130	68	62	69
30	71	47	56	75	---	122	105	402	120	68	63	75
31	69	---	54	71	---	119	---	408	---	67	61	---
TOTAL	2200	1893	1768	1884	2714	4201	3479	4990	6454	2514	1957	1895
MEAN	71.0	63.1	57.0	60.8	96.9	136	116	161	215	81.1	63.1	63.2
MAX	113	83	80	75	214	228	160	408	378	128	71	97
MIN	61	45	46	50	65	109	103	89	120	61	56	53
AC-FT	4360	3750	3510	3740	5380	8330	6900	9900	12800	4990	3880	3760

CAL YR 1985	TOTAL	35448	MEAN	97.1	MAX	476	MIN	42	AC-FT	70310
WTR YR 1986	TOTAL	35949	MEAN	98.5	MAX	408	MIN	45	AC-FT	71300

DESCHUTES RIVER BASIN

14074900 SNOW CREEK NEAR SISTERS, OR

LOCATION.--Lat 44°06'59", long 121°39'34", in NE¼SW¼ sec.9, T.17 S., R.9 E., Deschutes County, Hydrologic Unit 17070301, on left bank about 250 ft upstream from diversion dam, and 13 mi southwest of Sisters.

DRAINAGE AREA.--1.65 mi^2.

PERIOD OF RECORD.--October 1985 to September 1986. November 1970 to September 1985 available from Oregon Water Resources Department.

GAGE.--Water-stage recorder. Prior to Oct 14, 1975, on right bank at different datum.

REMARKS.--Estimated daily discharges: Oct. 8, 9, 11-13, 29, 31; Nov. 5, 8-30; Dec. 1-31; Jan. 1-3, 6, 7, 9, 15-18, 22, 23; Feb. 12, 16-18, 23, 24. Records good except for estimated daily discharges, which are fair.

AVERAGE DISCHARGE.--15 years (1971-86), 6.87 ft^3/s, 4,980 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 127 ft^3/s Jan. 18, 1971; maximum gage height, 5.73 ft (backwater from ice), discharge not determined, Jan. 18, 1971; minimum discharge, 1.4 ft^3/s Feb. 25, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 25 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 23	0100	*50	*1.51	May 30	1630	37	1.37

Minimum daily discharge, 2.5 ft^3/s Nov. 25 to Dec. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.0	5.3	2.5	3.5	4.2	5.6	5.0	4.7	22	12	9.2	6.7
2	6.0	5.6	2.5	4.7	4.2	5.6	4.7	4.7	20	13	9.2	6.7
3	6.0	5.6	2.5	4.5	4.2	5.3	4.7	4.7	20	12	8.8	6.7
4	6.0	5.6	2.5	4.4	4.2	5.3	4.4	4.4	19	13	8.8	6.7
5	6.0	5.3	4.4	4.2	4.2	5.0	4.4	4.4	18	12	8.8	6.7
6	6.0	5.3	4.4	4.0	4.2	5.6	4.4	4.4	15	11	8.8	6.3
7	6.0	5.3	4.0	3.8	4.2	11	4.7	4.2	14	12	8.8	6.3
8	6.0	5.0	3.5	3.7	3.9	7.5	5.0	4.2	14	11	8.8	6.3
9	6.0	4.7	3.5	3.8	3.9	6.3	5.0	4.2	14	11	8.8	6.3
10	5.6	4.3	3.5	3.9	3.9	6.0	5.0	4.2	14	11	8.8	6.3
11	5.6	4.0	3.5	3.9	3.9	5.6	4.7	4.2	15	11	8.3	6.3
12	5.6	3.7	3.5	3.9	4.2	5.3	4.4	4.2	15	11	8.3	6.3
13	5.6	3.5	3.5	3.9	3.9	5.0	4.4	4.4	15	11	8.3	6.3
14	5.6	3.5	3.5	4.2	4.2	5.0	4.4	4.4	16	11	8.3	6.3
15	5.6	3.5	3.5	5.0	3.9	5.0	4.4	4.4	14	11	8.3	6.3
16	5.6	3.5	3.5	5.8	5.0	4.7	4.2	5.0	14	10	8.3	6.3
17	5.6	3.5	3.5	7.0	6.5	4.7	4.2	6.0	15	10	7.5	6.3
18	5.6	3.5	3.5	5.5	5.0	4.4	4.2	6.3	13	10	7.5	6.3
19	5.6	3.5	3.3	4.7	3.9	4.4	4.4	7.5	13	10	7.5	6.0
20	5.6	3.5	3.3	4.4	3.9	4.4	5.0	8.8	12	10	7.5	5.6
21	5.3	3.5	3.3	4.2	3.9	4.4	6.3	7.1	12	10	7.5	5.6
22	11	3.4	3.3	4.8	3.9	4.4	6.0	6.7	12	9.6	7.5	5.6
23	36	3.1	3.3	5.2	5.0	4.7	5.3	7.1	13	9.6	7.1	7.5
24	11	2.8	3.3	4.4	9.0	4.7	5.0	9.6	13	9.6	7.1	6.3
25	7.5	2.5	3.3	4.2	7.9	4.4	4.7	12	14	9.6	7.1	5.6
26	6.3	2.5	3.2	4.2	6.7	4.4	4.7	14	13	9.2	7.1	7.5
27	6.0	2.5	3.2	4.4	6.3	5.0	4.7	16	13	9.2	7.1	5.6
28	6.0	2.5	3.2	4.4	6.0	5.6	4.7	17	13	9.2	7.1	5.6
29	5.6	2.5	3.2	4.4	---	5.3	4.4	19	12	9.2	7.1	6.0
30	5.3	2.5	3.1	4.2	---	5.3	4.4	22	12	9.2	7.1	5.6
31	5.3	---	3.0	4.2	---	5.0	---	22	---	9.2	6.7	---
TOTAL	220.9	115.5	103.3	137.4	134.2	164.9	141.8	251.8	439	326.6	247.1	187.9
MEAN	7.13	3.85	3.33	4.43	4.79	5.32	4.73	8.12	14.6	10.5	7.97	6.26
MAX	36	5.6	4.4	7.0	9.0	11	6.3	22	22	13	9.2	7.5
MIN	5.3	2.5	2.5	3.5	3.9	4.4	4.2	4.2	12	9.2	6.7	5.6
AC-FT	438	229	205	273	266	327	281	499	871	648	490	373

CAL YR 1985	TOTAL	2241.0	MEAN	6.14	MAX	36	MIN	2.5	AC-FT	4450
WTR YR 1986	TOTAL	2470.4	MEAN	6.77	MAX	36	MIN	2.5	AC-FT	4900

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 mi^2, not including 12.6 mi^2 of Pole Creek. See REMARKS.

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 current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WDR OR-83-1: Drainage area.

GAGE.--Water-stage recorder. Elevation 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.--Estimated daily discharges: Oct. 10-12, 29-31, Nov. 1-19, 24-30, Dec. 1-30, Jan. 3-5, Feb. 9-14, May 26 to June 17. Records good except for estimated daily discharges, which are fair. No regulation. A canal near mouth of Pole Creek has diverted the entire flow of that creek since 1885. Prior to Oct. 1, 1982, drainage area of 57.8 mi^2 included that of Pole Creek. Water is diverted from Snow Creek, a tributary upstream from station, for irrigation in Three Creek basin.

AVERAGE DISCHARGE.--74 years (water years 1907-18, 1920, 1926-86), 106 ft^3/s, 76,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge since 1909, 2,000 ft^3/s Dec. 25, 1980, from rating curve extended above 690 ft^3/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 ft^3/s Mar. 2, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 470 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 28	1130	ice jam	a*3.27	May 31	unknown	*unknown	unknown

Minimum daily discharge, 38 ft^3/s Nov. 24, 25, during period of ice effect.

a Backwater from ice.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	59	42	46	63	179	103	79	380	190	118	92
2	58	58	42	44	61	165	96	84	370	201	119	94
3	60	57	42	41	59	152	93	80	360	182	122	93
4	59	54	48	41	58	144	91	77	350	182	122	93
5	59	53	58	41	57	140	89	77	290	150	118	91
6	58	54	66	41	55	145	89	74	270	140	117	90
7	58	54	62	41	53	279	91	72	250	140	117	90
8	56	52	62	42	59	225	93	72	250	143	118	88
9	53	50	52	57	65	179	94	73	250	146	121	84
10	53	49	45	55	60	160	94	72	250	168	123	79
11	53	46	45	50	55	143	92	69	270	169	121	77
12	53	49	50	48	55	132	89	69	280	158	116	76
13	53	54	60	47	58	126	84	76	280	147	113	75
14	54	60	68	47	70	116	83	76	300	142	111	74
15	53	59	62	47	87	112	81	75	260	136	112	76
16	53	54	56	55	72	107	79	79	250	130	109	74
17	52	50	52	51	75	100	76	87	240	125	108	79
18	51	52	48	69	68	95	75	99	228	128	107	74
19	51	59	48	73	62	93	75	112	188	126	106	74
20	50	55	45	62	62	92	81	132	176	131	103	76
21	50	53	46	56	59	92	99	120	176	136	103	71
22	57	48	47	57	119	87	115	104	181	138	102	69
23	126	44	48	55	299	92	100	101	193	133	100	86
24	105	38	48	53	292	103	93	114	214	129	98	109
25	119	38	46	53	285	90	90	138	238	127	97	81
26	81	42	43	52	270	90	85	190	237	124	98	79
27	70	45	42	56	223	96	88	200	216	120	100	75
28	66	45	42	63	198	106	85	250	205	118	102	72
29	63	42	45	66	---	112	81	320	198	121	103	75
30	62	42	47	72	---	111	78	400	187	120	99	76
31	60	---	46	66	---	107	---	420	---	118	94	---
TOTAL	1953	1515	1553	1647	2999	3970	2662	3991	7537	4418	3397	2442
MEAN	63.0	50.5	50.1	53.1	107	128	88.7	129	251	143	110	81.4
MAX	126	60	68	73	299	279	115	420	380	201	123	109
MIN	50	38	42	41	53	87	75	69	176	118	94	69
AC-FT	3870	3010	3080	3270	5950	7870	5280	7920	14950	8760	6740	4840

CAL YR 1985	TOTAL	33805	MEAN	92.6	MAX	633	MIN	33	AC-FT	67050
WTR YR 1986	TOTAL	38084	MEAN	104	MAX	420	MIN	38	AC-FT	75540

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 mi^2.

PERIOD OF RECORD.--July 1952 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,980 ft above 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.--No estimated daily discharges. Records excellent. Flow regulated by Crescent Lake and Crane Prairie and Wickiup Reservoirs (see elsewhere in this report). Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--34 years, 932 ft^3/s, 675,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,680 ft^3/s Dec. 24, 1964, gage height, 10.00 ft, from rating curve extended above 2,200 ft^3/s on basis of slope-area measurement of peak flow; minimum discharge, 418 ft^3/s July 7, 8, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,680 ft^3/s Feb. 23, gage height, 6.53 ft; minimum discharge, 529 ft^3/s Aug. 19-23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	585	1230	1110	1190	1460	2460	2180	549	908	549	541	540
2	636	1240	1060	1150	1510	2370	2130	550	916	548	542	537
3	635	1240	1080	1050	1570	2280	2120	557	925	552	541	537
4	630	1240	1230	1030	1570	2210	2030	555	934	562	540	548
5	622	1220	1250	1010	1550	2180	1690	553	917	586	540	562
6	634	1180	1260	1010	1520	2150	1790	554	870	635	539	540
7	639	1170	1240	934	1510	2240	1780	558	754	594	538	536
8	637	1170	1170	901	1480	2440	1630	548	667	584	539	535
9	677	1170	1150	920	1450	2350	1620	546	615	612	541	539
10	710	1170	1150	902	1450	2250	1570	544	590	602	542	540
11	700	1200	1130	970	988	1910	1530	543	589	562	542	570
12	679	1170	1120	1100	974	2010	1510	544	590	543	542	609
13	647	1140	1160	1140	1010	2010	1490	544	602	543	542	617
14	639	1150	1170	1130	1100	1980	1440	542	592	543	541	602
15	634	1200	1180	1140	1450	2220	1020	543	607	542	544	578
16	638	1200	1140	1220	1500	2340	872	538	602	542	541	615
17	643	1170	1130	1330	1870	2340	734	539	604	544	537	632
18	651	967	1150	1310	1730	2250	671	539	618	545	536	685
19	648	911	988	1330	1620	2170	620	542	597	541	534	673
20	634	805	1050	1330	1710	2120	619	542	563	542	531	608
21	1180	774	1130	1340	1860	2090	603	540	573	542	532	613
22	1100	900	1130	1380	2470	2110	586	545	581	541	533	567
23	1130	1080	1130	1420	2410	2100	601	539	572	542	534	565
24	1180	1070	1120	1380	2600	2120	569	541	570	541	535	569
25	1210	1130	1130	1350	2410	2110	562	543	577	544	537	648
26	1240	1140	1120	1340	2370	2130	563	588	589	547	539	655
27	1220	1150	1110	1340	2430	2140	558	691	576	544	537	634
28	1230	1160	1110	1350	2510	2160	553	672	557	542	537	617
29	1200	1110	1140	1350	---	2190	554	699	557	544	540	599
30	1210	1090	1130	1380	---	2190	552	801	556	543	540	584
31	1200	---	1150	1400	---	2190	---	888	---	541	541	---
TOTAL	26018	33547	35318	37127	48082	67810	34747	17977	19768	17242	16698	17654
MEAN	839	1118	1139	1198	1717	2187	1158	580	659	556	539	588
MAX	1240	1240	1260	1420	2600	2460	2180	888	934	635	544	685
MIN	585	774	988	901	974	1910	552	538	556	541	531	535
AC-FT	51610	66540	70050	73640	95370	134500	68920	35660	39210	34200	33120	35020

CAL YR 1985	TOTAL	360998	MEAN	989	MAX	2140	MIN	514	AC-FT	716000
WTR YR 1986	TOTAL	371988	MEAN	1019	MAX	2600	MIN	531	AC-FT	737800

14080400 PRINEVILLE RESERVOIR NEAR PRINEVILLE, OR

LOCATION.--Lat 44°06'50", long 120°46'50", in SW¼NW¼ sec.11, T.17 S., R.16 E., Crook County, Hydrologic Unit 17070304, at right end of Prineville Dam on Crooked River, 13.8 mi south of Prineville, and at mile 72.5.

DRAINAGE AREA.--2,700 mi^2, approximately, of which 500 mi^2 is probably noncontributing.

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to Aug. 13, 1969, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill dam with ungated concrete spillway and concrete outlet tunnel controlled by two 4-ft by 6-ft regulating gates. Storage began in December 1960. Total capacity at elevation 3,234.80 ft, crest of spillway, is 154,700 acre-ft, of which 152,800 acre-ft is active storage above 3,114.00 ft, proposed minimum pool. Reservoir used for flood control, irrigation, and recreation. Figures given herein represent active storage.

COOPERATION.--Gage inspected and capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 178,100 acre-ft Apr. 20, 1984, elevation, 3,242.75 ft; minimum contents observed, 37,400 acre-ft Oct. 31, Nov. 1, 1977, elevation, 3,177.40 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 159,500 acre-ft Mar. 31, elevation, 3,236.96 ft; minimum contents, 90,790 acre-ft Feb. 11, elevation, 3,210.20 ft.

Capacity table (elevation, in feet, and usable contents, in acre-feet)

3,175	34,560	3,210	90,380
3,180	40,600	3,215	101,100
3,185	47,390	3,220	112,600
3,190	54,740	3,230	138,700
3,195	62,640	3,235	153,400
3,200	71,190	3,240	169,100
3,205	80,430	3,243	178,900

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3217.23	3213.27	3211.01	3211.20	3216.11	3226.61	3236.83	3234.95	3234.44	3229.94	3224.18	3218.11
2	3217.14	3213.15	3211.01	3211.20	3216.22	3227.28	3236.54	3234.90	3234.34	3229.74	3224.01	3217.95
3	3217.03	3213.06	3211.01	3211.20	3216.13	3227.65	3236.14	3234.90	3234.24	3229.61	3223.79	3217.77
4	3216.92	3212.89	3211.01	3211.20	3215.54	3228.01	3235.87	3234.90	3234.15	3229.40	3223.64	3217.59
5	3216.81	3212.75	3211.03	3211.22	3214.82	3228.18	3235.65	3234.90	3234.02	3229.22	3223.39	3217.42
6	3216.69	3212.77	3211.10	3211.30	3214.01	3228.51	3235.40	3234.90	3233.87	3229.13	3223.25	3217.19
7	3216.54	3212.68	3211.18	3211.31	3213.04	3230.26	3235.24	3234.91	3233.73	3228.94	3223.07	3216.96
8	3216.33	3212.60	3211.24	3211.35	3212.17	3232.62	3235.23	3235.00	3233.60	3228.77	3222.87	3216.74
9	3216.19	3212.51	3211.29	3211.45	3211.24	3233.48	3235.27	3235.00	3233.50	3228.60	3222.70	3216.55
10	3216.07	3212.41	3211.30	3211.50	3210.49	3233.58	3235.33	3235.00	3233.37	3228.40	3222.48	3216.32
11	3215.94	3212.28	3211.36	3211.59	3210.20	3233.68	3235.37	3235.00	3233.23	3228.18	3222.25	3216.13
12	3215.78	3212.20	3211.36	3211.65	3210.22	3233.85	3235.37	3235.04	3233.11	3227.96	3222.08	3215.90
13	3215.57	3212.03	3211.36	3211.71	3210.30	3233.95	3235.36	3235.04	3233.00	3227.75	3221.88	3215.68
14	3215.43	3211.96	3211.36	3211.76	3210.33	3234.02	3235.26	3235.04	3232.75	3227.49	3221.69	3215.47
15	3215.33	3211.87	3211.36	3211.81	3210.35	3234.11	3235.20	3235.03	3232.60	3227.30	3221.50	3215.27
16	3215.19	3211.80	3211.39	3211.94	3210.78	3234.21	3235.09	3234.93	3232.41	3227.09	3221.30	3215.09
17	3215.13	3211.67	3211.39	3212.23	3211.99	3234.39	3234.89	3234.89	3232.28	3226.93	3221.13	3214.79
18	3214.98	3211.59	3211.39	3212.70	3212.52	3234.59	3234.72	3234.80	3232.07	3226.76	3220.92	3214.58
19	3214.86	3211.57	3211.39	3213.09	3212.22	3234.73	3234.76	3234.72	3231.93	3226.62	3220.72	3214.28
20	3214.68	3211.54	3211.39	3213.50	3211.79	3234.97	3234.79	3234.65	3231.75	3226.40	3220.51	3214.12
21	3214.57	3211.46	3211.39	3213.81	3211.55	3235.42	3234.86	3234.64	3231.58	3226.25	3220.31	3213.91
22	3214.41	3211.41	3211.39	3214.05	3212.91	3235.68	3234.86	3234.65	3231.42	3225.97	3220.14	3213.68
23	3214.36	3211.31	3211.37	3214.19	3217.27	3235.80	3234.87	3234.69	3231.29	3225.79	3219.90	3213.47
24	3214.26	3211.22	3211.32	3214.19	3220.63	3236.11	3234.93	3234.73	3231.12	3225.54	3219.70	3213.28
25	3214.17	3211.17	3211.32	3214.19	3222.58	3236.26	3234.98	3234.76	3230.97	3225.37	3219.52	3213.09
26	3214.10	3211.09	3211.32	3214.19	3223.86	3236.32	3234.98	3234.77	3230.77	3225.18	3219.33	3212.92
27	3214.00	3211.02	3211.32	3214.16	3224.92	3236.38	3234.96	3234.76	3230.63	3224.99	3219.12	3212.85
28	3213.78	3211.02	3211.31	3214.16	3225.83	3236.59	3234.96	3234.75	3230.42	3224.81	3218.93	3212.75
29	3213.67	3211.02	3211.28	3214.15	---	3236.84	3234.96	3234.65	3230.27	3224.63	---	3212.66
30	3213.58	3211.01	3211.20	3214.77	---	3236.95	3234.96	3234.61	3230.09	3224.46	3218.50	3212.55
31	3213.39	---	3211.20	3215.77	---	3236.96	---	3234.57	---	3224.30	3218.31	---
MAX	3217.23	3213.27	3211.39	3215.77	3225.83	3236.96	3236.83	3235.04	3234.44	3229.94	---	3218.11
MIN	3213.39	3211.01	3211.01	3211.20	3210.20	3226.61	3234.72	3234.57	3230.09	3224.30	---	3212.55
(†)	97540	92470	92870	102800	127300	159500	153300	152100	139000	123300	108600	95730
(‡)	-8560	-5070	+400	+9930	+24500	+32200	-6200	-1200	-13100	-15700	-14700	-12870

CAL YR 1985 MAX 3236.40 MIN 3201.80 AC-FT‡ +6960
WTR YR 1986 MAX -- MIN -- AC-FT‡ -10370

† Contents, in acre-feet, at 2400, on last day of month.
‡ Change in contents, in acre-feet.

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 mi^2, approximately, of which 500 mi^2 is probably noncontributing.

PERIOD OF RECORD.--November 1908 to September 1914, March 1941 to current year. 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.

REVISED RECORDS.--WSP 1448: 1909-13, 1914(M), drainage area (at sites prior to Apr. 24, 1961). See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 3,070.85 ft above 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.--No estimated daily discharges. Records excellent above 300 ft^3/s, good below. Flow completely regulated since December 1960 by Prineville Reservoir (see station 14080400). Diversions for irrigation upstream from 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 ft^3/s, 273,900 acre-ft/yr; 26 years (water years 1961-86), 378 ft^3/s, 273,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,410 ft^3/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.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,300 ft^3/s Mar. 8, gage height, 7.77 ft; minimum daily discharge, 104 ft^3/s Dec. 31 to Jan. 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	195	261	123	104	1230	2340	1830	419	259	264	243	241
2	195	261	123	104	1230	2340	1800	377	259	264	243	241
3	195	261	123	104	1490	2350	1750	356	259	264	243	241
4	195	261	123	104	1730	2180	1560	357	259	264	243	239
5	195	203	123	104	1760	2360	1450	358	256	264	243	239
6	195	141	123	104	1760	2360	1430	358	254	264	243	240
7	241	230	123	104	1610	2370	1230	211	252	264	243	239
8	265	230	123	104	1520	2980	1050	269	252	264	243	240
9	264	230	123	104	1520	3150	1010	321	252	264	243	240
10	264	230	123	104	1210	2990	1020	321	261	264	243	239
11	264	230	123	104	601	2720	1020	321	266	310	243	239
12	264	230	123	104	334	2150	1020	321	266	345	243	263
13	264	230	123	104	334	1830	1020	321	266	345	243	284
14	262	230	123	104	334	1740	934	320	267	313	243	283
15	261	230	123	104	334	1460	883	318	266	285	243	283
16	206	230	124	104	334	1280	875	315	266	285	243	283
17	217	230	124	104	433	1090	871	313	266	285	243	283
18	262	196	124	104	1490	989	634	313	266	285	243	283
19	263	176	124	105	2140	989	484	314	266	285	241	283
20	264	176	124	106	1780	993	483	276	266	285	241	283
21	264	176	124	106	1160	1010	484	254	266	285	241	283
22	264	176	124	106	918	1360	485	254	266	285	241	283
23	264	176	124	204	931	1520	485	254	265	285	241	283
24	263	176	124	321	1430	1640	489	256	266	285	241	283
25	261	176	124	321	1770	1750	489	257	265	265	241	283
26	261	176	124	321	2100	1760	486	257	265	243	241	236
27	261	145	124	305	2330	1760	485	257	264	243	241	187
28	261	123	124	295	2330	1770	443	257	264	243	241	187
29	261	123	124	295	---	1810	423	257	264	243	241	187
30	261	123	112	295	---	1840	421	258	264	243	241	187
31	261	---	104	838	---	1850	---	259	---	243	241	---
TOTAL	7613	6036	3797	5490	36143	58731	27044	9299	7873	8526	7507	7565
MEAN	246	201	122	177	1291	1895	901	300	262	275	242	252
MAX	265	261	124	838	2330	3150	1830	419	267	345	243	284
MIN	195	123	104	104	334	989	421	211	252	243	241	187
AC-FT	15100	11970	7530	10890	71690	116500	53640	18440	15620	16910	14890	15010

CAL YR 1985	TOTAL	148069	MEAN	406	MAX	2930	MIN	104	AC-FT	293700
WTR YR 1986	TOTAL	185624	MEAN	509	MAX	3150	MIN	104	AC-FT	368200

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 mi^2, approximately, of which 500 mi^2 is probably noncontributing.

PERIOD OF RECORD.--October 1961 to September 1986.

GAGE.--Water-stage recorder. Datum of gage is 1,953.60 ft above National Geodetic Vertical Datum of 1929 (Portland General Electric Co. bench mark).

REMARKS.--No estimated daily discharges. Records excellent. Flow regulated since December 1960 by Prineville Reservoir (see station 14080400) and Ochoco Reservoir, capacity, 47,500 acre-ft. Dam and powerplant 500 ft upstream, completed in 1985, causes brief fluctuations in flow. Many diversions for irrigation upstream from station. Practically all of the summer flow comes from Opal Springs and other springs within 15 mi upstream from station. Simultaneous records (1961-63) at former gaging station 5.6 mi downstream indicated over 15 percent increase to summer flow from springs downstream from this station.

AVERAGE DISCHARGE.--25 years, 1,615 ft^3/s, 1,170,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,660 ft^3/s Dec. 24, 1964, gage height, 9.36 ft; minimum daily discharge, 1,090 ft^3/s May 11, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,910 ft^3/s Mar. 10, gage height, 8.67 ft, due to powerplant operation; maximum daily discharge, 4,900 ft^3/s Mar. 10; minimum discharge not determined, occurred when stage dropped below intakes briefly, on many days, due to powerplant operation; minimum daily, 1,170 ft^3/s Aug. 7-9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1380	1460	1300	1290	2140	4090	3240	1530	1210	1260	1190	1290
2	1360	1470	1260	1290	2370	4120	3210	1530	1220	1240	1190	1300
3	1350	1460	1300	1300	2360	4100	3160	1530	1220	1220	1180	1280
4	1360	1450	1340	1280	2640	4080	3120	1530	1230	1200	1180	1280
5	1380	1450	1320	1280	2800	3950	2870	1580	1230	1290	1180	1270
6	1370	1440	1330	1300	2820	4080	2790	1640	1230	1360	1180	1280
7	1380	1330	1340	1330	2810	4110	2760	1560	1240	1350	1170	1280
8	1390	1420	1330	1320	2640	4180	2520	1460	1240	1300	1170	1280
9	1440	1430	1310	1390	2600	4690	2380	1370	1240	1250	1170	1290
10	1460	1430	1310	1410	2600	4900	2240	1460	1240	1220	1180	1350
11	1460	1420	1290	1360	2270	4760	2250	1480	1230	1210	1190	1370
12	1460	1420	1270	1320	1790	4520	2220	1450	1230	1240	1220	1380
13	1470	1410	1300	1300	1640	3890	2200	1450	1200	1300	1270	1380
14	1480	1410	1300	1290	1630	3620	2200	1440	1210	1310	1240	1410
15	1520	1410	1300	1280	1600	3520	2130	1430	1240	1260	1250	1430
16	1490	1430	1290	1290	1580	3110	2060	1400	1250	1230	1250	1470
17	1460	1410	1290	1360	1650	3010	2080	1390	1230	1240	1250	1540
18	1420	1410	1290	1330	1860	2560	2070	1360	1240	1250	1260	1590
19	1490	1390	1290	1340	3070	2490	1790	1360	1260	1250	1240	1600
20	1550	1370	1270	1350	3360	2480	1630	1360	1270	1240	1220	1590
21	1510	1390	1270	1320	2940	2380	1640	1340	1270	1240	1230	1580
22	1480	1390	1290	1320	2650	2390	1620	1310	1280	1230	1230	1570
23	1470	1360	1280	1320	3400	2800	1620	1290	1290	1220	1230	1550
24	1480	1340	1280	1360	3180	2860	1640	1260	1280	1220	1220	1570
25	1460	1360	1280	1490	3410	3010	1700	1250	1250	1210	1230	1580
26	1460	1350	1270	1490	3530	3180	1700	1250	1240	1230	1230	1580
27	1460	1350	1280	1500	3810	3170	1680	1300	1250	1210	1220	1550
28	1450	1350	1270	1490	3930	3170	1720	1280	1240	1220	1220	1470
29	1450	1300	1270	1490	---	3190	1660	1200	1280	1220	1240	1460
30	1450	1300	1260	1560	---	3220	1610	1230	1270	1190	1290	1470
31	1460	---	1280	1640	---	3240	---	1210	---	1180	1290	---
TOTAL	44800	41910	40060	42390	73080	108870	65510	43230	37310	38590	37810	43040
MEAN	1445	1397	1292	1367	2610	3512	2184	1395	1244	1245	1220	1435
MAX	1550	1470	1340	1640	3930	4900	3240	1640	1290	1360	1290	1600
MIN	1350	1300	1260	1280	1580	2380	1610	1200	1200	1180	1170	1270
AC-FT	88860	83130	79460	84080	145000	215900	129900	85750	74000	76540	75000	85370

CAL YR 1985	TOTAL	566110	MEAN	1551	MAX	4080	MIN	1220	AC-FT	1123000
WTR YR 1986	TOTAL	616600	MEAN	1689	MAX	4900	MIN	1170	AC-FT	1223000

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 mi^2.

PERIOD OF RECORD.--June to November 1911, March to September 1912, May to October 1913, April 1915 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1124: 1943, 1947. WSP 1218: Drainage area. WSP 1448: 1916(M), 1925. WDR OR-81-1: 1974(M), 1978(M).

GAGE.--Water-stage recorder. Datum of gage is 3,431.68 ft above 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.--Estimated daily discharges: June 15-17, July 4-13. Records excellent except those for December to February, which are fair. Flow occasionally regulated by Suttle Lake 150 ft upstream from station.

AVERAGE DISCHARGE.--71 years (water years 1916-86), 52.7 ft^3/s, 38,180 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum recorded discharge, 446 ft^3/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 discharge, 1.0 ft^3/s Nov. 4, 5, 1940; minimum daily, 8 ft^3/s Nov. 5, 1940, Oct. 6, 1942.

EXTREMES FOR CURRENT YEAR.--Maximum recorded discharge, 301 ft^3/s Feb. 25, gage height, 4.13 ft; minimum discharge, 27 ft^3/s Oct. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	33	53	40	48	205	90	70	60	37	33	31
2	29	33	65	38	48	183	89	71	60	39	33	30
3	29	33	72	42	48	166	86	67	59	39	34	31
4	29	33	61	36	48	155	84	65	58	39	33	31
5	30	34	55	38	50	145	81	66	55	45	32	30
6	30	34	59	39	47	135	79	65	54	43	32	30
7	31	38	60	35	46	145	78	62	52	39	33	30
8	30	39	54	36	45	155	77	61	50	39	33	31
9	30	38	49	38	44	172	75	61	48	39	33	32
10	29	36	47	37	43	170	74	63	48	39	32	32
11	31	35	46	36	44	162	75	62	48	39	31	31
12	31	34	45	35	60	153	79	60	46	39	31	32
13	30	33	44	35	63	143	77	62	45	39	31	32
14	30	34	43	36	58	130	73	58	42	37	32	31
15	30	36	42	38	55	119	73	59	42	36	31	33
16	32	40	41	50	66	112	72	57	42	36	31	34
17	34	39	40	53	75	104	71	59	42	36	31	35
18	34	40	39	42	79	97	68	59	42	36	31	37
19	32	38	39	41	89	90	65	58	42	36	30	37
20	32	39	38	43	94	87	55	58	40	36	30	35
21	31	40	37	43	102	85	54	60	40	37	31	32
22	38	46	36	51	128	83	61	60	41	36	31	32
23	53	43	36	56	160	84	62	60	40	35	31	33
24	44	42	35	51	213	88	65	60	37	34	29	41
25	41	43	34	49	287	84	70	59	37	34	30	38
26	37	44	35	48	291	85	70	58	37	33	31	41
27	35	44	35	47	270	85	74	57	38	33	32	36
28	35	44	34	47	237	84	68	57	38	32	33	33
29	34	44	33	48	---	84	72	57	36	33	32	33
30	34	46	33	49	---	85	70	58	37	32	31	32
31	34	---	32	47	---	86	---	59	---	33	30	---
TOTAL	1029	1155	1372	1324	2838	3761	2187	1888	1356	1140	978	996
MEAN	33.2	38.5	44.3	42.7	101	121	72.9	60.9	45.2	36.8	31.5	33.2
MAX	53	46	72	56	291	205	90	71	60	45	34	41
MIN	29	33	32	35	43	83	54	57	36	32	29	30
AC-FT	2040	2290	2720	2630	5630	7460	4340	3740	2690	2260	1940	1980

CAL YR 1985	TOTAL	16591	MEAN	45.5	MAX	104	MIN	20	AC-FT	32910
WTR YR 1986	TOTAL	20024	MEAN	54.9	MAX	291	MIN	29	AC-FT	39720

14090350 JEFFERSON CREEK NEAR CAMP SHERMAN, OR

LOCATION.--Lat 44°34'18", long 121°38'17", in SW¼SE¼ sec.34, T.11 S., R.9 E., Jefferson County, Hydrologic Unit 17070301, Warm Springs Indian Reservation, on left bank 100 ft upstream from bridge, 7.6 mi north of Camp Sherman, and at mile 1.3.

DRAINAGE AREA.--27.8 mi^2.

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,780 ft, from topographic map.

REMARKS.--No estimated daily discharges. Records excellent. No regulation or diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 428 ft^3/s Feb. 23, 1986, gage height, 3.21 ft; minimum discharge, 52 ft^3/s Feb. 4, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 220 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Oct. 25	0500	232	2.48	Mar. 7	1230	241	2.52
Feb. 23	1300	*428	*3.21				

Minimum discharge, 59 ft^3/s Feb. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	79	80	75	68	81	147	123	98	190	123	100	89
2	79	96	75	65	79	141	117	100	188	126	100	89
3	79	87	76	65	76	134	115	100	185	122	101	89
4	78	84	79	65	74	133	113	98	177	129	101	88
5	78	81	75	69	74	134	111	97	160	121	100	87
6	78	88	75	69	71	139	111	95	147	118	100	87
7	80	138	77	66	70	197	113	94	138	117	99	88
8	78	97	73	67	69	171	116	94	135	116	100	87
9	77	88	71	78	70	146	117	95	135	116	100	90
10	78	83	70	75	68	139	116	95	137	121	99	86
11	81	78	69	71	68	133	114	93	143	120	98	86
12	78	73	71	69	65	127	110	92	142	116	97	86
13	77	76	70	68	65	124	106	103	139	114	97	85
14	76	77	69	66	66	120	104	101	142	112	96	86
15	75	93	69	66	71	118	104	99	136	111	96	88
16	76	94	67	78	93	116	103	100	130	111	96	87
17	75	83	67	79	89	113	101	106	132	110	94	88
18	74	79	68	101	83	112	99	116	131	108	94	87
19	80	79	67	99	81	111	99	122	124	107	94	85
20	78	78	66	84	78	112	105	132	123	107	94	84
21	75	76	66	78	76	113	120	122	123	107	93	83
22	87	73	67	78	121	111	129	109	124	108	93	83
23	130	69	67	76	312	115	114	105	127	107	92	89
24	135	69	68	73	272	127	108	112	130	106	92	100
25	154	69	69	71	223	116	105	136	131	105	91	91
26	97	75	69	70	189	116	103	166	128	104	91	92
27	90	76	69	72	160	121	109	172	126	103	91	88
28	88	75	69	79	151	130	104	170	126	103	92	87
29	82	75	69	80	---	133	101	183	125	102	92	97
30	81	75	69	94	---	133	98	192	123	102	90	90
31	79	---	68	85	---	128	---	192	---	101	90	---
TOTAL	2652	2464	2179	2324	2995	4010	3288	3689	4197	3473	2963	2642
MEAN	85.5	82.1	70.3	75.0	107	129	110	119	140	112	95.6	88.1
MAX	154	138	79	101	312	197	129	192	190	129	101	100
MIN	74	69	66	65	65	111	98	92	123	101	90	83
AC-FT	5260	4890	4320	4610	5940	7950	6520	7320	8320	6890	5880	5240

CAL YR 1985	TOTAL	32646	MEAN	89.4	MAX	267	MIN	55	AC-FT	64750
WTR YR 1986	TOTAL	36876	MEAN	101	MAX	312	MIN	65	AC-FT	73140

14090400 WHITEWATER RIVER NEAR CAMP SHERMAN, OR

LOCATION.--Lat 44°43'04", long 121°38'07", in SE¼NE¼ sec.11, T.10 S., R.9 E., Jefferson County, Hydrologic Unit 17070301, Warm Springs Indian Reservation, on left bank 0.2 mi downstream from Lionshead Creek, 18 mi north of Camp Sherman, and at mile 7.1.

DRAINAGE AREA.--22.9 mi^2.

PERIOD OF RECORD.--July 1982 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 3,230 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 9 to Jan. 21, Feb. 23 to Mar. 17, May 30 to Aug. 26. Records good except for estimated daily discharges, which are poor. No regulation or diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 593 ft^3/s Feb. 23, 1986, from rating curve extended above 170 ft^3/s, gage height, 3.20 ft; minimum discharge, 38 ft^3/s Oct. 9, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 220 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 23	1330	*593	*3.20	June 2	0200	236	2.25
Mar. 7	0900	328	2.55				

Minimum discharge, 38 ft^3/s Oct. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	51	50	44	68	200	108	75	200	115	100	78
2	49	73	50	44	67	180	101	78	215	120	100	84
3	50	68	50	44	67	170	97	78	200	115	100	84
4	50	63	52	44	64	160	97	76	200	115	100	81
5	50	57	50	44	63	150	94	75	180	100	100	76
6	49	57	48	46	60	150	92	73	160	100	100	74
7	45	88	50	46	58	240	92	71	140	100	100	75
8	42	65	50	46	56	200	93	70	130	95	100	68
9	40	60	48	60	55	170	95	69	125	100	100	65
10	42	55	46	55	54	150	94	71	120	110	100	58
11	49	52	46	52	54	140	91	69	120	120	100	56
12	44	50	46	50	53	130	88	67	145	120	100	55
13	41	50	48	50	51	120	85	75	145	110	100	53
14	41	55	46	50	50	120	83	72	145	110	100	51
15	41	60	46	50	55	110	81	70	140	110	100	52
16	41	65	44	55	85	110	81	69	135	110	95	50
17	41	55	44	65	87	110	79	73	140	110	95	52
18	40	52	44	80	77	105	77	81	140	110	95	50
19	49	50	44	85	71	104	77	87	115	110	95	48
20	48	50	42	70	67	102	80	98	100	110	95	48
21	43	50	42	65	69	102	93	95	100	105	95	47
22	59	48	44	62	160	100	105	85	110	105	95	46
23	89	44	44	63	460	103	93	82	120	105	90	61
24	99	40	44	60	440	112	87	83	130	105	90	75
25	122	42	46	59	360	100	84	101	130	105	90	56
26	71	48	46	58	300	99	81	128	130	105	90	59
27	64	50	46	57	240	104	83	148	120	105	90	53
28	65	50	46	62	220	114	81	151	120	105	96	52
29	56	50	46	65	---	119	80	173	120	100	93	60
30	55	50	46	73	---	118	77	200	110	100	84	58
31	51	---	46	70	---	114	---	200	---	100	79	---
TOTAL	1669	1648	1440	1774	3511	4106	2649	2943	4185	3330	2967	1825
MEAN	53.8	54.9	46.5	57.2	125	132	88.3	94.9	140	107	95.7	60.8
MAX	122	88	52	85	460	240	108	200	215	120	100	84
MIN	40	40	42	44	50	99	77	67	100	95	79	46
CFSM	2.35	2.40	2.03	2.50	5.46	5.76	3.86	4.14	6.11	4.67	4.18	2.66
IN.	2.71	2.68	2.34	2.88	5.70	6.67	4.30	4.78	6.80	5.41	4.82	2.96
AC-FT	3310	3270	2860	3520	6960	8140	5250	5840	8300	6610	5890	3620

CAL YR 1985	TOTAL	26571	MEAN	72.8	MAX	322	MIN	40	CFSM	3.18	IN.	43.16	AC-FT	52700
WTR YR 1986	TOTAL	32047	MEAN	87.8	MAX	460	MIN	40	CFSM	3.83	IN.	52.06	AC-FT	63570

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 mi^2, at cableway 1.0 mi downstream, where all discharge measurements are made. Hydrologic drainage boundary uncertain because of interbasin 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 current year. Published as "at Hubbard's ranch, near Sisters" 1910, and as "at Hubbard's ranch, near Grandview" 1910-13.

REVISED RECORDS.--WSP 1448: 1913.

GAGE.--Water-stage recorder. Datum of gage is 1,974.36 ft above 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 estimated daily discharges. Records excellent. No regulation. Many small diversions for irrigation upstream from station. Stream is spring fed. Records herein are for measuring site.

AVERAGE DISCHARGE.--66 years (water years 1913, 1922-86), 1,499 ft^3/s, 1,086,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,530 ft^3/s Dec. 24, 1964, gage height, 6.81 ft; minimum discharge, 1,080 ft^3/s Feb. 17, 1932, Oct. 2-31, Nov. 6, 7, 10-14, 1942.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,440 ft^3/s Feb. 23, gage height, 4.56 ft; minimum discharge, 1,280 ft^3/s Dec. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1350	1350	1310	1330	1460	2520	1740	1550	1820	1510	1400	1370
2	1350	1390	1310	1320	1460	2410	1720	1570	1830	1530	1410	1380
3	1350	1380	1340	1320	1460	2300	1700	1560	1790	1510	1400	1370
4	1350	1370	1340	1310	1440	2240	1690	1540	1790	1530	1400	1370
5	1350	1360	1330	1320	1450	2200	1670	1540	1730	1500	1400	1370
6	1350	1360	1370	1330	1430	2190	1660	1540	1680	1480	1400	1370
7	1350	1500	1380	1310	1410	2530	1650	1520	1630	1470	1400	1370
8	1340	1450	1350	1310	1400	2610	1650	1510	1600	1470	1410	1360
9	1340	1400	1340	1350	1390	2420	1650	1510	1580	1470	1420	1360
10	1340	1380	1320	1350	1390	2330	1640	1510	1580	1480	1420	1350
11	1350	1360	1300	1340	1390	2230	1630	1500	1600	1500	1410	1350
12	1350	1330	1310	1320	1390	2160	1630	1500	1610	1480	1400	1340
13	1340	1330	1320	1320	1390	2100	1610	1520	1600	1470	1400	1340
14	1330	1350	1320	1320	1380	2040	1610	1510	1610	1460	1400	1340
15	1330	1380	1310	1330	1390	1980	1600	1500	1590	1450	1400	1350
16	1330	1420	1310	1430	1610	1940	1590	1490	1570	1450	1400	1350
17	1330	1390	1310	1490	1830	1890	1580	1500	1570	1440	1400	1350
18	1330	1360	1310	1510	1820	1850	1570	1530	1580	1440	1400	1350
19	1340	1360	1300	1550	1720	1820	1560	1540	1540	1430	1390	1350
20	1350	1350	1300	1490	1650	1800	1560	1570	1530	1440	1390	1340
21	1330	1350	1300	1450	1640	1790	1580	1570	1520	1440	1390	1330
22	1400	1340	1300	1460	2510	1770	1620	1540	1520	1440	1390	1330
23	1520	1300	1300	1470	3890	1780	1600	1520	1530	1430	1380	1350
24	1530	1290	1290	1440	3860	1850	1580	1520	1550	1430	1370	1410
25	1590	1300	1290	1410	3370	1780	1570	1560	1560	1420	1370	1370
26	1430	1320	1290	1400	3130	1760	1570	1630	1550	1420	1370	1390
27	1390	1330	1290	1400	2850	1770	1580	1700	1540	1410	1380	1360
28	1390	1320	1290	1420	2670	1780	1590	1710	1540	1410	1400	1350
29	1370	1320	1290	1440	---	1790	1570	1740	1530	1410	1410	1360
30	1370	1310	1290	1480	---	1790	1560	1790	1520	1410	1390	1360
31	1350	---	1290	1470	---	1770	---	1810	---	1400	1380	---
TOTAL	42520	40750	40700	43190	53780	63190	48530	48600	48190	45130	43280	40740
MEAN	1372	1358	1313	1393	1921	2038	1618	1568	1606	1456	1396	1358
MAX	1590	1500	1380	1550	3890	2610	1740	1810	1830	1530	1420	1410
MIN	1330	1290	1290	1310	1380	1760	1560	1490	1520	1400	1370	1330
AC-FT	84340	80830	80730	85670	106700	125300	96260	96400	95580	89520	85850	80810

CAL YR 1985	TOTAL	528730	MEAN	1449	MAX	2100	MIN	1290	AC-FT	1049000
WTR YR 1986	TOTAL	558600	MEAN	1530	MAX	3890	MIN	1290	AC-FT	1108000

14092100 LAKE BILLY CHINOOK NEAR METOLIUS, OR

LOCATION.--Lat 44°36'14", long 121°16'40", in SW¼NE¼ sec.22, T.11 S., R.12 E., Jefferson County, Hydrologic Unit 17070301, Warm Springs Indian Reservation, near left end of Round Butte Dam on Deschutes River, 5.0 mi west of Metolius, and at mile 110.6.

DRAINAGE AREA.--7,490 mi^2, approximately.

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Portland General Electric Co.).

REMARKS.--Reservoir is formed by rock fill dam completed in June 1964 by Portland General Electric Co.; storage began Jan. 2, 1964. Total capacity is 534,700 acre-ft at elevation 1,945.0 ft proposed upper limit of operation, and usable capacity is 273,900 acre-ft between elevations 1,860.0 ft, proposed lower limit of operation, and 1,945.0 ft. Reservoir used for power generation under FERC license 2030. Figures given herein represent total contents.

COOPERATION.--Gage readings and capacity tables furnished by Portland General Electric Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 538,700 acre-ft July 15, 16, 1972, elevation, 1,946.00 ft; minimum contents observed since first filling, 431,100 acre-ft Feb. 13, 1972, elevation, 1,917.13 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 536,300 acre-ft Aug. 15, elevation, 1,945.38 ft; minimum contents observed, 497,400 acre-ft Nov. 29, elevation, 1,935.32 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	1,942.78	526,000	--
Oct. 31	1,942.79	526,000	0
Nov. 30	1,935.35	497,600	-28,400
Dec. 31	1,936.78	503,000	+5,400
CAL YR 1985	--	--	-27,700
Jan. 31	1,942.18	523,600	+20,600
Feb. 28	1,944.28	531,900	+8,300
Mar. 31	1,942.88	526,400	-5,500
Apr. 30	1,941.96	522,800	-3,600
May 31	1,944.21	531,600	+8,800
June 30	1,944.30	532,000	+400
July 31	1,944.36	532,200	+200
Aug. 31	1,944.28	531,900	-300
Sept.30	1,944.27	531,800	-100
WTR YR 1986	--	--	+5,800

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 mi^2, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1923 to current year.

REVISED RECORDS.--WSP 1398: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,390.25 ft above 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.--No estimated daily discharges. Water-discharge records excellent. 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.--63 years, 4,554 ft^3/s, 3,299,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,500 ft^3/s July 16, 1983, accidental release from Pelton Dam, gage height, 7.70 ft, from floodmarks; minimum discharge, 916 ft^3/s July 4, 1982, caused by power company testing control gates on dam.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,500 ft^3/s Feb. 25, gage height, 5.06 ft; minimum discharge, 968 ft^3/s June 28, caused by regulation.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3910	4870	4690	4690	6350	11400	8410	4430	4820	4140	3970	4400
2	3910	4870	4690	4750	6350	11100	8100	4430	4810	4130	3990	4400
3	3940	4870	4690	4230	6330	10200	7750	4430	4830	4130	4030	4340
4	4000	5060	4690	3690	6360	10200	7680	4440	4910	4100	4160	3940
5	4030	5160	4680	3760	6470	10100	7910	4180	4920	4110	4170	3930
6	4010	5170	4690	3820	6870	10000	7710	4110	4910	4100	4150	3940
7	4000	5090	4690	3810	7220	10000	6880	4110	4780	4110	3930	3940
8	3990	4980	4680	3820	7100	10700	6850	4330	4630	4110	3710	4000
9	3990	4980	4690	3500	7020	11100	6870	4430	4690	4120	3700	3950
10	4010	4970	4690	3230	6610	11400	6480	4420	4660	4130	3680	3730
11	4030	4970	4690	3250	6420	11000	6180	4420	4120	4130	3730	3740
12	4060	5080	4700	3250	6420	10700	6120	4420	4120	4130	3960	3740
13	4390	5770	4690	3250	6420	10200	6120	4430	4130	4120	3960	3730
14	4520	5730	4690	3650	5920	9290	6130	4230	3770	4130	4000	4200
15	4590	5740	4650	4500	5180	8980	6160	4120	3690	3990	4430	4440
16	4590	4890	4680	4900	5230	8970	5860	4120	3730	4000	4560	4440
17	4540	4900	4680	5520	5200	8350	5510	4100	4100	4000	4570	4340
18	4250	5290	4670	5620	5970	7930	5140	4110	4550	4000	4490	4350
19	4290	5700	4670	5640	7270	7660	4880	4110	5030	4220	4100	4370
20	4290	5690	4680	5160	8340	7440	4880	4110	4460	4240	3870	4440
21	4270	5750	4680	5110	8610	7110	4890	4110	4150	4190	3870	4460
22	4360	5900	4710	5110	9710	7100	4640	4110	4190	4010	3950	4490
23	5090	5850	4720	5240	11200	7100	4410	4110	4260	3950	3950	4760
24	5510	5950	4720	5350	11100	7280	4390	4100	4300	3800	3960	4740
25	5520	5990	4720	5350	11200	7330	4430	4100	4280	3750	3960	4660
26	5510	6030	4720	5350	11400	7760	4430	4090	4260	3640	3960	4160
27	5510	6010	4720	5350	11400	7910	4430	4090	4310	4180	3950	4040
28	5510	6050	4710	5350	11400	8190	4420	4120	4570	4180	3950	4060
29	5400	5300	4710	5350	---	8350	4430	4380	4630	4160	4020	4030
30	4870	4700	4700	5350	---	8410	4430	4400	4560	3980	4400	4060
31	4870	---	4700	5820	---	8390	---	4820	---	3970	4410	---
TOTAL	139760	161310	145490	142770	215070	281650	176520	131910	133170	125950	125540	125820
MEAN	4508	5377	4693	4605	7681	9085	5884	4255	4439	4063	4050	4194
MAX	5520	6050	4720	5820	11400	11400	8410	4820	5030	4240	4570	4760
MIN	3910	4700	4650	3230	5180	7100	4390	4090	3690	3640	3680	3730
AC-FT	277200	320000	288600	283200	426600	558700	350100	261600	264100	249800	249000	249600

CAL YR 1985	TOTAL	1772780	MEAN	4857	MAX	6840	MIN	3770	AC-FT	3516000
WTR YR 1986	TOTAL	1904960	MEAN	5219	MAX	11400	MIN	3230	AC-FT	3778000

14092500 DESCHUTES RIVER NEAR MADRAS, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: October 1971 to current year.

INSTRUMENTATION.--Temperature recorder since October 1971.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum, 18.0°C occurred during period Aug. 1 to Sept. 30, 1974; minimum, 3.5°C Feb. 8, 1979.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum recorded, 14.0°C many days in August and September; minimum recorded, 5.5°C Jan. 15-17, but may have been lower during period of missing record Jan. 19 to Mar. 3.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	13.0	12.5	13.0	11.0	11.0	11.0	7.5	7.0	7.0	6.0	6.0	6.0
2	13.0	12.5	13.0	11.0	11.0	11.0	7.0	6.5	7.0	6.0	6.0	6.0
3	13.0	12.5	13.0	11.0	11.0	11.0	7.0	7.0	7.0	6.5	6.0	6.0
4	13.0	12.5	13.0	11.0	10.5	11.0	7.0	7.0	7.0	6.0	6.0	6.0
5	13.0	12.5	13.0	11.0	10.5	10.5	7.5	7.0	7.0	6.0	6.0	6.0
6	13.0	12.5	12.5	11.0	10.5	10.5	7.5	7.0	7.5	6.0	6.0	6.0
7	12.5	12.5	12.5	11.0	10.5	10.5	7.5	7.5	7.5	6.5	6.0	6.0
8	12.5	12.0	12.5	10.5	10.5	10.5	7.5	7.0	7.5	6.0	6.0	6.0
9	12.5	12.0	12.0	10.5	10.0	10.5	7.5	7.0	7.0	6.0	6.0	6.0
10	12.5	12.0	12.0	10.0	10.0	10.0	7.0	6.5	7.0	6.0	6.0	6.0
11	12.5	12.0	12.0	10.0	9.5	10.0	6.5	6.5	6.5	6.0	6.0	6.0
12	12.5	12.0	12.0	10.0	9.5	9.5	6.5	6.0	6.5	6.0	6.0	6.0
13	12.5	11.5	12.0	9.5	9.5	9.5	6.5	6.0	6.0	6.0	6.0	6.0
14	12.5	11.5	12.0	9.5	9.5	9.5	6.5	6.0	6.0	6.0	6.0	6.0
15	12.5	11.5	12.0	9.5	9.5	9.5	6.5	6.0	6.5	6.0	5.5	5.5
16	12.5	12.0	12.0	9.5	9.5	9.5	7.0	6.5	6.5	6.0	5.5	5.5
17	12.5	11.5	12.0	9.5	9.0	9.5	7.0	6.5	6.5	6.0	5.5	5.5
18	12.0	11.5	12.0	9.5	9.0	9.0	7.0	6.5	6.5	6.0	6.0	6.0
19	12.0	11.5	12.0	9.0	9.0	9.0	6.5	6.5	6.5	---	---	---
20	12.0	11.5	12.0	9.0	8.5	9.0	6.5	6.5	6.5	---	---	---
21	12.0	11.5	12.0	9.0	8.5	8.5	6.5	6.5	6.5	---	---	---
22	11.5	11.5	11.5	8.5	8.0	8.5	6.5	6.0	6.0	---	---	---
23	11.5	11.5	11.5	8.0	8.0	8.0	6.5	6.0	6.0	---	---	---
24	11.5	11.5	11.5	8.0	8.0	8.0	6.5	6.0	6.0	---	---	---
25	11.5	11.5	11.5	8.0	8.0	8.0	6.5	6.0	6.0	---	---	---
26	11.5	11.5	11.5	8.0	8.0	8.0	6.0	6.0	6.0	---	---	---
27	11.5	11.5	11.5	8.0	8.0	8.0	6.0	6.0	6.0	---	---	---
28	11.5	11.0	11.5	8.0	8.0	8.0	6.0	6.0	6.0	---	---	---
29	11.5	11.0	11.0	8.0	7.5	7.5	6.0	6.0	6.0	---	---	---
30	11.5	11.0	11.0	7.5	7.5	7.5	6.0	6.0	6.0	---	---	---
31	11.0	11.0	11.0	---	---	---	6.0	6.0	6.0	---	---	---
MONTH	13.0	11.0	12.0	11.0	7.5	9.5	7.5	6.0	6.5	---	---	---

14092500 DESCHUTES RIVER NEAR MADRAS, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1				---	---	---	7.0	7.0	7.0	9.0	8.5	9.0
2				---	---	---	7.5	7.0	7.5	9.0	9.0	9.0
3				---	---	---	7.5	7.0	7.5	9.0	8.5	9.0
4				6.5	6.5	6.5	8.0	7.0	7.5	9.5	8.5	9.0
5				7.0	6.5	6.5	8.0	7.0	7.5	9.0	9.0	9.0
6				6.5	6.5	6.5	8.0	7.0	7.5	9.5	9.0	9.0
7				7.0	6.5	6.5	8.0	7.5	8.0	9.5	9.0	9.0
8				6.5	6.5	6.5	8.5	7.5	8.0	9.5	9.0	9.0
9				6.5	6.5	6.5	8.5	7.5	8.0	9.5	9.0	9.0
10				7.0	6.5	6.5	8.5	7.5	8.0	9.5	9.0	9.5
11				7.0	6.5	6.5	8.0	7.5	8.0	9.5	9.0	9.5
12				6.5	6.5	6.5	8.5	8.0	8.0	10.0	9.0	9.5
13				7.5	6.5	7.0	8.5	8.0	8.0	10.5	9.0	9.5
14				7.5	7.0	7.0	8.5	8.0	8.0	10.0	9.5	9.5
15				7.5	7.0	7.5	8.5	8.0	8.5	10.0	9.0	9.5
16				7.5	7.5	7.5	8.5	8.0	8.5	10.0	9.0	9.5
17				7.5	7.0	7.5	8.5	8.0	8.5	10.0	9.5	10.0
18				7.5	7.0	7.0	8.5	8.0	8.0	10.0	9.5	9.5
19				7.0	7.0	7.0	8.5	8.0	8.5	10.0	9.5	9.5
20				7.5	7.0	7.0	9.0	8.5	8.5	10.0	9.5	9.5
21				7.5	6.5	7.0	9.0	8.5	8.5	10.0	9.5	10.0
22				7.0	7.0	7.0	8.5	8.5	8.5	10.5	9.5	10.0
23				7.0	7.0	7.0	9.0	8.5	8.5	10.5	9.5	10.0
24				7.5	7.0	7.5	9.0	8.5	8.5	10.5	9.5	10.0
25				7.5	7.0	7.0	9.0	8.5	9.0	10.5	10.0	10.0
26				7.0	6.5	7.0	9.5	9.0	9.0	10.5	10.0	10.5
27				7.5	7.0	7.0	9.5	9.0	9.0	11.0	10.0	10.5
28				7.5	7.0	7.0	9.5	9.0	9.0	11.0	10.0	10.5
29				7.5	7.0	7.0	9.5	9.0	9.0	11.0	10.5	10.5
30				7.5	7.0	7.5	9.0	8.5	9.0	11.0	10.5	11.0
31				7.5	7.0	7.5	---	---	---	11.0	10.5	11.0
MONTH				---	---	---	9.5	7.0	8.0	11.0	8.5	9.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	11.0	10.5	11.0	12.5	11.5	12.0	13.5	12.5	13.0	14.0	13.5	13.5
2	11.0	10.5	11.0	12.0	11.5	12.0	13.5	13.0	13.0	14.0	13.5	13.5
3	11.0	10.5	11.0	12.5	11.5	12.0	13.5	13.0	13.0	14.0	13.5	13.5
4	11.0	10.5	11.0	12.5	11.5	12.0	13.5	12.5	13.0	14.0	13.5	14.0
5	11.5	10.5	11.0	12.5	11.5	12.0	13.5	13.0	13.0	14.0	13.5	13.5
6	11.0	10.5	11.0	12.5	12.0	12.0	13.5	13.0	13.5	14.0	13.5	13.5
7	11.5	10.5	11.0	12.5	11.5	12.0	13.5	13.0	13.5	14.0	13.5	13.5
8	11.5	10.5	11.0	12.5	12.0	12.0	13.5	13.0	13.5	14.0	13.5	13.5
9	11.5	10.5	11.0	12.5	12.0	12.0	13.5	13.0	13.5	14.0	13.5	13.5
10	11.5	10.5	11.0	12.5	12.0	12.0	13.5	13.0	13.5	14.0	13.5	14.0
11	11.5	11.0	11.5	12.5	12.0	12.0	13.5	13.0	13.5	14.0	13.0	14.0
12	11.5	11.0	11.0	12.5	11.5	12.0	14.0	13.0	13.5	14.0	13.0	13.5
13	11.5	11.0	11.0	12.5	11.5	12.5	14.0	13.0	13.5	14.0	13.0	13.5
14	11.5	11.0	11.0	12.5	12.0	12.5	14.0	13.0	13.5	14.0	13.0	13.5
15	11.5	11.0	11.5	12.5	12.0	12.5	14.0	13.0	13.5	14.0	13.5	13.5
16	11.5	11.0	11.0	12.5	12.0	12.5	14.0	13.0	13.5	14.0	13.0	13.5
17	11.5	11.0	11.0	13.0	12.0	12.5	14.0	13.0	13.5	13.5	13.0	13.0
18	11.5	11.0	11.5	13.0	12.5	12.5	14.0	13.0	13.5	13.5	13.0	13.0
19	11.5	11.0	11.5	13.0	12.0	12.5	14.0	13.0	13.5	13.5	13.0	13.0
20	11.5	11.0	11.5	13.0	12.5	12.5	13.5	13.0	13.5	13.5	13.0	13.0
21	12.0	11.0	11.5	13.0	12.5	12.5	14.0	13.0	13.5	13.5	13.0	13.0
22	12.0	11.0	11.5	13.0	12.0	12.5	14.0	13.0	13.5	13.5	13.0	13.0
23	12.0	11.0	11.5	13.0	12.5	13.0	14.0	13.5	13.5	13.0	13.0	13.0
24	12.0	11.5	11.5	13.5	12.5	13.0	14.0	13.5	13.5	13.5	13.0	13.0
25	12.0	11.5	11.5	13.0	12.5	13.0	14.0	13.5	13.5	13.0	13.0	13.0
26	12.0	11.5	11.5	13.0	12.5	13.0	14.0	13.5	13.5	13.0	13.0	13.0
27	12.0	11.0	11.5	13.0	12.5	13.0	14.0	13.5	13.5	13.0	12.5	13.0
28	12.0	11.5	12.0	13.0	12.5	13.0	14.0	13.5	13.5	13.0	12.5	12.5
29	12.5	11.5	12.0	13.0	12.5	13.0	14.0	13.5	13.5	13.0	12.5	12.5
30	12.5	11.5	12.0	13.5	12.5	13.0	14.0	13.5	13.5	13.0	12.5	12.5
31	---	---	---	13.5	12.5	13.0	14.0	13.5	13.5	---	---	---
MONTH	12.5	10.5	11.5	13.5	11.5	12.5	14.0	12.5	13.5	14.0	12.5	13.5

14092750 SHITIKE CREEK AT PETERS PASTURE, NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°45'02", long 121°37'56", in NW¼NE¼ sec.35, T.9 S., R.9 E., Jefferson County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on left bank 0.5 mi downstream from Peters Pasture, and 18 mi west of town of Warm Springs.

DRAINAGE AREA.--22.9 mi^2.

PERIOD OF RECORD.--July 1982 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,580 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 22 to Dec. 5, Dec. 11-13, 20, 21, Dec. 25 to Jan. 5, Jan. 12-15, 20-22, Feb. 10-15, Feb. 23 to Mar. 5, Mar. 8-23. Records excellent except for flows above 250 ft^3/s and estimated daily discharges, which are poor. No regulation or diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,170 ft^3/s Feb. 23, 1986, gage height, 3.65 ft, from rating curve extended above 170 ft^3/s; minimum discharge, 29 ft^3/s several days in October 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft^3/s and maximum (*) from rating curve extended above 170 ft^3/s:

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 23	1600	*1,170	*3.65	Mar. 7	1430	410	2.43

Minimum discharge, 29 ft^3/s several days in October.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	49	38	60	81	280	130	71	217	71	44	35
2	31	64	38	54	81	250	122	71	210	76	44	34
3	30	68	40	50	81	230	107	72	198	70	44	33
4	29	60	45	45	77	220	100	72	179	79	43	32
5	29	55	45	40	71	210	92	71	153	69	43	31
6	29	51	41	45	67	207	85	68	132	64	43	32
7	30	87	41	41	65	329	83	64	116	64	42	32
8	30	83	41	41	60	320	84	62	103	65	42	32
9	29	70	40	43	57	250	89	62	101	66	41	36
10	29	60	37	50	53	220	91	64	103	69	41	37
11	31	53	34	54	50	190	91	62	113	69	41	34
12	33	47	32	52	48	170	90	59	113	64	41	32
13	32	44	35	50	46	160	85	65	107	60	40	31
14	31	45	34	48	44	145	82	69	113	58	40	31
15	31	55	33	46	44	135	77	67	107	56	39	32
16	30	74	33	61	101	125	75	66	94	57	39	34
17	30	63	33	80	133	120	73	70	99	56	38	35
18	30	56	33	96	121	115	72	85	103	54	38	38
19	32	53	33	133	102	108	68	102	84	52	37	36
20	40	50	33	120	91	105	66	128	81	52	37	35
21	34	47	33	105	93	102	84	120	82	51	37	35
22	49	44	34	95	237	100	121	97	84	50	37	31
23	91	40	34	84	930	100	112	85	87	50	36	33
24	120	30	34	75	900	111	99	82	93	49	36	60
25	201	35	32	70	600	109	89	112	91	48	35	45
26	103	35	32	65	440	102	83	168	85	48	35	52
27	78	46	32	62	350	103	81	199	81	47	35	42
28	77	40	34	63	300	118	81	196	80	46	36	40
29	62	40	36	68	---	136	79	206	80	46	38	44
30	57	40	38	76	---	136	76	223	74	45	37	48
31	52	---	40	81	---	136	---	223	---	44	36	---
TOTAL	1541	1584	1118	2053	5323	5142	2667	3161	3363	1795	1215	1102
MEAN	49.7	52.8	36.1	66.2	190	166	88.9	102	112	57.9	39.2	36.7
MAX	201	87	45	133	930	329	130	223	217	79	44	60
MIN	29	30	32	40	44	100	66	59	74	44	35	31
CFSM	2.37	2.52	1.72	3.16	9.07	7.93	4.25	4.87	5.35	2.77	1.87	1.75
IN.	2.74	2.81	1.99	3.65	9.46	9.13	4.74	5.62	5.97	3.19	2.16	1.96
AC-FT	3060	3140	2220	4070	10560	10200	5290	6270	6670	3560	2410	2190

CAL YR 1985	TOTAL	23660	MEAN	64.8	MAX	486	MIN	29	CFSM	3.09	IN.	42.03	AC-FT	46930
WTR YR 1986	TOTAL	30064	MEAN	82.4	MAX	930	MIN	29	CFSM	3.94	IN.	53.41	AC-FT	59630

14092885 SHITIKE CREEK BELOW WOLFORD CANYON, NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°46'20", long 121°18'15", in NW¼SE¼ sec.21, T.9 S., R.12 E., Jefferson County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on left bank at bridge crossing 2.3 mi upstream from Tenino Creek, and 2.1 mi northwest of Warm Springs.

DRAINAGE AREA.--75.8 mi^2.

PERIOD OF RECORD.--October 1974 to current year. Records for June 1911 to October 1916, April 1923 to September 1928, and October 1972 to September 1974 (see sta 14093000) at sites downstream not equivalent owing to difference in drainage areas.

GAGE.--Water-stage recorder. Elevation of gage is 1,600 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 24 to Jan. 4. Records good except for estimated daily discharges, and those above 1,000 ft^3/s, which are poor. No regulation. Some diversion for irrigation and Warm Springs water supply.

AVERAGE DISCHARGE.--12 years, 99.5 ft^3/s, 17.83 in/yr, 72,090 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,980 ft^3/s Feb. 23, 1986, gage height, 6.40 ft, from rating curve extended above 860 ft^3/s; maximum gage height, 7.35 ft Dec. 13, 1977; minimum daily discharge, 17 ft^3/s Oct. 12-15, 17-22, 24-27, Nov. 12, 1978.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 400 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 23	1700	*1,980	*6.40	Mar. 7	1830	550	4.97

Minimum daily discharge, 34 ft^3/s Dec. 12, during ice-affected period.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	62	46	75	100	461	183	111	234	90	60	53
2	44	68	46	65	102	415	168	112	235	92	60	52
3	43	84	50	60	100	371	155	114	219	90	60	51
4	43	72	54	50	94	343	149	112	212	94	59	51
5	43	69	54	50	89	333	142	111	182	87	59	51
6	43	62	52	57	83	330	137	109	165	83	58	50
7	44	87	50	52	79	437	135	106	144	81	57	50
8	44	104	50	51	75	487	133	104	129	81	57	50
9	44	86	48	57	73	393	137	104	125	81	56	54
10	44	78	46	60	70	356	138	104	122	82	56	54
11	45	67	38	62	67	311	136	103	127	83	56	52
12	49	57	34	60	67	280	133	100	134	80	56	51
13	47	54	42	59	63	261	127	99	126	77	56	51
14	46	62	42	57	62	240	123	104	129	76	56	51
15	45	73	40	57	62	225	119	103	134	74	55	53
16	44	93	40	70	125	210	118	101	118	75	55	54
17	44	77	40	93	285	195	115	101	118	74	56	55
18	44	69	40	125	280	185	112	111	125	71	56	56
19	44	64	40	172	196	177	110	128	111	70	55	54
20	55	62	40	142	162	171	111	149	106	68	55	53
21	52	60	42	116	151	168	120	151	105	68	55	52
22	62	57	42	111	634	164	155	133	102	67	55	51
23	109	49	42	109	1360	163	150	119	102	66	55	51
24	142	35	42	93	1160	180	136	113	107	66	55	67
25	215	42	40	86	886	177	129	129	108	65	53	62
26	137	42	40	81	733	168	123	179	104	65	53	67
27	99	54	40	79	615	169	122	224	99	64	53	61
28	94	48	42	82	525	184	124	223	100	63	53	58
29	79	48	44	89	---	200	121	226	96	62	55	58
30	70	46	46	96	---	200	115	243	93	61	55	68
31	65	---	48	102	---	196	---	241	---	61	54	---
TOTAL	2023	1931	1360	2518	8298	8150	3976	4167	4011	2317	1734	1641
MEAN	65.3	64.4	43.9	81.2	296	263	133	134	134	74.7	55.9	54.7
MAX	215	104	54	172	1360	487	183	243	235	94	60	68
MIN	43	35	34	50	62	163	110	99	93	61	53	50
CFSM	.86	.85	.58	1.07	3.91	3.47	1.75	1.77	1.77	.99	.74	.72
IN.	.99	.95	.67	1.24	4.07	4.00	1.95	2.05	1.97	1.14	.85	.81
AC-FT	4010	3830	2700	4990	16460	16170	7890	8270	7960	4600	3440	3250

CAL YR 1985	TOTAL	29999	MEAN	82.2	MAX	426	MIN	34	CFSM	1.08	IN.	14.72	AC-FT	59500
WTR YR 1986	TOTAL	42126	MEAN	115	MAX	1360	MIN	34	CFSM	1.52	IN.	20.67	AC-FT	83560

14095500 WARM SPRINGS RIVER NEAR SIMNASHO, OR

LOCATION.--Lat 44°58'10", long 121°28'35", in SE¼SW¼ sec.7, T.7 S., R.11 E., Wasco County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank abutment of log bridge at Hehe Butte rodeo grounds, 3.3 mi upstream from Badger Creek, and 6.2 mi west of Simnasho.

DRAINAGE AREA.--107 mi².

PERIOD OF RECORD.--June to September 1915, August 1949 to September 1954, October 1983 to current year. Prior to October 1983, published as "at Hehe Mill near Warm Springs."

GAGE.--Water-stage recorder. Datum of gage is 2,533.78 ft above National Geodetic Vertical Datum of 1929. June to September 1915 1.0 mi downstream at different datum. August 1949 to September 1954 0.5 mi downstream at datum 7.12 ft lower.

REMARKS.--Estimated daily discharges: Nov. 22 to Mar. 7, July 14-29. Records good except for estimated daily discharges, which are fair. No regulation or diversions.

AVERAGE DISCHARGE.--8 years (water years 1950-54, 1984-86) 179 ft³/s, 22.72 in/yr, 129,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,700 ft³/s Feb. 23, 1986, gage height, 5.70 ft, from floodmark; minimum discharge observed, 97 ft³/s July 30, Sept. 5, 30, 1915.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 350 ft³/s and maximum (*):

Date	Time	Discharge (ft³/s)	Gage height (ft)	Date	Time	Discharge (ft³/s)	Gage height (ft)
Feb. 23	unknown	*1,700	*a5.70	Mar. 8	1830	582	4.20

Minimum daily discharge, 110 ft³/s Dec. 15-28, during ice-affected period.

a From outside high-water mark.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	120	120	120	120	155	720	258	175	153	132	126	122
2	119	120	120	120	150	660	246	180	150	133	127	122
3	118	119	120	120	145	600	238	182	147	132	128	121
4	118	121	120	125	145	550	233	179	145	143	127	121
5	118	120	130	125	145	500	226	178	143	134	126	121
6	119	121	130	130	140	470	221	175	141	133	126	121
7	121	140	130	135	140	550	219	170	142	134	125	121
8	119	141	130	140	140	555	219	169	141	132	125	121
9	119	128	120	140	140	502	222	168	140	132	125	128
10	119	126	120	140	135	472	220	170	140	132	124	123
11	121	123	120	140	135	422	216	168	138	131	124	121
12	119	123	120	135	140	384	217	166	137	131	124	121
13	119	123	120	135	135	359	210	166	136	131	124	122
14	119	123	115	135	130	333	202	167	136	130	124	122
15	119	122	110	135	130	317	199	165	136	130	124	126
16	119	121	110	140	160	298	197	163	136	130	124	126
17	119	123	110	144	210	279	193	162	136	130	124	125
18	119	121	110	146	260	262	188	163	135	129	123	123
19	121	120	110	150	245	254	184	163	135	129	123	123
20	121	120	110	150	230	252	186	165	135	129	123	122
21	120	120	110	145	220	254	191	166	135	129	123	121
22	135	120	110	140	1200	251	197	166	135	128	123	121
23	146	120	110	140	1600	252	193	161	134	128	123	123
24	126	120	110	135	1320	276	188	159	134	128	123	130
25	124	120	110	130	1300	261	188	158	133	128	123	124
26	121	120	110	130	1000	251	183	160	134	127	122	125
27	121	120	110	135	900	253	186	161	133	127	122	123
28	125	120	110	140	800	254	189	159	133	127	122	122
29	121	120	115	150	---	259	182	157	133	127	124	122
30	121	120	115	155	---	267	178	155	133	126	123	121
31	121	---	120	160	---	263	---	154	---	126	122	---
TOTAL	3767	3675	3605	4265	11550	11580	6169	5150	4139	4038	3846	3684
MEAN	122	123	116	138	413	374	206	166	138	130	124	123
MAX	146	141	130	160	1600	720	258	182	153	143	128	130
MIN	118	119	110	120	130	251	178	154	133	126	122	121
CFSM	1.14	1.15	1.08	1.29	3.86	3.50	1.93	1.55	1.29	1.21	1.16	1.15
IN.	1.31	1.28	1.25	1.48	4.02	4.03	2.14	1.79	1.44	1.40	1.34	1.28
AC-FT	7470	7290	7150	8460	22910	22970	12240	10220	8210	8010	7630	7310

CAL YR 1985	TOTAL	53781	MEAN	147	MAX	275	MIN	110	CFSM	1.37	IN.	18.70	AC-FT	106700
WTR YR 1986	TOTAL	65468	MEAN	179	MAX	1600	MIN	110	CFSM	1.67	IN.	22.76	AC-FT	129900

14096300 MILL CREEK NEAR BADGER BUTTE, NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°51'42", long 121°37'35", in SW¼ sec.23, T.8 S., R.9 E., Wasco County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank 200 ft upstream from bridge on road B241, 3.4 mi upstream from headworks of Mill Creek Canal, and 19.3 mi northwest of Warm Springs.

DRAINAGE AREA.--26.8 mi^2.

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 3,380 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 22-26, Nov. 29 to Dec. 4, Dec. 6-12, 26-29. Records good. No regulation or diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 368 ft^3/s Feb. 23, 1986, gage height, 6.53 ft, from rating curve extended above 105 ft^3/s; maximum gage height, 7.30 ft Feb. 23, 1986, from high-water mark on crest-stage gage; minimum discharge, 35 ft^3/s Oct. 4, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 130 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Dec. 29	1430	170	5.88	Feb. 23	1500	(a)	*7.30
Feb. 16	1530	159	5.76	Mar. 7	2200	170	5.78
Feb. 23	1500	*368	6.53				

Minimum discharge, 35 ft^3/s Oct. 4.

(a) From crest-stage gage.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	49	55	52	76	145	94	75	100	48	43	41
2	40	49	56	50	77	133	90	76	97	46	42	42
3	39	50	56	50	78	123	89	77	94	45	42	43
4	39	51	58	49	75	118	86	76	89	51	42	43
5	39	52	56	53	74	115	82	74	83	50	42	42
6	39	51	56	56	70	115	80	73	79	48	42	41
7	41	62	56	53	67	140	80	71	75	48	42	41
8	40	78	56	55	66	155	81	70	70	48	42	41
9	40	74	54	59	64	140	84	70	66	47	42	48
10	40	69	53	59	62	131	84	71	63	47	42	44
11	44	64	52	58	61	122	83	70	61	47	42	43
12	46	59	52	56	65	112	83	68	60	47	42	42
13	44	56	52	55	67	106	81	71	58	47	42	43
14	44	53	51	54	68	99	79	72	56	45	42	43
15	43	55	50	54	74	95	78	73	56	45	42	45
16	43	62	49	70	134	91	76	73	54	46	42	45
17	43	62	49	78	147	87	76	74	53	46	42	47
18	42	60	49	84	134	85	74	77	53	44	41	49
19	44	58	48	94	120	85	73	81	52	44	41	48
20	45	58	49	89	112	84	72	86	52	44	41	47
21	44	57	48	83	111	85	76	90	51	43	41	45
22	59	55	47	80	223	81	83	86	50	43	41	45
23	77	53	47	81	324	84	88	81	50	43	41	45
24	57	52	47	76	277	94	84	78	48	43	41	53
25	62	51	47	73	228	89	82	80	47	43	42	51
26	65	55	47	70	206	88	79	88	47	44	42	55
27	58	56	47	68	178	89	81	97	47	44	42	50
28	56	55	47	70	160	92	81	99	48	44	42	47
29	51	54	47	69	---	94	79	99	47	43	44	48
30	50	55	46	72	---	100	77	101	48	43	44	48
31	49	---	45	73	---	99	---	102	---	43	43	---
TOTAL	1464	1715	1572	2043	3398	3276	2435	2479	1854	1409	1301	1365
MEAN	47.2	57.2	50.7	65.9	121	106	81.2	80.0	61.8	45.5	42.0	45.5
MAX	77	78	58	94	324	155	94	102	100	51	44	55
MIN	39	49	45	49	61	81	72	68	47	43	41	41
CFSM	1.76	2.13	1.89	2.46	4.51	3.96	3.03	2.99	2.31	1.70	1.57	1.70
IN.	2.03	2.38	2.18	2.84	4.72	4.55	3.38	3.44	2.57	1.96	1.81	1.89
AC-FT	2900	3400	3120	4050	6740	6500	4830	4920	3680	2790	2580	2710

CAL YR 1985	TOTAL	21604	MEAN	59.2	MAX	147	MIN	39	CFSM	2.21	IN.	29.99	AC-FT	42850
WTR YR 1986	TOTAL	24311	MEAN	66.6	MAX	324	MIN	39	CFSM	2.49	IN.	33.75	AC-FT	48220

14096850 BEAVER CREEK BELOW QUARTZ CREEK, NEAR SIMNASHO, OR

LOCATION.--Lat 44°57'32", long 121°23'35", in NE¼SW¼ sec.14, T.7 S., R.11 E., Wasco County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank 600 ft downstream from culvert on Warm Springs Reservation Highway 9, 200 ft downstream from Quartz Creek, and 2.4 mi west of Simnasho.

DRAINAGE AREA.--145 mi^2.

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,260 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 23-25, Dec. 1-3. Records good. No regulation or diversions upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,340 ft^3/s, Feb. 23, 1986, gage height, 7.96 ft; minimum discharge, 34 ft^3/s Nov. 22, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 17	1900	1,400	5.40	Mar. 8	2100	561	4.04
Feb. 23	1630	*4,340	*7.96				

Minimum discharge, 34 ft^3/s Nov. 22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	40	40	39	166	614	165	83	61	47	41	39
2	38	40	40	40	190	536	155	84	60	46	41	39
3	38	40	39	41	202	477	145	89	59	46	41	39
4	38	40	38	41	165	433	138	85	58	50	41	39
5	38	40	39	41	150	404	131	84	57	49	41	39
6	38	40	44	42	120	388	126	84	57	47	40	39
7	39	46	48	44	102	452	122	80	55	46	40	40
8	39	65	48	43	87	505	119	78	55	47	40	40
9	39	53	45	46	81	479	121	76	55	46	40	42
10	39	49	44	47	79	436	122	80	54	45	40	41
11	40	45	43	47	74	396	117	77	54	45	40	40
12	40	41	40	46	67	352	118	75	53	45	40	40
13	39	41	40	45	70	324	113	75	53	45	40	40
14	39	42	41	45	68	296	108	74	53	44	40	39
15	39	42	40	45	70	275	106	72	53	44	40	40
16	39	44	40	53	198	257	103	71	52	44	40	42
17	39	45	40	104	960	231	100	70	51	43	40	42
18	39	43	39	198	951	211	96	72	50	42	40	41
19	39	42	39	341	478	200	93	72	50	42	40	40
20	40	42	38	217	332	193	92	72	50	42	42	41
21	39	41	37	130	314	191	95	72	49	42	40	40
22	45	40	38	122	3030	186	98	72	49	42	40	40
23	57	40	38	183	3680	186	98	70	49	42	40	40
24	49	40	37	138	2090	202	94	68	50	42	40	44
25	45	40	38	101	1380	185	94	68	49	42	39	43
26	43	41	38	89	1070	174	92	68	48	41	39	42
27	41	41	38	84	865	171	93	68	47	41	39	41
28	41	40	38	112	727	170	92	66	48	41	39	40
29	41	39	38	136	---	175	88	65	50	41	40	40
30	40	39	38	189	---	178	84	64	51	41	40	40
31	40	---	38	165	---	173	---	62	---	41	40	---
TOTAL	1258	1281	1241	3014	17766	9450	3318	2296	1580	1361	1243	1212
MEAN	40.6	42.7	40.0	97.2	635	305	111	74.1	52.7	43.9	40.1	40.4
MAX	57	65	48	341	3680	614	165	89	61	50	42	44
MIN	38	39	37	39	67	170	84	62	47	41	39	39
CFSM	.28	.29	.28	.67	4.38	2.10	.77	.51	.36	.30	.28	.28
IN.	.32	.33	.32	.77	4.56	2.42	.85	.59	.41	.35	.32	.31
AC-FT	2500	2540	2460	5980	35240	18740	6580	4550	3130	2700	2470	2400

CAL YR 1985	TOTAL	25090	MEAN	68.7	MAX	246	MIN	37	CFSM	.47	IN.	6.44	AC-FT	49770
WTR YR 1986	TOTAL	45020	MEAN	123	MAX	3680	MIN	37	CFSM	.85	IN.	11.55	AC-FT	89300

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 mi^2.

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,400 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 13, 14; Nov. 22 to Dec. 5; Dec. 12-16; Dec. 30 to Jan. 3. Records good except for estimated daily discharges, which are fair. No regulation. Small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--14 years, 460 ft^3/s, 11.88 in/yr, 333,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,240 ft^3/s Feb. 23, 1986, gage height, 10.54 ft; minimum daily discharge, 160 ft^3/s Jan. 1, 2, 1979.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 17	2400	2,950	5.65	Mar. 8	2300	2,180	4.76
Feb. 23	2030	*9,240	*10.54				

Minimum discharge, 212 ft^3/s Dec. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	261	276	280	250	615	2270	891	513	441	287	279	279
2	260	274	280	260	663	2030	855	511	430	286	280	278
3	258	274	280	270	686	1830	813	530	417	290	282	274
4	255	274	270	275	612	1690	787	515	402	318	276	272
5	257	280	270	273	573	1600	756	506	388	327	274	270
6	258	279	321	288	518	1540	731	502	373	305	275	269
7	265	298	331	284	469	1690	716	489	363	297	273	271
8	264	394	327	283	423	1990	705	471	352	302	274	271
9	262	375	307	303	404	1950	708	454	339	293	272	300
10	262	350	291	308	407	1750	710	460	333	295	266	299
11	267	325	262	304	394	1590	697	458	323	296	265	283
12	270	287	260	298	376	1440	693	442	312	290	267	279
13	267	290	270	291	390	1330	676	434	308	289	269	279
14	263	290	260	287	388	1240	648	446	303	287	268	275
15	262	306	270	288	383	1160	635	437	304	287	278	288
16	262	319	260	335	605	1100	621	427	305	291	280	297
17	262	320	270	473	1910	1030	606	422	307	298	281	303
18	260	309	264	577	2570	962	589	425	307	293	280	295
19	254	301	257	1030	1640	924	573	437	308	294	276	285
20	264	296	249	866	1180	903	558	449	304	292	278	284
21	262	290	230	621	1020	900	566	461	302	288	279	280
22	284	280	232	554	4930	886	589	460	298	290	276	275
23	386	280	233	659	7560	873	613	433	292	288	276	279
24	351	280	237	598	6340	948	593	416	287	289	275	308
25	309	280	240	493	4370	913	581	409	284	289	274	313
26	314	290	237	451	3530	871	568	423	283	286	274	315
27	304	290	238	424	2960	864	561	444	287	287	274	306
28	297	280	233	487	2570	867	569	455	292	287	279	289
29	288	270	242	581	---	883	554	447	294	286	283	287
30	280	270	240	648	---	906	533	446	292	281	283	289
31	279	---	250	621	---	916	---	443	---	280	282	---
TOTAL	8587	8927	8191	13680	48486	39846	19695	14165	9830	9068	8548	8592
MEAN	277	298	264	441	1732	1285	657	457	328	293	276	286
MAX	386	394	331	1030	7560	2270	891	530	441	327	283	315
MIN	254	270	230	250	376	864	533	409	283	280	265	269
CFSM	.53	.57	.50	.84	3.29	2.44	1.25	.87	.62	.56	.52	.54
IN.	.61	.63	.58	.97	3.43	2.82	1.39	1.00	.70	.64	.60	.61
AC-FT	17030	17710	16250	27130	96170	79030	39070	28100	19500	17990	16950	17040

CAL YR 1985	TOTAL	139037	MEAN	381	MAX	788	MIN	230	CFSM	.72	IN.	9.83	AC-FT	275800
WTR YR 1986	TOTAL	197615	MEAN	541	MAX	7560	MIN	230	CFSM	1.03	IN.	13.98	AC-FT	392000

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 mi^2.

PERIOD OF RECORD.--October 1917 to current year.

REVISED RECORDS.--WSP 1448: 1920, 1923, 1927-28, drainage area. WSP 1935: 1956.

GAGE.--Water-stage recorder. Datum of gage is 870.15 ft above 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.--Estimated daily discharges: Nov. 24 to Dec. 15. Records fair. No regulation. Diversions upstream from station for irrigation.

AVERAGE DISCHARGE.--69 years, 429 ft^3/s, 310,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,300 ft^3/s Jan. 6, 1923, gage height, about 13.3 ft, site and datum then in use, from rating curve extended above 5,000 ft^3/s; minimum discharge, 7.5 ft^3/s Aug. 31, 1961.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 17	2230	1,990	4.79	Mar. 7	2330	2,240	5.04
Feb. 23	1800	*7,600	*9.45				

Minimum discharge, 97 ft^3/s Aug. 26, 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	129	181	170	209	631	2410	951	439	516	166	126	121
2	131	216	170	220	703	2190	874	447	484	160	126	136
3	132	228	180	216	757	1980	813	504	451	165	123	136
4	131	209	200	202	701	1830	777	472	427	179	122	119
5	132	202	220	193	690	1790	738	462	391	179	124	110
6	133	252	210	233	614	1770	714	438	365	159	120	108
7	142	640	220	219	561	2010	703	414	349	152	118	111
8	144	720	205	206	531	2150	718	402	329	149	123	110
9	138	451	200	230	501	1950	726	401	303	142	122	116
10	136	362	195	257	474	1800	719	424	275	146	117	118
11	137	300	195	264	451	1690	696	401	259	156	116	115
12	149	258	190	256	449	1540	673	374	255	152	115	113
13	143	250	190	245	441	1420	636	396	243	152	114	111
14	134	247	190	239	421	1310	607	397	232	147	113	112
15	133	252	195	239	413	1220	603	373	236	144	113	130
16	132	311	198	348	770	1130	584	362	231	145	113	132
17	134	281	192	601	1470	1030	568	367	225	156	110	127
18	131	254	189	856	1560	944	547	408	217	141	111	133
19	136	244	188	1160	1120	910	527	426	218	138	112	126
20	155	242	183	818	896	895	527	441	206	140	108	125
21	145	225	176	615	965	914	569	434	198	138	104	126
22	158	221	175	545	3380	899	624	413	191	136	108	119
23	274	181	174	582	5970	889	568	389	183	136	109	123
24	241	175	172	603	6190	976	529	376	181	136	105	171
25	285	170	172	505	4570	906	506	403	178	133	106	159
26	245	170	167	464	3720	873	466	458	177	132	100	160
27	203	175	164	423	3120	907	505	494	175	130	101	151
28	202	185	163	424	2690	948	536	494	173	126	103	146
29	187	185	160	495	---	1020	485	498	174	121	109	144
30	179	175	171	632	---	1060	456	509	170	122	114	165
31	180	---	175	627	---	1020	---	519	---	125	113	---
TOTAL	5031	7962	5749	13126	44759	42381	18945	13335	8012	4503	3518	3873
MEAN	162	265	185	423	1599	1367	632	430	267	145	113	129
MAX	285	720	220	1160	6190	2410	951	519	516	179	126	171
MIN	129	170	160	193	413	873	456	362	170	121	100	108
AC-FT	9980	15790	11400	26040	88780	84060	37580	26450	15890	8930	6980	7680

CAL YR 1985	TOTAL	121872	MEAN	334	MAX	1210	MIN	110	AC-FT	241700
WTR YR 1986	TOTAL	171194	MEAN	469	MAX	6190	MIN	100	AC-FT	339600

14103000 DESCHUTES RIVER AT MOODY, NEAR BIGGS, OR
(National stream quality accounting network station)

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 mi^2, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1897 to December 1899 (published as "near Moro"), July 1906 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 754: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 167.54 ft above 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.--No estimated daily discharges. Water-discharge records good. 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 Wickiup Reservoirs, combined capacity, 323,390 acre-ft, and since 1960, in Prineville Reservoir (station 14080400), and since 1964 in Lake Billy Chinook (station 14092100). Large diversions in upper river basin for irrigation.

AVERAGE DISCHARGE.--82 years, 5,876 ft^3/s, 4,257,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 75,500 ft^3/s Dec. 22, 1964, gage height, 11.80 ft, from rating curve extended above 47,000 ft^3/s; minimum discharge, 2,400 ft^3/s Dec. 5, 1957.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 39,800 ft^3/s Feb. 23, gage height, 8.87 ft; minimum discharge, 3,890 ft^3/s July 26, 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4400	5260	5050	5070	7880	17600	10400	5580	5770	4810	4310	4790
2	4380	5280	5080	5150	8060	16800	10200	5580	5730	4490	4300	4810
3	4360	5310	5070	5200	8220	15600	9720	5630	5690	4480	4300	4820
4	4380	5310	5180	4460	8010	14700	9390	5640	5680	4550	4390	4680
5	4410	5500	5240	4220	7970	14500	9410	5610	5670	4570	4470	4370
6	4430	5540	5240	4310	7850	14200	9460	5290	5630	4540	4470	4350
7	4430	5730	5280	4360	8350	14300	8950	5250	5550	4490	4440	4390
8	4420	6050	5310	4330	8200	15200	8430	5210	5400	4470	4220	4410
9	4410	5750	5250	4390	8080	16000	8470	5440	5300	4450	4050	4520
10	4430	5620	5200	4190	7910	15600	8450	5450	5270	4460	4020	4460
11	4470	5530	5130	4120	7350	15400	7950	5450	5120	4490	4010	4300
12	4480	5430	5030	4090	7380	14400	7740	5420	4690	4480	4090	4300
13	4560	5630	5060	4010	7310	14000	7650	5370	4670	4480	4300	4290
14	4840	6010	5110	3960	7280	12800	7580	5380	4590	4460	4290	4350
15	4940	6130	5080	4480	6370	11600	7560	5120	4270	4420	4390	4840
16	4960	5960	5090	5360	6620	11400	7560	5060	4250	4340	4740	5050
17	4990	5460	5090	8990	13200	11200	7080	5050	4320	4370	4830	5070
18	4870	5420	5070	8530	15300	10100	6760	5060	4680	4360	4840	4980
19	4660	5870	5070	10000	12600	9910	6280	5120	5140	4400	4710	4980
20	4710	6060	5060	8730	11400	9460	6140	5140	5270	4570	4390	5000
21	4730	6020	5040	7180	11600	9250	6140	5140	4810	4560	4200	5080
22	4680	6130	5010	6700	21500	9060	6210	5120	4570	4450	4230	5080
23	5030	6090	5040	7380	37100	9020	5900	5070	4610	4330	4290	5180
24	5740	6020	5060	7350	35200	9160	5810	5030	4660	4240	4280	5400
25	5950	6100	5050	6800	25500	9440	5770	4990	4670	4160	4300	5450
26	6020	6270	5050	6560	22000	9370	5730	5050	4660	4080	4320	5260
27	5890	6340	5030	6420	19900	9710	5740	5150	4670	4110	4300	4890
28	5850	6260	5030	6390	18500	9810	5740	5180	4750	4500	4310	4790
29	5830	6110	5020	6700	---	10300	5670	5230	4990	4480	4310	4800
30	5570	5400	5020	7160	---	10400	5620	5400	4980	4430	4470	4770
31	5260	---	5030	7380	---	10400	---	5510	---	4320	4760	---
TOTAL	152080	173590	158070	183970	366640	380690	223510	163720	150060	137340	135330	143460
MEAN	4906	5786	5099	5935	13090	12280	7450	5281	5002	4430	4365	4782
MAX	6020	6340	5310	10000	37100	17600	10400	5640	5770	4810	4840	5450
MIN	4360	5260	5010	3960	6370	9020	5620	4990	4250	4080	4010	4290
AC-FT	301700	344300	313500	364900	727200	755100	443300	324700	297600	272400	268400	284600

CAL YR 1985	TOTAL	2082250	MEAN	5705	MAX	9060	MIN	4360	AC-FT	4130000
WTR YR 1986	TOTAL	2368460	MEAN	6489	MAX	37100	MIN	3960	AC-FT	4698000

14103000 DESCHUTES RIVER AT MOODY, NEAR BIGGS, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1911-12, 1953-58, 1962 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1975 to September 1981.
WATER TEMPERATURES: December 1952 to February 1954, November 1954 to September 1958, June 1962 to September 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS NONCARB DIS-SOLVED (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)
NOV											
06...	0930	5510	129	7.5	9.5	11.4	K2	K110	41	0	8.0
JAN											
29...	1110	6660	127	7.4	6.0	12.4	--	34	44	0	8.8
MAR											
12...	1430	14300	129	8.0	9.0	13.4	--	--	44	0	9.1
JUN											
10...	0810	5230	121	--	15.5	10.2	K15	69	39	0	8.0
JUL											
09...	0800	4460	128	7.9	16.5	9.1	K17	K1100	42	0	8.4
SEP											
10...	1055	4570	122	8.1	17.5	10.4	K3	880	39	0	7.4

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY WATER DISSOLV FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)
NOV										
06...	5.0	11	1.7	65	3.5	2.5	0.2	0.04	<0.1	0.3
JAN										
29...	5.4	11	2.0	68	5.4	2.7	0.2	0.03	0.2	0.4
MAR										
12...	5.1	10	1.9	67	5.3	2.5	0.1	0.02	<0.1	0.2
JUN										
10...	4.7	9.4	1.8	59	4.1	2.2	0.1	0.02	<0.1	0.3
JUL										
09...	5.2	11	1.9	60	2.0	2.2	0.2	0.02	<0.1	0.4
SEP										
10...	4.9	10	1.8	59	2.4	2.3	0.1	0.04	<0.1	0.2

DATE	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, TOTAL (MG/L AS P)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER DAY)	TUR-BID-ITY (NTU)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV										
06...	0.04	0.05	0.07	28	81	99	1210	2.0	8	119
JAN										
29...	0.05	0.06	0.08	29	85	110	1530	5.5	25	450
MAR										
12...	0.02	0.03	0.10	32	88	110	3400	15	92	3550
JUN										
10...	0.04	0.05	0.07	27	88	93	1240	4.2	18	254
JUL										
09...	0.03	0.04	0.07	27	94	94	1130	2.8	15	181
SEP										
10...	0.04	0.05	0.06	28	86	92	1060	2.1	10	123

K - Results based on colony count outside acceptable range (non-ideal colony count).

14103000 DESCHUTES RIVER AT MOODY, NEAR BIGGS, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	ALUMINUM, DISSOLVED (UG/L AS AL)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	BERYLLIUM, DISSOLVED (UG/L AS BE)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COBALT, DISSOLVED (UG/L AS CO)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)
NOV 06...	<10	2	6	<0.5	<1	<1	<3	2	11	1
JAN 29...	--	--	--	--	--	--	--	--	--	--
MAR 12...	100	1	12	<0.5	<1	<1	<3	1	90	<1
JUN 10...	--	--	--	--	--	--	--	--	--	--
JUL 09...	20	1	5	<0.5	<1	<1	<3	<10	28	<10
SEP 10...	--	--	--	--	--	--	--	--	--	--

DATE	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	MOLYBDENUM, DISSOLVED (UG/L AS MO)	NICKEL, DISSOLVED (UG/L AS NI)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	STRONTIUM, DISSOLVED (UG/L AS SR)	VANADIUM, DISSOLVED (UG/L AS V)	ZINC, DISSOLVED (UG/L AS ZN)
NOV 06...	6	<1	<0.1	<10	--	<1	<1	41	15	7
JAN 29...	--	--	--	--	--	--	--	--	--	--
MAR 12...	4	4	<0.1	<10	<1	<1	<1	53	11	4
JUN 10...	--	--	--	--	--	--	--	--	--	--
JUL 09...	7	1	<0.1	<10	4	<1	<1	47	12	10
SEP 10...	--	--	--	--	--	--	--	--	--	--

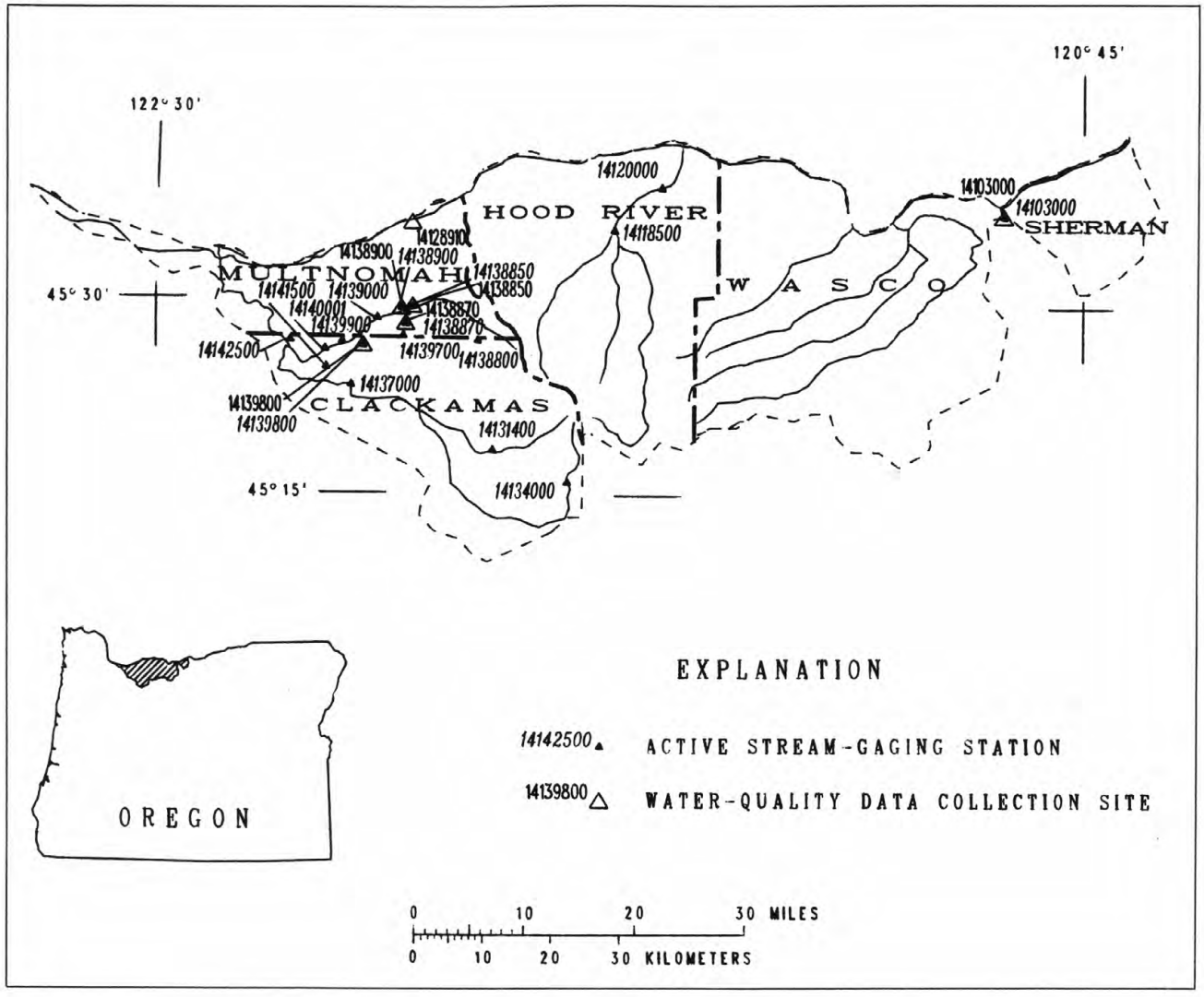

Figure 7.--Location of surface-water and water-quality stations in the Lower Deschutes River, Middle and Lower Columbia River, and Sandy River basins.

14105700 COLUMBIA RIVER AT THE DALLES, OR

LOCATION.--Lat 45°36'27", long 121°10'20", in SW¼SW¼ sec.34, T.2 N., R.13 E., Wasco County, Hydrologic Unit 17070105, Corps of Engineers land, on left bank 0.3 mi downstream from Mill Creek, 2.6 mi downstream from The Dalles Dam, and at mile 188.9.

DRAINAGE AREA.--237,000 mi^2, approximately.

PERIOD OF RECORD.--October 1857 to September 1877 (annual maximum only, at Lower Cascades Landing, published in WSP 1318), June 1878 to current year. Published as "near The Dalles" 1936-56.

REVISED RECORDS.--WSP 534: 1920(m). WSP 1094: 1894. WSP 1248: 1866, 1888, 1899, 1909. WSP 1518: 1876(M).

GAGE.--Acoustic velocity meter (AVM) with water-stage and velocity-index recorder. Datum of gage is National Geodetic Vertical Datum of 1929. See WSP 1738 for history of changes prior to Mar. 16, 1957. Mar. 16, 1957, to Sept 30, 1968, water-stage recorder at site 0.4 mi upstream at same datum.

REMARKS.--Estimated daily discharges: Oct. 11 to Dec. 8, Dec. 15, 18, Dec. 20 to Feb. 18, Feb. 22-25, Mar. 20 to Sept. 30. Records good. Considerable regulation by many large reservoirs. Diurnal fluctuations caused by powerplant and gates at The Dalles Dam. Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--108 years, 193,500 ft^3/s, 140,200,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge (since 1858), 1,240,000 ft^3/s June 6, 1894, elevation, 106.5 ft; minimum discharge (since 1878), 12,100 ft^3/s Apr. 16, 1968 (due to closure of John Day dam, recorded by AVM).

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 407,000 ft^3/s June 3; maximum elevation, 82.3 ft June 7; minimum daily discharge, 78,000 ft^3/s Sept. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	134000	153000	166000	119000	145000	310000	295000	271000	401000	134000	146000	78000
2	139000	130000	211000	119000	139000	313000	295000	264000	395000	147000	158000	110000
3	128000	105000	190000	129000	138000	308000	302000	243000	407000	132000	152000	132000
4	137000	121000	169000	125000	166000	285000	298000	228000	395000	100000	131000	156000
5	110000	134000	188000	106000	158000	250000	277000	248000	391000	110000	125000	135000
6	81100	143000	169000	123000	166000	256000	253000	268000	358000	92700	131000	126000
7	150000	162000	163000	139000	171000	287000	261000	256000	378000	102000	131000	133000
8	145000	150000	175000	125000	176000	338000	243000	252000	353000	118000	119000	129000
9	137000	161000	197000	135000	178000	354000	240000	256000	327000	132000	134000	126000
10	150000	159000	196000	129000	197000	329000	241000	271000	293000	140000	135000	114000
11	133000	182000	200000	119000	200000	303000	264000	274000	280000	180000	131000	111000
12	134000	182000	218000	117000	193000	294000	256000	284000	278000	174000	142000	111000
13	93200	198000	226000	131000	193000	318000	262000	276000	243000	173000	152000	109000
14	106000	175000	164000	142000	195000	336000	305000	252000	238000	185000	158000	110000
15	128000	188000	152000	142000	149000	335000	271000	280000	238000	178000	147000	118000
16	127000	92800	216000	137000	137000	311000	276000	278000	249000	202000	119000	131000
17	131000	92100	181000	123000	184000	294000	282000	253000	244000	177000	89400	125000
18	138000	135000	187000	128000	199000	273000	289000	222000	244000	162000	140000	111000
19	114000	144000	162000	135000	212000	285000	246000	270000	249000	153000	130000	108000
20	106000	195000	172000	147000	225000	288000	216000	250000	214000	157000	127000	110000
21	121000	206000	175000	134000	220000	283000	242000	287000	199000	182000	125000	95400
22	129000	156000	158000	144000	202000	236000	248000	323000	173000	188000	128000	113000
23	128000	199000	134000	137000	249000	220000	268000	308000	205000	177000	121000	114000
24	132000	208000	138000	161000	248000	204000	301000	209000	186000	167000	93300	128000
25	134000	208000	144000	139000	355000	271000	271000	216000	171000	165000	108000	122000
26	134000	148000	123000	128000	304000	286000	292000	203000	196000	160000	123000	119000
27	117000	164000	154000	132000	317000	283000	274000	279000	167000	158000	124000	97100
28	123000	148000	137000	140000	313000	265000	264000	317000	156000	151000	117000	78400
29	125000	187000	119000	136000	---	238000	276000	353000	151000	140000	104000	123000
30	137000	164000	136000	132000	---	316000	256000	358000	144000	150000	92400	109000
31	159000	---	132000	150000	---	318000	---	379000	---	142000	90700	---
TOTAL	3960300	4789900	5252000	4103000	5729000	8987000	8064000	8428000	7923000	4728700	3923800	3481900
MEAN	127800	159700	169400	132400	204600	289900	268800	271900	264100	152500	126600	116100
MAX	159000	208000	226000	161000	355000	354000	305000	379000	407000	202000	158000	156000
MIN	81100	92100	119000	106000	137000	204000	216000	203000	144000	92700	89400	78000
AC-FT	7855000	9501000	10417000	8138000	11363000	17826000	15995000	16717000	15715000	9379000	7783000	6906000

CAL YR 1985	TOTAL	61017000	MEAN	167200	MAX	295000	MIN	71900	AC-FT	121027000		
WTR YR 1986	TOTAL	69370600	MEAN	190100	MAX	407000	MIN	78000	AC-FT	137597000		

14115815 CLEAR BRANCH BELOW LAURANCE LAKE, NEAR PARKDALE, OR

LOCATION.--Lat 45°27'44", long 121°39'04", in SE¼SE¼ sec.22, T.1 S., R.9 E., Hood River County, Hydrologic Unit 17070105, on right bank 0.3 mi downstream from Laurance Lake, and 5.0 mi southwest of Parkdale.

DRAINAGE AREA.--8.62 mi^2.

PERIOD OF RECORD.--May to September 1986.

GAGE.--Water-stage recorder. Elevation of gage is 2,790 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Laurance Lake 0.3 mi upstream. Water is diverted from Laurance Lake for irrigation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during period May to September, 60 ft^3/s May 28, gage height, 6.15 ft; minimum discharge, 2.7 ft^3/s Sept. 11, 19, gage height, 5.40 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, MAY TO SEPTEMBER 1986
MEAN VALUES

DAY	MAY	JUN	JUL	AUG	SEP
1	---	40	6.4	5.2	3.4
2	---	30	6.5	5.1	3.4
3	---	20	6.5	5.1	3.5
4	---	8.4	6.3	5.0	3.5
5	---	6.2	6.2	4.9	3.5
6	---	6.1	6.1	4.9	3.4
7	8.5	6.1	6.1	4.7	3.3
8	12	6.0	6.1	4.7	3.2
9	17	6.3	6.0	4.8	3.1
10	19	6.3	5.9	4.6	3.1
11	20	6.3	6.0	4.4	3.0
12	20	6.2	6.1	4.2	3.1
13	19	6.3	6.0	4.1	3.0
14	19	6.5	5.9	4.0	3.0
15	18	6.5	5.7	3.9	3.0
16	17	6.5	5.5	3.7	2.9
17	16	6.4	5.5	3.7	2.9
18	15	6.4	5.4	3.6	2.9
19	16	6.3	5.4	3.6	3.0
20	31	6.5	5.4	3.4	3.1
21	35	6.4	5.7	3.5	3.1
22	24	6.5	5.7	3.5	3.1
23	15	6.8	5.6	3.5	3.1
24	11	6.7	5.5	3.4	3.2
25	12	6.7	5.4	3.4	3.2
26	24	6.6	5.3	3.6	3.1
27	34	6.7	5.3	3.6	3.0
28	43	6.6	5.2	3.6	3.1
29	43	6.6	5.1	3.5	6.9
30	44	6.4	5.2	3.5	8.8
31	46	---	5.2	3.5	---
TOTAL	---	265.3	178.2	126.2	103.9
MEAN	---	8.84	5.75	4.07	3.46
MAX	---	40	6.5	5.2	8.8
MIN	---	6.0	5.1	3.4	2.9
AC-FT	---	526	353	250	206

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 mi^2.

PERIOD OF RECORD.--September 1913 to February 1916 (incomplete), June 1932 to current year.

REVISED RECORDS.--WDR OR-80-1: 1972(M).

GAGE.--Water-stage recorder. Datum of gage is 802.1 ft above 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.--Estimated daily discharges: Nov. 22 to Dec. 5, Dec. 11-31. Records excellent except for estimated daily discharges, which are fair. No regulation. Dee Irrigation District canal diverts from right bank about 6 mi upstream from station for irrigation upstream from station and in Middle Fork Basin. Diversions from Green Point Creek basin upstream from station for irrigation near Oak Grove; water from two of these diversions is carried in Hood River Irrigation District canal.

AVERAGE DISCHARGE.--55 years (water years 1914, 1933-86), 557 ft^3/s, 403,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge not determined, Dec. 22, 1964, gage height, 27.0 ft, from floodmarks; maximum daily discharge, 15,000 ft^3/s Dec. 23, 1964; minimum, 93 ft^3/s Aug. 22, 1941.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 4,100 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Feb. 23	2030	*11,200	*12.54	No other peak greater than base discharge.			

Minimum discharge, 118 ft^3/s Sept. 12-14, 22, 23.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	152	463	300	288	710	1380	670	595	475	206	153	131
2	147	636	300	287	717	1260	604	584	435	221	155	131
3	149	644	330	352	747	1120	552	575	391	211	155	134
4	146	639	370	307	873	1080	522	540	363	227	153	134
5	144	637	380	302	921	1110	494	555	341	202	150	131
6	144	1060	354	383	765	1200	479	503	320	191	149	127
7	165	2710	389	324	662	2040	484	469	314	187	150	127
8	147	1810	363	399	582	1850	518	447	293	186	152	129
9	142	1130	316	528	523	1510	539	442	279	188	153	159
10	144	813	294	526	477	1270	507	476	280	207	151	129
11	213	635	270	573	445	1290	486	460	274	225	148	125
12	267	530	260	498	423	1140	494	477	268	206	146	121
13	210	460	255	449	400	1020	468	645	259	192	146	119
14	186	408	250	415	378	953	435	572	264	183	145	123
15	182	417	240	392	386	823	427	514	254	179	143	145
16	190	692	230	546	1120	725	446	481	248	190	140	131
17	184	596	220	739	886	657	502	481	256	213	136	135
18	175	514	220	1280	701	607	483	503	263	185	138	152
19	208	474	220	2020	592	608	453	516	268	177	138	128
20	246	441	215	1330	527	615	473	553	233	175	135	127
21	209	405	210	948	614	680	537	538	228	176	133	123
22	511	380	205	787	1810	650	574	555	226	174	134	120
23	820	360	200	915	7390	678	490	493	230	173	130	154
24	746	340	196	852	5540	882	447	467	233	169	129	283
25	1390	330	192	691	3350	766	468	505	227	166	131	206
26	781	340	190	597	2550	722	470	544	223	164	133	275
27	575	350	200	575	1890	744	841	523	222	161	138	221
28	676	330	205	592	1540	829	918	512	222	157	145	270
29	504	320	200	546	---	844	747	520	221	158	147	246
30	483	310	200	634	---	870	652	538	212	156	142	225
31	480	---	240	662	---	756	---	526	---	154	137	---
TOTAL	10716	19174	8014	19737	37519	30679	16180	16109	8322	5759	4435	4761
MEAN	346	639	259	637	1340	990	539	520	277	186	143	159
MAX	1390	2710	389	2020	7390	2040	918	645	475	227	155	283
MIN	142	310	190	287	378	607	427	442	212	154	129	119
AC-FT	21260	38030	15900	39150	74420	60850	32090	31950	16510	11420	8800	9440

CAL YR 1985	TOTAL	158463	MEAN	434	MAX	2710	MIN	141	AC-FT	314300
WTR YR 1986	TOTAL	181405	MEAN	497	MAX	7390	MIN	119	AC-FT	359800

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 mi^2.

PERIOD OF RECORD.--October 1897 to December 1899, September 1913 to September 1914, August 1915 to September 1917, January 1965 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1318: 1899. WSP 1935: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 383.2 ft above 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.--Estimated daily discharges: Nov. 12 to Dec. 9, Feb. 23, 24. Records good. Some daily fluctuation caused by diversion dam upstream from station and sawmill at Dee. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--26 years (water years 1898-99, 1914, 1916-17, 1966-86), 1,076 ft^3/s, 779,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,300 ft^3/s Dec. 13, 1977, gage height, 15.59 ft; minimum discharge recorded, 136 ft^3/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 ft^3/s, from rating curve extended above 1,500 ft^3/s on basis of slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Nov. 7	1900	4,890	7.81	Mar. 7	1530	4,700	7.76
Feb. 23	unknown	*17,900	*a13.7				

Minimum discharge, 171 ft^3/s Sept. 11.

a Crest-stage gage reading.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	307	658	600	503	1190	2970	1440	1080	1220	503	314	207
2	324	878	600	475	1210	2720	1310	1070	1150	550	331	228
3	334	908	660	559	1260	2460	1220	1070	1060	495	342	234
4	333	884	760	504	1360	2380	1170	1020	985	491	334	217
5	337	867	730	498	1450	2360	1130	1030	898	429	318	198
6	344	1280	740	630	1230	2450	1100	950	805	394	335	194
7	360	3510	760	534	1100	3890	1100	900	748	391	347	193
8	334	2450	670	602	994	3660	1140	866	701	389	369	196
9	331	1520	620	792	910	3000	1190	858	652	396	380	236
10	332	1180	570	801	843	2610	1140	908	630	455	390	191
11	419	956	527	853	795	2560	1110	868	630	520	352	187
12	466	860	510	751	779	2330	1110	873	634	467	327	172
13	395	780	506	687	735	2130	1050	1090	608	412	307	172
14	366	720	492	650	694	2020	1000	1000	614	393	303	173
15	361	860	483	618	709	1800	983	922	593	368	303	236
16	365	1400	474	845	1800	1620	988	871	567	365	287	218
17	355	1000	464	1190	1590	1470	1040	881	574	394	267	223
18	335	920	460	1880	1240	1370	1010	923	591	355	264	249
19	371	860	472	2750	1060	1340	969	948	585	345	217	214
20	452	800	434	1930	955	1340	993	1010	515	360	218	226
21	386	760	425	1450	1060	1430	1090	999	492	375	213	204
22	696	720	418	1250	2720	1380	1180	998	496	383	215	224
23	1140	700	416	1380	8540	1400	1040	906	521	373	205	245
24	985	660	407	1320	9900	1700	970	863	548	355	201	518
25	1830	640	395	1110	7050	1510	992	952	555	348	206	361
26	1070	660	381	980	5490	1440	971	1060	546	339	217	462
27	801	680	402	946	4120	1480	1430	1110	533	324	242	361
28	936	660	413	981	3360	1630	1600	1100	551	320	264	398
29	713	640	405	908	---	1670	1330	1160	546	324	280	374
30	673	610	394	1140	---	1740	1190	1240	521	306	255	355
31	681	---	393	1150	---	1590	---	1270	---	305	230	---
TOTAL	17132	30021	15981	30667	64144	63450	33986	30796	20069	12224	8833	7666
MEAN	553	1001	516	989	2291	2047	1133	993	669	394	285	256
MAX	1830	3510	760	2750	9900	3890	1600	1270	1220	550	390	518
MIN	307	610	381	475	694	1340	969	858	492	305	201	172
AC-FT	33980	59550	31700	60830	127200	125900	67410	61080	39810	24250	17520	15210

CAL YR 1985	TOTAL	289285	MEAN	793	MAX	3610	MIN	255	AC-FT	573800
WTR YR 1986	TOTAL	334969	MEAN	918	MAX	9900	MIN	172	AC-FT	664400

14128600 COLUMBIA RIVER AT STEVENSON, WA

LOCATION.--Lat 45°41'58", long 121°52'02", in NW¼SE¼ sec.36, T.3 N., R.7-1/2 E., Skamania County, Hydrologic Unit 17070105, on right bank 0.9 mi east of Stevenson, and at mile 151.3.

DRAINAGE AREA.--239,800 mi^2, approximately.

PERIOD OF RECORD.--October 1973 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated by many reservoirs upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 79.79 ft June 20, 1974; minimum, 70.39 ft Oct. 25, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 78.56 ft Feb. 23; minimum, 71.61 ft Aug. 14.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	76.49	74.82	75.63	76.53	74.59	75.35	76.36	74.95	75.39	75.86	74.25	74.97
2	76.27	74.61	75.59	76.75	74.66	75.71	75.62	72.67	74.33	75.97	74.61	75.35
3	76.57	74.44	75.40	76.63	74.68	75.40	75.35	72.77	73.89	76.16	73.60	74.84
4	76.45	75.14	75.85	75.84	74.26	74.99	76.07	74.54	75.28	76.13	75.04	75.58
5	75.95	74.64	75.04	76.04	74.88	75.47	75.98	74.01	75.10	75.90	73.99	74.61
6	75.12	72.70	73.62	75.62	73.69	74.67	76.70	74.53	75.62	75.54	73.50	74.30
7	73.97	71.97	72.66	76.64	73.94	75.33	76.60	74.85	75.97	75.93	74.88	75.21
8	75.16	73.13	74.16	76.47	73.99	75.03	76.45	74.67	75.65	75.93	73.98	74.94
9	75.41	73.44	74.72	76.11	74.53	75.15	76.47	74.11	75.30	76.23	74.49	75.07
10	76.09	73.78	75.04	76.23	74.09	74.80	76.33	73.75	74.80	76.39	75.17	75.75
11	76.12	74.38	75.18	75.11	73.68	74.27	75.66	73.55	74.54	76.10	74.54	75.41
12	76.41	74.73	75.53	75.04	73.93	74.50	76.71	73.11	74.78	76.10	74.87	75.63
13	76.44	74.79	75.38	76.38	72.55	74.13	77.01	74.81	75.89	75.99	75.00	75.56
14	75.59	74.52	75.17	76.49	73.39	74.54	76.50	74.65	75.43	76.35	74.06	75.31
15	75.99	74.00	75.04	76.41	73.40	75.23	75.26	72.82	73.92	76.42	74.39	75.70
16	76.19	74.31	75.28	76.23	74.51	75.29	76.76	73.54	74.85	76.66	74.93	76.03
17	76.65	74.86	75.71	75.61	75.23	75.41	76.71	73.91	74.99	77.01	76.29	76.68
18	76.61	75.54	76.27	75.80	75.06	75.42	75.79	73.43	74.70	77.14	76.07	76.57
19	76.29	74.43	75.19	76.24	75.50	75.82	75.66	73.58	74.67	76.82	75.51	76.24
20	75.26	73.83	74.55	76.36	75.34	76.01	75.68	72.81	74.59	76.57	75.06	75.93
21	75.31	73.84	74.77	76.92	76.11	76.37	76.27	74.49	75.49	76.04	73.92	74.90
22	76.01	73.84	74.95	76.88	74.43	75.44	75.57	73.53	74.54	76.93	73.89	75.20
23	75.84	74.88	75.44	76.33	74.57	75.44	75.20	72.70	74.12	76.57	74.06	75.04
24	75.85	74.74	75.38	76.54	74.84	75.86	76.01	73.49	74.81	77.07	76.11	76.58
25	76.47	75.17	75.84	76.30	74.03	75.13	76.03	75.34	75.73	77.03	75.46	76.38
26	76.08	75.43	75.71	76.19	73.13	74.59	75.79	73.20	74.13	75.38	73.83	74.51
27	75.93	74.41	75.09	75.83	72.93	74.62	76.26	73.72	74.81	73.80	72.78	73.24
28	75.83	74.53	75.09	75.81	72.93	74.46	76.31	74.47	75.30	75.14	72.56	73.44
29	75.72	74.49	75.18	76.12	74.96	75.66	75.82	73.98	74.78	75.74	73.55	74.58
30	76.74	74.23	75.33	76.22	74.83	75.45	75.26	73.99	74.70	75.51	73.13	73.77
31	76.56	75.49	76.08	---	---	---	75.51	74.05	74.88	75.94	72.59	73.93
MONTH	76.74	71.97	75.16	76.92	72.55	75.18	77.01	72.67	74.93	77.14	72.56	75.20

14128600 COLUMBIA RIVER AT STEVENSON, WA--Continued

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	76.91	75.33	75.78	76.90	75.48	75.99	76.56	75.50	76.07	77.05	75.44	76.11
2	76.65	75.56	75.90	77.21	75.14	75.94	77.00	76.00	76.40	77.07	75.87	76.38
3	75.91	73.80	74.70	77.87	76.82	77.28	77.12	75.88	76.47	76.75	75.78	76.21
4	76.13	72.83	74.01	77.17	75.88	76.61	76.95	75.52	76.27	76.43	75.07	75.51
5	76.97	75.97	76.59	77.16	76.07	76.62	76.93	75.63	76.33	76.26	75.40	75.85
6	77.15	76.34	76.73	76.47	75.71	76.02	76.67	75.61	76.05	76.30	75.35	75.82
7	77.26	76.59	76.76	77.28	75.77	76.61	76.88	75.15	76.15	76.49	75.44	76.07
8	77.28	76.33	76.69	78.13	76.49	77.37	76.68	74.86	75.97	76.58	75.18	75.95
9	76.32	75.31	75.81	78.11	77.36	77.72	76.55	75.18	76.04	76.31	74.77	75.52
10	75.95	73.57	74.88	77.30	76.68	77.04	77.50	75.55	76.19	75.91	74.52	75.18
11	75.68	74.09	74.96	77.58	76.14	77.03	76.49	75.73	75.98	76.46	75.77	76.04
12	76.54	73.61	75.10	76.71	76.19	76.48	76.73	75.45	76.07	76.44	75.34	75.84
13	76.22	73.52	75.18	77.45	75.90	76.59	76.88	75.21	76.04	76.96	74.66	75.32
14	76.09	74.19	75.25	77.24	76.30	76.80	76.75	75.59	76.21	77.09	75.63	76.34
15	75.81	72.76	74.46	76.98	76.34	76.62	76.84	75.56	76.30	76.96	75.55	76.17
16	76.10	74.07	75.02	77.01	76.46	76.70	76.78	75.39	75.99	76.64	75.78	76.23
17	76.72	74.76	75.77	77.26	75.84	76.64	77.36	75.71	76.57	76.55	75.72	76.17
18	76.63	74.57	75.60	76.99	75.18	76.29	76.78	75.76	76.35	76.12	75.56	75.78
19	76.45	75.30	75.91	76.76	75.81	76.09	76.59	75.09	75.77	76.64	75.14	75.78
20	76.28	74.59	75.35	76.72	75.64	76.06	76.18	75.33	75.68	76.43	74.35	75.28
21	76.77	73.27	74.77	76.86	75.69	76.13	76.88	74.93	75.69	74.64	73.62	74.35
22	76.94	73.68	75.31	76.65	74.89	75.74	76.84	75.29	76.09	75.62	74.00	75.07
23	78.56	75.54	76.77	76.35	75.07	75.67	77.25	74.91	75.95	75.94	74.92	75.55
24	77.96	74.79	76.90	76.33	74.83	75.61	77.25	75.67	76.39	75.68	73.92	74.75
25	77.96	74.68	76.28	76.36	74.54	75.45	77.26	75.96	76.54	75.67	73.80	75.01
26	77.73	74.68	75.90	76.43	75.44	75.99	76.98	75.95	76.42	75.35	74.50	74.86
27	76.51	75.16	75.74	76.55	75.38	75.93	77.30	75.79	76.40	77.12	74.55	75.62
28	77.08	75.54	76.30	76.35	75.64	75.99	76.98	75.92	76.44	77.12	76.31	76.68
29	---	---	---	76.01	75.63	75.81	77.11	75.85	76.43	78.18	76.40	77.44
30	---	---	---	76.72	75.25	75.92	76.50	75.52	75.94	77.89	76.61	77.20
31	---	---	---	76.77	76.03	76.41	---	---	---	76.59	75.24	75.98
MONTH	78.56	72.76	75.66	78.13	74.54	76.36	77.50	74.86	76.17	78.18	73.62	75.81
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	76.51	75.01	75.67	76.44	74.84	75.51	76.22	75.30	75.81	76.49	74.98	75.68
2	76.75	76.02	76.35	75.99	74.77	75.45	76.14	75.46	75.77	75.84	74.10	75.03
3	76.92	75.71	76.19	75.82	74.90	75.39	76.32	74.98	75.76	76.26	75.14	75.86
4	77.20	76.11	76.84	75.81	75.04	75.38	76.24	74.85	75.51	76.80	75.86	76.32
5	78.25	76.16	77.14	76.62	74.66	75.57	76.15	73.53	74.73	76.64	76.01	76.43
6	77.68	76.01	76.73	76.55	75.43	75.78	76.32	74.46	75.43	76.39	75.48	75.83
7	78.28	76.15	77.12	75.81	74.85	75.27	76.37	74.67	75.68	75.79	75.13	75.35
8	77.92	76.76	77.35	76.05	74.30	75.20	76.09	74.47	75.37	75.35	73.95	74.59
9	77.85	77.07	77.45	76.19	72.82	74.29	76.20	75.19	75.68	75.16	74.57	74.82
10	77.84	76.40	76.99	76.70	74.98	75.90	75.97	74.80	75.37	74.97	74.15	74.57
11	77.76	76.26	76.98	77.25	76.22	76.76	75.25	74.02	74.46	74.96	73.77	74.33
12	77.14	76.47	76.82	76.79	75.22	76.16	74.33	73.09	73.69	75.42	74.41	74.94
13	76.88	75.82	76.30	76.52	75.78	76.16	73.59	72.43	72.98	75.33	74.58	74.95
14	77.01	76.01	76.44	76.94	75.63	76.09	74.26	71.61	72.60	75.27	74.68	75.02
15	76.56	75.74	76.27	77.02	75.84	76.54	75.94	74.24	75.12	76.02	74.70	75.39
16	77.09	76.14	76.54	77.06	75.97	76.53	75.97	75.55	75.73	76.01	74.72	75.59
17	76.95	75.72	76.21	77.39	75.26	76.26	75.82	74.09	74.88	76.23	74.30	75.42
18	76.93	75.94	76.36	76.97	75.75	76.07	75.79	73.33	74.38	76.19	74.65	75.43
19	77.48	76.16	76.80	76.28	75.35	75.92	76.22	74.87	75.40	76.28	75.46	75.94
20	77.49	75.38	76.38	76.51	75.69	76.24	76.19	75.13	75.71	75.92	75.03	75.37
21	76.78	75.03	75.99	76.89	75.00	76.06	76.32	74.72	75.59	75.68	75.08	75.33
22	76.93	75.58	76.08	76.83	75.22	76.12	76.54	74.79	75.79	75.92	74.62	75.40
23	77.15	75.18	76.14	76.74	75.75	76.28	76.05	74.52	75.24	76.15	75.12	75.73
24	77.52	74.91	76.28	76.45	75.26	75.79	75.63	74.38	74.89	76.54	74.53	75.41
25	77.10	75.29	76.14	76.85	74.96	75.96	76.15	74.26	75.20	76.19	75.32	75.87
26	76.76	74.73	76.12	76.73	74.82	75.74	76.37	75.12	75.76	76.16	74.64	75.43
27	76.53	75.18	75.73	76.23	75.08	75.59	76.78	74.70	75.76	75.45	74.27	74.77
28	76.15	75.09	75.52	76.34	74.67	75.56	76.32	73.83	74.99	74.43	72.77	73.39
29	76.66	75.71	76.12	76.75	74.95	75.71	76.45	74.60	75.63	76.20	73.17	74.23
30	76.69	74.92	75.77	76.34	74.61	75.50	76.48	75.43	75.99	76.08	74.58	75.13
31	---	---	---	76.48	75.54	76.02	76.51	75.60	76.08	---	---	---
MONTH	78.28	74.73	76.43	77.39	72.82	75.83	76.78	71.61	75.19	76.80	72.77	75.25
YEAR	78.56	71.61	75.60									

14128860 COLUMBIA RIVER AT BONNEVILLE DAM, OR

LOCATION.--Lat 45°38'36", long 121°56'21", in sec.22, T.2 N., R.7 E., Multnomah County, Hydrologic Unit 17080001, on north shore of Bradford Island, 200 ft upstream from Bonneville Dam, at mile 146.1.

DRAINAGE AREA.--239,900 mi^2, approximately.

PERIOD OF RECORD.--May 1981 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated by many reservoirs upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height recorded, 77.95 ft Jan. 21, 1986; minimum, 69.65 ft Oct. 25, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum gage height recorded, 77.95 ft Jan. 21; minimum recorded, 71.11 ft Oct. 7.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	75.99	74.20	75.07	75.88	73.77	74.60	75.95	74.12	74.72	75.28	73.57	74.41
2	75.67	73.82	74.95	76.32	74.06	75.24	74.64	71.68	73.45	75.49	73.92	74.79
3	76.06	73.82	74.85	76.13	74.10	74.85	74.89	71.35	72.97	75.78	72.87	74.23
4	75.90	74.52	75.27	75.57	73.69	74.51	75.88	73.82	74.65	75.73	74.51	75.10
5	75.34	74.08	74.50	75.61	74.18	74.86	75.46	72.93	74.40	75.41	73.29	74.05
6	74.69	72.16	73.09	75.11	72.77	73.99	76.26	73.71	75.05	74.98	72.79	73.65
7	73.45	71.11	71.94	76.02	73.09	74.62	76.04	74.11	75.37	75.24	74.05	74.54
8	74.67	72.40	73.54	75.51	72.98	74.21	75.79	73.90	75.01	75.40	73.16	74.34
9	74.84	72.71	74.15	75.56	73.55	74.42	75.64	73.09	74.49	75.56	73.81	74.43
10	75.55	72.94	74.44	75.57	72.85	73.91	75.59	72.64	73.72	75.92	74.41	75.11
11	75.50	73.70	74.56	74.34	72.46	73.36	74.69	72.12	73.37	75.56	73.89	74.84
12	75.92	74.06	74.98	74.29	72.76	73.59	75.64	71.80	73.68	75.60	74.16	75.10
13	75.80	74.30	74.88	75.77	71.69	73.34	75.94	73.46	74.70	75.53	74.32	74.94
14	75.09	73.78	74.63	76.04	72.47	73.73	75.29	73.69	74.49	77.77	73.37	74.82
15	75.48	73.41	74.53	75.76	72.22	74.35	74.67	71.98	73.19	75.82	73.59	75.02
16	75.73	73.62	74.72	75.67	74.02	74.88	75.74	72.45	73.77	77.77	74.18	75.40
17	76.15	74.19	75.16	75.29	74.77	75.01	75.65	72.65	73.95	76.34	75.57	76.09
18	76.04	74.87	75.65	75.24	74.35	74.86	75.09	72.38	73.77	76.58	75.42	75.91
19	75.64	73.71	74.57	75.72	74.92	75.32	74.97	72.68	73.95	76.10	74.74	75.52
20	74.59	73.25	74.01	75.58	74.20	75.13	75.02	71.92	73.82	75.93	74.12	75.14
21	74.83	73.25	74.22	76.21	75.14	75.51	75.54	73.45	74.68	77.95	72.98	74.23
22	75.52	73.14	74.41	75.96	73.51	74.66	75.10	72.57	73.77	76.37	73.08	74.48
23	75.22	74.20	74.82	75.72	73.80	74.69	74.85	71.76	73.53	76.05	73.01	74.27
24	75.32	74.02	74.77	75.85	73.97	75.01	75.63	72.97	74.34	76.46	75.40	75.83
25	75.91	74.25	75.21	75.39	72.62	74.12	75.54	74.68	75.19	76.44	74.75	75.73
26	75.57	74.67	75.09	75.60	72.18	73.85	75.23	72.46	73.59	74.80	72.96	73.79
27	75.43	73.66	74.47	75.20	72.11	73.96	75.67	72.87	74.24	73.14	71.95	72.47
28	75.46	73.87	74.59	75.47	72.19	73.98	75.79	73.81	74.72	74.65	71.61	72.75
29	75.29	73.72	74.60	75.53	74.24	75.01	75.26	73.18	74.18	75.14	72.75	73.90
30	76.32	73.57	74.87	75.94	74.24	74.92	74.88	73.22	74.10	74.78	72.06	72.87
31	75.93	74.86	75.40	---	---	---	75.00	73.27	74.29	75.30	71.69	73.19
MONTH	76.32	71.11	74.58	76.32	71.69	74.48	76.26	71.35	74.17	77.95	71.61	74.55

14128860 COLUMBIA RIVER AT BONNEVILLE DAM, OR--Continued

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	76.35	74.56	75.11	---	---	---	75.22	73.59	74.54	76.06	74.14	74.95
2	75.99	74.70	75.17	---	---	---	75.52	74.15	74.82	76.17	74.34	75.24
3	75.15	72.77	73.92	---	---	---	75.85	74.01	74.98	75.90	74.73	75.26
4	75.57	71.39	73.02	---	---	---	75.44	73.59	74.67	75.78	74.23	74.70
5	76.26	75.29	75.84	75.95	74.25	75.14	75.83	74.17	74.93	75.43	74.19	74.80
6	76.45	75.43	75.94	75.08	74.16	74.56	75.78	73.88	74.90	75.07	73.97	74.58
7	76.43	75.62	75.97	75.34	74.13	74.87	75.69	73.75	74.97	75.48	74.24	75.04
8	76.48	75.39	75.87	76.39	73.54	75.04	75.52	73.30	74.93	75.80	74.14	74.90
9	75.51	74.26	74.90	76.15	74.74	75.17	75.81	73.26	75.04	74.89	73.23	74.18
10	---	---	---	75.34	74.16	74.79	76.58	74.42	75.25	74.62	72.99	73.94
11	---	---	---	75.94	73.94	75.05	75.06	74.32	74.74	75.62	74.27	74.81
12	---	---	---	75.18	74.10	74.62	75.83	73.89	74.95	75.55	73.34	74.39
13	---	---	---	76.02	73.36	74.54	75.98	73.72	74.84	75.84	73.17	74.02
14	---	---	---	74.99	72.69	74.48	75.43	74.00	74.68	76.00	74.28	75.33
15	---	---	---	75.19	73.87	74.38	75.79	73.79	75.10	75.57	73.96	74.84
16	---	---	---	75.46	74.19	74.78	75.62	74.06	74.73	75.51	74.33	74.96
17	---	---	---	75.88	73.55	74.98	76.33	74.26	75.36	75.72	74.23	75.17
18	---	---	---	75.64	73.55	74.70	75.59	74.16	74.94	75.28	74.58	74.97
19	---	---	---	75.29	73.98	74.52	75.28	74.13	74.69	75.60	73.49	74.62
20	---	---	---	75.18	73.88	74.36	75.56	74.56	74.96	75.11	72.86	73.98
21	---	---	---	75.31	73.83	74.59	75.93	73.39	74.79	73.38	71.48	72.69
22	---	---	---	75.44	73.58	74.56	75.86	73.88	75.05	74.11	72.28	73.42
23	---	---	---	75.48	73.94	74.66	76.15	73.39	74.81	75.17	73.19	74.09
24	---	---	---	75.86	73.69	74.67	75.74	74.00	75.00	74.54	72.92	73.87
25	---	---	---	75.20	73.75	74.27	75.75	74.59	75.26	75.14	72.85	74.36
26	---	---	---	75.02	73.71	74.38	75.74	74.30	74.98	74.74	73.58	74.14
27	---	---	---	75.25	73.50	74.54	76.34	74.40	75.22	76.01	73.30	74.46
28	---	---	---	75.18	74.22	74.63	76.07	74.71	75.28	75.74	74.41	75.06
29	---	---	---	75.15	74.11	74.74	76.38	73.90	75.06	76.22	74.21	75.38
30	---	---	---	74.98	72.85	74.19	75.49	74.24	74.85	75.42	73.20	74.51
31	---	---	---	75.18	73.69	74.43	---	---	---	73.88	71.25	72.63
MONTH	---	---	---	---	---	---	76.58	73.26	74.94	76.22	71.25	74.49
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	73.71	71.47	72.43	75.94	74.28	75.00						
2	73.73	72.18	72.96	75.51	74.13	74.88						
3	74.72	72.08	72.85	75.51	74.27	74.87						
4	74.33	71.55	73.48	75.52	74.64	75.04						
5	75.70	72.48	74.18	76.39	74.28	75.24						
6	74.53	72.76	73.71	76.28	75.09	75.46						
7	76.00	72.38	74.40	75.52	74.43	74.93						
8	75.47	73.65	74.74	75.56	73.88	74.77						
9	75.75	74.25	75.12	75.93	71.96	73.76						
10	76.08	74.27	75.02	76.22	74.31	75.42						
11	76.01	74.16	75.04	76.58	75.20	76.05						
12	75.36	74.40	75.01	76.33	74.40	75.46						
13	75.44	74.10	74.67	76.09	74.90	75.47						
14	75.70	74.44	75.03	---	---	---						
15	75.16	74.28	74.86	---	---	---						
16	75.53	74.60	75.06	---	---	---						
17	75.43	74.04	74.65	---	---	---						
18	75.48	74.39	74.88	---	---	---						
19	76.09	74.45	75.37	---	---	---						
20	75.93	73.92	75.00	---	---	---						
21	75.81	73.75	74.84	---	---	---						
22	75.94	74.52	75.03	---	---	---						
23	76.04	74.05	74.99	---	---	---						
24	76.41	73.72	75.20	---	---	---						
25	76.15	74.14	75.11	---	---	---						
26	76.07	73.44	75.07	---	---	---						
27	75.96	74.40	75.01	---	---	---						
28	75.61	74.40	74.90	---	---	---						
29	76.22	75.12	75.56	---	---	---						
30	76.22	74.26	75.22	---	---	---						
31	---	---	---	---	---	---						
MONTH	76.41	71.47	74.65	---	---	---						

14128870 COLUMBIA RIVER BELOW BONNEVILLE DAM, OR

LOCATION.--Lat 45°38'20", long 121°57'16", in sec.21, T.2 N., R.7 E., Multnomah County, Hydrologic Unit 17080001, on left bank 0.4 mi downstream from Bonneville Dam left bank powerhouse, 0.5 mi upstream from Tanner Creek, and at mile 145.0.

DRAINAGE AREA.--239,900 mi^2, approximately.

PERIOD OF RECORD.--May 1981 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated by many reservoirs upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 30.40 ft June 11, 1981; minimum, 7.00 ft Oct. 4, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 29.04 ft June 4; minimum, 7.77 ft Sept. 29.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	12.55	11.22	12.03	15.27	14.00	14.73	16.14	14.21	15.17	12.24	11.22	11.71
2	13.25	12.36	12.96	13.80	12.26	12.66	18.09	15.39	16.54	12.36	11.59	12.01
3	12.70	11.44	11.94	12.58	11.26	11.83	18.48	14.39	16.88	12.52	11.88	12.26
4	12.85	12.19	12.61	12.22	11.02	11.39	17.27	13.56	14.86	12.80	11.47	11.89
5	13.01	10.12	11.50	13.72	11.23	12.84	16.85	15.56	16.09	12.08	10.83	11.58
6	11.20	9.52	10.03	14.01	13.34	13.79	15.81	14.77	15.29	12.36	11.45	11.89
7	14.43	10.53	12.61	15.95	13.79	15.01	16.29	14.89	15.38	13.52	11.66	12.81
8	12.97	11.32	12.49	16.20	14.41	15.80	17.27	15.58	16.18	13.41	12.72	13.03
9	12.71	11.06	12.14	15.81	14.13	15.12	18.70	17.06	17.56	13.98	12.16	12.82
10	13.04	12.61	12.87	16.41	15.33	15.93	18.34	17.59	17.93	13.90	12.98	13.57
11	13.07	12.04	12.53	17.34	15.20	16.33	18.84	17.15	18.05	13.56	11.94	12.54
12	12.77	11.76	12.32	17.87	15.93	16.88	18.88	17.12	17.75	12.83	11.33	11.96
13	12.69	9.54	10.54	17.06	14.07	15.92	19.17	17.79	18.83	13.64	12.66	13.16
14	11.80	9.28	10.77	17.23	14.63	15.83	19.06	15.92	17.04	14.28	12.24	12.74
15	12.38	10.80	11.64	18.57	14.99	16.42	15.98	13.41	14.18	14.47	13.24	13.70
16	12.67	11.66	12.10	15.53	11.07	12.07	18.02	13.74	16.54	14.04	12.86	13.44
17	12.85	12.10	12.40	11.56	10.58	10.90	18.13	15.53	17.04	14.13	11.97	12.95
18	13.71	12.39	13.04	14.27	10.88	13.20	17.24	14.71	15.88	16.41	11.40	14.21
19	14.36	11.33	12.32	15.64	12.50	13.25	15.09	13.94	14.34	15.68	13.48	14.75
20	11.72	10.37	10.90	17.69	15.73	16.84	15.29	13.66	14.25	15.87	15.49	15.69
21	12.14	11.13	11.60	18.11	16.04	17.47	15.44	13.93	14.90	15.55	14.02	14.78
22	12.15	11.49	11.83	17.15	14.75	15.79	15.50	13.03	14.23	14.70	13.62	13.92
23	13.36	11.85	12.64	18.05	14.61	16.02	14.15	11.05	12.40	15.72	13.43	14.95
24	13.22	12.54	12.86	18.44	14.96	16.96	11.67	10.11	10.75	17.06	12.70	15.29
25	14.09	12.36	13.30	18.84	16.61	17.90	12.86	11.84	12.37	16.08	14.37	15.18
26	14.05	12.24	13.27	16.39	14.74	15.20	12.83	10.93	11.90	16.08	13.31	14.40
27	13.15	11.88	12.71	15.70	13.58	14.77	13.23	10.62	12.03	14.54	13.43	13.84
28	12.71	11.25	12.07	15.68	12.53	13.35	13.91	12.25	12.86	14.14	12.20	13.11
29	13.29	11.39	12.46	17.05	13.39	15.47	13.01	11.39	12.19	13.35	12.63	13.07
30	13.03	11.58	12.16	16.34	14.24	14.71	13.29	11.76	12.39	14.75	13.51	14.38
31	15.39	12.94	14.17	---	---	---	12.83	11.78	12.24	14.07	12.91	13.65
MONTH	15.39	9.28	12.22	18.84	10.58	14.81	19.17	10.11	14.97	17.06	10.83	13.40

14128870 COLUMBIA RIVER BELOW BONNEVILLE DAM, OR--Continued

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	14.71	13.76	14.15	25.89	25.59	25.75	23.30	21.99	22.56	21.46	20.46	21.03
2	15.21	14.64	14.92	25.65	24.62	25.12	23.75	21.99	22.63	21.39	20.46	20.95
3	15.67	13.53	14.98	25.22	24.40	24.61	23.31	22.27	22.62	20.79	19.80	20.19
4	17.59	13.68	15.82	24.66	22.70	23.88	23.18	22.48	22.75	19.91	18.53	18.93
5	16.46	13.81	15.13	22.93	21.78	22.26	23.13	21.29	22.12	20.99	18.54	19.95
6	16.44	15.14	16.01	21.79	21.32	21.54	21.75	20.29	20.80	21.70	20.36	21.08
7	17.46	15.11	16.24	23.99	21.24	22.49	21.21	20.39	20.69	21.20	19.67	20.27
8	17.66	15.18	16.46	26.58	23.90	25.03	21.70	19.40	20.03	21.18	19.88	20.23
9	16.96	16.60	16.78	27.06	25.95	26.55	21.29	18.05	19.62	22.00	20.57	21.23
10	17.98	16.62	17.64	26.14	25.07	25.62	20.31	19.18	19.50	21.07	20.51	20.78
11	17.97	17.16	17.64	25.17	24.18	24.82	21.81	20.45	21.03	21.92	20.52	21.04
12	17.50	15.93	17.01	24.47	23.59	23.93	22.51	19.99	20.61	22.87	21.16	21.81
13	17.25	15.93	16.90	25.45	23.31	24.22	21.74	19.67	20.70	21.91	20.02	21.31
14	17.42	17.16	17.28	26.66	24.99	25.40	23.25	21.50	22.35	21.85	18.95	20.25
15	17.60	13.86	14.96	25.60	24.61	25.24	22.13	21.04	21.46	22.12	21.01	21.64
16	15.57	13.98	14.68	24.83	23.69	24.34	21.86	21.04	21.29	22.12	21.17	21.68
17	18.40	15.50	17.13	24.27	22.39	23.13	21.74	21.05	21.28	21.89	19.88	20.40
18	19.05	18.32	18.76	24.07	21.86	22.39	22.56	21.42	22.04	20.01	18.43	18.95
19	19.83	18.78	19.15	22.71	21.53	22.09	21.99	18.77	20.70	22.34	18.41	20.32
20	20.31	19.35	19.90	23.08	22.40	22.61	18.76	18.13	18.35	21.87	19.81	21.09
21	20.76	18.25	19.63	22.97	21.53	22.04	20.05	18.00	18.99	23.21	20.19	21.96
22	20.52	18.99	19.83	21.27	20.03	20.36	21.11	19.47	20.16	23.55	21.81	22.54
23	26.45	20.12	23.29	20.27	18.43	19.01	21.38	19.32	20.62	22.80	21.15	22.38
24	27.78	25.55	26.64	21.19	14.72	19.11	22.88	21.26	22.01	21.12	17.90	19.51
25	28.15	27.28	27.89	21.46	14.99	19.78	23.49	21.25	21.98	18.09	17.12	17.65
26	28.03	26.61	27.47	23.03	21.06	22.45	22.98	21.50	22.42	18.43	16.96	17.65
27	26.94	25.92	26.49	22.72	21.72	22.09	23.08	20.74	21.70	22.02	18.41	20.05
28	26.33	25.33	25.99	22.38	21.18	21.74	22.41	20.60	21.35	24.06	21.56	22.84
29	---	---	---	21.32	19.62	20.32	23.59	20.24	22.02	25.47	23.65	24.50
30	---	---	---	24.22	19.34	22.30	22.44	19.76	20.77	26.44	24.83	25.72
31	---	---	---	25.26	23.18	24.23	---	---	---	26.99	25.77	26.42
MONTH	28.15	13.53	18.88	27.06	14.72	23.05	23.75	18.00	21.17	26.99	16.96	21.11
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	26.99	25.26	26.41	13.80	12.23	12.93	16.23	12.46	13.56	9.42	7.97	8.95
2	27.48	26.45	26.90	13.72	12.99	13.46	14.13	13.68	13.92	10.25	8.98	9.63
3	27.50	26.04	26.86	13.87	10.52	12.85	14.13	13.58	13.82	13.04	9.95	11.68
4	29.04	26.69	27.03	10.76	10.01	10.36	13.97	11.98	13.49	15.49	11.72	13.65
5	27.65	25.50	26.37	10.52	9.66	10.05	12.24	10.38	11.39	13.81	12.07	13.02
6	26.12	25.18	25.61	10.41	9.66	9.97	12.62	11.88	12.22	13.13	11.38	12.10
7	26.36	24.74	25.32	10.54	9.74	10.08	12.79	12.12	12.41	13.33	12.65	12.98
8	25.73	24.21	24.84	13.20	9.70	11.19	12.69	10.34	11.90	13.37	11.55	12.60
9	24.97	23.09	24.01	13.97	10.57	12.42	12.86	11.66	12.34	13.00	11.07	12.08
10	23.58	21.82	22.51	13.92	10.33	12.38	13.75	12.53	13.12	12.30	10.76	11.43
11	22.44	21.59	21.90	16.73	13.20	15.47	13.85	12.67	13.10	11.46	10.05	10.68
12	22.95	20.54	21.49	16.92	14.00	15.70	14.16	12.79	13.60	10.85	10.13	10.42
13	20.88	19.71	20.22	16.85	13.84	15.23	14.35	13.82	14.12	11.24	10.10	10.42
14	19.79	18.46	19.23	16.87	13.88	15.76	14.48	12.07	13.42	10.90	10.12	10.48
15	19.45	18.43	18.89	17.44	14.07	15.61	13.21	11.83	12.52	11.32	10.28	10.66
16	19.97	19.16	19.43	18.15	16.52	17.12	12.33	11.36	11.82	13.08	10.98	11.85
17	20.08	18.75	19.67	17.39	14.33	15.51	11.41	9.87	10.53	12.99	11.42	12.16
18	19.81	19.22	19.47	15.95	14.13	15.30	12.90	10.01	12.07	11.69	10.52	11.08
19	20.15	19.30	19.56	14.39	13.74	14.07	12.79	12.03	12.43	11.86	9.30	10.91
20	19.63	17.37	18.66	16.49	12.90	14.30	12.62	11.85	12.28	11.84	10.40	11.12
21	18.56	16.80	17.31	17.24	14.00	15.62	12.64	12.06	12.31	11.13	9.47	10.12
22	16.84	15.61	16.14	18.17	14.34	16.51	12.49	11.92	12.20	11.06	10.20	10.55
23	18.68	15.05	16.88	18.02	14.50	15.88	12.71	11.08	12.25	11.57	10.23	10.97
24	18.28	15.47	16.44	17.53	13.81	15.20	11.11	9.48	10.16	13.09	9.64	11.88
25	16.18	15.53	15.76	15.80	14.10	14.73	10.42	9.25	9.69	12.22	11.16	11.68
26	17.50	15.49	16.63	15.76	13.95	14.59	13.23	9.41	10.96	12.46	11.65	12.01
27	16.98	15.33	15.72	15.95	13.88	14.60	12.15	11.19	11.56	12.22	9.26	10.77
28	15.57	13.58	14.20	15.63	12.59	13.80	12.07	10.39	11.64	9.73	8.11	9.06
29	13.91	13.11	13.58	15.89	12.24	13.40	11.09	8.60	9.48	10.06	7.77	9.14
30	13.77	13.11	13.49	15.57	12.19	13.19	10.48	8.03	8.98	11.90	9.62	11.10
31	---	---	---	15.51	12.19	13.05	9.21	8.27	8.67	---	---	---
MONTH	29.04	13.11	20.35	18.17	9.66	13.88	16.23	8.03	12.00	15.49	7.77	11.17
YEAR	29.04	7.77	16.39									

SUMMER LAKE BASIN

430701121040001 SILVER LAKE RANGER STATION, OR

LOCATION.--Lat 43°07'01", Long 121°04'00", in NE¼SW¼ sec.21, T.28 S., R.14 E., Lake County, Hydrologic Unit 17120005, at Silver Lake Ranger Station, 0.5 mi south of State Highway 31, and 1 mi southwest of town of Silver Lake.

PERIOD OF RECORD.--August 1983 to current year (weekly composite).

INSTRUMENTATION.--The wet-deposition sample collector is an Aerochem Metrics Model 301* wet/dry deposition collector. The sensing circuit is activated by wet deposition, causing the motor to move the cover from the wet bucket and cover the dry bucket. When the heater in the sensor evaporates the precipitation, the cycle is reversed. The sample buckets are polyethylene and have a capacity of 13 liters (28.6 cm inside diameter, 23.2 cm deep). The opening of the collector is approximately 5 ft above ground level.

REMARKS.--Inches of precipitation obtained from an on-site recording weighing-bucket gage.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	ATM DEP WET TOTAL FOR PERIOD (IN)	PRECIP-ITATION TOTAL INCHES/ WEEK	COL-LECTOR EFFI-CIENCY WET DEPOS. PERCENT	SPE-CIFIC CON-DUCT-ANCE (US/CM)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM)	PH (STAND-ARD UNITS)	PH LAB (STAND-ARD UNITS)	CALCIUM DIS-SOLVED (MG/L AS CA)
OCT 01-08	1530	--	0.0	--	--	19	--	5.99	0.34
OCT 08-15	1535	0.0	0.0	--	--	--	--	6.26	--
OCT 15-22	1525	0.28	0.28	48	4	7	4.98	6.20	0.09
OCT 22-29	1515	0.25	0.25	55	4	4	5.07	5.96	0.06
OCT 29-NOV 05	1630	0.0	0.0	--	--	10	--	5.98	0.20
NOV 05-12	1640	0.20	0.20	62	4	3	5.07	6.16	0.05
NOV 12-19	1620	0.05	0.05	1.0	--	--	--	--	--
NOV 19-26	1545	0.05	0.05	37	--	4	--	5.96	0.15
NOV 26-DEC 03	1530	0.77	0.77	81	3	2	5.21	5.43	0.02
DEC 03-10	1540	0.07	0.07	117	4	5	5.14	6.11	0.12
DEC 10-17	1625	0.0	0.0	--	--	--	--	--	--
DEC 17-24	1625	0.0	0.0	--	--	--	--	--	--
DEC 24-31	1600	0.0	0.0	--	--	--	--	--	--
31...	1545	0.19	0.19	61	--	--	--	--	--
JAN 07-14	1650	0.07	0.07	92	3	3	5.01	5.93	0.07
JAN 14-21	1617	0.64	0.64	84	3	3	5.14	5.51	0.01
JAN 21-28	1551	0.19	0.19	74	6	4	4.89	5.74	0.08
JAN 28-FEB 04	1610	0.12	0.12	78	4	4	5.07	6.12	0.05
FEB 04-11	1610	0.01	0.01	77	--	8	--	5.98	<0.08
FEB 11-18	1530	1.82	1.82	96	3	2	5.08	5.41	0.01

* The use of the brand name in this report is for identification purposes only and does not imply endorsement by the U.S. Geological Survey.

SUMMER LAKE BASIN

430701121040001 SILVER LAKE RANGER STATION, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS NO3)	PHOS-PHATE, DIS-SOLVED (MG/L AS PO4)
OCT 01-08	0.19	1.2	0.79	1.5	2.5	<0.05	0.54	<0.01
OCT 08-15	--	--	--	--	--	--	--	--
OCT 15-22	0.03	0.53	0.55	0.3	0.69	<0.02	0.42	<0.01
OCT 22-29	0.05	0.32	0.30	<0.1	0.51	<0.02	<0.03	0.21
OCT 29-NOV 05	0.16	0.33	0.17	1.9	0.32	<0.09	<0.14	<0.01
NOV 05-12	0.02	0.16	0.14	0.1	0.27	<0.02	<0.03	<0.01
NOV 12-19	--	--	--	--	--	--	--	--
NOV 19-26	0.09	0.11	0.03	0.1	0.22	<0.06	0.16	<0.01
NOV 26-DEC 03	0.01	0.01	<0.01	<0.1	<0.03	<0.02	<0.03	<0.01
DEC 03-10	0.04	0.28	0.32	0.2	0.45	<0.02	<0.03	0.01
DEC 10-17	--	--	--	--	--	--	--	--
DEC 17-24	--	--	--	--	--	--	--	--
DEC 24-31	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--
JAN 07-14	0.02	0.10	0.08	0.1	0.21	<0.02	<0.03	<0.01
JAN 14-21	<0.01	0.02	0.04	<0.1	0.07	<0.02	<0.03	<0.01
JAN 21-28	0.03	0.08	0.04	0.2	0.13	<0.02	0.47	0.02
JAN 28-FEB 04	0.03	0.09	0.11	0.2	0.25	0.22	0.33	<0.01
FEB 04-11	0.05	0.55	0.06	<0.3	1.0	<0.19	<0.28	<0.09
FEB 11-18	<0.01	0.01	<0.01	<0.1	<0.03	<0.02	<0.03	<0.01

SUMMER LAKE BASIN

430701121040001 SILVER LAKE RANGER STATION, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	ATM DEP WET TOTAL FOR PERIOD (IN)	PRECIP-ITATION TOTAL INCHES/ WEEK	COL-LECTOR EFFI-CIENCY WET DEPOS. PERCENT	SPE-CIFIC CON-DUCT-ANCE (US/CM)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM)	PH (STAND-ARD UNITS)	PH LAB (STAND-ARD UNITS)	CALCIUM DIS-SOLVED (MG/L AS CA)
FEB 18-25	1620	1.16	1.16	85	2	2	5.20	5.60	<0.01
FEB 25-MAR 04	1630	0.0	0.0	--	--	--	--	7.33	--
MAR 04-11	1620	0.63	0.63	95	3	2	5.11	5.53	0.01
MAR 11-18	2030	0.0	0.0	--	--	34	--	7.03	0.16
MAR 18-25	1615	0.20	0.20	85	4	4	5.07	6.26	0.13
MAR 25-APR 01	1625	0.0	0.0	--	--	--	--	--	--
APR 01-08	1640	0.0	0.0	--	--	--	--	--	--
APR 08-15	1930	0.05	0.05	83	--	17	--	4.98	0.36
APR 15-22	1615	0.11	0.11	95	9	6	4.75	5.47	0.13
APR 22-29	1620	0.06	0.06	95	10	9	4.77	5.70	0.20
APR 29-MAY 06	1515	0.91	0.91	102	4	3	5.02	5.69	0.07
MAY 06-13	1520	0.14	0.14	98	6	5	4.84	5.62	0.08
MAY 13-20	1515	0.0	0.0	--	--	--	--	--	--
MAY 20-27	1520	0.63	0.63	91	4	5	5.08	5.12	0.09
MAY 27-JUN 03	1515	0.55	0.55	92	18	9	4.50	5.19	0.35
JUN 03-10	1520	0.03	0.03	123	--	13	--	5.29	0.37
JUN 10-17	1435	0.11	0.11	77	11	8	4.62	5.29	0.41
JUN 17-24	1410	0.18	0.18	107	4	3	5.05	5.68	0.05
JUN 24-JUL 01	1420	0.19	0.19	85	--	--	--	--	--

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS NO3)	PHOS-PHATE, DIS-SOLVED (MG/L AS PO4)
FEB 18-25	<0.01	0.02	0.01	<0.1	<0.03	<0.02	<0.03	<0.01
FEB 25-MAR 04	--	--	--	--	--	--	--	--
MAR 04-11	<0.01	0.04	0.03	0.1	0.06	<0.02	0.13	<0.01
MAR 11-18	0.04	0.45	0.41	1.3	1.2	<0.29	<0.44	<0.15
MAR 18-25	0.03	0.23	0.21	0.2	0.41	0.05	0.16	<0.01
MAR 25-APR 01	--	--	--	--	--	--	--	--
APR 01-08	--	--	--	--	--	--	--	--
APR 08-15	0.09	0.44	0.31	0.6	0.75	<0.02	4.6	<0.01
APR 15-22	0.03	0.10	0.13	0.5	0.53	0.09	0.61	<0.01
APR 22-29	0.05	0.28	0.23	0.8	0.45	0.38	0.92	<0.01
APR 29-MAY 06	0.01	0.04	0.03	0.3	0.07	0.05	0.22	<0.01
MAY 06-13	0.02	0.13	0.16	0.5	0.26	0.05	0.33	<0.01
MAY 13-20	--	--	--	--	--	--	--	--
MAY 20-27	0.01	0.04	0.04	0.4	0.07	0.07	0.46	<0.01
MAY 27-JUN 03	0.07	0.09	0.15	0.8	0.13	0.03	1.1	<0.01
JUN 03-10	0.09	0.34	0.31	1	0.50	0.54	2.2	<0.01
JUN 10-17	0.09	0.16	0.28	0.6	0.27	<0.02	0.26	<0.01
JUN 17-24	0.02	0.18	0.17	0.1	0.27	<0.02	0.18	<0.01
JUN 24-JUL 01	--	--	--	--	--	--	--	--

CHEMICAL QUALITY OF PRECIPITATION

SUMMER LAKE BASIN

430701121040001 SILVER LAKE RANGER STATION, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	ATM DEP WET TOTAL FOR PERIOD (IN)	PRECIP-ITATION TOTAL INCHES/ WEEK	COL-LECTOR EFFI-CIENCY WET DEPOS. PERCENT	SPE-CIFIC CON-DUCT-ANCE (US/CM)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM)	PH (STAND-ARD UNITS)	PH LAB (STAND-ARD UNITS)	CALCIUM DIS-SOLVED (MG/L AS CA)
JUL 01-08	1455	0.13	0.13	107	20	8	4.34	5.50	0.12
JUL 08-15	1455	0.0	0.0	--	--	--	--	--	--
JUL 15-22	1615	0.0	0.0	--	--	--	--	--	--
JUL 22-29	1545	0.0	0.0	--	--	--	--	--	--
JUL 29-AUG 05	1515	0.0	0.0	--	--	--	--	5.98	--
AUG 05-12	1500	0.0	0.0	--	--	--	--	--	--
AUG 12-19	1500	0.0	0.0	--	--	--	--	--	--
AUG 19-26	1515	0.01	0.01	161	--	--	--	--	--
AUG 26-SEP 02	1550	0.0	0.0	--	--	--	--	--	--
SEP 02-09	1545	0.0	0.0	--	--	--	--	--	--
SEP 09-16	1545	0.11	0.11	106	16	9	4.45	5.24	0.15
SEP 16-23	1520	0.40	0.40	101	10	7	4.80	4.98	0.03
SEP 23-30	1555	0.27	0.27	95	6	3	5.05	5.64	0.02
SEP 30-OCT 07	1530	0.0	0.0	--	--	--	--	--	--

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS NO3)	PHOS-PHATE, DIS-SOLVED (MG/L AS PO4)
JUL 01-08	0.06	0.32	0.20	0.7	0.38	<0.02	0.97	<0.01
JUL 08-15	--	--	--	--	--	--	--	--
JUL 15-22	--	--	--	--	--	--	--	--
JUL 22-29	--	--	--	--	--	--	--	--
JUL 29-AUG 05	--	--	--	--	--	--	--	--
AUG 05-12	--	--	--	--	--	--	--	--
AUG 12-19	--	--	--	--	--	--	--	--
AUG 19-26	--	--	--	--	--	--	--	--
AUG 26-SEP 02	--	--	--	--	--	--	--	--
SEP 02-09	--	--	--	--	--	--	--	--
SEP 09-16	0.05	0.25	0.12	0.7	0.30	0.15	1.3	0.01
SEP 16-23	0.01	0.10	0.06	0.3	0.12	0.05	0.68	<0.01
SEP 23-30	0.01	0.15	0.06	0.1	0.21	<0.02	0.14	<0.01
SEP 30-OCT 07	--	--	--	--	--	--	--	--

UPPER GRANDE RONDE RIVER BASIN

451328118304100 STARKEY EXPERIMENTAL STATION, OR

LOCATION.--Lat 45°13'28", long 118°30'41", in NE¼NW¼ sec.14, T.4 S., R.34 E., Union County, Hdyrologic Unit 17060104, in the Starkey Experimental Forest, 2.5 mi north of State Highway 244, 29 mi west of LaGrande.

PERIOD OF RECORD.--March 1984 to current year (weekly composite).

INSTRUMENTATION.--The wet-deposition sample collector is an Aerochem Metrics Model 301* wet/dry deposition collector. The sensing circuit is activated by wet deposition, causing the motor to move the cover from the wet bucket and cover the dry bucket. When the heater in the sensor evaporates the precipitation, the cycle is reversed. The sample buckets are polyethylene and have a capacity of 13 liters (28.6 cm inside diameter, 23.2 cm deep). The opening of the collector is approximately 8 ft above ground level.

REMARKS.--Inches of precipitation obtained from an on-site recording weighing-bucket gage.

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	ATM DEP WET TOTAL FOR PERIOD (IN)	PRECIP-ITATION TOTAL INCHES/ WEEK	COL-LECTOR EFFI-CIENCY WET DEPOS. PERCENT	SPE-CIFIC CON-DUCT-ANCE (US/CM)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM)	PH (STAND-ARD UNITS)	PH LAB (STAND-ARD UNITS)	CALCIUM DIS-SOLVED (MG/L AS CA)
OCT 01-08	1600	--	0.04	--	13	8	4.73	4.88	0.05
OCT 08-15	1632	0.12	0.12	92	4	3	5.12	5.15	0.05
OCT 15-22	1626	0.31	0.31	104	3	3	5.96	6.05	0.26
OCT 22-29	1740	0.44	0.44	102	3	2	5.28	5.30	0.03
OCT 29-NOV 05	1714	0.34	0.34	98	5	4	5.15	5.17	0.05
NOV 05-12	1915	1.77	1.77	92	3	3	5.13	5.34	0.03
NOV 12-19	1815	0.58	0.58	70	4	3	5.18	5.23	0.02
NOV 19-26	1720	0.48	0.48	58	3	2	5.28	5.32	0.02
NOV 26-DEC 03	1815	0.85	0.85	64	2	2	5.30	5.38	0.01
DEC 03-10	1730	0.24	0.24	56	3	2	5.23	5.58	0.02
DEC 10-17	1830	0.0	0.0	--	--	--	--	--	--
DEC 17-24	1730	0.0	0.0	--	--	--	--	--	--
DEC 24-31	1740	0.0	0.0	--	--	--	--	5.75	--
31...	1755	0.93	0.93	83	3	3	5.21	5.30	0.02
JAN 07-14	1745	0.16	0.16	88	5	3	5.07	5.48	0.05
JAN 14-21	1646	0.73	0.73	88	2	2	5.41	5.45	<0.01
JAN 21-28	1716	0.33	0.33	83	3	3	5.21	5.38	0.02
JAN 28-FEB 04	1730	0.23	0.23	77	4	3	5.08	5.37	0.03
FEB 04-11	1714	0.28	0.28	80	2	2	5.30	5.54	0.01
FEB 11-18	1734	2.05	2.05	91	2	2	5.40	5.46	<0.01

* The use of the brand name in this report is for identification purposes only and does not imply endorsement by the U.S. Geological Survey.

UPPER GRANDE RONDE RIVER BASIN

451328118304100 STARKEY EXPERIMENTAL STATION, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	NITROGEN, AMMONIA DISSOLVED (MG/L AS NH4)	NITROGEN, NITRATE DISSOLVED (MG/L AS NO3)	PHOSPHATE, DISSOLVED (MG/L AS PO4)
OCT 01-08	0.01	0.03	0.02	0.5	0.06	<0.02	0.54	<0.01
OCT 08-15	0.02	0.02	<0.01	0.2	<0.03	<0.02	<0.03	<0.01
OCT 15-22	0.03	0.06	0.08	0.3	0.06	<0.02	<0.03	0.01
OCT 22-29	0.01	0.04	0.02	0.1	0.06	<0.02	0.11	<0.01
OCT 29-NOV 05	0.02	0.02	0.01	0.2	<0.03	<0.02	0.24	<0.01
NOV 05-12	0.01	0.02	<0.01	0.1	<0.03	<0.02	<0.03	<0.01
NOV 12-19	0.01	0.04	<0.01	0.1	0.07	<0.02	<0.03	0.01
NOV 19-26	<0.01	0.01	<0.01	0.1	<0.03	<0.02	0.15	<0.01
NOV 26-DEC 03	0.01	0.02	<0.01	<0.1	<0.03	<0.02	0.15	<0.01
DEC 03-10	0.01	0.04	0.01	0.1	0.09	<0.02	<0.03	<0.01
DEC 10-17	--	--	--	--	--	--	--	--
DEC 17-24	--	--	--	--	--	--	--	--
DEC 24-31	--	--	--	--	--	--	--	--
31...	<0.01	0.02	0.01	0.1	0.08	<0.02	0.10	<0.01
JAN 07-14	0.01	0.12	0.05	0.2	0.14	<0.02	0.22	<0.01
JAN 14-21	<0.01	0.02	<0.01	0.1	<0.03	<0.02	0.05	0.01
JAN 21-28	0.01	0.02	0.01	0.2	0.04	<0.02	0.21	<0.01
JAN 28-FEB 04	0.01	0.03	<0.01	0.1	0.05	<0.02	0.27	<0.01
FEB 04-11	<0.01	0.03	<0.01	0.1	0.05	<0.02	<0.03	0.01
FEB 11-18	<0.01	0.01	<0.01	<0.1	<0.03	<0.02	0.08	<0.01

UPPER GRANDE RONDE RIVER BASIN

451328118304100 STARKEY EXPERIMENTAL STATION, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	ATM DEP WET TOTAL FOR PERIOD (IN)	PRECIP-ITATION TOTAL INCHES/ WEEK	COL-LECTOR EFFI-CIENCY WET DEPOS. PERCENT	SPE-CIFIC CON-DUCT-ANCE (US/CM)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM)	PH (STAND-ARD UNITS)	PH LAB (STAND-ARD UNITS)	CALCIUM DIS-SOLVED (MG/L AS CA)
FEB 18-25	1724	2.87	2.87	96	2	2	5.43	5.54	<0.01
FEB 25-MAR 04	1715	0.0	0.0	--	--	--	--	--	--
MAR 04-11	1729	1.01	1.01	98	3	3	5.18	5.28	0.02
MAR 11-18	1735	0.24	0.24	54	5	3	5.02	5.36	0.04
MAR 18-25	1721	0.49	0.49	88	3	3	5.59	6.07	0.12
MAR 25-APR 01	1638	0.11	0.11	111	6	3	5.94	5.44	0.03
APR 01-08	1755	0.08	0.08	61	4	5	5.49	5.35	0.10
APR 08-15	1724	0.38	0.38	94	7	5	4.89	5.04	0.03
APR 15-22	1735	0.44	0.44	97	--	--	--	--	--
APR 22-28	1532	0.56	0.56	85	3	3	5.20	5.50	0.04
APR 28-MAY 06	1611	0.78	0.78	95	3	2	5.50	5.78	0.04
MAY 06-13	1818	0.06	0.06	116	10	7	4.71	4.95	0.06
MAY 13-20	1719	0.04	0.04	209	11	8	4.76	5.03	0.15
MAY 20-27	1611	0.61	0.61	96	2	3	5.32	5.43	0.04
MAY 27-JUN 03	1548	0.01	0.01	74	--	22	--	4.97	1.1
JUN 03-10	1622	0.13	0.13	129	--	--	--	--	--
JUN 10-17	1420	0.27	0.27	104	--	--	--	--	--
JUN 17-24	1608	0.03	0.03	80	--	6	--	6.17	0.50
JUN 24-JUL 01	1510	0.49	0.49	97	12	8	4.70	5.15	0.17

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS NO3)	PHOS-PHATE, DIS-SOLVED (MG/L AS PO4)
FEB 18-25	<0.01	0.01	<0.01	<0.1	<0.03	<0.02	<0.03	<0.01
FEB 25-MAR 04	--	--	--	--	--	--	--	--
MAR 04-11	<0.01	0.01	0.01	0.1	<0.03	<0.02	0.15	<0.01
MAR 11-18	0.01	0.02	0.01	0.2	0.08	0.03	0.29	<0.01
MAR 18-25	0.01	0.15	0.01	0.2	0.04	0.05	0.22	<0.01
MAR 25-APR 01	0.01	0.01	0.01	0.2	<0.03	<0.02	0.31	<0.01
APR 01-08	0.04	0.06	0.01	0.3	0.17	0.16	0.57	<0.01
APR 08-15	0.01	0.04	0.01	0.4	0.08	0.05	0.54	<0.01
APR 15-22	--	--	--	--	--	--	--	--
APR 22-28	0.01	0.05	0.05	0.2	0.10	<0.02	<0.03	<0.01
APR 28-MAY 06	0.01	0.05	0.01	0.2	0.04	<0.02	<0.03	<0.01
MAY 06-13	0.02	0.05	<0.01	0.7	0.39	<0.02	0.17	0.01
MAY 13-20	0.03	0.08	0.06	0.7	0.11	0.19	0.70	0.01
MAY 20-27	0.01	0.03	0.01	0.2	<0.03	<0.02	0.19	<0.01
MAY 27-JUN 03	0.27	0.43	0.16	1.6	0.72	<0.16	1.7	<0.08
JUN 03-10	--	--	--	--	--	--	--	--
JUN 10-17	--	--	--	--	--	--	--	--
JUN 17-24	0.11	0.22	0.12	0.4	0.28	<0.02	0.73	0.01
JUN 24-JUL 01	0.03	0.09	0.05	0.6	0.12	<0.02	<0.03	0.01

UPPER GRANDE RONDE RIVER BASIN

451328118304100 STARKEY EXPERIMENTAL STATION, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986

DATE	TIME	ATM DEP WET TOTAL FOR PERIOD (IN)	PRECIP-ITATION TOTAL INCHES/ WEEK	COL-LECTOR EFFI-CIENCY WET DEPOS. PERCENT	SPE-CIFIC CON-DUCT-ANCE (US/CM)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM)	PH (STAND-ARD UNITS)	PH LAB (STAND-ARD UNITS)	CALCIUM DIS-SOLVED (MG/L AS CA)
JUL 01-08	1550	0.41	0.41	87	5	5	5.10	5.05	0.03
JUL 08-15	1421	0.06	0.06	126	4	4	5.13	5.14	0.05
JUL 15-22	1601	0.24	0.24	93	5	4	5.06	5.12	0.04
JUL 22-29	1543	0.0	0.0	--	--	--	--	--	--
JUL 29-AUG 05	1523	0.01	0.01	121	--	23	--	5.07	1.1
AUG 05-12	1446	0.0	0.0	--	--	--	--	--	--
AUG 12-19	1513	0.0	0.0	--	--	--	--	--	--
AUG 19-26	2045	0.19	0.19	111	13	13	4.67	4.78	0.20
AUG 26-SEP 02	1427	0.0	0.0	--	--	--	--	--	--
SEP 02-09	1800	0.11	0.11	114	--	--	--	--	--
SEP 09-16	1536	--	0.02	--	23	13	4.38	5.11	0.22
SEP 16-23	1712	0.44	0.18	88	6	4	4.93	5.26	0.03
SEP 23-30	1742	1.25	--	87	3	2	5.25	5.46	0.01
SEP 30-OCT 07	1612	0.26	0.26	107	5	4	5.11	5.10	0.02

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS NH4)	NITRO-GEN, NITRATE DIS-SOLVED (MG/L AS NO3)	PHOS-PHATE, DIS-SOLVED (MG/L AS PO4)
JUL 01-08	0.02	0.04	0.02	0.3	0.07	<0.02	0.46	<0.01
JUL 08-15	0.02	0.05	0.02	0.1	0.06	<0.02	0.31	<0.01
JUL 15-22	0.01	0.02	<0.01	0.3	0.04	<0.02	0.25	<0.01
JUL 22-29	--	--	--	--	--	--	--	--
JUL 29-AUG 05	0.15	0.26	0.28	1.8	0.41	<0.08	<0.12	<0.04
AUG 05-12	--	--	--	--	--	--	--	--
AUG 12-19	--	--	--	--	--	--	--	--
AUG 19-26	0.04	0.05	0.12	0.8	0.15	0.39	2.0	<0.01
AUG 26-SEP 02	--	--	--	--	--	--	--	--
SEP 02-09	--	--	--	--	--	--	--	--
SEP 09-16	0.06	0.76	0.10	1.3	0.26	0.31	2.5	<0.01
SEP 16-23	0.01	0.09	0.01	0.2	<0.03	0.07	0.41	<0.01
SEP 23-30	<0.01	0.03	<0.01	0.1	<0.03	<0.02	0.11	<0.01
SEP 30-OCT 07	0.01	0.07	0.01	0.2	0.08	<0.02	0.54	<0.01

Measurements of streamflow at points other than gaging stations or partial-record stations are given in the following table.

Discharge measurements at miscellaneous sites during water year 1986

Stream	Tributary to	Location	Drainage area (mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		KLAMATH RIVER BASIN				
Williamson River	Klamath River	Lat 42°57'15", long 121°40'20", Klamath County, Hydrologic Unit 18010201.	---	----	9-17-86	*16.9
Big Springs Creek	.....do.....	Lat 42°57'30", long 121°45'28", Klamath County, Hydrologic Unit 18010201.	---	----	9-18-86	*52.4
Artesian Well	.....do.....	Lat 42°57'55", long 121°46'10", Klamath County, Hydrologic Unit 18010201.	---	----	9-18-86	*0.01
Williamson River	.....do.....	Lat 42°35'40", long 121°51'35", Klamath County, Hydrologic Unit 18010201.	---	----	9-18-86	*390
Sprague River	.....do.....	Lat 42°34'00", long 121°51'50", Klamath County, Hydrologic Unit 18010202.	---	----	9-18-86	*290
Wood River	.....do.....	Lat 42°42'20", long 121°59'30", Klamath County, Hydrologic Unit 18010203.	---	----	9-18-86	*318
		MALHEUR RIVER BASIN				
S.F. Malheur River at Riverside	Malheur River	Lat 43°33'15", long 118°10'01", Malheur County, Hydrologic Unit 17050116, 1,000 ft upstream from mouth, and 1 mi northwest of Riverside.	630	1910-14 1919-20 1927-28 1938, 1985	10-21-85	21.2
Malheur River above Juntura	Snake River	Lat 43°43'20", long 118°04'23", Malheur County, Hydrologic Unit 17050116, 1.2 mi upstream from station 13216350, and 1.6 mi south of Juntura.	---	1985	10-21-85	25.3
Malheur River near Jonesboro	.....do.....	Lat 43°48'04", long 117°55'50", Malheur County, Hydrologic Unit 17050117, upstream side of private bridge, 0.2 mi downstream of Trail Creek, and 1.1 mi west of Jonesboro.	---	1985	10-22-85	44.1
Harper-Southside Canal above Harper	Malheur River	Lat 43°49'30", long 117°38'27", Malheur County, Hydrologic Unit 17050117, 50 ft downstream from control gate at diversion from Malheur River.	---	1985	10-22-85	4.85
Malheur River at Little Valley	Snake River	Lat 43°53'50", long 117°30'22", Malheur County, Hydrologic Unit 17050117, upstream from county bridge at Little Valley.	3,010	1949-79, 1985	10-23-85	73.6
Vines Ditch near inflow of J-H Canal near Hope	Malheur River	Lat 43°57'18", long 117°27'20", Malheur County, Hydrologic Unit 17050117, 30 ft downstream from wood bridge at end of dirt road that follows J-H Canal.	---	1985	10-23-85	1.99
Malheur River below J-H Canal near Hope	Snake River	Lat 43°57'21", long 117°26'57", Malheur County, Hydrologic Unit 17050117, approximately 1,000 ft downstream from J-H Canal diversion dam.	---	1985	10-22-85	49.1
Malheur River near Hope	.....do.....	Lat 43°56'34", long 117°22'06", Malheur County, Hydrologic Unit 17050117, 600 ft upstream from State Highway 20 at Hope.	---	1985	10-23-85	49.4
Malheur River below Gellerman-Froman Canal	.....do.....	Lat 43°55'13", long 117°18'18", Malheur County, Hydrologic Unit 17050117, 100 ft upstream from bridge on 2nd Boulevard South, southwest of Vale.	---	1985	10-24-85	61.5
Bully Creek at Vale	Malheur River	Lat 43°59'01", long 117°14'45", Malheur County, Hydrologic Unit 17050118, 20 ft downstream from bridge on Main Street in Vale, and approximately 0.3 mi upstream from mouth.	620	1904, 1905, 1985	10-24-85	25.8
Willow Creek at Vale	.....do.....	Lat 43°59'17", long 117°13'47", Malheur County, Hydrologic Unit 17050119, downstream side of bridge on Foothill Drive, and 300 ft upstream from mouth.	---	1985	10-24-85	75.1
Malheur River near mouth near Ontario	Snake River	Lat 44°02'23", long 117°01'03", Malheur County, Hydrologic Unit 17050117, 200 ft downstream from county bridge, 1 mi north of Ontario Airport.	---	1985	10-25-85	254

* Base flow.

Discharge measurements at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		WALLA WALLA RIVER BASIN				
Mill Creek	Walla Walla River	Lat 45°59'25", long 118°02'47", unsurveyed, T.6 N., R.38 E., Umatilla County, Hydrologic Unit 17070102, 400 ft upstream from city of Walla Walla intake at mile 25.4.	---	----	8-23-85	*a36
Walla Walla River	Columbia River	Lat 45°56'38", long 118°23'00", in SE¼NW¼ sec.1, T.5 N., R.35 E., Umatilla County, Hydrologic Unit 17070102, 500 ft upstream from Eastside Road bridge near Milton-Freewater, 400 ft upstream from Hudson Bay Ditch diversion, and at mile 44.8.	---	----	9-18-86	20.2
Walla Walla River	.....do.....	Lat 45°55'44", long 118°22'40", in SW¼NE¼ sec.12, T.5 N., R.35 E., Umatilla County, Hydrologic Unit 17070102, 200 ft downstream from 9th Street bridge (also cemetery bridge) at Milton-Freewater, 400 ft downstream from Little Walla Walla River diversion, and at mile 46.1.	---	----	9-18-86	22.2
		DESCHUTES RIVER BASIN				
Deschutes River	.....do.....	SE¼SE¼ sec.20, T.21 S., R.8 E., just downstream from Sheep Springs, 15 mi northwest of La Pine.	---	1938-49‡ 1950, 1952-57, 1960-85	11- 5-85 12-18-85 3- 5-86 4-23-86 5-29-86 7- 9-86 9-12-86	c375 c406 c410 c614 c743 c720 c879
Abbott Creek	Metolius River	Lat 44°33'39", long 121°37'43", Jefferson County, Hydrologic Unit 17070307.	---	1973,1974	9-22-86	*12.4
Candle Creek	.....do.....	Lat 44°34'31", long 121°37'08", Jefferson County, Hydrologic Unit 17070307.	---	1973,1974	9-22-86	*73.4
Mariel Creek	.....do.....	Lat 44°35'07", long 121°37'14", Jefferson County, Hydrologic Unit 17070307.	---	----	9-25-86	*12.1
unnamed springs	.....do.....	Lat 44°36'08", long 121°36'23", Jefferson County, Hydrologic Unit 17070307.	---	----	9-25-86	*1.77
Walker Creek	.....do.....	Lat 44°36'17", long 121°36'21", Jefferson County, Hydrologic Unit 17070307.	---	----	9-25-86	*1.14
Code Creek	.....do.....	Lat 44°38'41", long 121°36'52", Jefferson County, Hydrologic Unit 17070307.	---	----	9-23-86	*0.50
Camp Creek	.....do.....	Lat 44°39'07", long 121°36'25", Jefferson County, Hydrologic Unit 17070307.	---	----	9-23-86	*3.82
Metolius River	Deschutes River	Lat 44°39'07", long 121°36'14", Jefferson County, Hydrologic Unit 17070307.	---	----	9-23-86	*1,390
unnamed springs	Metolius River	Lat 44°39'22", long 121°36'07", Jefferson County, Hydrologic Unit 17070307.	---	----	9-23-86	*1.45
Racing Creek	.....do.....	Lat 44°39'44", long 121°35'24", Jefferson County, Hydrologic Unit 17070307.	---	----	9-23-86	*2.10
unnamed springs	.....do.....	Lat 44°39'58", long 121°35'01", Jefferson County, Hydrologic Unit 17070307.	---	----	9-23-86	*0.29
Whitewater River	.....do.....	Lat 44°40'12", long 121°32'36", Jefferson County, Hydrologic Unit 17070307.	---	1973,1974	9-24-86	*73.9
Metolius River	Deschutes River	Lat 44°33'24", long 121°37'09", Jefferson County, Hydrologic Unit 17070307.	---	1973,1974, 1985	9-25-86	*1,134
Spring Creek	Metolius River	Lat 44°35'06", long 121°25'01", Jefferson County, Hydrologic Unit 17070307.	---	1985	10-10-85 1-16-86 3- 4-86 5-20-86 6-26-86 7-24-86 8-26-86	*0.54 *0.77 28.1 *0.78 *0.45 *0.44 *0.53
Fly Creek at mouth	.....do.....	Lat 44°35'07", long 121°23'29", Jefferson County, Hydrologic Unit 17070307.	---	1985	10-10-85 12-11-85 1-15-86 3- 6-86 5-20-86 6-26-86 7-24-86 8-26-86	no flow no flow no flow 125 *0.19 *0.08 no flow no flow

* Base flow.
‡ Operated as a continuous record gaging station.
a Not previously published.
c Base flow from intervening springs can be obtained by subtracting flow of Deschutes River below Crane Prairie Reservoir.

Discharge measurements at miscellaneous sites during water year 1986--Continued

Stream	Tributary to	Location	Drainage area (mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		DESCHUTES RIVER BASIN--Continued				
Fly Creek	Metolius River	Lat 44°33'54", long 121°25'01", Jefferson County, Hydrologic Unit 17070307.	---	1985	10-10-85	no flow
unnamed tributary	Deschutes River	Lat 44°35'01", long 121°14'47", Jefferson County, Hydrologic Unit 17070307.	---	1985	10-10-85	6.84
					12-11-85	no flow
					1-16-86	*0.26
					3- 4-86	*0.40
					5-20-86	2.84
					6-26-86	4.96
					7-24-86	3.23
					8-26-86	6.90
Seekseequa Creek	.....do.....	Lat 44°40'28", long 121°17'28", Jefferson County, Hydrologic Unit 17070307.	---	1973,1974, 1985	10- 8-85	*2.17
					12-10-85	*2.73
					1-14-86	3.00
					3-18-86	6.27
					5-19-86	3.54
					6-25-86	*1.56
					7-21-86	*1.34
					8-25-86	*1.27
Willow Creek	.....do.....	Lat 44°40'19", long 121°13'36", Jefferson County, Hydrologic Unit 17070307.	---	1973,1974, 1985	12-10-85	26.2
					3-18-86	37.4
					5-19-86	27.1
					6-27-86	28.1
					7-21-86	26.8
					8-28-86	18.0
Campbell Creek	.....do.....	Lat 44°42'53", long 121°13'32", Jefferson County, Hydrologic Unit 17070307.	---	1973,1974, 1985	10-17-85	9.49
					12-12-85	3.04
					1-14-86	4.37
					3- 5-86	3.10
					5-19-86	8.44
					6-27-86	19.6
					7-21-86	9.13
					8-25-86	5.84
Tenino Creek	Shitike Creek	Lat 44°45'38", long 121°16'00", Jefferson County, Hydrologic Unit 17070307.	---	1973,1974, 1985	10- 9-85	*0.20
					12-10-85	*0.17
					3-18-86	36.8
					4-19-86	2.43
					6-27-86	*0.17
					7-21-86	*0.08
					8-29-86	*0.09
Dry Creek	Deschutes River	Lat 44°47'49", long 121°13'37", Jefferson County, Hydrologic Unit 17070307.	---	1973,1974, 1985	10- 8-85	*0.08
					12-13-85	*0.03
					1-15-86	0.10
					3- 6-86	5.08
					5-28-86	0.61
					6-27-86	0.28
					7-23-86	*0.14
					8-29-86	*0.17
Trout Creek	.....do.....	Lat 44°49'02", long 121°04'31", Jefferson County, Hydrologic Unit 17070307.	---	1973,1974, 1985	10- 8-85	18.5
					12-12-85	0.60
					1-15-86	60.1
					3-19-86	184
					5-28-86	22.8
					6-26-86	9.69
					7-23-86	8.94
					8-29-86	10.3
Skookum Creek	.....do.....	Lat 44°55'19", long 121°04'51", Wasco County, Hydrologic Unit 17070306.	---	1973,1974, 1985	10- 8-85	*0.07
					12-13-85	no flow
					1-15-86	no flow
					3- 6-86	5.57
					5-28-86	0.23
					6-26-86	no flow
					7-23-86	no flow
					8-28-86	no flow
Deschutes River	Columbia River	Lat 45°02'20", long 121°06'39", Wasco County, Hydrologic Unit 17070306.	---	1973,1974, 1985	11-14-85	5,640
					12-23-85	4,740
					1-17-86	6,620
					3-19-86	8,940
					4-21-86	5,550
					5-13-86	5,180
					6-17-86	4,460
					7-15-86	4,340
					8-26-86	*4,180

* Base flow.

October 1, 1978

FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI). This report contains both the inch-pound and SI unit equivalents in the station manuscript descriptions.

Multiply inch-pound units	By	To obtain SI units
	Length	
inches (in)	2.54×10^{1}	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^{0}	kilometers (km)
	Area	
acres	4.047×10^{3}	square meters (m^2)
	4.047×10^{-1}	square hectometers (hm^2)
	4.047×10^{-3}	square kilometers (km^2)
square miles (mi^2)	2.590×10^{0}	square kilometers (km^2)
	Volume	
gallons (gal)	3.785×10^{0}	liters (L)
	3.785×10^{0}	cubic decimeters (dm^3)
	3.785×10^{-3}	cubic meters (m^3)
million gallons	3.785×10^{3}	cubic meters (m^3)
	3.785×10^{-3}	cubic hectometers (hm^3)
cubic feet (ft^3)	2.832×10^{1}	cubic decimeters (dm^3)
	2.832×10^{-2}	cubic meters (m^3)
cfs-days	2.447×10^{3}	cubic meters (m^3)
	2.447×10^{-3}	cubic hectometers (hm^3)
acre-feet (acre-ft)	1.233×10^{3}	cubic meters (m^3)
	1.233×10^{-3}	cubic hectometers (hm^3)
	1.233×10^{-6}	cubic kilometers (km^3)
	Flow	
cubic feet per second (ft^3/s)	2.832×10^{1}	liters per second (L/s)
	2.832×10^{1}	cubic decimeters per second (dm^3/s)
	2.832×10^{-2}	cubic meters per second (m^3/s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm^3/s)
	6.309×10^{-5}	cubic meters per second (m^3/s)
million gallons per day	4.381×10^{1}	cubic decimeters per second (dm^3/s)
	4.381×10^{-2}	cubic meters per second (m^3/s)
	Mass	
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

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