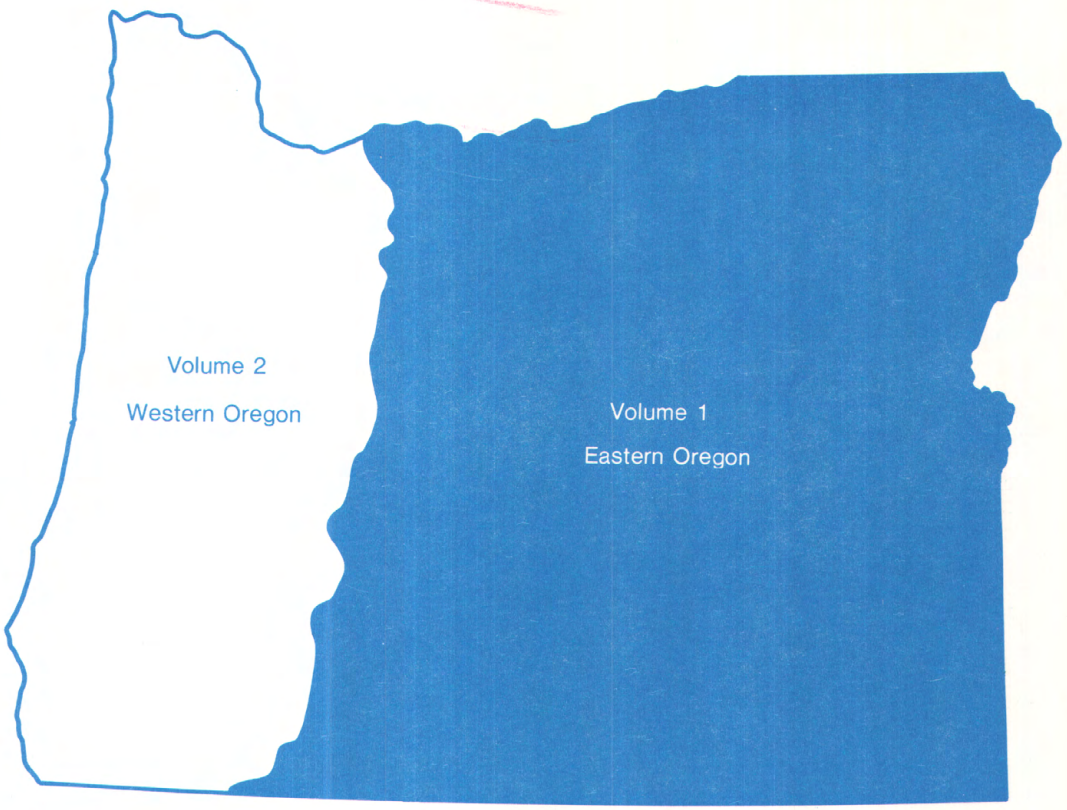
Water Resources Data Oregon Water Year 1988

Volume 1. Eastern Oregon



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT OR-88-1
Prepared in cooperation with the Oregon Water Resources Department and with other agencies

CALENDAR FOR WATER YEAR 1988

1987

OCTOBER

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1988

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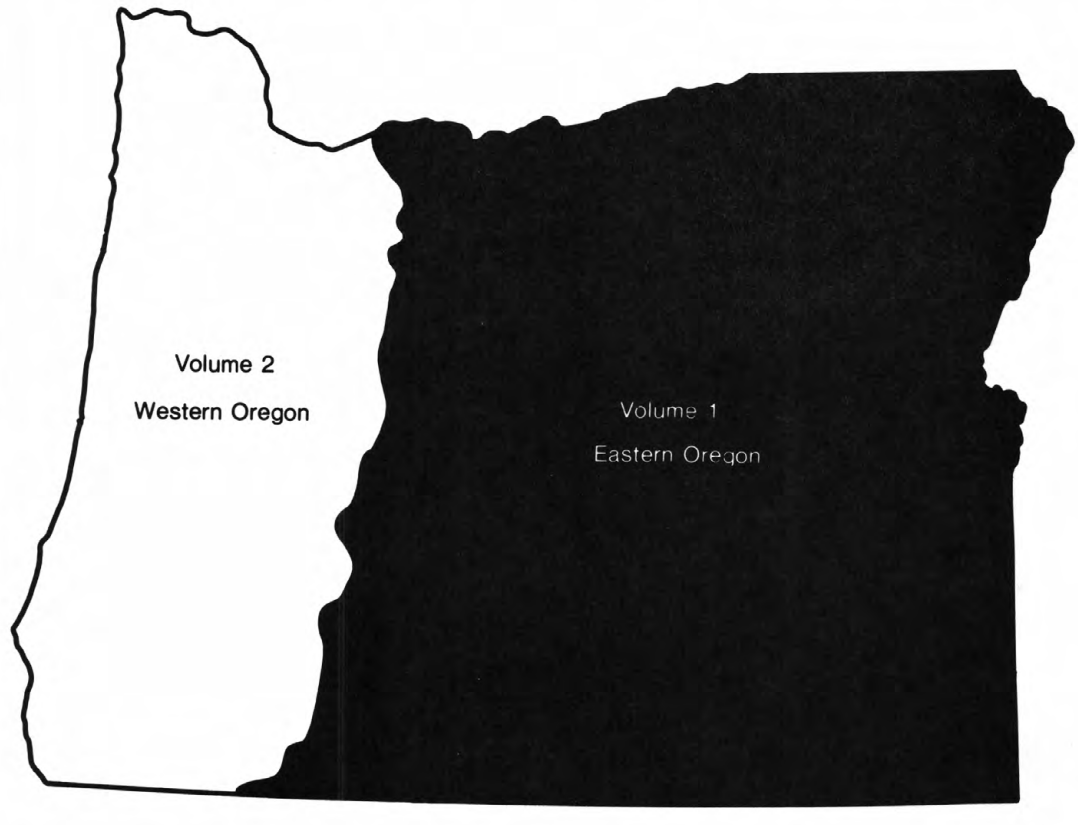
Water Resources Data
Oregon
Water Year 1988

Volume 1. Eastern Oregon

by L.E. Hubbard, R.L. Moffatt, T.A. Herrett, R.L. Kraus, and G.P. Ruppert



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT OR-88-1
Prepared in cooperation with the Oregon Water Resources Department and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

MANUEL LUJAN, JR., Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

For additional information write to:

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1989

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, Garald G. Parker, Jr., Pacific Northwest District Chief, and T. John Conomos, Regional Hydrologist, Western Region.

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO. USGS/WRD/HD-90/240	2.	3. Recipient's Accession No.

4. Title and Subtitle
Water Resources Data for Oregon
Water Year 1988
Volume 1. Eastern Oregon

5. Report Date
December 1989

6.

7. Author(s)

8. Performing Organization Rept. No.
USGS-WDR-OR-88-1

9. Performing Organization Name and Address
U.S. Geological Survey, Water Resources Division
10615 S.E. Cherry Blossom Drive
Portland, Oregon 97216

10. Project/Task/Work Unit No.

11. Contract(C) or Grant(G) No.
(C)
(G)

12. Sponsoring Organization Name and Address
U.S. Geological Survey, Water Resources Division
10615 S.E. Cherry Blossom Drive
Portland, Oregon 97216

13. Type of Report & Period Covered
Annual - Oct. 1, 1987 to Sept. 30, 1988

14.

15. Supplementary Notes
Prepared in cooperation with the State of Oregon and with other agencies.

16. Abstract (Limit: 200 words)

Water Resources Data for the 1988 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 250 gaging stations; stage only records for 7 gaging stations; stage and contents for 39 lakes and reservoirs; water quality for 44 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.

17. Document Analysis a. Descriptors
*Oregon, *Hydrologic Data, *Surface water, *Water quality, *Gaging stations, Flow rate, Lakes, Reservoirs, Chemical analyses, Sediment, Water temperatures, Sampling sites, Water analyses.

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement: No restriction on distribution
This report may be purchased from:
National Technical Information Service
Springfield, VA 22161

19. Security Class (This Report) UNCLASSIFIED

20. Security Class (This Page) UNCLASSIFIED

21. No. of Pages 219

22. Price

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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.

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

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WATER RESOURCES DATA FOR OREGON 1988

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 250 stream-gaging stations, stage only records for 7 gaging stations, 93 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 39 streamflow-gaging stations and 5 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 Eastern Oregon, while Volume 2 described the activities for Western 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-88-1" and "U.S. Geological Survey Water-Data Report OR-88-2." 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:

State of Oregon Water Resources Department, W. F. Young, Director.
State of Oregon Department of Fish and Wildlife, Randy Fisher, Director.
Coos Bay-North Bend Water Board, Phil Matson, General Manager.
Eugene Water and Electric Board, Jean Reeder, General Manager.
Douglas County, John Youngquist, Coordinator.
City of McMinnville, J. L. Harshman, 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,
Doug McClelland, Fiscal 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

Water year 1988 was the second consecutive year of dry and mild weather conditions across the Pacific Northwest. The geographical pattern of annual precipitation showed an extensive portion of the region at less than 80 percent of normal. Areas affected in Oregon west of the Cascades were the northern coast and southwest corner of the state. East of the Cascades, the area covered the southern half of the state. Wet conditions of late November and December 1987 were wet enough to assure that, even though the rest of the water year was dry, it would not be as dry as the near-record drought of 1977. A secondary period of above-normal precipitation occurred between April and June. Precipitation records showed some subbasins ending the 1988 water year with an even drier year than water year 1987.

Northwest weather during the water year can be divided into three groups: dry weather through November; wetter weather from December through mid July; followed by more dry weather.

More specifically, the dry weather of August and September persisted into October 1987. The month started with a high pressure ridge dominating the Columbia Basin producing warm days and cool, clear nights, and little or no rain. The warm weather was especially noteworthy in southwestern Oregon where Medford averaged 7 degrees above normal to be the warmest October in 77 years of record. A result of this drought was the devastating forest fires in southwestern Oregon, Wyoming, and Montana. This weather continued until November 8 when a small but vigorous storm brought light rain to the entire basin. During the middle of the month, a westerly flow brought frequent but weak weather systems, light precipitation, and maximum temperatures of 5 to 12 degrees above normal to most of the basin. By the 28th, a large area of high pressure over western Montana became dominant, dried up the rain, and cooled the maximum temperatures to 3 to 13 degrees below normal.

December began wet and warm as a large Alaskan area of low pressure pushed marine air over the basin. Many stations west of the Cascades reported their wettest first 9 days of December on record. The upper air pattern changed to a ridge of high pressure by the 12th bringing much drier and cooler weather to the entire basin through the first week in January resulting in the major cold period of the winter. Below-normal precipitation occurred in both January and February with each month receiving most of its precipitation during the second week of the month.

A period of normal precipitation began March 1 and continued through the end of June. The only digression from this pattern was a short, dry spell near the middle of each month. Brief storms produced enough precipitation each month to compensate for the brief, dry periods. Most significant of these events was a series of frontal systems that passed through the region between March 18 and April 9 producing above-normal precipitation. A second series of storms entered the area on April 13 and lasted until May 11, also producing slightly above-normal precipitation for the period. A brief, warm spell accelerated snowmelt but this was curtailed by cooler weather and light precipitation on May 14. On May 28, a large Gulf of Alaska area of low pressure pushed marine air and a series of storm fronts through the western portion of the region. These wet and very cold conditions prevailed over Oregon until June 11. Astoria recorded a one-day precipitation record of 1.60 inches on June 7. Crater Lake recorded its snowiest June in 55 years with 16 inches, exceeding the 15 inches of June 1984. Despite the June record, Crater Lake recorded only 368.5 inches of snowfall during the 1987-88 season which ranked 7th lowest of 53 winters. July began with cool, wet weather across northwestern Oregon and western Washington with maximum temperatures as much as 17 degrees below normal.

The dry season began on July 17 as a large upper air ridge pushed northward from California, bringing a thermal surface trough, halting the rain, and furnishing record warmth to many areas west of the Cascades. New daily records on the 19th included 103°F at Portland, 109°F at Medford, and 93°F at Astoria, Oregon. Very dry conditions continued into August with maximum temperatures 12 to 20 degrees above normal. A general increase in precipitation occurred during September.

Snowpack in the Columbia Basin was below to well below average throughout the 1988 water year. Snowpack accumulation began slowly resulting in a snowpack below that of January 1987. As the season progressed, the entire Columbia Basin received below-normal snowfall and on March 1, the snowpack was generally below the 1987 level. During March, the snowfall increased somewhat resulting in a basin snowpack on April 1 of 76 percent of average, slightly ahead of 1987. An unseasonable warm spring coupled with little late-season snowfall reduced the May 1 snowpack to below 50 percent of average.

Total runoff for the 1988 water year was below average at most streamflow stations. There were, however, variations from this generalization, depending upon location and season. The dry conditions experienced in the previous water year carried into the start of the 1988 water year with drought conditions existing in many basins east of the Cascades. Early in the year, some eastern Oregon streams were experiencing discharges at only 10 to 20 percent of average. In November, some minor storm activity brought snow to higher elevations. In December, significant rainfall brought many coastal streams to or slightly above flood stage. Even with these heavier rains, runoff was less than 80 percent of normal for streams west of the Cascades. East of the Cascades, runoff ranged from 30 to 70 percent.

From January to March, streamflow east of the Cascades remained below normal, while streamflow west of the Cascades was near normal. By April, a below-average snowpack coupled with high temperatures produced snowmelt runoff peaks 2 to 3 weeks earlier than usual. No flooding was reported. By June, streams east of the Cascades were approaching extreme low flows by month's end.

Above-average precipitation during July eased the declining streamflow levels but by August, many streams again were approaching extreme low flows. As the water year concluded, well below-normal streamflow conditions were recorded in many locations. Peak discharges for representative gages are shown in Table 1.

Table 1.--Comparison of peak discharge for the 1988 water year with peak discharge for the period of record at long-term stations

Station number	Station name	Drainage area (mi^2)	Peak discharge 1988 water year Date	Peak discharge 1988 water year ft^3/s	Exceedance probability	Peak discharge period of record Date	Peak discharge period of record ft^3/s
10396000	Donner und Blitzen River near Frenchglenn	a200	Apr. 17	736	.83	Apr. 26, 1978	4,270
11502500	Williamson River below Sprague River, near Chiloquin	a3,000	Mar. 4	1,590	.86	Dec. 26, 1964	16,100
13181000	Owyhee River near Rome	a8,000	Mar. 7	3,150	---	Feb. 19, 1986	41,400
13214000	Malheur River near Drewsey	a910	Feb. 9	1,500	.65	Dec. 23, 1964	12,000
13331500	Minam River at Minam	a240	May 28	2,050	.90	June 16, 1974	6,260
14048000	John Day River at McDonald Ferry	a7,580	Apr. 23	6,210	.89	Dec. 24, 1964	42,800
14137000	Sandy River near Marmot	262	Dec. 10	16,100	.41	Dec. 22, 1964	61,400
14178000	North Santiam River below Boulder Creek, near Detroit	216	Dec. 10	8,430	.43	Dec. 22, 1964	26,700
14301000	Nehalem River near Foss	667	Dec. 9	29,500	.43	Jan. 20, 1972	46,900
14321000	Umpqua River near Elkton	3,683	Jan. 10	77,500	.67	Dec. 23, 1964	265,000
14325000	South Fork Coquille River at Powers	169	Dec. 3	17,300	.42	Dec. 22, 1964	48,900

a Approximately.

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.

The Monthly and annual mean discharges are compared with the long-term medians (1951-80) at four representative sites throughout the state in figures 1a and 1b. In eastern Oregon, the annual mean discharge for the Donner Und Blitzen River near Frenchglen (10396000) was 76.9 ft^3/s which was 63 percent of the 1951-80 median. Also in eastern Oregon, the annual mean discharge for the Williamson River below Sprague River, near Chiloquin (11502500) was 777 ft^3/s which was 65 percent of the long-term median. In western Oregon, the annual mean discharge for the Wilson River near Tillamook (14301500) was 847 ft^3/s which was 71 percent of the long-term median. The annual mean discharge for the Umpqua River near Elkton (14321000), also in western Oregon, reported an annual mean discharge of 5,121 ft^3/s which was 68 percent of the long-term median.

The above information was compiled from reports of the Columbia River Water Management Group. The information was provided by the River Forecast Center, National Weather Service; the Snow Survey Office, Soil Conservation Service; and the U.S. Geological Survey.

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 1988 water year that began October 1, 1987, and ended September 30, 1988. 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 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

Presentation of discharge records in this Oregon Water-Data Report (Volume 1) differs from that of previous years. More statistical characteristics of discharge appear in tabular summaries and less information is provided in text.

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.

Headings for average discharge, extremes for period of record, and extremes for current year have been deleted and the information presented in tabular summaries or under the REMARKS heading as appropriate. No changes have been made to the presentations of lake contents.

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.

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.

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.

A summary of the mean, maximum, and minimum monthly flows for each calendar month for the period of record is provided below the daily table. The water years of the first occurrence of maximum and minimum monthly flows are provided on the line immediately below those figures.

A statistical summary of yearly, daily, and instantaneous flows for the current year and period of record is displayed below the monthly summary. The date or water year, as appropriate, of the first occurrence of each statistic is provided adjacent to the statistic. Repeated occurrences are noted in the REMARKS paragraph of the manuscript. Selected streamflow duration curve percentiles are also provided. Unless otherwise noted, the complete period of record is used to compute the statistics.

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.

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 in 1972 to provide an effective and efficient means for the processing and maintenance of water data collected through the activities of the U.S. Geological Survey. A variety of useful products ranging from data tables to complex statistical analyses such as Log Pearson Type III statistics can be produced using WATSTORE. The system resides on the central computer facilities of the U.S. Geological Survey at its National Center in Reston, Virginia and consists of related files and data bases.

- Station Header File - Contains descriptive information on over 440,000 sites throughout the United States and its territories where the U.S. Geological Survey collects or has collected data.
- Daily Values File - Contains over 220 million daily values of streamflow, stage, reservoir content, water temperature, specific conductance, sediment concentration, sediment discharge, and ground-water level.
- Peak Flow File - Contains approximately 500,000 maximum (peak) streamflow and gage height values at surface-water sites.
- Water Quality File - Contains approximately 2 million analyses of water samples that describe the chemical, physical, biological, and radiochemical characteristics of both surface and ground water.
- Ground-Water Site Inventory Data Base - Contains inventory data for over 900,000 wells, springs, and other sources of ground water. The data includes site location, geohydrologic characteristics, well-construction history, and one-time field measurements such as water temperature.

In 1976, the U.S. Geological Survey opened WATSTORE to the public for direct access. The signing of a Memorandum of Agreement with the Survey is required to obtain direct access to WATSTORE. The system can be accessed either synchronously or asynchronously. The requestor will be expected to pay all computer costs he/she incurs. Direct access may be obtained by contacting:

U.S. Geological Survey
National Water Data Exchange
421 USGS National Center
Reston, Virginia 22092

In addition to providing direct access to WATSTORE, the National Water Data Exchange (NAWDEX) services include data-search assistance, data dissemination, and data referrals. Data can be provided in various machine-readable formats on magnetic tape or 5-1/4 in. floppy disk. The request for water-data should be forwarded to the local Geological Survey district office:

State Chief, Oregon Office
Water Resources Division
U.S. Geological Survey
10615 S.E. Cherry Blossom Drive
Portland, Oregon 97216

If the district office does not have the facility to fulfill the request, it will be referred to the National Water Data Exchange (NAWDEX) office in Reston, Virginia.

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.

Average discharge 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.

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.

Flow-duration curve percentiles refer to interpolated values taken from a cumulative frequency curve that shows the percent of the time specified discharges were equaled or exceeded during a given period.

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 ($CaCO_3$).

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.

Percentile. See Flow-duration curve percentiles.

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 02/(m^2 .time)] for periphyton and macrophytes and [mg 02/(m^3 .time)] for phytoplankton are 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.

DISCONTINUED GAGING STATIONS

The following continuous-record streamflow stations in Oregon have been discontinued or converted to partial-record stations. Daily streamflow or stage records were collected and published for the period of record shown for each station.

Station number	Station name	Drainage area (mi^2)	Period of record
	WARNER LAKES BASIN		
10366500	Deep Creek above Dismal Creek, near Warner Lake, OR	13	1917-19
10367000	Dismal Creek above Big Valley, near Warner Lake, OR	12.5	1913
10367500	Dismal Creek near Warner Lake, OR	14	1919
10368000	Deep Creek below Dismal Creek, near Warner Lake, OR	27	1913
			1917-19
10368500	Deep Creek at Big Valley, near Lakeview, OR	76	1911-15
10369000	Camas Creek near Plush, OR	32	1911-12
10369500	Mud Creek near Plush, OR	18	1911-12
			1915
			1927-30
10370000	Camas Creek near Lakeview, OR	63	1912-15
			1949-73
10370500	Crane Creek near Lakeview, OR	7	1914
10371000	Drake Creek near Adel, OR	67	1915
			1923
			1951
			1966-73
10374500	Deep Creek at Adel, OR	274	1909-16
			1918-19
			1921-22
10376500	Fish Creek near Plush, OR	38	1914
10377000	Honey Creek at Charlestrand's Ranch, near Plush, OR	56	1910-11
10377500	Snyder Creek near Plush, OR	--	1911
10378000	Twelvemile Creek near Plush, OR	37	1911
	ABERT LAKE BASIN		
10382500	Chewaucan River at damsite, near Paisley, OR	158	1912-16
10382550	Chewaucan River near Buck Mountain, near Paisley, OR	157	1983-86
10382600	Chewaucan River below coffeepot Creek, near Paisley, OR	216	1983-86
10384100	Chewaucan River at Paisley, OR	278	1905-7
			1909-13
10386000	Chewaucan River at Narrows, near Paisley, OR	380	1914-21
10386500	Chewaucan River at Hotchkiss Ford, near Paisley, OR	430	1914-20
			1921
10387000	Crooked Creek near Valley Falls, OR	--	1912-13
	SUMMER LAKE BASIN		
10389000	West Fork Silver Creek near Silver Lake, OR	27	1919-23
			1925-32

DISCONTINUED GAGING STATIONS

Station number	Station name	Drainage area (mi^2)	Period of record
	SUMMER LAKE BASIN--Continued		
10390500	Bridge Creek near Silver Lake, OR	30	1922-23
10390800	Buck Creek above Timothy Creek, near Silver Lake, OR	250	1922-23
10391000	Buck Creek near Silver Lake, OR	290	
			1905-6
			1909-10
			1911
			1919-21
10392000	Duncan Creek near Silver Lake, OR	58	1922
	MALHEUR AND HARNEY LAKES BASIN		
10392500	Silvies River near Silvies, OR	510	1903-4
			1909-12
			1916
			1921-23
10393000	Emigrant Creek near Burns, OR	240	1921
10394000	Poison Creek near Burns, OR	81	1921-22
10394500	Prater Creek near Burns, OR	20	1921-23
10395000	East Fork Silvies River near Lawen, OR	--	1916
			1973-76
10395500	West Fork Silvies River near Lawen, OR	--	1916-17
			1919
			1922
			1972-76
10395600	Rock Creek near Burns, OR	--	1976
10396500	Mud Creek near Diamond, OR	30	1911-16
			1930
10397000	Bridge Creek near Frenchglen, OR	30	1911-16
			1930
			1937-70
10397500	Krumbo Creek near Diamond, OR	37	1911
			1930
10398500	Donner und Blitzen River near Narrows, OR	420	1915-20
10399000	Kiger Creek near Diamond, OR	75	1911-13
			1916-21
			1930
			1941
10399500	Cucamonga Creek near Diamond, OR	15	1916
			1930
10400000	McCoy Creek near Diamond, OR	45	1910
			1911
			1914
			1916-21
			1930
			1941

DISCONTINUED GAGING STATIONS

Station number	Station name	Drainage area (mi^2)	Period of record
	MALHEUR AND HARNEY LAKES BASIN--Continued		
10400500	Riddle Creek near Smith, OR	60	1911
10401000	Riddle Creek near Diamond, OR	120	1917-21
10401500	Donner und Blitzen River near Voltage	760	1938-46
			1973-77
10402000	Malheur Lake Outlet (Malheur Lake) at Narrows, OR	2,150	1903-6
			1909
			1911-14
			1916
			1973-76
10402500	Mud Lake Outlet near Narrows, OR	2,160	1916-18
			1921-22
10403000	Silver Creek near Riley, OR	228	1951-80
10403500	Silver Creek above Suntex, Oregon	260	1904-6
			1909-12
			1914-23
			1925-26
10404000	Chickahominy Creek near Suntex, OR	90	1917
			1921
			1922-23
10404500	Rock Quarry Creek near Suntex, OR	--	1921
			1922
10405000	Silver Creek below Suntex, OR	550	1912-13
			1921-23
10406000	Silver Creek near Narrows, OR	630	1917
			1919-23
	CATLOW VALLEY		
10406300	Home Creek near Beckley (Narrows), OR	38	1911-12
			1915-17
			1930
	ALVORD LAKE BASIN		
10407000	Little Cottonwood Creek near Denio, OR	8	1911-12
	GOOSE LAKE (CLOSED BASIN)		
11338000	Dog Creek near Lakeview, OR	27	1912-13
11339500	Drews Creek near Lakeview, OR	212	1909-81
11340500	Cottonwood Creek near Lakeview, OR	32.9	1908-19
			1923-81
11341000	Thomas Creek near Lakeview, OR	30	1912-17
			1919
			1927-31

DISCONTINUED GAGING STATIONS

Station number	Station name	Drainage area (mi2)	Period of record
	LOST RIVER BASIN		
11483500	Miller Creek at Gerber Reservoir, near Lorella, OR	220	1904-8
			1925-50
11484000	Miller Creek near Lorella, OR	270	1909-20
11484500	Lost River above Olene, OR	1,410	1915-17
11485000	Lost River at Olene, OR	1,590	1904
			1907-12
11487000	Lost River at Wilson Bridge, near Olene, OR	1,620	1912-20
11487500	Lost River near Merrill, OR	1,670	1904-7
			1908-9
11488000	Lost River at Merrill, OR	1,680	1916
	KLAMATH RIVER BASIN		
11491500	Williamson River near Silver Lake, OR	220	1917-18
			1920-21
11492000	Miller Creek near Crescent, OR	23.7	1912-14
11492500	Sand Creek near Fort Klamath, OR	35	1917-22
11493000	Scott Creek near Fort Klamath, OR	10	1917-20
11494000	Williamson River above Spring Creek, near Klamath Agency, OR	1,330	1912-13
			1917-25
11494500	Williamson River at Chiloquin, OR	1,400	1911-16
			1917
11495500	South Fork Sprague River near Bly, OR	110	1925-26
11496500	North Fork Sprague River near Bly, OR	45	1917-18
			1925-26
11497000	Fivemile Creek near Bly, OR	40	1917-20
11498000	Sycan River near Silver Lake, OR	100	1918-20
11498100	Sycan River at Sycan Marsh, near Silver Lake, OR	220	1905
11498500	Long Creek near Silver Lake, OR	40	1918-23
			1926-29
11499000	Sycan River near Beatty, OR	540	1917-25
11500000	Sprague River near Yainax, OR	1,270	1904
11502000	Sprague River at Chiloquin, OR	1,600	1911-19
			1923
			1925
11503000	Annie Creek at Crater Lake, OR	--	1913
11503500	Annie Creek near Fort Klamath, OR	40	1922-27
11504000	Wood River at Fort Klamath, OR	90	1911
			1913-36
11504100	Wood River near Fort Klamath, OR	87.7	1964-67
11504200	Crooked Creek near Fort Klamath, OR	5.68	1964-67
11505500	Fourmile Creek near Odessa, OR	10.6	1912-17
11505600	Fourmile Creek near Rocky Point, OR	105	1964-67

DISCONTINUED GAGING STATIONS

Station number	Station name	Drainage area (mi^2)	Period of record
	KLAMATH RIVER BASIN--Continued		
11505700	Varney Creek near Rocky Point, OR	7.43	1964-67
11508500	Diversion from Klamath River to Lost River near Olene, OR	--	1931-68
11510000	Spencer Creek near Keno, OR	90	1929-32
11510500	Klamath River at Spencer Bridge, near Keno, OR	4,050	1913-31
11514500	Keene Creek near Ashland, OR	12.1	1917-22
			1948-65
	OWYHEE RIVER BASIN		
13181500	Crooked Creek near Rome, OR	1,700	1949-52
13182000	Owyhee River above Owyhee Reservoir, OR	10,400	1929-51
13184000	Owyhee River near Owyhee, OR	11,300	1890-96
			1903-16
			1920-29
			1979-86
	MALHEUR RIVER BASIN		
13213500	Malheur River at Jones' Ranch, near Drewsey, OR	530	1914
13215500	South Fork Malheur River at Riverside, OR	630	1910-14
			1919-20
			1927-29
			1938
13216000	Malheur River at Riverside, OR	1,750	1909-15
13218000	North Fork Malheur River at Foley's Ranch, near Beulah, OR	470	1909-14
13218500	North Fork Malheur River at Juntura, OR	530	1919-22
			1926-32
			1935-40
13219000	Malheur River near Namorf, OR	2,590	1913-23
			1926-31
13219500	Malheur River near Westfall, OR	2,970	1903-5
13220000	Malheur River at Little Valley, near Hope, OR	3,010	1949-79
13220500	Malheur River near Hope, OR	3,030	1919-1949
13221500	Malheur River near Little Valley, OR	3,030	1914
13223500	Malheur River at McLaughlin Bridge, near Vale, OR	3,060	1905-6
13225500	Bully Creek near Westfall, OR	160	1912-13
			1923
13226000	Cottonwood Creek near Westfall, OR	82	1922-23
13226500	Bully Creek at Warmsprings, near Vale, OR	539	1903-7
			1910-17
			1922-23
			1963-86
13227000	Bully Creek near Vale, OR	570	1933-62
13227500	Bully Creek at Vale, OR	620	1904-5

DISCONTINUED GAGING STATIONS

Station number	Station name	Drainage area (mi^2)	Period of record
	MALHEUR RIVER BASIN--Continued		
13228000	Malheur River at Vale, OR	3,880	1890-91
			1895-97
			1903-14
			1919
13229000	Malheur River below Nevada Dam, near Vale, OR	3,880	1926-34
			1936-42
			1944-50
13229500	Willow Creek near Malheur, OR	250	1912-15
			1921-29
13230500	Willow Creek below reservoir, near Malheur, OR	290	1904-6
			1911
			1920-29
13231000	Cow Creek near Brogan, OR	75	1912-14
13231500	Willow Creek near Brogan, OR	420	1912-14
13232000	Willow Creek at Cole's Ranch, near Brogan, OR	455	1904-6
13232500	Pole Creek near Brogan, OR	14	1912
13233000	Pole Creek below Black Creek feed canal, near Brogan, OR	14	1913
13233500	Malheur River at Halliday Bridge, near Ontario, OR	4,620	1904-5
13234000	Malheur River near Ontario, OR	4,680	1903-4
	BURNT RIVER BASIN		
13269300	North Fork Burnt River near Whitney, OR	110	1964-80
13269500	North Fork Burnt River at Audrey, OR	139	1915-16
13270000	Middle Fork Burnt River near Audrey, OR	9.54	1915-16
13270500	South Fork Burnt River near Unity, OR	30.9	1915-16
13270800	South Fork Burnt River above Barney Creek, near Unity, OR	38.5	1963-81
13271000	South Fork Burnt River at Hardman Ranch, near Unity, OR	44.4	1916-20
			1938-40
13271500	Fleetwood ditch near Unity, OR	--	1918-20
13272000	Sawmill Creek near Unity, OR	--	1915
13274000	Burnt River at Bridgeport, OR	600	1915-16
			1931-35
13274200	Burnt River near Bridgeport, OR	650	1956-80
13274500	Burnt River near Durkee, OR	700	1931-38
13275000	Burnt River at Huntington, OR	1,093	1928-32
			1956-59
			1962-80
	POWDER RIVER BASIN		
13275500	Powder River near Baker, OR	219	1903-14
			1926-68
13276000	Old Settlers Slough at Baker, OR	--	1913-14
13276500	Baldock Slough at Baker, OR	--	1913-14

DISCONTINUED GAGING STATIONS

Station number	Station name	Drainage area (mi^2)	Period of record
	POWDER RIVER BASIN--Continued		
13277500	Pine Creek near Baker, OR	8.8	1913-14
			1928-30
13278000	Goodrich Creek near Baker, OR	3.1	1913
13279000	Mill Creek near Baker, OR	3.9	1913-14
			1928-30
13279500	Marble Creek near Baker, OR	3.9	1913-14
			1928-30
13280000	Salmon Creek near Baker, OR	4.4	1913-14
			1928-29
13280500	Willow Creek near Haines, OR	2.4	1913
13281000	Powder River at Haines, OR	539	1914
13281500	Powder River near Haines, OR	572	1946-53
13282000	North Powder River near North Powder, OR	47.7	1912
13282500	Anthony Fork near North Powder, OR	37	1912
13283000	North Powder River at North Powder, OR	129	1912-14
13283500	Wolf Creek at Bauer's Ranch, near North Powder, OR	30	1913-14
13284000	Wolf Creek near North Powder, OR	32.9	1946-53
13284500	Powder River near North Powder, OR	860	1913-16
			1920-25
13286000	Big Creek near Medical Springs, OR	35.5	1913-14
13286500	Goose Creek near Keating, OR	41.9	1913-14
13287000	Eagle Creek above West Fork, near Baker, OR	18	1911
13287500	West Fork Eagle Creek near Baker, OR	15	1911
13288000	Eagle Creek near Baker, OR	42	1909-10
13288500	Eagle Creek near New Bridge, OR	170	1910-11
			1914
13289000	Daly Creek near Richland, OR	40.5	1913
13289500	Powder River near Robinette, OR	1,660	1928-57
	IMNAHA RIVER BASIN		
13291000	Imnaha River above Gumboat Creek, OR	99.6	1944-53
13291500	Big Sheep Creek near Joseph, OR	12.5	1920
	GRANDE RONDE RIVER BASIN		
13318000	Meadow Creek near Starkey, OR	140	1931-35
13318050	Meadow Creek below Smith Creek, near Starkey, OR	33.2	1977-79
13318060	Meadow Creek above Bear Creek, near Starkey, OR	48.2	1977-79
13318500	Grande Ronde River near Hilgard, OR	505	1938-56
13319000	Grande Ronde River at Hilgard, OR	555	1966-81
13320400	Little Creek at High Valley, near Union, OR	15.8	1918
13320500	Little Creek at Southerland Ranch, near Union, OR	23.8	1915
13321000	Little Creek near Union, OR	30.4	1918
13321500	Ladd Creek near Hot Lake, OR	40	1918
13322000	Mill Creek near Cove, OR	11.6	1918
			1920-21
13322500	Mill Creek near Summerville, OR	--	1914-15

DISCONTINUED GAGING STATIONS

Station number	Station name	Drainage area (mi^2)	Period of record
	GRANDE RONDE RIVER BASIN--Continued		
13323500	Grande Ronde River near Elgin, OR	1,250	1955-81
13323600	Indian Creek near Imbler, OR	22	1938-50
13324000	Grande Ronde River at Elgin, OR	1,400	1903-12
			1918-19
13324500	Wallowa Falls powerplant tailrace near Joseph, OR	--	1924-52
			1966-83
13325500	Wallowa River above Wallowa Lake, near Joseph, OR	43	1924-33
			1936-38
			1940-41
13326500	Joseph powerplant tailrace at Joseph, OR	--	1929-41
			1950-52
13329500	Hurricane Creek near Joseph, OR	29.6	1915
			1924-78
13330500	Bear Creek near Wallowa, OR	68	1915
			1924-85
13331000	Wallowa River near Wallowa, OR	520	1903-7
13332000	Wallowa River at Minam, OR	880	1903-14
13333500	Joseph Creek at Chico, OR	280	1931-33
13334000	Grande Ronde River at Zindel, WA	3,950	1904-12
	WALLA WALLA RIVER BASIN		
14010500	South Fork Walla Walla River below Pacific Power and Light Co.'s plant, near Milton, OR	80	1903-6
			1930-45
14011000	North Fork Walla Walla River near Milton, OR	43.8	1930-69
14011500	Walla Walla River near Milton, OR	130	1905-6
			1918-29
14012000	Walla Walla River at Milton, OR	155	1903-5
14012500	Walla River below Freewater, OR	160	1941-48
	UMATILLA RIVER BASIN		
14019500	North Fork Umatilla River near Gibbon, OR	31	1912-15
			1940-43
14020500	Umatilla River at Gibbon, OR	310	1896-99
			1900-01
			1902-12
14020700	Umatilla River near Cayuse, OR	384	1968-75
			1960-79
14022000	Umatilla River above McKay Creek, near Pendleton, OR	700	1921-34
14024000	McKay Creek at mouth, near Pendleton, OR	190	1903-4
			1922-24

DISCONTINUED GAGING STATIONS

Station number	Station name	Drainage area (mi^2)	Period of record
	UMATILLA RIVER BASIN--Continued		
14024200	East Birch Creek near Pilot Rock, OR	70	1968-73
14024500	Birch Creek near Pilot Rock, OR	240	1919-26
14025000	Birch Creek at Rieth, OR	291	1921-23
			1927-76
14025500	Umatilla River near Yoakum, OR	1,260	1915-36
	WILLOW CREEK BASIN		
14035000	Willow Creek near Morgan, OR	630	1921
			1928-31
14035500	Willow Creek above Eightmile Canyon, near Arlington, OR	680	1905
14036000	Willow Creek near Arlington, OR	850	1906
			1961-79
	JOHN DAY RIVER BASIN		
14038000	Strawberry Creek near Prairie City, OR	15	1916-17
			1925-30
14038500	John Day River at Prairie City, OR	231	1916-17
			1925-68
14039000	John Day River near Dayville, OR	960	1908-14
			1920-21
			1925-26
14039500	South Fork John Day River near Dayville, OR	590	1951-56
14040000	South Fork John Day at Dayville, OR	600	1908-14
			1920-21
			1925-26
14041000	Desolation Creek near Dale, OR	108	1915-17
			1949-58
14041500	North Fork John Day River near Dale, OR	525	1929-58
14042000	Camas Creek near Lehman, OR	60.7	1950-70
14043000	Cable Creek near Ukiah, OR	39	1914-17
			1919-24
			1932-37
			1939
14043500	Camas Creek below Cable Creek, near Ukiah, OR	--	1914
14043560	Snipe Creek near Ukiah, OR	37	1968-73
14044500	Fox Creek at gorge, near Fox, OR	90.2	1930-58
14045000	Cottonwood Creek near Monument, OR	210	1926-31
14045500	Cottonwood Creek at Monument, OR	232	1925
14047000	John Day River at Clarno, OR	5,940	1914-15
			1920-21
14047500	Rock Creek at Rock Creek, OR	500	1905
			1911

DISCONTINUED GAGING STATIONS

Station number	Station name	Drainage area (mi^2)	Period of record
	DESCHUTES RIVER BASIN		
14049000	Deschutes River above Snow Creek, near Lapine, OR	109	1922-25
14049500	Snow Creek above Crane Prairie, near Lapine, OR	23.0	1922-25
14051500	Cultus River below Cultus Creek near Lapine, OR	52.8	1922
14053000	Charlton Creek above Crane Prairie Reservoir near La Pine, OR	16	1938-79
14055000	Deschutes River above Davis Creek, near Lapine, OR	290	1925-32
14055500	Odell Creek near Crescent, OR	39.0	1911
			1912-14
			1923-24
			1933-76
14057000	Deschutes River at Pringle Falls, near Lapine, OR	507	1915-17
			1922-52
14058000	Deschutes River near Lapine, OR	600	1910-17
			1920
			1922
14058500	Deschutes River near Lava, OR	659	1905-7
			1909-12
14059000	Little Deschutes River at Crescent, OR	109	1905-8
			1910-14
14060500	Crescent Creek below Cold Creek near Crescent, OR	77	1922-26
			1931-32
14061000	Big Marsh Creek at Hoey Ranch, near Crescent, OR	51.5	1912-14
			1924
			1928-58
14061500	Crescent Creek near Crescent, OR	137	1912-14
14062000	Little Deschutes River above Walker Basin intake, near Lapine, OR	307	1914-17
			1919-26
			1931-32
14063500	Little Deschutes River at Allen's Ranch, near Lapine, OR	1,020	1905-12
			1913-15
			1931-32
			1943-44
14065000	Deschutes River above Lava Island, near Bend, OR	1,790	1914-16
			1943-50
14066000	Deschutes River below Lava Island, near Bend, OR	1,829	1926-65
14070700	Bridge Creek near Bend, OR	7	1980-86
14071500	Tumalo Creek near Tumalo, OR	30.9	1906-14
14073000	Tumalo Creek near Bend, OR	47	1974-87
14074000	Deschutes River at Tumalo, OR	1,983	1910-12
			1914-15
14074500	Deschutes River at Cline Falls, near Redmond, OR	2,080	1910-13
			1928-46
14077000	South Fork Beaver Creek near Paulina, OR	95	1944-53
14077500	North Fork Beaver Creek near Paulina, OR	64.4	1942-54
14078000	Beaver Creek near Paulina, OR	450	1942-75
			1924-33

DISCONTINUED GAGING STATIONS

Station number	Station name	Drainage area (mi^2)	Period of record
	DESCHUTES RIVER BASIN--Continued		
14078500	North Fork Crooked River above Deep Creek, OR	159	1941-54
14079000	North Fork Crooked River below Deep Creek, OR	264	1946-53
14079500	Crooked River near Post, OR	2,160	1908-11
			1939-60
			1968-73
			1976-77
14079800	Crooked River above Prineville Reservoir, near Post, OR	2,400	1960-68
14080000	Bear Creek at Rickman Ranch, near Roberts, OR	44	1920-23
14080250	Bear Creek near Prineville, OR	205	1976-81
14081500	Crooked River at Prineville, OR	2,820	1914
14082500	Marks Creek near Prineville, OR	61.0	1916
14083000	Ochoco Creek above Mill Creek near Prineville, OR	200	1917-22
			1924-28
14083500	Mill Creek near Prineville, OR	78.8	1916
			1917-18
			1920-22
			1924-33
14085000	Ochoco Creek at Elliott Ranch, near Prineville, OR	300	1909-10
			1914-17
14085500	Ochoco Creek at Prineville, OR	358	1912
			1913-15
14086000	McKay Creek near Prineville, OR	76.6	1924-32
14086500	McKay Creek above Old Dry Creek, near Prineville, OR	86.2	1918-19
			1920
14087000	McKay Creek below Old Dry Creek, near Prineville, OR	103	1915
14087300	Crooked River near Terrebonne, OR	4,240	1961-67
			1967-73
14087500	Crooked River near Culver, OR	4,330	1917-63
14088500	Metolius River at Allingham ranger station, near Sisters, OR	81.5	1910-13
			1915-17
14089000	First Creek near Sisters, OR	12.2	1915-17
			1924-28
14089500	Jack Creek near Sisters, OR	16.0	1915-16
14090000	Canyon Creek near Sisters, OR	32.5	1915-16
14090500	Whitewater River near Grandview, OR	30.6	1911-13
14092000	Metolius River at Riggs Ranch, near Sisters, OR	347	1908-12
14093000	Shitike Creek at Warm Springs, OR	104	1911-16
			1923-28
			1972-74
14093500	Deschutes River at Mecca, OR	7,940	1911-27
14094000	Trout Creek near Antelope, OR	220	1915-17
14094500	Trout Creek near Gateway, OR	--	1915-16
14095000	Hay Creek near Hay Creek, OR	78	1915-16
14096000	Mill Creek at outlet of Olallie Lake, OR	5.6	1915-16
14096500	Mill Creek near Warm Springs, OR	28.8	1915
14097000	Warm Springs River near Warm Springs, OR	517	1911-19

DISCONTINUED GAGING STATIONS

Station number	Station name	Drainage area (mi^2)	Period of record
	DESCHUTES RIVER BASIN--Continued		
14097200	White River near Government Camp, OR	40.7	1969-79
			1980-81
14097400	Clear Creek below Clear Lake, near Government Camp, OR	8.32	1968-73
14097500	Clear Creek near Government Camp, OR	9.94	1940-41
			1946-53
14098000	Clear Creek above intake, near Wapinitia, OR	17.7	1918-21
			1934-35
14098600	Clear Creek near Pine Grove, OR	38.3	1967-73
14099500	Gate Creek at Purcell Ranch, near Wamic, OR	23.9	1920-23
14100000	Gate Creek near Wamic, OR	28.3	1917-18
14100500	White River near Tygh Valley, OR	221	1911-18
14102000	Deschutes River at Sherars Bridge, OR	10,200	1923-32
	FIFTEENMILE CREEK BASIN		
14104000	Fifteenmile Creek near Dufur, OR	19.6	1918-19
14104500	Fifteenmile Creek near Wrentham, OR	171	1946-53
14105000	Eightmile Creek near Boyd, OR	56	1946-53
14105500	Fivemile Creek near The Dalles, OR	32.4	1925-26
			1927-28
			1930-31
	MILL CREEK BASIN		
14105850	South Fork Mill Creek near The Dalles, OR	28	1959-75
	MOSIER CREEK BASIN		
14113200	Mosier Creek near Mosier, OR	41.5	1963-81
	HOOD RIVER BASIN		
14113400	Dog River near Parkdale, OR	4.50	1959-71
14113500	East Fork Hood River above intake, near Mount Hood, OR	77.2	1915-22
14115000	East Fork Hood River near Mount Hood, OR	78.8	1913-14
14115500	East Fork Hood River near Dee, OR	108	1917
14116000	Hood River at Dee, OR	155	1913-16
			1917
14116500	Green Point Creek near Dee, OR	10.0	1919-21
14117500	North Fork Green Point Creek near Dee, OR	7.6	1919
			1921
14118000	Green Point Creek below North Fork, near Dee, OR	20.0	1949-54
14119000	Hood River at Winans, OR	259	1905-7
			1910-12
			1913
14121000	Hood River near Hood River, OR	329	1913-64

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1-D2. GUIDELINES FOR COLLECTION AND FIELD ANALYSIS OF GROUND-WATER SAMPLES FOR SELECTED UNSTABLE CONSTITUENTS, by W. W. Wood: USGS--TWRI book 1, Chapter D2. 1976. 24 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.

3-A3. MEASUREMENT OF PEAK DISCHARGE AT CULVERTS BY INDIRECT METHODS, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.

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3-A7. STAGE MEASUREMENTS AT GAGING STATIONS, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages.

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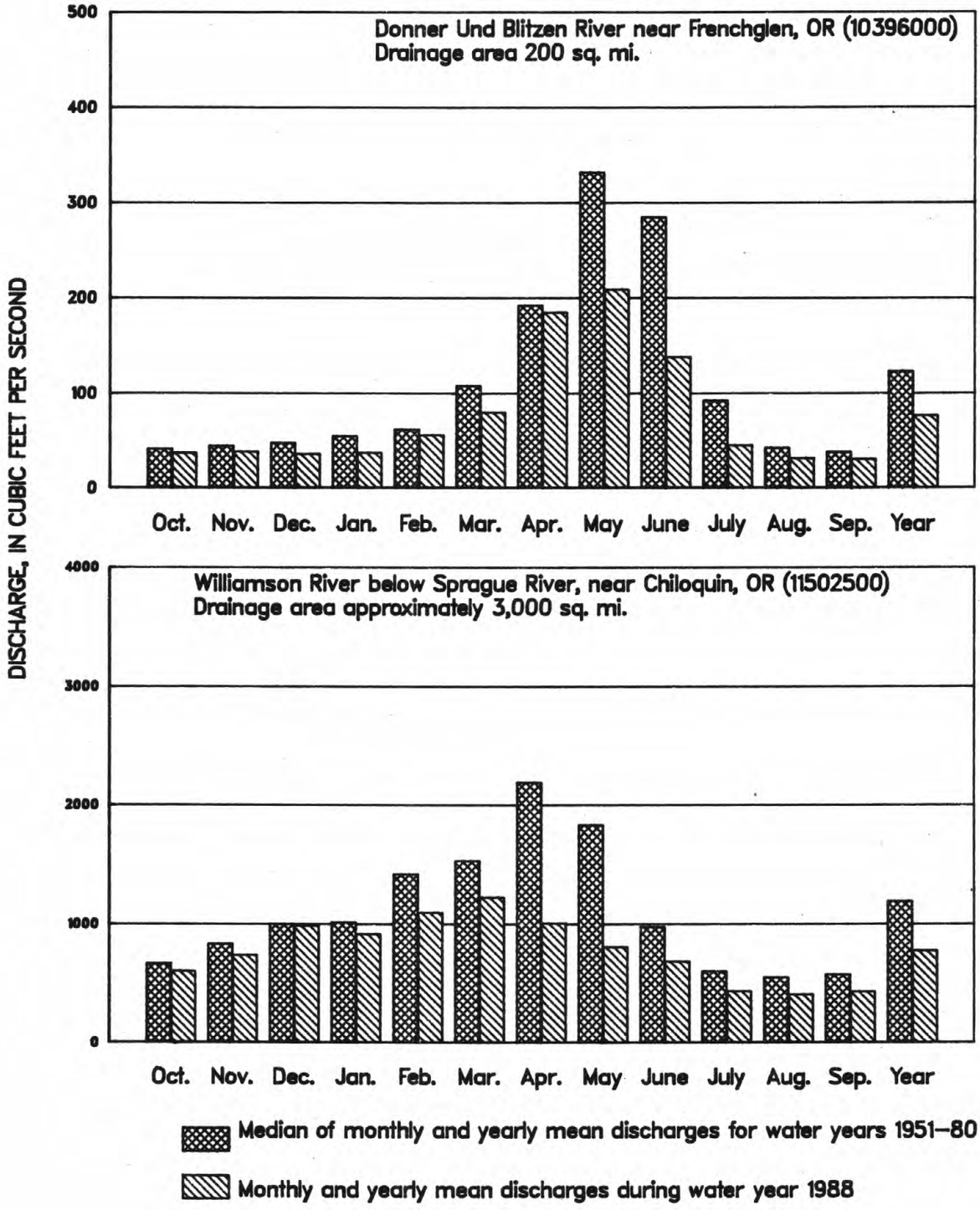

Figure 1a.--Discharge during 1988 water year compared with median discharge for period 1951-80 for two representative gaging stations in Eastern Oregon.

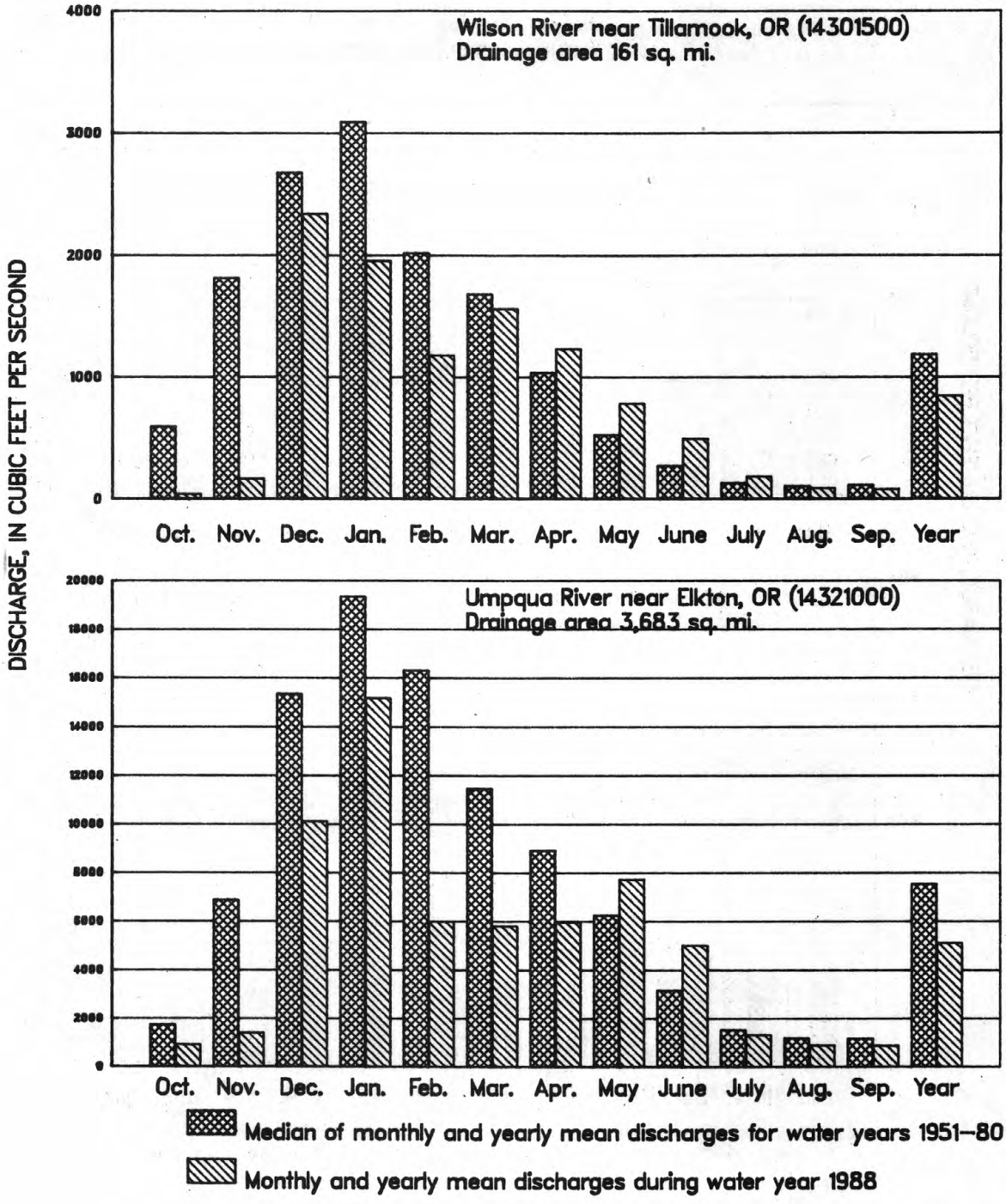

Figure 1b.--Discharge during 1988 water year compared with median discharge for period 1951-80 for two representative gaging stations in Western Oregon.

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)
M	Presence of material verified but not quantified

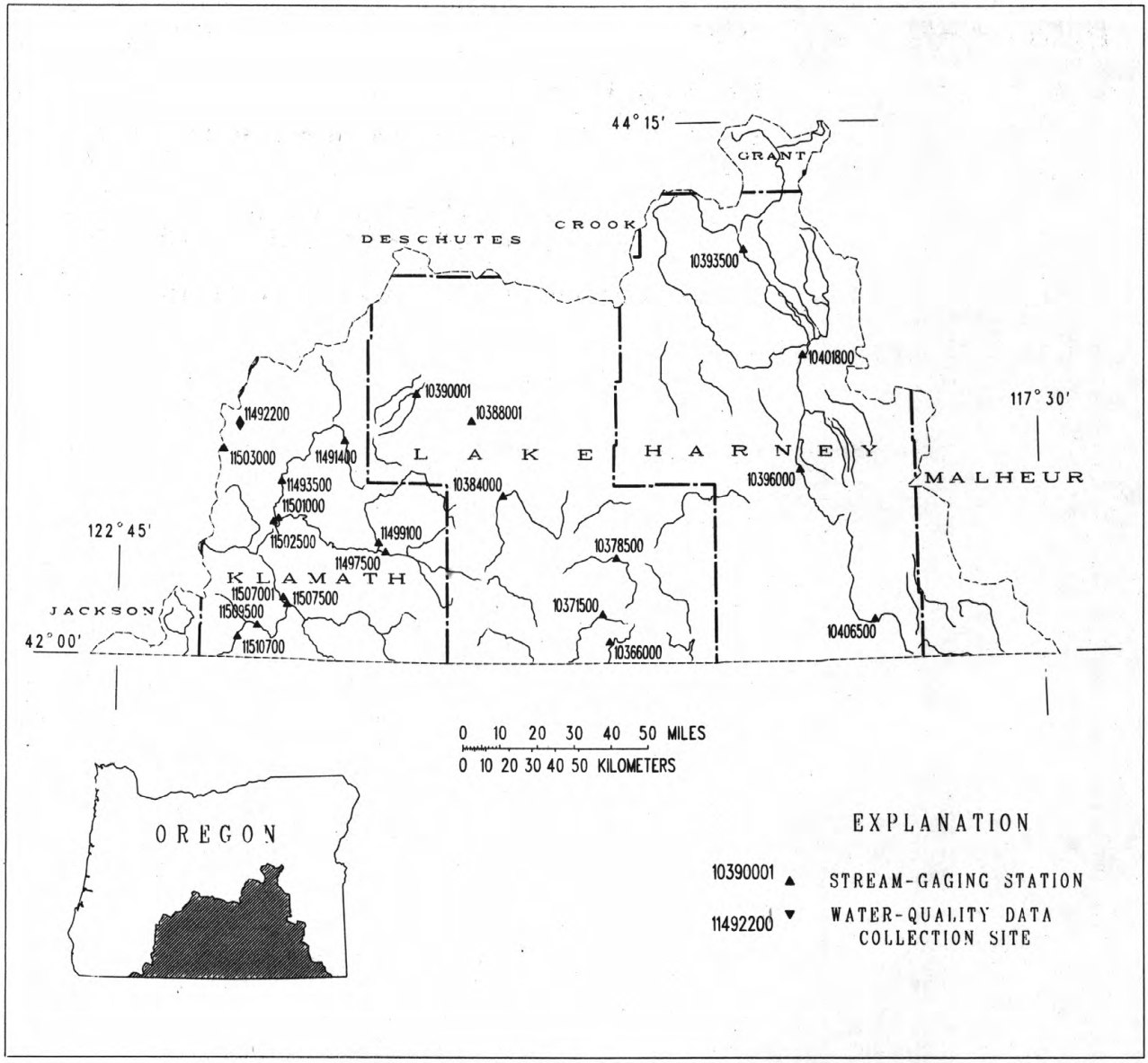

Figure 2.--Location of surface-water and water-quality stations in the Oregon Closed Basins and the Klamath River basin.

THE GREAT BASIN

WARNER LAKES BASIN

10366000 TWENTYMILE CREEK NEAR ADEL, OR

LOCATION.--Lat 42°04'20", long 119°57'42", in SW 1/4 NW 1/4 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), WDR OR-86-1: 1963(P), 1965(P), 1969-72(P), 1974(P), 1980(P), 1982(P), 1983(P).

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.--Records good except for flows below 10 ft^3/s, which are fair and estimated daily discharges, which are poor. 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	2.4	4.2	e4.5	6.8	124	4.1	31	37	4.0	e2.5	2.3
2	3.3	2.5	11	e4.2	e5.4	101	7.8	28	33	4.0	e3.0	2.4
3	2.9	2.5	13	7.3	e6.4	65	11	28	30	3.9	e2.6	2.3
4	2.1	2.4	7.7	7.2	e6.4	44	12	26	31	3.9	e2.2	e2.2
5	2.0	2.4	6.5	6.6	e6.3	57	11	24	29	4.0	e2.3	e2.1
6	2.1	2.4	6.2	6.2	e6.2	40	12	22	26	3.9	e2.5	e2.2
7	2.1	2.3	7.2	5.8	6.0	27	12	22	24	3.9	e2.9	e2.6
8	2.1	2.4	6.0	6.0	8.7	19	11	22	23	3.9	e2.7	e2.4
9	2.1	2.7	6.2	6.2	e16	19	10	20	20	3.9	e2.5	e2.4
10	2.3	2.7	31	12	e34	18	8.8	19	19	3.7	e2.5	e2.5
11	2.3	2.5	18	e7.0	e28	15	5.9	24	17	3.5	e2.7	e2.3
12	2.3	2.4	e6.2	e5.0	e21	13	9.4	33	16	3.3	e2.6	e3.1
13	2.2	3.3	e5.8	e6.0	e15	12	14	44	16	e3.5	e2.4	e2.8
14	2.4	4.0	e5.4	e8.0	e14	11	27	41	15	3.1	e2.3	e2.7
15	2.4	3.3	e5.8	e15	e13	10	27	44	15	3.1	2.9	e2.8
16	2.4	2.9	e5.8	e10	e15	9.7	25	50	15	e3.5	2.8	e2.9
17	2.4	3.1	e5.8	e5.0	e12	9.2	58	47	15	e3.5	2.7	e2.7
18	2.6	3.1	5.8	e4.0	13	9.0	57	41	14	e3.5	2.5	e2.5
19	2.6	3.0	6.3	e4.0	10	8.9	63	39	13	e3.5	2.5	2.8
20	2.4	2.9	5.0	e5.2	19	9.2	196	39	12	e3.5	2.4	3.6
21	2.5	2.9	6.6	e5.2	33	10	259	40	9.6	3.1	2.4	3.6
22	2.5	2.8	6.3	e5.2	35	10	149	42	7.3	3.3	2.4	3.3
23	2.4	2.7	4.6	6.4	33	10	185	43	5.3	e3.3	2.4	3.2
24	2.1	2.5	e4.5	6.0	36	11	75	41	3.9	e3.0	2.3	3.0
25	2.1	2.7	e4.5	5.8	48	10	45	40	4.7	e2.8	2.3	3.0
26	2.1	2.2	e4.5	5.8	63	10	39	41	6.2	e2.7	2.3	3.0
27	2.0	e2.0	e4.5	6.2	65	13	39	39	5.3	e2.6	2.3	3.2
28	2.1	e2.0	e6.2	6.6	165	12	36	39	4.4	e3.0	2.3	3.6
29	2.2	e2.0	e6.0	7.5	118	11	33	39	4.0	e2.8	2.3	3.4
30	2.5	2.8	e5.6	7.7	---	6.6	34	32	4.2	e2.4	2.3	3.3
31	2.4	---	e5.0	6.1	---	4.3	---	27	---	e2.4	2.3	---
TOTAL	73.1	79.8	227.2	203.7	858.2	728.9	1476.0	1067	474.9	104.5	77.1	84.2
MEAN	2.36	2.66	7.33	6.57	29.6	23.5	49.2	34.4	15.8	3.37	2.49	2.81
MAX	3.3	4.0	31	15	165	124	259	50	37	4.0	3.0	3.6
MIN	2.0	2.0	4.2	4.0	5.4	4.3	4.1	19	3.9	2.4	2.2	2.1
AC-FT	145	158	451	404	1700	1450	2930	2120	942	207	153	167

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	6.69	8.89	31.1	49.2	85.7	148.6	130.8	99.2	56.1	9.82	3.49	3.63
MAX	120.7	64.8	349.0	330.1	796.5	578.2	878.7	282.9	261.5	34.1	9.55	6.44
(WY)	1963	1982	1965	1970	1986	1943	1952	1952	1971	1952	1983	1983
MIN	2.36	2.66	3.13	2.79	3.26	5.87	5.89	9.43	4.18	1.52	1.15	2.13
(WY)	1988	1988	1977	1977	1977	1977	1977	1977	1977	1961	1955	1948

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	14.9		53.4	
HIGHEST ANNUAL MEAN			126	1952
LOWEST ANNUAL MEAN			4.22	1977
HIGHEST DAILY MEAN	259	Apr 21	9000	Feb 18 1986
LOWEST DAILY MEAN	2.0	Oct 5	.30	Aug 19 1955
INSTANTANEOUS PEAK FLOW	531	Apr 20	10400b	Feb 18 1986
INSTANTANEOUS PEAK STAGE (FEET)	5.15	Apr 20	16.94b	Feb 18 1986
INSTANTANEOUS LOW FLOW	0.96a	Dec 23	0.0	at times
10 PERCENTILE	38		128	
50 PERCENTILE	5.3		8.0	
95 PERCENTILE	2.0		2.2	

a Result of freezeup
b Based on slope-area measurement

10371500 DEEP CREEK ABOVE ADEL, OR

LOCATION.-- Lat 42°11'21", long 120°00'02", in SW 1/4 NW 1/4 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.--Records good except for estimated daily discharges which are fair. No regulation. Diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	16	23	e11	e18	160	78	198	252	22	7.3	6.6
2	12	17	127	e12	e16	174	93	179	266	21	6.6	7.0
3	12	18	107	e15	e16	172	102	157	194	19	6.3	6.3
4	13	17	60	e18	e17	169	106	137	165	15	6.4	6.2
5	13	16	47	e16	e17	246	96	134	151	14	6.5	6.3
6	12	16	41	e14	e19	211	109	124	143	14	7.8	6.2
7	12	16	33	e15	e22	137	135	128	137	13	7.9	5.9
8	13	16	32	e18	e23	120	106	137	144	13	7.5	5.9
9	13	17	31	23	e50	158	93	125	128	12	7.1	5.8
10	12	18	213	25	e95	118	93	109	111	12	6.9	6.3
11	13	17	97	e15	e65	98	101	113	94	11	7.7	6.7
12	13	17	e22	e20	e56	88	110	137	83	11	7.3	7.2
13	13	25	e15	26	e56	85	122	152	76	10	7.2	7.2
14	13	28	e14	34	e56	84	217	130	72	10	6.4	8.0
15	13	17	e15	38	e52	78	223	143	65	9.9	8.3	8.9
16	13	19	e16	e30	e58	74	172	167	61	9.7	8.7	7.6
17	13	22	e16	e18	e50	73	369	222	71	9.4	8.4	7.4
18	13	22	e15	e11	e52	79	313	184	71	8.9	7.8	7.3
19	13	21	e15	e11	53	95	273	161	59	8.7	7.4	9.1
20	13	20	e14	e14	49	115	313	153	e53	8.5	7.2	13
21	14	19	e16	e14	53	129	505	153	e46	8.4	6.9	14
22	14	17	e14	e14	55	110	576	162	e39	7.9	6.9	11
23	15	16	e13	e14	59	114	424	164	34	7.6	6.5	11
24	15	16	e11	e14	66	94	333	163	31	7.4	6.4	11
25	15	16	e11	e14	84	95	270	160	31	7.5	6.0	11
26	15	e15	e11	e15	96	119	234	153	46	7.4	5.7	11
27	15	e14	e12	e17	107	142	216	148	43	7.4	5.9	12
28	15	e14	e15	e19	158	113	199	176	34	8.2	6.0	15
29	15	e12	e14	e22	153	103	188	255	28	7.5	5.9	13
30	16	e15	e13	e25	---	85	222	188	23	7.4	6.3	12
31	16	---	e12	e21	---	80	---	150	---	7.3	6.3	---
TOTAL	419	529	1095	573	1671	3718	6391	4862	2751	336.1	215.5	265.9
MEAN	13.5	17.6	35.3	18.5	57.6	120	213	157	91.7	10.8	6.95	8.86
MAX	16	28	213	38	158	246	576	255	266	22	8.7	15
MIN	12	12	11	11	16	73	78	109	23	7.3	5.7	5.8
AC-FT	831	1050	2170	1140	3310	7370	12680	9640	5460	667	427	527

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	24.4	39.7	79.2	83.8	119.5	191.0	398.7	431.5	207.7	34.5	13.1	15.5
MAX	179.5	196.7	605.3	451.3	712.9	824.8	1072	920.3	629.4	114.9	32.3	31.9
(WY)	1963	1982	1965	1970	1982	1972	1952	1971	1983	1953	1983	1971
MIN	5.20	10.3	8.48	7.00	8.00	18.7	45.6	32.3	12.0	2.35	2.08	2.92
(WY)	1935	1940	1933	1933	1933	1933	1977	1934	1934	1934	1934	1934

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	62.4		133	
HIGHEST ANNUAL MEAN			288	1971
LOWEST ANNUAL MEAN			27.0	1977
HIGHEST DAILY MEAN	576	Apr 22	6000	Dec 23 1964
LOWEST DAILY MEAN	5.7	Aug 26	1.8	Aug 10 1934
INSTANTANEOUS PEAK FLOW	761	Apr 21	9420a	Dec 23 1964
INSTANTANEOUS PEAK STAGE (FEET)	3.29	Apr 21	10.64	Dec 23 1964
INSTANTANEOUS LOW FLOW	5.1	Aug 26, Sep 9	1.7	Jul 20, 27-29, 1934
10 PERCENTILE	165		407	
50 PERCENTILE	19		36	
95 PERCENTILE	5.7		7.2	

a 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

10378500 HONEY CREEK NEAR PLUSH, OR

LOCATION.--Lat 42°25'33", long 119°55'23", in SW 1/4 SW 1/4 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 4,552.80 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.--Records good except for estimated daily discharges, which are poor. Slight regulation by five small reservoirs, combined capacity, 870 acre-ft. Diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.32	e2.0	e7.5	e4.3	e6.6	17	21	48	29	3.0	e.40	e.35
2	.34	e2.0	e16	e5.0	e5.6	18	27	44	43	3.5	e.40	e.35
3	e.60	e2.2	e18	e5.8	e4.8	18	27	38	31	3.8	e.39	e.35
4	e1.0	e2.4	e16	e6.8	e5.0	19	28	34	24	4.2	e.39	e.35
5	e1.0	e2.6	e14	e7.8	e6.0	23	25	33	24	5.2	e.39	e.35
6	e1.0	e2.9	e13	e6.0	e7.8	24	28	31	24	4.6	e.40	e.35
7	e1.1	e3.3	e14	e7.0	e11	17	32	33	22	2.5	e.40	e.35
8	e1.1	e3.8	e10	e9.0	e23	17	28	32	21	1.9	e.40	e.35
9	e1.1	e4.5	e10	e8.4	e33	19	23	29	20	.87	e.40	e.35
10	e1.2	e5.0	e20	e9.4	e21	15	22	25	17	1.2	e.40	e.35
11	e1.2	e5.0	e18	e11	e15	14	23	22	14	1.1	e.40	e.35
12	e1.2	e5.0	e11	e7.0	e14	8.6	25	20	12	.76	e.40	e.37
13	e1.3	e5.0	e6.5	e8.2	e12	10	26	20	12	.75	e.40	e.40
14	e1.3	e5.0	e7.0	e11	e10	12	34	23	12	.58	e.41	e.45
15	e1.3	e5.0	e7.5	e15	17	11	40	21	11	.82	e.45	e.47
16	e1.4	e5.8	e8.2	e10	12	11	28	20	11	.79	e.50	e.46
17	e1.4	e6.5	e7.6	e6.8	9.2	10	91	26	11	.60	e.50	e.41
18	e1.4	e7.2	e7.6	e5.0	12	9.0	71	26	10	.52	e.48	e.50
19	e1.5	e8.0	e7.0	e5.0	9.0	7.5	47	26	9.9	.44	e.45	e.60
20	e1.5	e9.0	e6.0	e5.4	9.0	12	58	24	7.5	.34	e.43	e.64
21	e1.5	e8.7	e8.8	e5.8	9.7	19	79	21	5.4	.29	e.42	e.56
22	e1.5	e8.2	e8.2	e6.2	9.7	20	105	19	4.4	.17	e.41	e.52
23	e1.5	e7.7	e7.2	e6.2	8.7	17	103	21	4.2	.17	e.40	e.48
24	e1.5	e7.3	e6.0	e6.2	9.4	15	85	21	4.6	.16	e.38	e.45
25	e1.5	e7.0	e5.2	e6.2	9.5	15	74	21	4.9	.24	e.37	e.40
26	e1.5	e6.8	e6.2	e7.0	10	17	70	20	5.1	.19	e.36	e.42
27	e1.6	e6.8	e7.6	e8.4	12	30	76	18	5.3	.24	e.35	e.45
28	e1.7	e6.2	e7.4	e10	13	24	72	16	5.4	.18	e.35	e.54
29	e1.8	e5.5	e6.6	e12	17	23	56	28	3.7	.33	e.35	e.64
30	e1.9	e6.5	e5.4	e10	---	21	52	29	3.0	e.44	e.36	e.76
31	e2.0	---	e4.5	e8.0	---	21	---	23	---	e.43	e.36	---
TOTAL	40.26	162.9	298.0	239.9	342.0	514.1	1476	812	411.4	40.31	12.50	13.37
MEAN	1.30	5.43	9.61	7.74	11.8	16.6	49.2	26.2	13.7	1.30	.40	.45
MAX	2.0	9.0	20	15	33	30	105	48	43	5.2	.50	.76
MIN	.32	2.0	4.5	4.3	4.8	7.5	21	16	3.0	.16	.35	.35
AC-FT	80	323	591	476	678	1020	2930	1610	816	80	25	27

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	3.63	6.86	20.3	22.8	32.9	49.1	97.0	118.0	48.3	8.46	1.51	1.17
MAX	38.5	32.1	252.7	106.8	180.7	181.1	263.5	317.5	157.9	27.8	7.45	3.87
(WY)	1963	1982	1965	1974	1982	1986	1952	1971	1983	1983	1965	1965
MIN	.119	.923	.961	1.13	5.04	4.62	10.1	10.9	3.19	.319	.187	.230
(WY)	1962	1960	1960	1960	1955	1977	1977	1977	1977	1968	1951	1955

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	11.9		30.6	
HIGHEST ANNUAL MEAN			78.8	1971
LOWEST ANNUAL MEAN			3.84	1977
HIGHEST DAILY MEAN	105	Apr 22	3500	Dec 23 1964
LOWEST DAILY MEAN	.16	Jul 24	.10	Aug 6 1951
INSTANTANEOUS PEAK FLOW	146	Apr 17	11000a	Dec 23 1964
INSTANTANEOUS PEAK STAGE (FEET)	3.62b	Feb 9	13.4c	Dec 23 1964
INSTANTANEOUS LOW FLOW	0.01	Jul 23, 24	0.0	at times
10 PERCENTILE	28		101	
50 PERCENTILE	6.8		7.7	
95 PERCENTILE	.35		.24	

a From rating curve extended above 250 ft^3/s on basis of slope-area measurement at gage height 10.46 and of peak flow
b Backwater from ice
c From floodmark

10384000 CHEWAUCAN RIVER NEAR PAISLEY, OR

LOCATION.--Lat 42°41'05", long 120°34'08", in SW 1/4 NW 1/4 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 mi^2.

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.--Records good except for estimated daily discharges, which are poor. No regulation. Diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	32	75	e31	e55	138	147	226	222	53	23	22
2	27	35	112	e35	e40	142	164	206	256	50	22	21
3	26	35	112	e38	e35	142	221	193	194	47	21	21
4	26	33	80	e47	e35	143	224	185	176	46	20	21
5	26	32	62	e43	e36	188	190	190	168	47	20	22
6	26	33	57	e37	e40	195	202	173	183	45	22	22
7	26	33	55	e39	e50	147	224	169	160	43	22	22
8	26	32	47	e44	e60	145	190	174	149	41	21	21
9	28	33	51	e47	e87	161	184	168	137	39	21	22
10	28	35	159	e50	e130	121	182	156	129	33	20	23
11	28	34	122	e53	e100	125	190	156	119	30	21	23
12	28	34	62	e38	e85	106	202	164	112	32	22	24
13	28	51	41	e44	e75	110	212	182	107	31	25	25
14	28	53	46	e54	e65	117	317	181	103	31	22	25
15	28	36	53	e62	e70	104	322	178	101	31	22	25
16	29	39	60	e80	e75	99	273	184	102	29	23	24
17	29	40	55	e54	e68	98	343	204	100	29	22	24
18	29	40	56	e40	72	107	297	183	94	28	22	25
19	29	37	e49	e32	69	118	296	171	87	27	21	27
20	29	37	e40	e35	73	135	325	165	81	26	21	30
21	30	36	e54	e38	75	154	316	162	77	25	21	30
22	30	34	e54	e41	76	143	308	165	73	24	21	28
23	30	32	e48	e41	78	152	280	169	68	23	22	27
24	30	34	e35	e42	82	137	256	169	64	24	21	27
25	30	33	e35	e42	83	138	233	163	63	24	20	26
26	30	e31	e37	e43	87	165	220	160	67	23	20	26
27	30	e31	e43	e47	96	185	212	161	63	24	21	27
28	30	e28	e52	e53	121	155	212	164	59	24	21	29
29	31	e26	e45	e60	138	161	218	205	56	23	21	27
30	33	e35	e40	e67	---	142	259	167	55	23	21	27
31	33	---	e33	e74	---	137	---	148	---	23	22	---
TOTAL	888	1054	1870	1451	2156	4310	7219	5441	3425	998	664	743
MEAN	28.6	35.1	60.3	46.8	74.3	139	241	176	114	32.2	21.4	24.8
MAX	33	53	159	80	138	195	343	226	256	53	25	30
MIN	26	26	33	31	35	98	147	148	55	23	20	21
AC-FT	1760	2090	3710	2880	4280	8550	14320	10790	6790	1980	1320	1470

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	40.1	54.5	86.5	88.9	114.8	170.2	344.1	497.2	256.9	64.2	31.9	31.5
MAX	156.1	204.8	657.3	394.9	566.3	658.5	828.4	1211	792.8	219.2	75.2	53.4
(WY)	1963	1974	1965	1970	1982	1972	1956	1971	1983	1983	1983	1983
MIN	22.1	20.7	10.0	17.0	22.8	42.2	53.8	56.9	25.0	13.7	9.39	14.1
(WY)	1927	1931	1931	1962	1929	1977	1977	1977	1926	1931	1931	1931

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	82.6		147	
HIGHEST ANNUAL MEAN			352	1956
LOWEST ANNUAL MEAN			34.1	1931
HIGHEST DAILY MEAN	343	Apr 17	4550	Dec 23 1964
LOWEST DAILY MEAN	20	Aug 4	7.0	Jul 30 1934
INSTANTANEOUS PEAK FLOW	399	Apr 17	6490a	Dec 22 1964
INSTANTANEOUS PEAK STAGE (FEET)	2.64b	Feb 10	8.35	Dec 22 1964
INSTANTANEOUS LOW FLOW	19	Aug 3-5, 10, 25, 26	0.0c	
10 PERCENTILE	189		409	
50 PERCENTILE	48		58	
95 PERCENTILE	22		21	

a From rating curve extended above 900 ft^3/s on basis of slope-area measurement of peak flow
b Backwater from ice
c No flow for part of each day Dec. 7, 1927, Dec. 12, 1932, result of freezeup

10388001 ANA RIVER NEAR SUMMER LAKE, OR

LOCATION.--Lat 42°59'42", long 120°44'54", in SE 1/4 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 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.--40 years (water years 1931-32, 1936, 1952-88), 90.8 ft^3/s, 65,780 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 daily discharge, 108 ft^3/s May 4; minimum daily discharge, 68 ft^3/s Sept. 16, 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	87	93	94	92	93	94	91	88	89	81	82	81
2	90	93	95	92	92	94	90	83	90	81	82	81
3	89	93	94	93	92	94	88	96	89	81	81	81
4	89	92	94	93	92	94	88	108	87	80	83	82
5	89	92	94	92	92	94	89	87	86	82	83	82
6	88	92	94	93	92	94	89	78	87	81	84	82
7	88	92	94	93	92	94	89	78	86	81	83	82
8	88	92	94	93	92	94	87	85	85	82	83	82
9	94	92	93	92	92	94	84	98	85	82	83	82
10	97	92	93	92	92	94	84	96	84	82	82	82
11	96	92	93	91	92	94	79	88	84	82	84	82
12	96	92	93	91	92	94	75	81	84	82	83	77
13	95	92	93	92	93	94	77	80	84	84	84	72
14	94	92	93	92	93	94	79	83	84	84	83	72
15	97	92	93	92	92	94	80	84	84	83	83	69
16	98	92	93	92	92	94	81	85	84	83	83	68
17	97	94	94	93	92	93	82	84	84	81	83	68
18	96	95	94	93	92	93	83	83	84	81	83	69
19	95	95	94	93	93	93	84	84	83	81	82	79
20	95	95	94	93	93	94	86	84	81	81	83	96
21	95	94	93	93	94	93	87	85	79	80	82	96
22	94	94	92	93	94	93	87	86	80	81	76	95
23	94	94	91	93	94	93	88	85	82	81	82	94
24	94	94	91	93	94	93	89	85	85	82	81	93
25	93	93	92	93	94	92	89	85	83	82	81	92
26	93	93	92	93	94	92	89	86	82	82	81	92
27	93	93	92	92	94	92	90	87	82	82	81	91
28	93	93	92	92	94	92	91	88	82	82	81	90
29	93	93	92	92	94	91	91	88	82	82	81	90
30	93	94	92	92	---	91	90	88	81	82	82	89
31	93	---	92	93	---	91	---	88	---	82	81	---
TOTAL	2886	2789	2884	2866	2691	2890	2576	2684	2522	2533	2546	2491
MEAN	93.1	93.0	93.0	92.5	92.8	93.2	85.9	86.6	84.1	81.7	82.1	83.0
MAX	98	95	95	93	94	94	91	108	90	84	84	96
MIN	87	92	91	91	92	91	75	78	79	80	76	68
AC-FT	5720	5530	5720	5680	5340	5730	5110	5320	5000	5020	5050	4940

CAL YR 1987 TOTAL 32070 MEAN 87.9 MAX 98 MIN 57 AC-FT 63610
WTR YR 1988 TOTAL 32358 MEAN 88.4 MAX 108 MIN 68 AC-FT 64180

10390001 SILVER CREEK NEAR SILVER LAKE, OR

LOCATION.--Lat 43°06'50", long 121°03'59" in NE 1/4 SW 1/4 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.--Records good except for estimated daily discharges, which are poor. 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.--76 years (water years 1906, 1910-27, 1930-41, 1944-88), 31.5 ft^3/s, 22,820 acre-ft/yr, including diversion by Silver Lake Irrigation District Canal.

EXTREMES FOR PERIOD OF RECORD.--Creek only, 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.

Combined flow, 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.--Creek only, maximum discharge, 61 ft^3/s Oct. 1, gage height, 2.49 ft; maximum gage height, 2.87 ft Jan. 12, backwater from ice; minimum discharge, 0.06 ft^3/s Nov. 23.

Combined flow, maximum daily discharge, 49 ft^3/s Oct. 1; minimum daily discharge, 0.12 ft^3/s Nov. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	1.9	e2.8	.92	e7.5	8.8	1.2	10	45	35	38	18
2	42	2.9	e3.5	1.9	e7.5	8.5	1.3	21	45	32	39	18
3	40	3.2	e4.0	e2.5	e7.5	8.9	1.3	26	44	32	39	18
4	37	2.3	e4.5	e3.5	e7.5	8.9	1.4	27	44	32	39	18
5	34	2.2	4.9	e4.0	e7.5	8.7	2.7	36	45	31	40	18
6	31	2.2	5.0	e4.0	e7.8	8.6	2.4	36	45	30	40	18
7	29	2.1	4.8	e4.0	e8.0	8.7	2.3	35	41	26	40	18
8	26	2.0	3.3	e4.0	e8.2	8.5	2.4	28	44	25	40	17
9	24	2.0	3.5	e4.0	e8.2	8.5	2.5	26	41	25	39	17
10	21	2.0	12	e4.0	e8.2	8.6	4.7	25	42	20	39	17
11	18	2.0	e13	e4.0	e8.1	8.8	9.6	25	41	18	38	13
12	16	2.1	e9.0	e4.0	e8.1	8.8	e11	38	39	18	36	12
13	14	2.9	e8.5	e4.0	e8.1	8.9	e12	44	38	19	26	12
14	12	3.0	e7.5	e4.0	e8.1	8.9	e20	44	39	20	25	12
15	7.7	1.9	4.9	e4.0	e8.1	8.5	22	44	38	20	24	11
16	4.6	2.2	4.7	e4.0	e7.7	8.3	18	46	45	20	22	11
17	4.4	2.9	4.7	e4.0	e7.2	7.0	17	46	46	20	21	11
18	3.9	2.5	4.4	e4.0	e7.2	6.8	16	46	43	20	19	11
19	2.4	2.4	4.2	e4.0	e7.3	4.5	15	45	42	30	18	12
20	2.0	2.0	3.7	e4.0	e7.5	3.9	16	45	42	33	18	13
21	2.2	.31	e3.5	e4.5	7.8	4.0	18	45	43	34	18	12
22	2.0	.12	e3.5	e4.5	7.8	3.7	17	45	46	34	18	12
23	1.9	2.0	e3.3	e5.0	e7.8	3.2	16	45	48	34	19	17
24	1.9	2.9	e3.5	e6.0	7.9	2.7	13	45	48	34	18	26
25	1.9	e3.1	3.2	e7.0	7.9	3.2	13	45	47	35	18	30
26	1.9	2.5	2.8	e7.3	8.1	3.4	11	45	46	35	18	27
27	1.8	2.4	2.3	e7.6	8.2	3.7	12	45	46	40	18	26
28	1.8	e2.3	2.1	e8.0	8.6	3.7	12	44	46	44	18	25
29	1.9	e2.3	1.8	e8.0	8.7	3.2	9.9	44	45	44	18	21
30	1.9	2.3	1.5	e7.8	---	2.3	10	42	42	41	18	7.4
31	1.9	---	1.2	e7.5	---	2.1	---	43	---	39	18	---
TOTAL	439.1	66.93	141.6	146.02	228.1	196.3	310.7	1181	1306	920	839	498.4
MEAN	14.2	2.23	4.57	4.71	7.87	6.33	10.4	38.1	43.5	29.7	27.1	16.6
MAX	49	3.2	13	8.0	8.7	8.9	22	46	48	44	40	30
MIN	1.8	.12	1.2	.92	7.2	2.1	1.2	10	38	18	18	7.4
AC-FT	871	133	281	290	452	389	616	2340	2590	1820	1660	989

CAL YR 1987 TOTAL 10327.63 MEAN 28.3 MAX 71 MIN .12 AC-FT 20480
WTR YR 1988 TOTAL 6273.15 MEAN 17.1 MAX 49 MIN .12 AC-FT 12440

e Estimated

10393500 SILVIES RIVER NEAR BURNS, OR

LOCATION.-- Lat 43°42'55", long 119°10'35", in NW 1/4 NW 1/4 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.--Records good except for estimated daily discharges, which are poor. No regulation. Diversions for irrigation upstream from station during periods of high flow only.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	20	25	e26	e35	154	101	139	55	22	5.6	3.3
2	15	20	32	e25	e31	157	106	130	62	20	5.4	3.7
3	15	19	37	e21	e27	161	119	127	58	19	5.2	3.7
4	15	19	43	e21	e26	158	140	128	52	18	5.4	4.0
5	15	20	39	e23	e30	179	136	126	54	17	5.5	4.3
6	16	19	44	e27	e37	186	127	126	60	17	5.9	4.2
7	16	20	41	e27	e37	169	127	118	66	16	5.8	4.2
8	16	19	35	e28	e43	155	127	106	64	16	5.8	4.0
9	16	20	41	e30	e54	153	120	104	66	15	5.6	4.3
10	17	22	43	e32	e64	136	117	104	69	14	5.3	5.0
11	19	22	65	e35	e75	115	113	93	64	13	5.0	4.9
12	17	22	48	e37	e95	107	112	85	60	12	4.8	5.1
13	17	25	e37	e31	e90	99	111	75	57	12	5.0	5.4
14	17	27	e33	e35	e85	101	109	68	52	11	5.3	5.3
15	17	24	e37	e42	e77	91	109	65	48	11	6.5	6.8
16	17	23	46	e54	e72	86	109	60	45	11	7.7	7.3
17	17	25	42	e45	e70	82	132	62	43	10	7.0	7.4
18	17	23	38	e39	e65	82	210	63	42	9.4	6.2	7.8
19	17	25	38	e34	e63	84	191	57	39	8.8	5.7	8.7
20	17	27	34	e28	e65	92	213	54	35	8.6	5.9	9.3
21	17	26	e30	e33	e70	101	230	52	34	8.1	5.9	9.8
22	17	28	e30	e35	e80	106	235	50	32	7.5	6.1	9.6
23	18	26	37	e34	e85	101	233	48	29	7.2	5.7	9.6
24	18	36	e31	e34	e85	98	216	46	27	7.0	6.1	9.2
25	18	34	e25	e33	105	90	196	44	26	6.8	6.0	9.2
26	18	e28	e21	e34	118	92	184	41	27	6.4	5.4	9.3
27	18	25	e20	e34	137	103	181	39	28	6.2	4.8	9.4
28	18	e24	e20	e35	145	103	174	41	27	6.2	4.7	9.4
29	18	24	e23	e35	134	103	154	55	24	6.0	4.6	9.8
30	19	24	e24	e37	---	104	149	56	23	5.7	4.4	9.9
31	19	---	e25	e40	---	100	---	50	---	5.7	4.0	---
TOTAL	526	716	1084	1024	2100	3648	4581	2412	1368	353.6	172.3	203.9
MEAN	17.0	23.9	35.0	33.0	72.4	118	153	77.8	45.6	11.4	5.56	6.80
MAX	19	36	65	54	145	186	235	139	69	22	7.7	9.9
MIN	15	19	20	21	26	82	101	39	23	5.7	4.0	3.3
AC-FT	1040	1420	2150	2030	4170	7240	9090	4780	2710	701	342	404

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	20.9	34.8	55.6	85.7	176.5	368.4	740.5	452.7	135.9	34.8	14.7	13.7
MAX	74.5	142.4	482.2	714.9	799.0	1653	2716	1898	612.1	182.0	69.2	72.5
(WY)	1985	1985	1965	1965	1982	1983	1952	1983	1984	1983	1984	1984
MIN	3.88	5.17	10.0	10.0	18.0	30.0	11.7	5.62	2.24	.445	.000	.590
(WY)	1932	1932	1932	1932	1937	1934	1934	1934	1934	1934	1934	1934

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	49.7		179	
HIGHEST ANNUAL MEAN			592	1983
LOWEST ANNUAL MEAN			15.0	1934
HIGHEST DAILY MEAN	235	Apr 22	4500	Apr 6 1952
LOWEST DAILY MEAN	3.3	Sep 1	.00	Jul 19 1934
INSTANTANEOUS PEAK FLOW	238	Apr 22	4960	Apr 6 1952
INSTANTANEOUS PEAK STAGE (FEET)	3.05	Apr 22	15.2	Apr 6 1952
INSTANTANEOUS LOW FLOW	2.9	Sep 1	0.0	Jul 19 - Sep 20, 1934
10 PERCENTILE	124		535	
50 PERCENTILE	32		43	
95 PERCENTILE	4.9		4.3	

10396000 DONNER UND BLITZEN RIVER NEAR FRENCHGLEN, OR

LOCATION.--Lat 42°47'28", long 118°52'00", in NW 1/4 NW 1/4 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.--Records excellent. No regulation or diversion upstream from station. Water-quality records for period March 1975 to September 1986 have been collected at this location. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	38	46	e37	e33	191	73	175	200	68	33	29
2	37	42	44	e35	21	118	86	164	196	65	32	29
3	36	40	46	e29	29	76	98	156	210	65	33	29
4	36	39	40	e28	38	80	97	145	202	62	32	28
5	37	38	39	e32	39	110	84	139	175	60	32	29
6	37	38	39	e35	42	92	97	136	165	57	36	29
7	37	39	39	e39	44	69	116	130	159	55	35	29
8	37	38	35	44	45	68	92	123	143	50	33	29
9	37	40	39	44	46	77	86	122	130	50	32	29
10	37	40	45	46	46	73	87	123	122	49	31	29
11	36	38	40	42	45	65	96	146	124	48	32	29
12	37	40	33	33	54	63	108	207	122	47	32	30
13	37	48	29	46	60	61	118	282	132	46	34	30
14	37	46	26	45	43	62	126	250	138	45	35	30
15	36	37	44	43	50	59	148	271	147	45	34	30
16	37	41	45	39	51	58	136	336	149	44	34	30
17	37	40	41	26	40	56	403	273	163	42	32	30
18	37	36	35	26	45	59	335	241	146	40	31	30
19	37	41	39	e22	39	64	342	228	144	39	31	34
20	37	39	31	e32	43	73	315	234	132	38	30	39
21	37	39	e29	43	53	84	424	253	127	37	30	34
22	37	38	40	35	62	83	363	282	124	37	30	33
23	37	38	32	43	60	89	321	291	113	36	30	32
24	38	37	18	32	74	77	222	283	109	36	29	31
25	37	39	e20	37	99	73	227	261	114	35	29	31
26	37	30	e25	40	100	84	214	248	122	35	29	31
27	37	e29	e30	42	89	109	191	225	97	35	29	34
28	37	e28	e33	41	111	83	189	219	84	35	29	33
29	38	30	e35	40	125	81	183	205	76	34	29	32
30	39	43	e37	41	---	74	187	169	71	33	29	31
31	38	---	e38	37	---	69	---	156	---	33	29	---
TOTAL	1148	1149	1112	1154	1626	2480	5564	6473	4136	1401	976	923
MEAN	37.0	38.3	35.9	37.2	56.1	80.0	185	209	138	45.2	31.5	30.8
MAX	39	48	46	46	125	191	424	336	210	68	36	39
MIN	36	28	18	22	21	56	73	122	71	33	29	28
AC-FT	2280	2280	2210	2290	3230	4920	11040	12840	8200	2780	1940	1830

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	44.5	48.4	56.7	66.1	94.4	146.6	225.1	377.4	291.2	99.0	48.1	42.7
MAX	86.4	94.3	181.1	238.9	310.1	392.0	666.3	812.2	802.1	319.7	113.4	87.3
(WY)	1985	1985	1965	1971	1921	1984	1952	1984	1917	1984	1984	1984
MIN	25.4	25.3	25.2	25.0	27.8	40.5	61.2	137.7	67.8	28.9	24.2	23.5
(WY)	1969	1962	1960	1916	1964	1977	1968	1968	1966	1968	1966	1968

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	76.9		127	
HIGHEST ANNUAL MEAN			273	1984
LOWEST ANNUAL MEAN			55.2	1966
HIGHEST DAILY MEAN	424	Apr 21	2180	Jan 18 1971
LOWEST DAILY MEAN	18	Dec 24	11	Nov 16 1961
INSTANTANEOUS PEAK FLOW	736	Apr 17	4270a	Apr 26 1978
INSTANTANEOUS PEAK STAGE (FEET)	3.87	Apr 17	7.15b	Apr 26 1988
INSTANTANEOUS LOW FLOW	7.6	Feb 3	4.2c	Dec 9 1972

a From rating curve extended above 1,900 ft^3/s on basis of slope-area measurement of peak flow
b From floodmarks
c Result of freezeup

10401800 MALHEUR LAKE NEAR VOLTAGE, OR

LOCATION.--Lat 43°16'04", long 118°50'31", in NE 1/4 SE 1/4 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" (station 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.

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 elevation, 4,099.68 ft Mar. 14, affected by wind; minimum recorded, 4,097.56 ft Aug, 5, but was lower during period of no record, Aug. 6 to Sept. 30.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4098.79	4098.58	4098.58	4098.78	4098.98	4099.04	4098.88	4098.76	4098.33	4098.10	4097.77	---
2	4098.79	4098.63	4098.66	4098.80	4098.97	4099.01	4098.80	4098.73	4098.34	4098.09	4097.76	---
3	4098.78	4098.62	4098.63	4098.82	4098.97	4099.00	4098.85	4098.73	4098.36	4098.14	4097.73	---
4	4098.77	4098.62	4098.71	4098.83	4098.97	4099.02	4098.88	4098.74	4098.33	4098.09	4097.69	---
5	4098.75	4098.63	4098.67	4098.83	4098.97	4098.98	4098.88	4098.72	4098.32	4098.06	4097.63	---
6	4098.75	4098.61	4098.53	4098.83	4098.99	4099.04	4098.80	4098.68	4098.32	4098.03	---	---
7	4098.74	4098.59	4098.60	4098.84	4099.00	4099.01	4098.95	4098.69	4098.29	4098.00	---	---
8	4098.72	4098.62	4098.64	4098.86	4099.01	4098.99	4098.89	4098.63	4098.33	4097.98	---	---
9	4098.73	4098.58	4098.55	4098.88	4099.02	4099.05	4098.89	4098.66	4098.33	4097.97	---	---
10	4098.74	4098.62	4098.67	4098.89	4099.03	4099.05	4098.86	4098.68	4098.40	4097.96	---	---
11	4098.73	4098.63	4098.76	4098.88	4099.03	4099.00	4098.82	4098.67	4098.41	4097.96	---	---
12	4098.71	4098.62	4098.83	4098.89	4099.03	4098.95	4098.82	4098.59	4098.40	4097.94	---	---
13	4098.69	4098.62	4098.77	4098.91	4099.02	4098.94	4098.81	4098.59	4098.37	4097.93	---	---
14	4098.68	4098.68	4098.72	4098.91	4099.03	4099.04	4098.78	4098.63	4098.37	4097.93	---	---
15	4098.68	4098.63	4098.74	4098.91	4099.04	4099.14	4098.81	4098.61	4098.34	4097.92	---	---
16	4098.66	4098.61	4098.75	4098.93	4099.03	4099.05	4098.79	4098.48	4098.34	4097.92	---	---
17	4098.64	4098.69	4098.75	4098.94	4099.03	4099.02	4098.78	4098.57	4098.32	4097.90	---	---
18	4098.62	4098.67	4098.75	4098.94	4099.03	4099.02	4098.78	4098.58	4098.30	4097.91	---	---
19	4098.61	4098.67	4098.75	4098.94	4099.03	4099.01	4098.80	4098.53	4098.28	4097.90	---	---
20	4098.59	4098.67	4098.76	4098.96	4099.03	4099.00	4098.79	4098.52	4098.25	4097.89	---	---
21	4098.59	4098.64	4098.77	4098.96	4099.03	4098.97	4098.79	4098.52	4098.26	4097.89	---	---
22	4098.59	4098.65	4098.77	4098.95	4099.03	4098.95	4098.81	4098.49	4098.26	4097.88	---	---
23	4098.59	4098.63	4098.77	4098.96	4099.03	4098.88	4098.80	4098.48	4098.25	4097.87	---	---
24	4098.58	4098.65	4098.76	4098.95	4099.03	4098.92	4098.83	4098.44	4098.22	4097.86	---	---
25	4098.58	4098.65	4098.76	4098.95	4099.03	4098.89	4098.80	4098.43	4098.17	4097.86	---	---
26	4098.58	4098.65	4098.76	4098.95	4099.03	4098.87	4098.81	4098.40	4098.19	4097.86	---	---
27	4098.58	4098.67	4098.77	4098.97	4099.03	4098.98	4098.80	4098.38	4098.20	4097.84	---	---
28	4098.59	4098.66	4098.77	4098.98	4099.03	4098.93	4098.73	4098.35	4098.17	4097.82	---	---
29	4098.58	4098.66	4098.77	4098.98	4099.03	4098.96	4098.69	4098.48	4098.12	4097.81	---	---
30	4098.57	4098.68	4098.79	4098.98	---	4098.99	4098.81	4098.40	4098.12	4097.81	---	---
31	4098.58	---	4098.79	4098.98	---	4098.90	---	4098.34	---	4097.78	---	---
MEAN	4098.66	4098.64	4098.72	4098.91	4099.02	4098.99	4098.82	4098.56	4098.29	4097.93	---	---
MAX	4098.79	4098.69	4098.83	4098.98	4099.04	4099.14	4098.95	4098.76	4098.41	4098.14	---	---
MIN	4098.57	4098.58	4098.53	4098.78	4098.97	4098.87	4098.69	4098.34	4098.12	4097.78	---	---

CAL YR 1987 MEAN 4099.87 MAX 4101.00 MIN 4098.53

10406500 TROUT CREEK NEAR DENIO, NV

LOCATION.--Lat 42°09'20", long 118°27'14", in NW 1/4 SE 1/4 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.--Records good except those for December to March, which are fair. No regulation. Diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.6	5.1	e7.0	e5.7	e7.0	7.2	12	11	7.7	5.0	1.5	1.3
2	3.5	5.5	9.4	5.7	e6.0	7.0	13	11	7.6	4.6	1.4	1.3
3	3.5	5.5	12	e5.7	e6.0	6.9	19	11	6.5	4.6	1.5	1.3
4	3.5	5.6	9.0	e6.2	e6.0	7.0	20	12	6.1	4.4	1.5	1.4
5	3.8	5.4	8.3	e7.0	e6.0	7.6	17	11	7.1	4.5	1.4	1.6
6	3.7	5.8	8.2	e6.4	e6.0	e7.2	24	11	6.6	4.6	1.4	1.5
7	3.8	5.7	9.0	e5.8	e6.5	7.1	25	11	6.7	4.4	1.8	1.4
8	3.8	5.1	6.7	e6.5	e7.0	e7.0	13	11	6.6	4.2	1.7	1.4
9	3.8	5.5	8.8	e7.2	e7.0	e6.8	11	9.9	6.6	4.1	1.6	1.5
10	3.6	5.4	11	e7.7	e7.0	6.7	11	9.3	6.0	3.8	1.5	1.5
11	3.7	5.3	10	e8.0	e6.5	6.5	11	8.6	5.8	3.2	1.6	1.6
12	3.8	5.5	8.9	5.8	e6.5	e6.4	8.5	12	5.0	2.6	1.5	1.8
13	3.9	6.3	8.6	e7.0	e6.3	e6.3	12	17	5.1	2.3	1.5	1.9
14	4.1	6.8	4.6	e8.0	6.1	e6.2	13	16	5.1	2.3	1.5	1.8
15	4.1	5.5	7.9	9.5	e6.0	6.1	12	15	4.5	2.4	1.7	1.7
16	4.1	5.9	11	7.4	5.8	e6.0	9.9	16	4.2	2.3	1.9	1.7
17	4.1	5.8	8.7	e6.5	e5.6	5.7	15	13	3.3	2.2	1.7	1.8
18	4.1	5.3	7.5	e5.5	e5.6	e6.0	9.6	9.1	3.0	2.1	1.5	2.0
19	4.1	6.0	8.4	e5.0	e5.6	6.2	6.6	9.3	2.8	2.0	1.4	2.5
20	3.8	5.9	6.5	e5.0	e5.6	7.0	7.7	9.0	2.8	1.9	1.4	3.3
21	3.9	5.7	12	e6.0	5.6	7.8	7.2	8.4	2.9	1.8	1.3	3.1
22	4.1	5.5	9.9	e6.0	5.7	7.9	5.6	7.9	2.9	1.6	1.5	2.8
23	4.3	5.2	11	e6.0	5.2	7.3	5.2	8.0	3.1	1.6	1.5	2.6
24	4.7	5.3	8.0	e6.0	e5.3	6.5	5.2	6.9	3.4	1.6	1.4	2.3
25	4.4	e5.3	5.9	e6.0	e5.3	7.1	4.9	6.3	4.5	1.5	1.4	2.3
26	4.4	e5.0	e6.5	e6.0	6.2	7.9	5.8	5.9	5.9	1.5	1.3	2.3
27	4.1	e4.8	e5.3	e6.0	6.3	13	6.9	5.8	4.8	1.5	1.4	2.4
28	4.3	e4.6	e5.3	e7.0	6.5	11	7.1	6.4	4.6	1.5	1.4	2.6
29	4.6	e4.5	e6.4	7.7	6.8	11	9.0	8.6	5.3	1.5	1.5	2.6
30	5.5	e5.5	e6.2	7.4	---	11	11	8.0	5.3	1.4	1.3	2.5
31	5.3	---	e5.7	7.4	---	10	---	7.3	---	1.5	1.3	---
TOTAL	126.0	164.3	253.7	203.1	177.0	233.4	338.2	312.7	151.8	84.5	46.3	59.8
MEAN	4.06	5.48	8.18	6.55	6.10	7.53	11.3	10.1	5.06	2.73	1.49	1.99
MAX	5.5	6.8	12	9.5	7.0	13	25	17	7.7	5.0	1.9	3.3
MIN	3.5	4.5	4.6	5.0	5.2	5.7	4.9	5.8	2.8	1.4	1.3	1.3
AC-FT	250	326	503	403	351	463	671	620	301	168	92	119

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	5.38	6.50	6.73	7.61	9.24	15.3	35.6	63.0	34.7	10.2	3.98	3.85
MAX	12.3	13.8	15.8	24.0	28.5	68.5	105.5	204.1	126.8	40.7	12.7	11.0
(WY)	1985	1985	1984	1971	1982	1972	1952	1984	1984	1952	1983	1983
MIN	1.83	3.03	2.92	2.85	3.36	4.51	7.74	4.41	2.50	1.04	.100	.133
(WY)	1935	1935	1960	1962	1935	1977	1968	1934	1934	1934	1934	1934

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	5.88		16.6	
HIGHEST ANNUAL MEAN			49.4	1984
LOWEST ANNUAL MEAN			3.82	1934
HIGHEST DAILY MEAN	25	Apr 7	450	Apr 11 1982
LOWEST DAILY MEAN	1.3	Aug 21	.10a	Aug 4 1930
INSTANTANEOUS PEAK FLOW	56	Apr 7	470b	Aug 1 1933
INSTANTANEOUS PEAK STAGE (FEET)	3.12c	Feb 6	5.26	Aug 1 1933
INSTANTANEOUS LOW FLOW	1.2d		0.0f	Sep 1-19 1931
10 PERCENTILE	11		46	
50 PERCENTILE	5.3		6.8	
95 PERCENTILE	1.4		1.9	

a Also occurred Aug. 1, Sept. 12, 28, 1934
b From rating curve extended above 230 ft^3/s
c Backwater from ice
d Occurred Aug. 21, 24, 26, 27, Sept. 2, 3, 10
f No flow occurred at times during these days

WILLIAMSON RIVER BASIN

11491400 WILLIAMSON RIVER BELOW SHEEP CREEK, NEAR LENZ, OR

LOCATION.--Lat 42°54'42", long 121°28'32", in NE 1/4 SW 1/4 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.--Records good except for estimated daily discharges, which are poor. Diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	56	61	e56	e68	e55	e54	65	59	44	46	43
2	53	57	70	e57	e65	e54	e54	64	59	44	46	43
3	53	61	72	e58	e60	e55	e54	63	59	45	46	43
4	56	72	70	e62	e59	e57	e54	62	61	45	46	43
5	59	75	68	e61	e58	e60	e54	63	60	45	46	44
6	58	69	66	e58	e57	e61	e54	62	63	45	45	44
7	57	64	66	e58	e57	e61	e54	62	61	45	43	44
8	55	61	e65	e60	e57	e61	54	63	62	44	45	43
9	55	61	e64	e66	e56	e62	54	62	62	45	46	43
10	54	61	e61	e72	e56	e62	52	61	62	45	46	42
11	54	61	e59	e74	e55	e62	52	60	60	44	45	43
12	54	62	e56	e74	e55	e62	52	60	58	44	44	43
13	54	63	e56	e73	e55	e62	52	60	57	44	45	44
14	54	62	e55	e73	e54	e61	54	57	55	42	44	43
15	55	62	e56	e72	e54	e60	54	55	53	42	45	44
16	55	62	e56	e72	e54	e60	53	55	51	42	45	43
17	55	63	e58	e72	e55	e59	53	57	51	43	44	44
18	55	64	e61	e70	e55	e58	53	55	51	44	43	45
19	54	63	e61	e66	e55	e58	54	55	50	43	44	46
20	54	62	e64	e62	e54	e57	57	54	50	43	44	46
21	53	61	e62	e58	e54	e56	64	54	49	43	44	47
22	54	60	e60	e56	e54	e55	66	54	48	43	43	47
23	53	60	e58	e56	e54	e54	65	54	48	41	43	47
24	54	61	e56	e57	e54	e53	63	54	48	42	42	46
25	54	61	e55	e59	e54	e52	61	54	46	44	43	46
26	54	60	e55	e58	e54	e52	61	54	47	43	42	47
27	54	59	e55	e58	e54	e52	65	54	46	45	43	48
28	55	59	e55	e58	e54	e53	66	57	45	44	43	48
29	56	62	e56	e59	e55	e53	67	62	44	44	43	48
30	57	59	e56	e60	---	e54	66	58	41	46	43	48
31	57	---	e56	e66	---	e54	---	57	---	46	43	---
TOTAL	1698	1863	1869	1961	1626	1775	1716	1807	1606	1359	1370	1345
MEAN	54.8	62.1	60.3	63.3	56.1	57.3	57.2	58.3	53.5	43.8	44.2	44.8
MAX	59	75	72	74	68	62	67	65	63	46	46	48
MIN	53	56	55	56	54	52	52	54	41	41	42	42
AC-FT	3370	3700	3710	3890	3230	3520	3400	3580	3190	2700	2720	2670

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	60.3	63.6	64.7	65.8	73.4	88.1	100.6	99.4	79.0	59.9	54.6	56.1
MAX	73.2	78.4	78.6	79.2	87.5	142.6	171.9	181.6	140.7	87.4	71.4	70.3
(WY)	1985	1985	1984	1985	1982	1986	1983	1983	1983	1982	1983	1984
MIN	48.9	54.5	55.9	59.6	56.1	56.8	51.1	48.0	48.1	39.5	38.3	40.5
(WY)	1982	1981	1979	1979	1988	1981	1981	1981	1981	1981	1981	1981

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	54.6		71.9	
HIGHEST ANNUAL MEAN			98.6	1983
LOWEST ANNUAL MEAN			51.5	1981
HIGHEST DAILY MEAN	75	Nov 5	210	May 29 1983
LOWEST DAILY MEAN	41	Jun 30	34	Jul 18 1981
INSTANTANEOUS PEAK FLOW	77	Nov 29	246	May 9, 10 1974
INSTANTANEOUS PEAK STAGE (FEET)	1.39	Nov 29	3.51	May 9, 10 1974
INSTANTANEOUS LOW FLOW	40.0	Jun 30, Sep 10	16.0a	Dec 13 1980
10 PERCENTILE	64		111	
50 PERCENTILE	55		64	
95 PERCENTILE	43		44	

a Result of freezeup

WILLIAMSON RIVER BASIN

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, 6,175.04 ft Jan. 16; minimum, 6,172.94 ft Sept. 30.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6174.94	6174.31	6174.27	6174.62	6174.88	6174.65	6174.60	6174.64	6174.80	6174.64	6174.14	6173.52
2	6174.91	6174.28	6174.36	6174.58	6174.86	6174.65	6174.66	6174.67	6174.82	6174.63	6174.11	6173.50
3	6174.90	6174.26	6174.36	6174.60	6174.85	6174.66	6174.67	6174.66	6174.82	6174.62	6174.09	6173.48
4	6174.88	6174.24	6174.44	6174.60	6174.83	6174.68	6174.66	6174.68	6174.83	6174.60	6174.08	6173.46
5	6174.85	6174.23	6174.37	6174.58	6174.82	6174.69	6174.66	6174.69	6174.83	6174.58	6174.06	6173.45
6	6174.84	6174.22	6174.50	6174.57	6174.81	6174.68	6174.67	6174.69	6174.83	6174.56	6174.03	6173.42
7	6174.82	6174.17	6174.47	6174.57	6174.83	6174.68	6174.66	6174.73	6174.84	6174.55	6174.01	6173.40
8	6174.80	6174.16	6174.58	6174.62	6174.89	6174.70	6174.64	6174.72	6174.82	6174.54	6174.00	6173.37
9	6174.77	6174.15	6174.75	6174.77	6174.90	6174.73	6174.63	6174.71	6174.84	6174.53	6173.98	6173.35
10	6174.74	6174.13	6174.88	6174.87	6174.88	6174.71	6174.62	6174.70	6174.83	6174.51	6173.96	6173.31
11	6174.74	6174.14	6174.85	6174.90	6174.87	6174.68	6174.61	6174.69	6174.82	6174.49	6173.94	6173.26
12	6174.71	6174.23	6174.84	6174.89	6174.87	6174.67	6174.60	6174.72	6174.81	6174.48	6173.92	6173.22
13	6174.68	6174.28	6174.80	6174.93	6174.85	6174.66	6174.62	6174.70	6174.81	6174.45	6173.90	6173.21
14	6174.65	6174.24	6174.79	6175.01	6174.86	6174.63	6174.62	6174.69	6174.80	6174.43	6173.87	6173.19
15	6174.65	6174.26	6174.83	6175.02	6174.83	6174.62	6174.62	6174.69	6174.79	6174.42	6173.85	6173.16
16	6174.63	6174.25	6174.83	6175.03	6174.81	6174.61	6174.61	6174.70	6174.78	6174.40	6173.83	6173.13
17	6174.61	6174.23	6174.81	6175.02	6174.80	6174.60	6174.60	6174.69	6174.78	6174.39	6173.80	6173.09
18	6174.58	6174.21	6174.80	6175.01	6174.77	6174.59	6174.59	6174.68	6174.78	6174.37	6173.78	6173.07
19	6174.56	6174.17	6174.78	6175.00	6174.76	6174.56	6174.63	6174.67	6174.77	6174.36	6173.75	6173.10
20	6174.55	6174.18	6174.78	6174.99	6174.74	6174.55	6174.64	6174.66	6174.77	6174.35	6173.74	6173.06
21	6174.53	6174.15	6174.81	6174.97	6174.73	6174.57	6174.65	6174.66	6174.76	6174.34	6173.72	6173.05
22	6174.50	6174.15	6174.82	6174.96	6174.72	6174.61	6174.64	6174.64	6174.75	6174.32	6173.70	6173.04
23	6174.49	6174.14	6174.79	6174.94	6174.71	6174.66	6174.63	6174.64	6174.75	6174.31	6173.68	6173.02
24	6174.47	6174.18	6174.76	6174.93	6174.70	6174.65	6174.62	6174.63	6174.73	6174.29	6173.65	6172.99
25	6174.45	6174.14	6174.74	6174.92	6174.69	6174.64	6174.61	6174.62	6174.73	6174.27	6173.63	6172.97
26	6174.42	6174.12	6174.72	6174.90	6174.68	6174.67	6174.60	6174.62	6174.71	6174.25	6173.62	6172.98
27	6174.41	6174.10	6174.69	6174.87	6174.66	6174.65	6174.59	6174.61	6174.69	6174.24	6173.60	6172.98
28	6174.39	6174.08	6174.68	6174.88	6174.65	6174.66	6174.59	6174.70	6174.68	6174.23	6173.59	6172.96
29	6174.38	6174.04	6174.67	6174.93	6174.64	6174.63	6174.66	6174.71	6174.67	6174.21	6173.57	6172.95
30	6174.35	6174.08	6174.67	6174.90	---	6174.61	6174.66	6174.70	6174.65	6174.20	6173.55	6172.94
31	6174.34	---	6174.64	6174.90	---	6174.60	---	6174.74	---	6174.18	6173.53	---
MAX	6174.94	6174.31	6174.88	6175.03	6174.90	6174.73	6174.67	6174.74	6174.84	6174.64	6174.14	6173.52
MIN	6174.34	6174.04	6174.27	6174.57	6174.64	6174.55	6174.59	6174.61	6174.65	6174.18	6173.53	6172.94

WTR YR 1988 MAX 6175.03 MIN 6172.94

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

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: 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. Records represent water temperature at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: 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 TEMPERATURE: Maximum, 17.0°C July 31, Sept. 6, 7; minimum not determined, occurred during period of missing record between Dec. 27 and June 18.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS NONCARB (MG/L AS CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)
OCT 15...	1230	113	7.7	12.5	29	0	7.1	2.8	11
JUN 15...	1130	113	7.1	6.0	28	0	6.9	2.7	11
SEP 06...	1100	117	7.9	16.5	28	0	6.7	2.7	11

DATE	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY WATER DIS IT FIELD (MG/L AS CACO3)	BICARBONATE WATER DIS IT FIELD (MG/L AS HCO3)	CARBONATE WATER DIS IT FIELD (MG/L AS CO3)	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)
OCT 15...	1.8	30	36	0	14	9.6	0.2	0.02	<0.1
JUN 15...	1.6	33	41	0	14	10	0.2	<0.01	<0.1
SEP 06...	2.1	28	34	0	10	9.8	0.1	0.01	<0.1

DATE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHOROUS ORTHO, DISSOLVED (MG/L AS P)	PHOSPHOROUS DISSOLVED (MG/L AS P)	PHOSPHOROUS 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 15...	<0.2	0.01	<0.01	0.01	18	78	83	0.2
JUN 15...	0.2	<0.01	0.02	0.02	18	76	84	0.3
SEP 06...	0.4	0.01	<0.01	0.02	18	81	79	0.3

11492200 CRATER LAKE NEAR CRATER LAKE, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

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 15...	20	4	6	<0.5	<1	<1	<3	1	8	<5
JUN 15...	190	3	6	<0.5	<1	2	<3	2	5	<5
SEP 06...	90	3	5	<0.5	<1	<1	<3	1	5	<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 15...	45	1	0.3	<10	<1	<1	<1	61	<6	5
JUN 15...	46	<1	<0.1	<10	3	<1	2	58	<6	29
SEP 06...	46	<1	<0.1	<10	<1	<1	<1	56	<6	16

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 NATURAL DISSOLVED (UG/L AS U)
OCT 15...	<0.4	<0.4	1.8	1.6	<0.4	<0.4	<0.02	<0.01
JUN 15...	0.6	<0.4	1.8	1.6	<0.4	<0.4	0.04	0.01
SEP 06...	--	--	--	--	--	--	--	--

11492200 CRATER LAKE NEAR CRATER LAKE, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

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

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												
10												
11												
12												
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18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
MONTH												

11492200 CRATER LAKE NEAR CRATER LAKE, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	---	---	---	10.0	9.0	9.5	16.5	15.0	16.0	16.0	15.5	15.5
2	---	---	---	10.5	9.0	10.5	16.0	14.0	15.5	16.0	15.5	15.5
3	---	---	---	11.0	10.0	11.0	15.5	13.0	14.0	16.0	15.5	16.0
4	---	---	---	11.0	10.0	10.5	14.5	13.5	14.0	16.0	15.5	15.5
5	---	---	---	11.0	10.5	10.5	15.0	14.5	15.0	16.5	16.0	16.0
6	---	---	---	10.5	10.0	10.0	15.0	15.0	15.0	17.0	16.5	16.5
7	---	---	---	10.5	9.5	10.0	15.0	14.5	14.5	17.0	16.0	16.5
8	---	---	---	10.0	9.5	10.0	15.0	14.5	14.5	16.5	16.0	16.0
9	---	---	---	10.5	9.5	10.0	15.0	14.5	15.0	16.5	16.0	16.0
10	---	---	---	12.5	10.0	11.5	15.5	15.0	15.0	16.5	15.5	16.0
11	---	---	---	12.5	10.5	12.0	16.0	15.5	16.0	15.0	15.0	15.0
12	---	---	---	12.5	12.0	12.0	16.0	15.5	15.5	14.5	14.0	14.5
13	---	---	---	12.5	12.0	12.0	15.5	15.0	15.0	14.5	14.0	14.0
14	---	---	---	12.0	12.0	12.0	15.5	14.5	15.0	14.5	14.0	14.0
15	---	---	---	12.0	11.5	12.0	15.0	15.0	15.0	14.0	14.0	14.0
16	---	---	---	12.5	11.5	12.0	15.0	15.0	15.0	14.0	14.0	14.0
17	---	---	---	13.0	11.0	12.0	15.0	14.5	15.0	14.0	13.5	13.5
18	---	---	---	12.0	11.5	12.0	15.0	14.5	15.0	13.5	13.0	13.5
19	9.0	7.5	8.5	12.5	12.0	12.0	15.0	15.0	15.0	13.0	13.0	13.0
20	8.5	7.5	8.0	13.0	12.5	12.5	14.5	14.5	14.5	13.0	12.5	13.0
21	8.5	7.5	8.5	13.5	12.0	13.0	15.0	14.5	14.5	12.5	12.5	12.5
22	9.0	7.0	8.0	13.5	12.0	13.0	15.0	14.5	15.0	12.5	12.5	12.5
23	12.0	8.0	11.0	13.5	11.5	13.0	15.0	14.5	15.0	12.5	12.5	12.5
24	12.5	8.5	11.0	14.0	13.0	13.5	15.0	14.5	15.0	12.5	12.0	12.5
25	11.0	8.5	10.0	14.0	12.0	13.5	15.5	15.0	15.0	12.0	12.0	12.0
26	11.0	9.5	10.0	14.5	13.5	14.0	15.5	14.5	15.0	12.0	12.0	12.0
27	11.5	9.5	11.0	14.5	13.5	14.0	15.5	14.5	15.0	12.0	12.0	12.0
28	11.0	9.5	10.5	16.0	14.0	15.5	15.0	15.0	15.0	12.0	12.0	12.0
29	9.5	9.5	9.5	15.5	14.0	15.0	15.5	15.0	15.5	12.0	12.0	12.0
30	10.0	9.0	9.5	15.5	14.5	15.0	15.5	15.0	15.5	12.0	12.0	12.0
31	---	---	---	17.0	15.5	16.0	16.0	15.5	15.5	---	---	---
MONTH	---	---	---	17.0	9.0	12.0	16.5	13.0	15.0	17.0	12.0	14.0

11493500 WILLIAMSON RIVER NEAR KLAMATH AGENCY, OR

LOCATION.--Lat 42°44'25", long 121°50'00", in NW 1/4 SW 1/4 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.--Records excellent except for estimated daily discharges, which are fair. Flow affected by natural storage in Klamath Marsh. Small diversions upstream from station for irrigation in vicinity of marsh.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	33	129	e258	225	460	261	155	90	36	e.00	.00
2	5.0	36	152	e250	e220	462	245	151	86	31	e.00	.00
3	5.1	39	162	252	e220	452	225	148	89	28	e.00	.00
4	5.6	43	175	247	217	449	225	152	91	25	e.00	.00
5	5.7	45	186	241	214	444	224	152	93	22	e.00	.00
6	5.3	47	193	237	210	438	214	150	95	22	e.00	.00
7	4.9	51	211	234	205	440	215	154	97	19	e.00	.00
8	5.5	54	224	230	202	433	217	154	98	17	.00	.00
9	6.6	57	231	228	212	424	216	154	99	15	.00	.00
10	6.7	60	278	e220	229	426	211	154	101	13	.00	.00
11	6.5	63	327	e220	242	423	207	151	102	11	.00	.00
12	7.1	67	348	e225	256	419	201	142	101	9.3	.00	.00
13	7.7	69	344	e230	271	412	192	140	100	7.8	.00	.00
14	7.5	77	350	246	286	403	197	142	97	7.1	.00	.00
15	9.0	81	358	255	313	397	195	139	95	6.3	.00	.00
16	9.2	82	353	e245	331	386	191	135	91	5.6	.00	.00
17	11	89	355	e240	343	376	184	137	87	4.8	.00	.00
18	12	94	357	e225	357	367	182	135	83	3.1	.00	.00
19	12	99	355	e205	370	352	179	134	80	2.3	.00	.00
20	13	102	352	e215	385	336	178	131	76	e1.5	.00	.00
21	14	106	352	e225	398	323	176	125	71	e1.0	.00	.00
22	15	110	354	e232	412	302	178	119	66	e.50	.00	.00
23	16	115	346	242	425	281	175	115	63	e.00	.00	.00
24	17	116	334	e232	434	285	169	112	61	e.00	.00	.00
25	19	124	327	e230	439	278	169	108	58	e.00	.00	.00
26	21	125	317	e230	445	270	167	102	54	e.00	.00	.00
27	22	127	305	232	448	274	164	98	52	e.00	.00	.00
28	24	129	300	230	452	274	158	97	48	e.00	.00	.00
29	26	128	292	231	452	264	152	99	47	e.00	.00	.00
30	29	126	285	231	---	273	153	94	42	e.00	.00	.00
31	31	---	e262	231	---	270	---	92	---	e.00	.00	---
TOTAL	384.8	2494	8914	7249	9213	11393	5820	4071	2413	288.30	0.00	0.00
MEAN	12.4	83.1	288	234	318	368	194	131	80.4	9.30	.00	.00
MAX	31	129	358	258	452	462	261	155	102	36	.00	.00
MIN	4.9	33	129	205	202	264	152	92	42	.00	.00	.00
AC-FT	763	4950	17680	14380	18270	22600	11540	8070	4790	572	.0	.0

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	50.5	140.7	253.5	259.8	346.4	483.1	484.2	290.2	139.4	53.0	17.8	14.3
MAX	255.2	390.8	579.7	730.4	799.1	1039	1081	951.6	531.2	331.8	146.3	95.8
(WY)	1958	1957	1956	1956	1965	1986	1956	1956	1956	1958	1958	1958
MIN	.000	.000	56.3	62.1	60.1	127.7	128.0	28.1	.010	.000	.000	.000
(WY)	1962	1965	1981	1977	1969	1969	1981	1981	1981	1979	1961	1960

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	143		210	
HIGHEST ANNUAL MEAN			468	1956
LOWEST ANNUAL MEAN			61.5	1981
HIGHEST DAILY MEAN	462	Mar 2	1250	Mar 1 1958
LOWEST DAILY MEAN	.00	Jul 23	.00	Jul 23 1960
INSTANTANEOUS PEAK FLOW	463	Mar 1-3	1,590a	Mar 13 1910
INSTANTANEOUS PEAK STAGE (FEET)	4.70	Mar 1-3	5.57	Mar 3 1958
INSTANTANEOUS LOW FLOW	.00	Jul 23 - Sep 30	.00b	at times
10 PERCENTILE	348		548	
50 PERCENTILE	113		150	
95 PERCENTILE	.00		.00	

a From rating curve extended above 800 ft^3/s
b At times during 1960-74, 1977-81, 1988

11497500 SPRAGUE RIVER NEAR BEATTY, OR

LOCATION.--Lat 42°26'50", long 121°14'15", in NW 1/4 SE 1/4 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.--Records fair except those for February to August, which are poor. No regulation. Diversions for irrigation upstream from station in the vicinity of Bly.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	105	136	149	122	175	327	201	351	356	101	101	100
2	100	137	191	115	147	418	209	320	454	90	103	102
3	100	138	216	143	126	333	239	298	401	97	102	104
4	104	133	209	156	137	321	287	279	359	95	102	106
5	108	134	179	157	138	411	249	285	339	99	107	107
6	108	135	171	153	142	448	253	265	363	96	134	106
7	110	136	166	150	139	387	261	259	356	99	129	93
8	113	134	158	148	141	297	244	276	352	102	119	91
9	117	135	161	151	218	291	231	282	340	104	113	91
10	116	138	229	171	548	286	221	262	345	100	118	84
11	120	140	289	245	487	233	223	236	322	106	108	81
12	116	144	177	191	392	213	232	223	287	98	121	86
13	111	155	146	171	378	200	236	223	274	100	116	86
14	113	157	151	186	292	194	287	215	251	104	117	88
15	112	143	161	281	264	189	395	207	232	112	126	83
16	110	147	164	222	242	184	359	215	222	118	123	82
17	116	159	160	158	200	175	347	249	219	118	118	84
18	132	154	153	148	176	174	369	250	220	122	117	85
19	130	149	146	e135	172	184	352	226	199	120	124	90
20	133	147	126	e130	177	199	368	222	187	120	125	96
21	131	146	160	e140	199	217	423	224	173	114	123	94
22	131	145	155	154	209	224	608	220	158	117	126	93
23	129	143	140	155	208	219	640	227	141	113	127	103
24	130	143	111	146	205	216	522	235	125	109	122	101
25	134	138	e111	141	215	204	440	244	123	116	115	97
26	133	130	e120	140	224	222	399	243	119	113	108	101
27	133	130	139	146	240	249	382	245	120	105	107	145
28	130	135	147	153	261	231	360	262	110	106	110	132
29	133	125	147	168	365	220	336	349	104	98	111	110
30	134	141	144	214	---	207	368	345	105	96	105	107
31	137	---	141	213	---	194	---	311	---	103	98	---
TOTAL	3729	4227	5017	5103	6817	7867	10041	8048	7356	3291	3575	2928
MEAN	120	141	162	165	235	254	335	260	245	106	115	97.6
MAX	137	159	289	281	548	448	640	351	454	122	134	145
MIN	100	125	111	115	126	174	201	207	104	90	98	81
AC-FT	7400	8380	9950	10120	13520	15600	19920	15960	14590	6530	7090	5810

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	167.5	194.8	276.0	296.7	368.7	454.4	612.0	687.0	360.0	167.3	122.3	132.1
MAX	422.3	410.2	1157	897.7	1102	1217	1673	1703	808.4	312.6	210.0	186.0
(WY)	1963	1974	1965	1965	1958	1972	1956	1956	1983	1956	1956	1985
MIN	120.3	140.1	133.4	127.6	151.2	146.7	131.4	162.8	146.6	88.9	72.2	84.9
(WY)	1988	1981	1977	1977	1977	1977	1977	1977	1968	1977	1977	1981

e Estimated

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	186		310	
HIGHEST ANNUAL MEAN			644	1956
LOWEST ANNUAL MEAN			131	1977
HIGHEST DAILY MEAN	640	Apr 23	5670	Dec 23 1964
LOWEST DAILY MEAN	81	Sep 11	54	Aug 27 1981
INSTANTANEOUS PEAK FLOW	662	Apr 23	6980	Dec 23 1964
INSTANTANEOUS PEAK STAGE (FEET)	5.31a	Jun 2	12.19	Dec 23 1964
INSTANTANEOUS LOW FLOW	79	Sep 16	50	Aug 25 1981
10 PERCENTILE	336		691	
50 PERCENTILE	148		191	
95 PERCENTILE	96		104	

a Backwater from aquatic growth

11499100 SYCAN RIVER BELOW SNAKE CREEK, NEAR BEATTY, OR

LOCATION.--Lat 42°29'10", long 121°16'40", in SW 1/4 SE 1/4 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.--Records good. Diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	27	31	30	34	244	45	80	67	28	22	19
2	25	27	47	27	33	255	44	83	66	28	21	19
3	25	27	37	30	30	232	45	85	68	27	21	18
4	25	27	36	32	31	182	43	84	69	26	21	16
5	25	27	37	34	31	166	43	87	73	25	22	19
6	25	27	43	33	31	146	50	84	83	24	22	20
7	26	27	48	32	32	118	54	87	76	24	19	20
8	26	27	42	32	34	104	53	86	73	23	20	20
9	26	27	38	32	48	100	57	87	71	20	21	21
10	25	27	65	38	50	92	60	81	72	20	20	20
11	24	27	62	37	46	82	60	78	68	21	20	21
12	25	29	42	33	47	73	56	77	62	22	21	22
13	25	30	e42	32	53	70	53	74	57	22	19	22
14	25	29	e45	37	56	69	62	64	52	22	18	21
15	25	28	47	36	72	67	76	61	48	21	21	20
16	25	31	40	35	76	65	92	59	45	19	20	21
17	25	32	39	32	77	63	99	58	43	19	19	19
18	25	31	40	31	83	61	99	55	37	22	19	19
19	26	30	40	30	79	59	98	55	36	22	19	20
20	27	30	36	31	81	56	98	55	36	22	20	21
21	27	30	38	32	86	53	108	55	32	20	19	21
22	27	29	38	32	98	50	129	54	33	23	19	21
23	27	29	33	32	123	50	138	53	32	22	20	21
24	27	29	32	32	142	49	133	49	31	21	19	22
25	27	25	29	32	167	48	127	48	30	24	18	22
26	26	25	e29	32	189	49	114	46	26	24	19	21
27	26	26	30	33	213	47	105	45	28	24	18	21
28	26	26	31	34	234	46	96	54	28	24	18	23
29	27	24	31	36	242	46	88	59	27	23	19	22
30	27	28	31	36	---	46	81	57	27	20	20	22
31	27	---	31	34	---	44	---	57	---	23	20	---
TOTAL	799	838	1210	1019	2518	2832	2406	2057	1496	705	614	614
MEAN	25.8	27.9	39.0	32.9	86.8	91.4	80.2	66.4	49.9	22.7	19.8	20.5
MAX	27	32	65	38	242	255	138	87	83	28	22	23
MIN	24	24	29	27	30	44	43	45	26	19	18	16
AC-FT	1580	1660	2400	2020	4990	5620	4770	4080	2970	1400	1220	1220

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	30.4	53.7	87.7	86.9	275.6	385.4	438.8	391.5	158.3	49.1	26.1	28.1
MAX	48.5	124.6	383.2	259.2	1114	808.1	867.7	996.8	548.7	115.3	45.5	42.8
(WY)	1985	1982	1982	1980	1982	1983	1985	1983	1983	1982	1983	1985
MIN	16.1	20.5	26.5	32.9	40.1	79.1	80.2	66.4	29.1	12.7	6.26	8.91
(WY)	1982	1981	1979	1988	1985	1981	1988	1988	1981	1981	1981	1981

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	46.7		169	
HIGHEST ANNUAL MEAN			361	1982
LOWEST ANNUAL MEAN			46.7	1988
HIGHEST DAILY MEAN	255	Mar 2	4500	Feb 22 1982
LOWEST DAILY MEAN	16	Sep 4	4.1	Aug 16 1981
INSTANTANEOUS PEAK FLOW	271	Mar 2	5550	Feb 21 or 22 1982
INSTANTANEOUS PEAK STAGE (FEET)	3.64	Mar 2	12.22a	Feb 21 1982
INSTANTANEOUS LOW FLOW	14	Aug 13, 24	3.0	Nov 21 1977
10 PERCENTILE	87		513	
50 PERCENTILE	33		49	
95 PERCENTILE	20		15	

* For period October 1978 to September 1988
a From floodmark

11501000 SPRAGUE RIVER NEAR CHILOQUIN, OR

LOCATION.--Lat 42°35'05", long 121°50'55", in NE 1/4 NW 1/4 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.--Records good. Minor regulation from irrigation diversions upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	245	291	295	e380	435	702	412	558	469	224	131	124
2	248	294	337	e360	e390	762	398	562	458	214	130	120
3	242	294	363	e380	e330	781	406	566	462	207	133	128
4	240	292	407	398	e320	810	416	553	522	203	124	120
5	235	294	416	423	e330	751	443	542	540	199	117	116
6	233	291	410	383	348	690	463	531	513	208	113	123
7	234	287	384	363	358	714	434	532	507	209	115	134
8	237	292	388	357	357	731	440	527	503	208	126	137
9	240	294	398	352	350	664	459	517	506	214	152	143
10	245	291	412	354	461	576	442	519	497	213	159	143
11	253	289	428	374	683	567	435	523	486	208	148	143
12	254	294	464	e360	805	538	431	495	472	193	149	148
13	259	298	e440	e360	756	487	411	455	461	185	144	153
14	271	298	e340	391	668	453	421	424	429	174	128	149
15	257	305	370	392	631	438	434	415	390	165	132	156
16	254	311	259	466	566	435	477	406	376	158	137	153
17	254	302	e290	e400	544	427	556	387	363	154	133	148
18	259	302	424	e310	507	422	564	382	357	152	131	148
19	266	312	e410	e280	463	416	560	403	348	148	140	152
20	275	306	e400	e270	447	414	582	416	334	148	143	168
21	284	297	371	e300	447	417	579	394	322	149	140	169
22	285	294	352	e330	466	428	597	367	304	158	138	180
23	285	296	364	380	489	443	634	360	290	155	137	181
24	285	295	e370	352	506	439	730	353	275	141	139	172
25	285	291	e395	e330	525	435	806	355	262	133	145	177
26	284	294	e415	e330	543	429	785	352	251	139	141	192
27	287	287	e430	347	575	415	716	342	242	143	139	201
28	289	283	e450	348	607	431	663	359	235	149	133	197
29	291	264	456	365	642	452	626	367	233	150	122	201
30	291	295	e440	385	---	434	594	374	229	139	118	219
31	290	---	e410	417	---	427	---	428	---	135	121	---
TOTAL	8157	8833	12088	11237	14549	16528	15914	13764	11636	5375	4158	4695
MEAN	263	294	390	362	502	533	530	444	388	173	134	156
MAX	291	312	464	466	805	810	806	566	540	224	159	219
MIN	233	264	259	270	320	414	398	342	229	133	113	116
AC-FT	16180	17520	23980	22290	28860	32780	31570	27300	23080	10660	8250	9310

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	300.0	348.6	482.5	517.7	682.6	907.0	1285	1157	620.8	287.9	226.2	242.1
MAX	847.8	789.3	2853	1961	2764	2904	4250	3211	1762	560.2	404.6	374.5
(WY)	1963	1974	1965	1965	1982	1972	1956	1956	1983	1983	1956	1956
MIN	182.9	219.3	214.9	196.1	222.7	288.3	263.1	184.3	169.3	141.0	113.5	140.5
(WY)	1934	1933	1933	1937	1933	1924	1977	1934	1934	1981	1981	1934

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	347		585	
HIGHEST ANNUAL MEAN			1395	1956
LOWEST ANNUAL MEAN			220	1931
HIGHEST DAILY MEAN	810	Mar 4	14500	Dec 26 1964
LOWEST DAILY MEAN	113	Aug 6	50	May 26 1926
INSTANTANEOUS PEAK FLOW	820	Feb 12, Mar 4	14900	Dec 26 1964
INSTANTANEOUS PEAK STAGE (FEET)	2.56a	Feb 12, Mar 4	10.37	Dec 26 1964
INSTANTANEOUS LOW FLOW	109	Aug 7	not determined	
10 PERCENTILE	554		1280	
50 PERCENTILE	348		357	
95 PERCENTILE	131		177	

a Also occurred on Jan. 21, result of ice jam

11502500 WILLIAMSON RIVER BELOW SPRAGUE RIVER, NEAR CHILOQUIN, OR

LOCATION.--Lat 42°34'15", long 121°52'35", in NE 1/4 NE 1/4 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.--Records excellent. Some regulation by diversion dams and logpond operations on Sprague River. Diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	558	674	798	888	e960	1460	996	962	778	485	400	402
2	565	686	863	843	e880	1530	978	961	774	473	394	399
3	570	690	880	873	e810	1550	969	963	774	460	400	400
4	568	684	929	899	e780	1580	960	943	827	452	398	400
5	564	692	943	956	e760	1530	982	939	865	444	395	397
6	561	693	953	957	e770	1460	1000	925	841	446	390	397
7	567	694	936	940	e780	1470	955	935	833	453	390	407
8	571	699	959	925	e800	1500	944	931	831	455	395	412
9	571	712	1000	935	856	1430	960	921	836	459	412	418
10	577	711	1040	946	968	1330	943	920	825	458	423	417
11	591	713	1080	955	1200	1310	940	925	816	455	417	414
12	592	727	1140	969	1340	1280	945	893	803	445	416	419
13	595	742	1160	e990	1320	1230	913	846	791	439	421	427
14	610	738	1010	e1000	1250	1190	912	812	756	429	412	425
15	601	753	1030	996	1230	1160	907	796	697	421	409	429
16	595	764	945	e950	1200	1150	929	782	668	417	407	431
17	597	760	950	e900	1190	1130	986	757	641	416	407	424
18	602	761	1130	e840	1170	1110	996	740	628	418	404	423
19	609	776	1100	796	1140	1090	993	755	616	414	412	426
20	618	781	1030	e800	1130	1080	1010	771	605	422	412	440
21	626	772	1070	e840	1140	1070	1010	749	604	424	411	441
22	630	770	1030	e870	1170	1060	1030	703	586	447	408	455
23	630	772	987	e910	1200	1050	1070	690	564	430	410	463
24	630	778	905	947	1220	1050	1170	674	542	426	409	455
25	632	772	923	920	1250	1040	1230	671	534	414	415	455
26	634	775	934	906	1280	1030	1220	673	516	410	411	464
27	639	769	956	918	1320	1000	1150	640	511	411	411	474
28	646	768	986	930	1350	1020	1090	668	504	409	407	475
29	648	752	972	938	1380	1040	1040	672	497	416	404	472
30	654	777	952	920	---	1020	1000	671	496	410	399	487
31	656	---	936	953	---	1010	---	718	---	406	401	---
TOTAL	18707	22155	30527	28410	31844	37960	30228	25006	20559	13464	12600	12948
MEAN	603	738	985	916	1098	1225	1008	807	685	434	406	432
MAX	656	781	1160	1000	1380	1580	1230	963	865	485	423	487
MIN	558	674	798	796	760	1000	907	640	496	406	390	397
AC-FT	37110	43940	60550	56350	63160	75290	59960	49600	40780	26710	24990	25680

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	665.8	775.8	972.0	1001	1251	1598	2014	1691	1024	625.8	552.6	575.3
MAX	1237	1345	3682	3075	3846	4256	5488	4376	2658	1278	933.8	871.5
(WY)	1963	1974	1965	1965	1958	1972	1952	1956	1953	1958	1958	1958
MIN	516.8	560.6	553.9	524.5	547.3	668.7	594.9	472.3	458.3	399.1	382.2	431.6
(WY)	1934	1937	1937	1937	1933	1931	1931	1931	1931	1981	1981	1988

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	777		1057	
HIGHEST ANNUAL MEAN			2187	1956
LOWEST ANNUAL MEAN			548	1931
HIGHEST DAILY MEAN	1580	Mar 4	16000	Dec 26 1964
LOWEST DAILY MEAN	390	Aug 6	334	Oct 13 1920
INSTANTANEOUS PEAK FLOW	1590	Mar 4	16100	Dec 26 1964
INSTANTANEOUS PEAK STAGE (FEET)	3.63	Mar 4	10.56	Dec 26 1964
INSTANTANEOUS LOW FLOW	390	Aug 2, 5-8	320	Oct 14 1920
10 PERCENTILE	1150		1990	
50 PERCENTILE	777		772	
95 PERCENTILE	406		482	

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. Fluctuations caused 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.--11 years, 3.09 ft^3/s, 2,240 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, 6.0 ft^3/s June 24, gage height, 1.26 ft; minimum discharge, 0.57 ft^3/s Feb. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	1.1	.87	.81	.68	.73	.98	1.8	4.9	5.4	2.7	2.0
2	1.3	1.1	.95	.81	.68	.71	.99	1.8	4.9	5.3	2.7	1.9
3	1.3	1.1	.92	.80	.67	.74	.97	1.9	4.8	5.0	2.7	1.8
4	1.3	1.1	.89	.80	.68	.84	.96	1.8	4.9	4.9	2.7	1.9
5	1.3	1.1	.91	.79	.69	.83	.97	1.8	5.0	4.9	2.7	1.9
6	1.3	1.1	.88	.75	.71	.77	1.1	1.8	5.0	4.9	2.6	1.8
7	1.3	1.0	.86	.74	.70	.79	1.2	1.8	5.2	4.8	2.6	1.8
8	1.3	1.1	.87	.76	.82	.79	1.1	1.8	5.1	4.5	2.6	1.8
9	1.3	1.1	.93	.80	.81	.77	1.2	1.9	5.2	4.4	2.4	1.8
10	1.3	1.0	1.0	.87	.78	.79	1.2	2.0	5.0	4.5	2.4	1.8
11	1.3	1.0	.96	.78	.75	.80	1.2	2.0	4.9	4.3	2.3	1.7
12	1.3	1.0	.96	.77	.73	.79	1.3	2.0	4.9	4.2	2.3	1.8
13	1.3	1.1	.98	.74	.71	.80	1.4	2.0	4.8	4.1	2.3	1.8
14	1.3	.98	.98	.76	.72	.78	1.5	2.0	4.8	4.1	2.2	1.7
15	1.3	.95	.98	.76	.71	.79	1.6	2.1	4.8	3.8	2.2	1.7
16	1.3	.97	.96	.77	.66	.78	1.6	2.1	4.6	3.9	2.2	1.7
17	1.2	.97	.94	.74	.66	.82	1.7	2.3	4.7	3.8	2.2	1.7
18	1.2	.97	.89	.70	.70	.85	1.8	2.4	5.0	3.6	2.2	1.7
19	1.2	.93	.91	.74	.77	.87	1.8	2.5	5.3	3.3	2.2	1.7
20	1.2	.93	.90	.77	.78	.86	1.8	2.6	5.5	3.1	2.2	1.6
21	1.1	.91	.90	.78	.77	.84	1.9	2.7	5.5	3.0	2.1	1.6
22	1.2	.90	.90	.80	.76	.86	1.9	2.8	5.4	2.9	2.1	1.6
23	1.1	.90	.82	.78	.72	.88	1.9	3.0	5.5	2.9	2.1	1.6
24	1.2	.90	.82	.71	.74	.85	1.8	3.5	5.9	2.9	2.0	1.6
25	1.2	.90	.79	.75	.73	.91	1.8	4.0	5.8	2.9	2.1	1.5
26	1.1	.90	.74	.77	.74	.97	1.8	4.1	5.7	2.8	2.0	1.5
27	1.2	.90	.74	.76	.72	.89	1.8	4.4	5.6	2.8	2.0	1.5
28	1.1	.87	.78	.73	.71	.89	1.8	4.4	5.4	2.8	2.0	1.5
29	1.1	.87	.81	.70	.72	.85	1.8	4.5	5.4	2.7	2.0	1.5
30	1.1	.87	.80	.68	---	.89	1.9	4.4	5.5	2.7	2.0	1.5
31	1.1	---	.81	.68	---	.95	---	4.8	---	2.7	1.9	---
TOTAL	38.1	29.52	27.45	23.60	21.02	25.68	44.77	83.0	155.0	117.9	70.7	51.0
MEAN	1.23	.98	.89	.76	.72	.83	1.49	2.68	5.17	3.80	2.28	1.70
MAX	1.3	1.1	1.0	.87	.82	.97	1.9	4.8	5.9	5.4	2.7	2.0
MIN	1.1	.87	.74	.68	.66	.71	.96	1.8	4.6	2.7	1.9	1.5
AC-FT	76	59	54	47	42	51	89	165	307	234	140	101
MEAN†	1.26	1.00	0.92	0.79	0.77	0.85	1.51	2.72	5.25	3.92	2.42	1.77
AC-FT†	77.2	59.6	56.7	48.7	42.7	52.1	89.8	167	313	241	149	105

CAL YR 1987 TOTAL 779.53 MEAN 2.14 MAX 8.2 MIN .74 AC-FT 1550 MEAN† 1.94 AC-FT† 1400
WTR YR 1988 TOTAL 687.74 MEAN 1.88 MAX 5.9 MIN .66 AC-FT 1360 MEAN† 1.94 AC-FT† 1400

† Adjusted for diversion by pumping.

11507001 UPPER KLAMATH LAKE NEAR KLAMATH FALLS, OR

LOCATION.--Lat 42°15'00", long 121°48'55", in NW 1/4 SW 1/4 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 mi^2, approximately, including 26.2 mi^2 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, 4,143.13 ft May 17, 18; minimum daily, 4,138.68 ft Sept. 25.

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 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4139.32	4139.12	4139.42	4140.60	4141.42	4142.09	4142.73	4142.99	4142.83	4142.49	4140.92	4139.53
2	4139.30	4139.16	4139.55	4140.61	4141.43	4142.12	4142.71	4142.96	4142.78	4142.42	4140.95	4139.49
3	4139.30	4139.15	4139.50	4140.64	4141.46	4142.15	4142.73	4142.99	4142.86	4142.42	4140.86	4139.42
4	4139.29	4139.14	4139.62	4140.67	4141.48	4142.17	4142.74	4143.01	4142.90	4142.36	4140.74	4139.37
5	4139.30	4139.15	4139.57	4140.69	4141.49	4142.20	4142.74	4143.00	4142.94	4142.33	4140.67	4139.33
6	4139.27	4139.13	4139.66	4140.71	4141.49	4142.24	4142.74	4142.99	4142.96	4142.23	4140.64	4139.30
7	4139.25	4139.13	4139.77	4140.74	4141.51	4142.27	4142.81	4143.01	4142.96	4142.18	4140.62	4139.25
8	4139.23	4139.11	4139.81	4140.77	4141.53	4142.30	4142.77	4143.04	4142.97	4142.17	4140.56	4139.21
9	4139.24	4139.13	4139.93	4140.80	4141.56	4142.37	4142.79	4143.06	4143.00	4142.13	4140.53	4139.17
10	4139.24	4139.15	4140.09	4140.85	4141.58	4142.38	4142.78	4143.10	4143.02	4142.07	4140.50	4139.14
11	4139.19	4139.16	4140.18	4140.90	4141.62	4142.39	4142.78	4143.10	4143.06	4142.05	4140.44	4139.09
12	4139.15	4139.14	4140.25	4140.92	4141.67	4142.40	4142.76	4143.05	4143.04	4141.91	4140.36	4139.03
13	4139.15	4139.19	4140.28	4140.93	4141.72	4142.42	4142.74	4143.11	4143.03	4141.86	4140.33	4138.97
14	4139.13	4139.22	4140.26	4140.97	4141.76	4142.46	4142.78	4143.12	4143.04	4141.88	4140.40	4138.94
15	4139.13	4139.20	4140.32	4141.03	4141.81	4142.47	4142.79	4143.09	4143.00	4141.84	4140.35	4138.90
16	4139.12	4139.22	4140.42	4141.08	4141.83	4142.47	4142.80	4143.10	4142.98	4141.80	4140.21	4138.88
17	4139.12	4139.28	4140.45	4141.11	4141.86	4142.47	4142.81	4143.13	4142.96	4141.76	4140.18	4138.84
18	4139.13	4139.29	4140.45	4141.14	4141.87	4142.50	4142.79	4143.13	4142.93	4141.74	4140.15	4138.79
19	4139.15	4139.29	4140.46	4141.16	4141.89	4142.52	4142.72	4143.11	4142.92	4141.66	4140.11	4138.76
20	4139.13	4139.27	4140.47	4141.18	4141.91	4142.56	4142.84	4143.09	4142.88	4141.58	4140.06	4138.76
21	4139.10	4139.33	4140.49	4141.21	4141.93	4142.58	4142.84	4143.08	4142.94	4141.55	4140.02	4138.75
22	4139.10	4139.33	4140.51	4141.22	4141.95	4142.55	4142.84	4143.06	4142.88	4141.53	4139.97	4138.71
23	4139.10	4139.35	4140.53	4141.22	4141.95	4142.64	4142.87	4143.04	4142.82	4141.46	4139.91	4138.71
24	4139.10	4139.38	4140.53	4141.25	4141.96	4142.62	4142.88	4143.00	4142.81	4141.40	4139.85	4138.69
25	4139.11	4139.40	4140.54	4141.27	4141.97	4142.66	4142.90	4142.96	4142.76	4141.34	4139.82	4138.68
26	4139.12	4139.40	4140.55	4141.28	4141.99	4142.69	4142.92	4142.92	4142.70	4141.28	4139.78	4138.69
27	4139.12	4139.40	4140.55	4141.29	4142.00	4142.71	4142.92	4142.85	4142.71	4141.22	4139.74	4138.69
28	4139.10	4139.45	4140.55	4141.31	4142.03	4142.67	4142.91	4142.86	4142.75	4141.14	4139.69	4138.69
29	4139.10	4139.42	4140.55	4141.34	4142.05	4142.72	4142.95	4142.91	4142.56	4141.10	4139.65	4138.69
30	4139.10	4139.38	4140.57	4141.37	---	4142.71	4142.99	4142.85	4142.56	4141.05	4139.62	4138.69
31	4139.12	---	4140.59	4141.39	---	4142.71	---	4142.82	---	4140.97	4139.58	---
MEAN	4139.17	4139.25	4140.21	4141.02	4141.75	4142.46	4142.81	4143.02	4142.88	4141.77	4140.23	4138.97
MAX	4139.32	4139.45	4140.59	4141.39	4142.05	4142.72	4142.99	4143.13	4143.06	4142.49	4140.95	4139.53
MIN	4139.10	4139.11	4139.42	4140.60	4141.42	4142.09	4142.71	4142.82	4142.56	4140.97	4139.58	4138.68

CAL YR 1987 MEAN 4141.04 MAX 4142.80 MIN 4139.10
WTR YR 1988 MEAN 4141.13 MAX 4143.13 MIN 4138.68

11507500 LINK RIVER AT KLAMATH FALLS, OR

LOCATION.--Lat 42°13'25", long 121°47'35", in SW 1/4 NW 1/4 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 (station 11507001). Large diurnal fluctuation caused by powerplant upstream from station. Water diverted upstream from station by main or "A" Canal of Klamath project. 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, 2,060 ft^3/s Feb. 23; minimum, 46 ft^3/s Apr. 8, result of regulation from Upper Klamath Lake, minimum daily, 139 ft^3/s Dec. 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	926	972	599	1060	508	1120	839	492	404	1000	584	697
2	744	861	483	1140	755	1120	1040	489	379	841	685	853
3	699	593	530	1140	909	1070	899	496	319	1070	680	1010
4	701	612	605	1050	913	1060	1100	460	298	925	591	821
5	702	882	240	1010	897	1120	885	432	298	651	591	819
6	598	889	139	939	920	1130	815	427	294	847	544	886
7	691	969	303	939	967	1130	744	423	293	714	432	823
8	748	1050	492	939	886	1120	341	390	299	704	350	644
9	843	1050	457	810	875	1130	463	322	304	920	292	560
10	844	1090	367	766	824	1120	909	425	306	910	327	645
11	840	1090	434	842	465	1150	1160	560	319	757	455	682
12	839	961	625	1010	428	1150	1170	344	536	883	819	795
13	872	755	617	976	425	1140	844	342	561	856	541	886
14	872	718	572	782	444	1150	611	454	773	854	515	888
15	873	726	784	780	836	1150	496	657	1020	735	649	888
16	874	732	1040	693	1120	1140	451	508	1080	603	643	805
17	874	646	1140	717	1120	835	414	445	1020	530	700	791
18	909	680	1140	902	1130	596	337	447	892	648	738	623
19	992	867	1030	905	1250	465	322	551	988	723	815	528
20	989	590	1000	962	1440	755	471	783	1070	736	914	433
21	938	565	895	962	1440	759	560	1050	1060	920	800	426
22	963	607	921	944	1660	757	639	1150	1130	792	834	423
23	1060	926	1120	880	1960	746	533	1180	1160	732	940	400
24	1060	945	1140	1000	1880	641	538	1180	894	873	1020	365
25	1020	888	1140	992	1720	873	487	1100	1100	985	1020	365
26	971	675	1130	939	1660	1020	468	1030	1140	984	1010	367
27	972	606	1130	952	1660	1020	471	1020	1070	840	981	433
28	971	609	1120	957	1660	911	474	567	775	662	663	462
29	971	605	1000	1040	1420	558	485	431	901	690	588	462
30	968	600	1030	1040	---	556	492	321	1090	847	669	463
31	971	---	1020	887	---	720	---	265	---	755	700	---
TOTAL	27295	23759	24243	28955	32172	29212	19458	18741	21773	24987	21090	19243
MEAN	880	792	782	934	1109	942	649	605	726	806	680	641
MAX	1060	1090	1140	1140	1960	1150	1170	1180	1160	1070	1020	1010
MIN	598	565	139	693	425	465	322	265	293	530	292	365
AC-FT	54140	47130	48090	57430	63810	57940	38590	37170	43190	49560	41830	38170

CAL YR 1987 TOTAL 343627 MEAN 941 MAX 2150 MIN 139 AC-FT 681600
WTR YR 1988 TOTAL 290928 MEAN 795 MAX 1960 MIN 139 AC-FT 577100

11509500 KLAMATH RIVER AT KENO, OR

LOCATION.--Lat 42°08'00", long 121°57'40", in NW 1/4 SE 1/4 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 OF 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 (station 11507001). Fluctuation by Keno powerplant 0.9 mi upstream. Diversions for irrigation upstream from station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 15.3 ft, from floodmark (original datum), about May 10, 1904, discharge, 9,250 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1040	1020	915	1180	1410	1940	960	720	570	473	559	903
2	1040	877	918	1260	1410	1890	961	720	544	472	588	907
3	1050	773	1300	1250	1410	1980	963	722	590	473	590	774
4	1040	867	870	1220	1410	2090	968	666	660	363	591	775
5	1040	1030	491	1110	1410	1880	924	630	659	269	589	773
6	1040	1030	491	970	1410	1890	868	630	658	269	589	770
7	1050	1030	586	1010	1410	1890	863	631	659	276	589	671
8	1050	1030	687	1050	1410	1880	2350	745	601	277	591	526
9	1040	1030	716	1050	1400	1880	1240	760	514	276	625	532
10	1030	1030	794	1040	1400	1880	608	1000	402	273	689	621
11	1030	1030	842	1170	1410	1870	324	770	305	271	808	687
12	1030	970	843	1300	1410	1750	325	513	303	268	844	861
13	1030	931	846	1190	1410	1750	607	513	368	269	851	964
14	1030	928	898	1060	1410	1750	849	512	408	271	847	960
15	1030	929	1230	1230	1790	1750	855	514	410	272	846	961
16	1030	929	1480	1390	1960	1680	852	517	408	273	795	953
17	1030	929	1390	1390	1960	1190	860	519	368	270	757	958
18	1030	927	1370	1380	1880	1040	804	516	322	271	761	956
19	1030	928	1440	1380	1880	1040	761	514	323	274	760	868
20	1030	913	1480	1380	2000	1040	761	613	322	276	759	819
21	1030	906	1470	1380	2100	1040	760	669	323	277	742	815
22	1020	906	1370	1390	2240	1040	739	633	349	278	810	821
23	1020	990	1300	1390	2500	1040	725	633	410	418	831	686
24	1020	1240	1310	1390	2500	964	724	633	464	502	830	531
25	1020	1260	1300	1390	2490	1090	721	641	573	501	829	530
26	1020	915	1310	1390	2440	1230	706	627	577	556	831	529
27	1020	916	1320	1390	2400	1240	704	632	530	590	738	524
28	1020	916	1250	1390	2400	1130	703	634	472	587	685	523
29	1020	916	1140	1400	2210	904	716	634	472	587	685	523
30	1020	913	1140	1400	---	904	718	728	472	537	686	525
31	1020	---	1140	1410	---	934	---	626	---	510	710	---
TOTAL	31950	29009	33637	39330	52470	45576	24919	19815	14036	11479	22405	22246
MEAN	1031	967	1085	1269	1809	1470	831	639	468	370	723	742
MAX	1050	1260	1480	1410	2500	2090	2350	1000	660	590	851	964
MIN	1020	773	491	970	1400	904	324	512	303	268	559	523
AC-FT	63370	57540	66720	78010	104100	90400	49430	39300	27840	22770	44440	44120

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	1516	1796	2021	2008	2155	2524	2173	1555	891.9	704.2	936.3	1248
MAX	3055	4673	5732	7702	7564	8197	6594	5258	3250	1762	1898	2214
(WY)	1957	1985	1984	1965	1965	1972	1956	1956	1953	1958	1958	1943
MIN	563.8	290.2	391.4	542.4	324.2	229.1	165.7	108.7	97.6	114.2	202.3	333.6
(WY)	1982	1935	1935	1935	1931	1931	1931	1931	1931	1931	1931	1931

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	948		1712	
HIGHEST ANNUAL MEAN			3582	1956
LOWEST ANNUAL MEAN			546	1931
HIGHEST DAILY MEAN	2500	Feb 23	9780	Mar 5 1972
LOWEST DAILY MEAN	268	Jul 12	60	May 19 1934
INSTANTANEOUS PEAK FLOW	2520a	Feb 23	10300a	Feb 28 1986
INSTANTANEOUS PEAK STAGE (FEET)	7.52a	Feb 23	12.82a	Feb 28 1986
INSTANTANEOUS LOW FLOW	263	July 12, 13	26	Sep 23 1956
10 PERCENTILE	1450		3160	
50 PERCENTILE	906		1240	
95 PERCENTILE	290		291	

* For regulated period only (1929-88)
a Caused by regulation from Keno powerplant 0.9 mi upstream from station

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

LOCATION.--Lat 42°05'05", long 122°04'20", in SE 1/4 SE 1/4 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."

REVISED RECORDS.-- WDR OR-87-1: 1967.

GAGE.--Water-stage recorder and crest-stage gage. 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1280	1200	1030	1440	1640	2190	1210	847	755	678	807	1220
2	1280	1320	1210	1570	1640	2290	1150	1040	836	847	806	1120
3	1230	939	1850	1490	1640	2260	1000	1030	1090	845	800	1030
4	1230	872	1040	1390	1640	2390	1240	1040	852	938	803	987
5	1280	1520	761	1350	1640	2360	1250	850	758	403	827	984
6	1300	1160	760	1210	1640	2150	1220	901	848	378	826	1070
7	1270	1250	945	1280	1630	1940	1270	760	935	378	824	771
8	1270	1250	990	1260	1630	2440	2110	753	939	375	924	729
9	1290	1250	999	1260	1630	1730	1650	1180	799	524	969	732
10	1270	1290	1130	1260	1650	2280	842	1280	661	465	766	970
11	1290	1270	1140	1390	1850	2280	659	1110	661	495	1120	916
12	1270	1360	1140	1550	1740	2040	657	710	661	496	1020	1120
13	1270	1260	1140	1420	1700	1890	851	755	658	496	1040	1210
14	1290	1120	1210	1280	1580	2130	1170	757	565	498	1030	1180
15	1280	1130	1230	1460	1950	1630	1180	756	569	508	1080	1210
16	1290	1260	1760	1620	2270	1990	1170	756	570	519	1070	1230
17	1310	1170	1640	1640	2200	1740	1020	763	569	505	1020	1170
18	1170	1170	1610	1640	2340	1080	1170	811	569	498	1020	1160
19	1310	1180	1660	1640	2160	1400	949	754	570	501	1020	1170
20	1310	1170	1340	1640	2080	1260	876	895	569	509	941	1070
21	1310	1190	1720	1640	2100	1370	997	1040	570	509	940	1130
22	1260	1170	1620	1630	2570	1370	1130	848	570	581	1120	1120
23	1320	1180	1550	1620	2810	1370	904	994	568	664	1120	673
24	1360	1570	1510	1630	2810	1160	896	894	615	666	1040	563
25	1140	1660	1520	1630	2810	1270	989	805	866	708	1000	1080
26	1270	1040	1550	1630	2780	1600	1030	800	870	900	988	887
27	1360	1190	1550	1610	2680	1470	1040	861	627	712	1020	754
28	1260	1180	1490	1600	2680	1560	1030	851	671	917	770	702
29	1310	1190	1340	1620	2570	1250	1040	845	657	854	922	752
30	1270	1180	1410	1640	---	1200	848	1120	681	717	1170	754
31	1360	---	1380	1630	---	1170	---	755	---	708	706	---
TOTAL	39710	36691	41225	46670	60060	54260	32548	27561	21129	18792	29509	29464
MEAN	1281	1223	1330	1505	2071	1750	1085	889	704	606	952	982
MAX	1360	1660	1850	1640	2810	2440	2110	1280	1090	938	1170	1230
MIN	1140	872	760	1210	1580	1080	657	710	565	375	706	563
AC-FT	78760	72780	81770	92570	119100	107600	64560	54670	41910	37270	58530	58440

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	1685	2196	2700	2668	2723	3153	2550	1725	872.5	651.1	903.2	1258
MAX	3157	4506	5733	7905	7780	8755	5645	3935	2327	1339	1054	1876
(WY)	1985	1985	1984	1965	1965	1972	1974	1971	1983	1982	1965	1965
MIN	786.2	897.0	1112	1174	1091	634.3	722.9	591.2	549.6	501.5	590.5	776.0
(WY)	1982	1982	1980	1981	1977	1977	1977	1966	1976	1973	1973	1973

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	1196		1903	
HIGHEST ANNUAL MEAN			3024	1984
LOWEST ANNUAL MEAN			1080	1981
HIGHEST DAILY MEAN	2810	Feb 23	10800	Mar 5 1972
LOWEST DAILY MEAN	375	Jul 8	317	Jul 25 1968
INSTANTANEOUS PEAK FLOW	2880	Feb 13	11000	Mar 5 1972
INSTANTANEOUS PEAK STAGE (FEET)	5.80	Feb 13	9.33	Mar 5 1972
INSTANTANEOUS LOW FLOW	336	Apr 5	283	Feb 17 1968
10 PERCENTILE	1720		3550	
50 PERCENTILE	1160		1460	
95 PERCENTILE	544		545	

11516530 KLAMATH RIVER BELOW IRON GATE DAM, CA

LOCATION.--Lat 41°55'41", long 122°26'35", in SE 1/4 NE 1/4 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. Chemical data available October 1961 to September 1981. Water temperature data available October 1962 to September 1980.

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 good. 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.--28 years, 2,246 ft^3/s, 1,627,000 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, 539 ft^3/s July 7, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,890 ft^3/s Feb. 28, gage height, 5.09 ft; minimum daily discharge, 539 ft^3/s July 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1340	1330	1340	1340	1790	2520	1330	1020	809	719	747	1030
2	1350	1340	1340	1340	1780	2490	1330	1020	912	722	772	1030
3	1350	1330	1330	1340	1780	2490	1340	1020	874	719	792	1030
4	1350	1330	1330	1340	1780	2490	1330	1020	802	719	819	1030
5	1350	1330	1330	1340	1780	2630	1320	1020	852	720	854	1030
6	1350	1330	1330	1340	1780	2630	1330	1020	904	613	884	1030
7	1340	1330	1320	1340	1780	2400	1320	1020	1050	539	922	1030
8	1340	1330	1330	1340	1780	2280	1330	1030	1110	540	971	1030
9	1340	1330	1330	1360	1780	2300	1340	1030	1110	552	1000	1030
10	1340	1330	1390	1390	1780	2290	1330	1040	1110	552	1010	1030
11	1340	1330	1330	1800	1910	2280	1330	1020	1070	553	1020	1030
12	1340	1330	1320	1790	2080	2270	1330	1030	1020	555	1010	1030
13	1340	1330	1320	1790	2060	2240	1320	1030	875	556	1020	1030
14	1340	1330	1320	1800	2050	2260	1330	1030	732	557	1020	1030
15	1340	1330	1320	1870	2050	2220	1020	1030	736	551	1020	1030
16	1340	1330	1400	2200	2280	1940	1010	1030	741	553	1020	1030
17	1340	1330	1790	2200	2390	1760	1020	1030	748	549	1020	1040
18	1340	1330	1790	2180	2570	1650	1020	1030	756	549	1030	1040
19	1340	1330	1790	2100	2440	1330	1020	1030	753	556	1020	1040
20	1340	1320	1790	1790	2390	1330	1020	1030	731	552	1020	1040
21	1340	1330	1780	1430	2410	1330	1030	1030	707	551	1020	1040
22	1340	1320	1780	1570	2470	1340	1030	1030	710	597	1020	1050
23	1340	1320	1780	1790	2690	1340	1020	1030	711	714	1020	1070
24	1340	1380	1780	1780	2690	1340	1020	1030	718	729	1020	1050
25	1340	1330	1780	1780	2720	1510	1020	1020	724	730	1020	1050
26	1340	1330	1770	1780	2850	1760	1020	754	718	728	1020	1050
27	1340	1330	1770	1790	2870	1760	1020	741	717	728	1030	1050
28	1340	1330	1700	1820	2830	1570	1020	754	716	732	1020	1050
29	1340	1330	1470	1810	2720	1310	1020	752	719	731	1020	1050
30	1330	1330	1480	1800	---	1320	1020	748	720	732	1020	1040
31	1330	---	1390	1790	---	1320	---	752	---	729	1020	---
TOTAL	41570	39930	47020	52130	64280	59700	34940	30171	24855	19627	30201	31140
MEAN	1341	1331	1517	1682	2217	1926	1165	973	829	633	974	1038
MAX	1350	1380	1790	2200	2870	2630	1340	1040	1110	732	1030	1070
MIN	1330	1320	1320	1340	1780	1310	1010	741	707	539	747	1030
AC-FT	82450	79200	93260	103400	127500	118400	69300	59840	49300	38930	59900	61770

CAL YR 1987 TOTAL 530399 MEAN 1453 MAX 3310 MIN 720 AC-FT 1052000
WTR YR 1988 TOTAL 475564 MEAN 1299 MAX 2870 MIN 539 AC-FT 943300

12472800 COLUMBIA RIVER BELOW PRIEST RAPIDS DAM, WA

LOCATION.--Lat 46°37'44", long 119°51'49", in SE 1/4 NW 1/4 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.--No estimated daily discharges. Water-discharge records excellent. 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.--71 years, 119,200 ft^3/s, 86,360,000 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, 230,000 ft^3/s May 16, elevation, 413.40 ft; minimum discharge, 36,400 ft^3/s Nov. 8, elevation, 396.40 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	101000	64000	99100	101000	119000	95700	79100	95100	150000	91500	76400	90600
2	111000	85100	98300	122000	134000	100000	81400	106000	153000	80100	78200	100000
3	80400	87500	90800	139000	132000	103000	77200	118000	148000	54300	79700	117000
4	72700	86800	76400	133000	134000	98700	89200	84400	124000	64900	86500	79000
5	109000	82400	75400	137000	145000	102000	70900	68300	120000	94100	92100	90100
6	105000	82900	71500	127000	141000	99400	81800	71700	112000	105000	81000	90600
7	111000	53300	113000	147000	102000	91600	78200	68800	136000	91000	50400	120000
8	99800	46000	123000	126000	94500	70500	69000	62800	131000	88800	82100	100000
9	85600	73400	114000	113000	100000	91900	68800	114000	115000	96700	92100	107000
10	79600	89900	104000	130000	99500	90200	68100	140000	110000	57700	85100	103000
11	59300	94900	111000	130000	93500	95200	68300	150000	71200	94500	94000	49100
12	109000	89900	99600	147000	89600	83700	67200	137000	64500	120000	85400	70400
13	133000	79300	108000	127000	82500	71300	67000	161000	101000	98200	66100	106000
14	132000	78000	107000	87800	79900	72300	84700	129000	99300	93300	42900	97600
15	88600	72000	118000	100000	104000	78400	80900	121000	108000	80900	75100	85700
16	102000	86300	139000	94200	108000	81700	69400	151000	122000	77500	80900	93700
17	94000	93100	138000	89300	111000	85000	69600	129000	118000	63600	85400	77100
18	81900	91500	134000	126000	102000	91300	70100	130000	109000	90000	81100	70400
19	102000	91800	101000	140000	93400	83200	76800	135000	63200	114000	83000	85600
20	100000	92800	102000	141000	83600	70600	69200	148000	92500	116000	80200	99300
21	101000	85500	119000	113000	85600	73300	71300	115000	118000	112000	46600	97800
22	114000	64400	121000	129000	103000	95700	69700	121000	123000	104000	75500	88000
23	114000	76500	114000	95800	105000	103000	68000	128000	127000	80800	98500	74200
24	103000	96500	119000	90700	102000	107000	69900	138000	131000	64300	96100	100000
25	86000	111000	79800	100000	104000	112000	96700	135000	125000	81200	104000	66100
26	89800	69100	92200	116000	106000	108000	91200	137000	72900	85700	111000	79800
27	95600	74700	102000	117000	87400	95100	83800	125000	93800	77600	69300	91200
28	92200	88500	122000	115000	71200	93800	87500	96800	93800	66400	61800	80100
29	88100	84600	118000	113000	81800	93000	93500	89000	105000	68500	90600	80400
30	78300	109000	121000	115000	---	83400	104000	92800	87200	61900	98400	74000
31	74900	---	124000	106000	---	85100	---	138000	---	51300	98900	---
TOTAL	2993800	2480700	3355100	3667800	2994500	2805100	2322500	3635700	3324400	2625800	2528400	2663800
MEAN	96570	82690	108200	118300	103300	90490	77420	117300	110800	84700	81560	88790
MAX	133000	111000	139000	147000	145000	112000	104000	161000	153000	120000	111000	120000
MIN	59300	46000	71500	87800	71200	70500	67000	62800	63200	51300	42900	49100
AC-FT	5938000	4920000	6655000	7275000	5940000	5564000	4607000	7211000	6594000	5208000	5015000	5284000

CAL YR 1987 TOTAL 37147000 MEAN 101800 MAX 185000 MIN 46000 AC-FT 73680000
WTR YR 1988 TOTAL 35397600 MEAN 96710 MAX 161000 MIN 42900 AC-FT 70210000

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

WATER-QUALITY RECORDS

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

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 20.0°C on several days during July, August, and September; minimum, 1.5°C Feb. 6, 7.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	18.0	17.5	18.0	15.5	15.0	15.5	10.5	10.5	10.5	6.0	6.0	6.0
2	18.5	17.5	18.0	16.0	15.0	15.5	10.5	10.0	10.5	6.0	5.5	6.0
3	18.5	17.5	18.0	15.5	15.0	15.5	10.5	10.5	10.5	5.5	5.5	5.5
4	18.5	17.5	18.0	15.5	15.0	15.0	10.5	10.5	10.5	5.5	5.0	5.5
5	18.0	17.5	18.0	15.5	14.5	15.0	10.5	10.5	10.5	5.5	5.0	5.5
6	18.0	17.5	18.0	15.0	14.5	15.0	10.5	10.0	10.5	5.5	5.0	5.0
7	18.5	17.5	18.0	15.0	14.5	14.5	10.0	10.0	10.0	5.0	5.0	5.0
8	18.5	17.5	18.0	15.0	14.0	14.5	10.0	10.0	10.0	5.0	5.0	5.0
9	18.0	17.5	17.5	14.5	14.0	14.5	10.0	10.0	10.0	5.0	4.5	4.5
10	18.0	17.0	17.5	14.5	14.0	14.5	10.0	9.5	10.0	4.5	4.5	4.5
11	17.5	17.0	17.0	14.5	14.0	14.5	10.0	9.5	9.5	4.5	4.5	4.5
12	17.5	16.5	17.0	14.5	14.0	14.5	9.5	9.0	9.0	4.5	4.5	4.5
13	17.5	17.0	17.0	14.5	14.0	14.0	9.0	9.0	9.0	4.5	4.5	4.5
14	17.0	16.5	17.0	14.5	13.5	14.0	9.0	9.0	9.0	5.0	4.5	4.5
15	17.0	16.0	16.5	14.5	13.5	13.5	9.0	8.5	9.0	4.5	4.5	4.5
16	16.5	16.0	16.5	13.0	12.5	13.0	8.5	8.5	8.5	4.5	4.5	4.5
17	16.5	16.0	16.0	13.0	12.5	13.0	8.5	8.0	8.5	4.5	4.0	4.0
18	17.0	15.5	16.0	13.0	12.5	12.5	8.0	8.0	8.0	4.0	4.0	4.0
19	16.5	15.5	16.0	13.0	12.5	12.5	8.0	7.5	8.0	4.0	4.0	4.0
20	16.5	15.5	16.0	12.5	12.0	12.5	7.5	7.5	7.5	4.0	4.0	4.0
21	16.5	15.5	16.0	12.5	12.0	12.5	7.5	7.0	7.5	4.0	4.0	4.0
22	16.5	15.5	16.0	12.5	11.5	12.0	7.0	7.0	7.0	4.0	3.5	3.5
23	16.0	15.5	16.0	12.0	11.5	12.0	7.0	7.0	7.0	4.0	3.5	4.0
24	16.5	15.5	16.0	12.0	11.5	11.5	7.0	6.5	7.0	4.0	3.5	4.0
25	16.0	15.5	15.5	11.5	11.0	11.5	6.5	6.5	6.5	4.0	3.5	3.5
26	16.0	15.0	15.5	11.5	11.0	11.0	6.5	6.0	6.5	3.5	3.5	3.5
27	16.0	15.0	15.5	11.0	11.0	11.0	6.0	6.0	6.0	3.5	3.5	3.5
28	15.5	15.0	15.5	11.0	10.5	11.0	6.0	6.0	6.0	3.5	3.5	3.5
29	16.0	15.0	15.5	11.0	10.5	10.5	6.0	6.0	6.0	3.5	3.5	3.5
30	15.5	15.0	15.5	10.5	10.5	10.5	6.0	6.0	6.0	3.5	3.0	3.5
31	15.5	15.0	15.5	---	---	---	6.0	6.0	6.0	3.0	2.5	3.0
MONTH	18.5	15.0	16.5	16.0	10.5	13.0	10.5	6.0	8.5	6.0	2.5	4.5

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

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	2.5	2.5	2.5	4.5	4.0	4.0	6.0	5.0	5.5	9.5	9.0	9.5
2	2.5	2.0	2.0	4.0	4.0	4.0	6.0	5.5	5.5	9.0	9.0	9.0
3	2.0	2.0	2.0	4.5	4.0	4.0	6.0	5.5	6.0	9.0	9.0	9.0
4	2.0	2.0	2.0	4.0	4.0	4.0	6.5	5.5	6.0	10.0	8.5	9.0
5	2.0	2.0	2.0	4.0	3.5	4.0	6.5	6.0	6.0	10.0	9.0	9.5
6	2.0	1.5	2.0	4.0	3.5	4.0	7.5	6.0	6.5	10.0	9.0	9.5
7	2.5	1.5	2.0	4.5	4.0	4.0	7.0	6.5	6.5	11.0	9.5	10.0
8	2.5	2.0	2.0	5.0	4.0	4.5	7.0	6.0	6.5	11.0	10.0	10.5
9	2.5	2.0	2.5	5.0	4.0	4.5	7.5	6.0	6.5	10.5	9.5	10.0
10	2.5	2.0	2.5	4.5	4.0	4.0	7.5	6.5	7.0	10.0	10.0	10.0
11	2.5	2.5	2.5	4.0	4.0	4.0	8.0	6.5	7.0	11.0	10.0	10.5
12	3.0	2.5	3.0	5.0	4.0	4.5	8.0	7.0	7.5	11.0	10.5	11.0
13	3.5	2.5	3.0	5.0	4.0	4.5	8.0	7.0	7.5	11.0	10.5	11.0
14	3.5	3.0	3.0	5.0	4.5	4.5	8.0	7.5	7.5	11.0	10.5	11.0
15	3.5	3.0	3.0	5.0	4.5	4.5	8.5	7.5	8.0	11.5	10.5	11.0
16	3.5	2.5	3.0	5.5	4.5	5.0	9.0	7.5	8.5	11.0	10.5	11.0
17	3.0	2.5	3.0	5.5	4.5	4.5	8.5	8.0	8.5	11.0	10.5	10.5
18	3.0	3.0	3.0	5.0	4.5	5.0	9.0	8.0	8.5	11.0	10.5	11.0
19	3.5	3.0	3.5	5.0	4.5	5.0	9.0	8.0	8.5	11.5	11.0	11.0
20	4.0	3.0	3.5	5.0	5.0	5.0	9.0	8.0	8.5	11.5	11.0	11.5
21	3.5	3.0	3.5	5.0	5.0	5.0	9.0	8.5	8.5	12.0	11.0	11.5
22	3.5	3.0	3.5	5.0	4.5	5.0	9.0	8.5	8.5	12.0	11.0	11.5
23	3.5	3.0	3.5	5.0	4.5	5.0	9.0	8.5	8.5	12.0	11.0	11.5
24	3.5	3.0	3.5	5.0	4.5	5.0	9.0	8.0	8.5	11.5	11.5	11.5
25	3.5	3.0	3.5	5.0	4.5	5.0	8.5	8.0	8.5	12.0	11.5	11.5
26	3.5	3.0	3.5	5.5	4.5	5.0	9.0	8.0	8.5	12.5	11.5	12.0
27	4.0	3.5	3.5	5.0	4.5	5.0	9.5	8.5	9.0	12.0	12.0	12.0
28	4.5	3.5	4.0	5.0	4.5	5.0	9.5	9.0	9.0	12.5	12.0	12.0
29	4.5	3.5	4.0	5.5	5.0	5.0	9.5	9.0	9.0	12.5	12.0	12.0
30	---	---	---	5.5	4.5	5.0	10.0	9.0	9.5	13.0	11.5	12.0
31	---	---	---	5.5	5.0	5.0	---	---	---	12.5	12.0	12.0
MONTH	4.5	1.5	3.0	5.5	3.5	4.5	10.0	5.0	7.5	13.0	8.5	11.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	12.5	12.0	12.0	16.5	15.5	16.0	19.0	18.0	18.5	20.0	18.5	19.0
2	12.0	12.0	12.0	17.0	15.5	16.5	19.5	18.5	19.0	19.5	19.0	19.5
3	12.0	12.0	12.0	17.0	15.5	16.0	19.5	18.5	19.0	19.5	19.0	19.5
4	12.5	12.0	12.0	16.5	16.0	16.0	20.0	19.0	19.5	20.0	19.0	19.5
5	12.5	12.0	12.0	16.5	15.5	16.0	20.0	19.0	19.5	20.0	19.0	19.5
6	12.5	12.0	12.0	16.5	15.5	16.0	19.5	18.5	19.0	20.0	18.5	19.5
7	12.0	12.0	12.0	16.5	15.5	16.0	20.0	18.0	19.0	19.5	19.0	19.0
8	12.0	12.0	12.0	17.5	16.0	16.5	19.5	18.5	19.0	19.5	18.5	19.0
9	12.5	12.0	12.0	17.0	16.0	16.5	19.0	18.5	19.0	19.0	18.5	19.0
10	13.0	12.0	12.5	18.0	16.5	17.0	19.5	18.5	19.0	18.5	17.5	18.0
11	13.5	12.0	13.0	17.5	17.0	17.0	19.5	18.5	19.0	19.5	17.5	18.0
12	14.0	13.0	13.5	17.0	17.0	17.0	19.5	18.5	19.0	18.5	17.5	18.0
13	14.0	13.5	13.5	17.5	17.0	17.0	20.0	19.0	19.5	18.5	18.0	18.5
14	14.5	13.5	14.0	17.5	17.0	17.0	20.0	18.5	19.0	19.0	18.0	18.5
15	15.0	13.5	14.5	18.0	17.0	17.5	19.5	18.5	18.5	19.0	18.0	18.5
16	15.0	14.0	14.5	18.0	16.5	17.5	19.0	18.0	18.5	18.5	18.0	18.5
17	15.0	14.5	14.5	18.5	16.5	17.5	18.5	18.0	18.5	18.0	17.0	17.5
18	15.5	14.5	15.0	17.5	17.0	17.5	19.0	18.0	18.5	18.0	16.5	17.5
19	17.0	14.5	15.5	18.0	17.0	17.5	19.0	18.0	18.5	17.5	17.0	17.5
20	16.5	15.5	16.0	18.5	17.5	18.0	19.0	18.0	18.5	18.0	17.0	17.5
21	16.5	15.5	16.0	18.5	18.0	18.0	19.5	18.0	18.5	18.0	17.0	17.5
22	16.5	16.0	16.0	18.5	18.0	18.5	19.5	18.0	18.5	18.0	17.0	17.5
23	16.5	16.0	16.0	19.0	18.0	18.5	19.5	18.5	19.0	17.5	17.0	17.5
24	16.5	15.5	16.0	19.0	17.5	18.5	19.5	19.0	19.0	17.5	17.0	17.0
25	16.0	15.5	16.0	19.5	18.0	19.0	19.5	19.0	19.0	17.5	16.5	17.0
26	17.0	15.5	16.5	20.0	18.5	19.0	19.5	18.5	19.0	17.5	17.0	17.0
27	17.0	16.0	16.5	20.0	18.5	19.0	20.0	18.5	19.0	17.5	17.0	17.0
28	16.5	15.5	16.0	20.0	18.0	19.0	20.0	18.5	19.5	17.5	16.0	17.0
29	16.0	15.5	15.5	20.0	18.5	19.0	19.5	19.0	19.5	17.5	16.5	17.0
30	16.5	15.5	15.5	20.0	18.5	19.0	19.5	18.5	19.0	17.5	16.5	17.0
31	---	---	---	20.0	18.5	19.0	19.5	19.0	19.0	---	---	---
MONTH	17.0	12.0	14.0	20.0	15.5	17.5	20.0	18.0	19.0	20.0	16.0	18.0
YEAR	20.0	1.5	11.5									

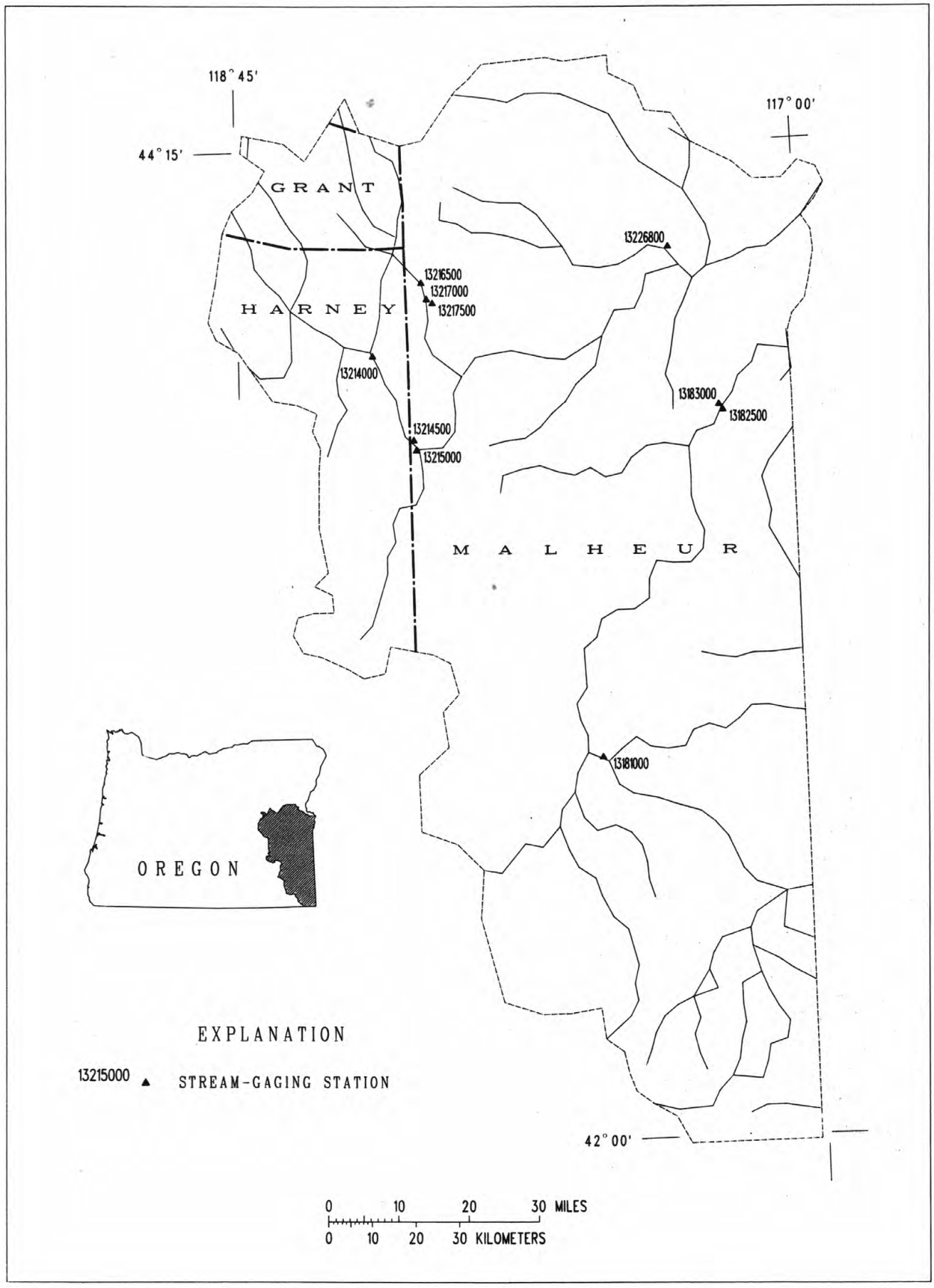

Figure 3.--Location of surface-water and water-quality stations in the Owyhee River, Malheur River, and Bully Creek basins.

13181000 OWYHEE RIVER NEAR ROME, OR

LOCATION.--Lat 42°52'02", long 117°38'52", in SE 1/4 NE 1/4 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.--Records good. 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	97	129	118	141	183	2370	366	305	138	160	88	59
2	97	137	131	e138	177	2280	343	279	162	136	86	60
3	97	138	139	135	163	2200	325	265	433	123	82	60
4	98	138	148	149	159	2300	360	250	436	115	80	59
6	99	142	162	144	152	2370	373	237	320	109	83	62
7	101	140	158	146	155	2430	387	271	273	108	86	62
8	106	137	157	153	157	1510	419	293	261	109	85	65
9	108	138	164	159	167	1000	387	285	237	108	85	68
10	113	141	164	162	224	827	366	276	218	102	89	69
11	115	143	167	172	362	759	356	281	192	96	94	69
12	115	144	199	177	491	601	363	270	178	93	96	70
13	115	144	163	174	565	489	356	260	178	90	96	70
14	115	147	128	190	520	419	351	237	179	88	95	69
15	115	144	116	199	462	396	354	217	171	88	94	68
16	115	143	131	206	471	379	361	208	157	87	91	68
17	115	146	151	210	440	376	363	202	160	85	90	69
18	115	145	167	186	407	388	358	188	166	85	89	69
19	118	140	151	176	367	374	334	182	150	87	83	70
20	116	140	145	e165	320	385	328	175	133	86	77	72
21	115	145	139	e155	291	508	355	178	128	84	74	74
22	115	143	153	e160	289	598	401	175	131	82	74	82
23	114	139	181	162	307	572	429	173	131	83	74	86
24	115	137	e181	162	356	542	483	173	123	83	74	88
25	115	138	146	153	469	494	406	170	115	82	73	88
26	117	136	132	157	568	476	405	156	113	82	69	88
27	120	133	118	151	838	471	403	142	118	82	68	99
28	121	122	119	150	1410	450	370	144	200	82	64	103
29	119	107	147	155	1720	437	364	154	301	87	62	101
30	122	109	144	170	---	424	327	157	198	90	61	101
31	123	---	143	180	---	401	---	150	---	90	59	---
TOTAL	3465	4126	4616	5086	12357	29516	11149	6691	6081	2987	2502	2228
MEAN	112	138	149	164	426	952	372	216	203	96.4	80.7	74.3
MAX	123	147	199	210	1720	2430	483	305	436	160	96	103
MIN	97	107	116	135	152	374	325	142	113	82	59	59
AC-FT	6870	8180	9160	10090	24510	58540	22110	13270	12060	5920	4960	4420

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	170.4	224.0	429.8	717.9	1361	2351	3192	2070	979.7	274.4	159.4	144.2
MAX	442.1	592.7	2898	4461	8820	9404	16960	10470	4870	1035	451.7	360.9
(WY)	1976	1971	1965	1971	1986	1972	1952	1984	1984	1984	1984	1984
MIN	85.3	107.1	103.5	113.6	129.3	232.7	205.8	124.0	156.8	61.2	63.7	62.5
(WY)	1955	1955	1955	1955	1955	1977	1968	1968	1966	1968	1954	1955

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	248		1001	
HIGHEST ANNUAL MEAN			3400	1984
LOWEST ANNUAL MEAN			188	1977
HIGHEST DAILY MEAN	2430	Mar 7	36500	Feb 19 1986
LOWEST DAILY MEAN	59	Aug 31	44	Aug 1 1968
INSTANTANEOUS PEAK FLOW	3150	Mar 7	41400	Feb 19 1986
INSTANTANEOUS PEAK STAGE (FEET)	5.14	Mar 7	19.09	Feb 19 1986
INSTANTANEOUS LOW FLOW	59	Aug 31, Sep 1-5, 7	42a	Aug 12 1954
10 PERCENTILE	428		2650	
50 PERCENTILE	150		250	
95 PERCENTILE	69		88	

a Also occurred on July 28, Aug. 5, 1961, July 31, 1968

13182500 LAKE OWYHEE NEAR NYSSA, OR

LOCATION.--Lat 43°38'30", long 117°14'30", in NW 1/4 SE 1/4 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.--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. Additional data available in files of Oregon Water Resources Department.

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, 409,800 acre-ft Sept. 30, 1988, elevation, 2,590.72 ft, furnished by Owyhee Irrigation District.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 697,700 acre-ft Apr. 3, elevation, 2,630.22 ft; minimum contents observed, 409,800 acre-ft Sept. 30, elevation, 2,590.72 ft, furnished by Owyhee Irrigation District.

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 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2613.35	2610.44	2612.95	2615.44	2618.07	2622.49	2630.06	2628.23	2622.53	2615.58	2605.14	---
2	2613.12	2610.56	2613.02	2615.50	2618.12	2623.07	2630.14	2628.10	2622.36	2615.31	2604.75	---
3	2612.91	2610.65	2613.10	2615.59	2618.25	2623.57	2630.15	2627.97	2622.25	2615.02	2604.42	---
4	2612.70	2610.71	2613.20	2615.67	2618.32	2624.16	2630.13	2627.84	2622.14	2614.76	2604.08	---
5	2612.51	2610.81	2613.30	2615.78	2618.41	2624.77	2630.13	2627.71	2622.05	2614.47	2603.78	---
6	2612.31	2610.88	2613.42	2615.88	2618.48	2625.29	2630.17	2627.61	2621.95	2614.18	2603.39	---
7	2612.10	2610.95	2613.45	2615.95	2618.58	2625.95	2630.14	2627.50	2621.81	2613.87	2603.05	---
8	2611.91	2611.02	2613.56	2616.02	2618.66	2626.45	2630.13	2627.37	2621.64	2613.57	2602.73	---
9	2611.70	2611.13	2613.67	2616.12	2618.83	2626.82	2630.11	2627.27	2621.49	2613.25	2602.38	---
10	2611.49	2611.20	2613.77	2616.26	2618.96	2627.08	2630.10	2627.14	2621.25	2612.92	2602.15	---
11	2611.28	2611.29	2613.83	2616.36	2619.08	2627.29	2630.08	2626.99	2621.08	2612.59	2601.52	---
12	2611.09	2611.41	2613.92	2616.37	2619.19	2627.47	2630.03	2626.85	2620.84	2612.25	2601.35	---
13	2610.89	2611.50	2614.00	2616.49	2619.38	2627.66	2629.96	2626.67	2620.63	2611.92	---	---
14	2610.69	2611.56	2614.07	2616.56	2619.53	2627.84	2629.88	2626.46	2620.36	2611.56	---	---
15	2610.50	2611.63	2614.17	2616.69	2619.72	2627.95	2629.80	2626.30	2620.08	2611.19	---	---
16	2610.36	2611.72	2614.22	2616.79	2619.85	2628.08	2629.70	2626.06	2619.78	2610.84	---	---
17	2610.25	2611.77	2614.32	2616.86	2619.98	2628.21	2629.61	2625.85	2619.47	2610.50	---	---
18	2610.15	2611.85	2614.39	2616.93	2620.17	2628.33	2629.51	2625.63	2619.20	2610.16	---	---
19	2610.07	2611.94	2614.48	2617.01	2620.28	2628.47	2629.39	2625.43	2618.87	2609.83	---	---
20	2609.97	2612.03	2614.55	2617.17	2620.43	2628.62	2629.27	2625.21	2618.57	2609.48	---	---
21	2609.89	2612.12	2614.61	2617.20	2620.57	2628.74	2629.17	2624.98	2618.27	2609.09	---	---
22	2609.82	2612.19	2614.71	2617.27	2620.64	2628.89	2629.06	2624.75	2617.92	2608.76	---	---
23	2609.78	2612.29	2614.77	2617.37	2620.73	2629.09	2628.98	2624.51	2617.57	2608.37	---	---
24	2609.84	2612.37	2614.88	2617.43	2620.86	2629.26	2628.89	2624.29	2617.28	2608.05	---	---
25	2609.91	2612.44	2614.92	2617.51	2620.96	2629.41	2628.83	2624.05	2616.97	2607.67	---	---
26	2609.98	2612.51	2614.98	2617.60	2621.10	2629.59	2628.74	2623.81	2616.71	2607.32	---	---
27	2610.03	2612.58	2615.06	2617.70	2621.28	2629.68	2628.64	2623.61	2616.44	2606.94	---	---
28	2610.09	2612.66	2615.16	2617.77	2621.54	2629.77	2628.57	2623.33	2616.19	2606.56	---	---
29	2610.12	2612.75	2615.23	2617.89	2621.93	2629.85	2628.47	2623.11	2615.95	2606.22	---	---
30	2610.26	2612.81	2615.31	2617.92	---	2629.90	2628.34	2622.90	2615.76	2605.86	---	---
31	2610.33	---	2615.35	2617.97	---	2630.00	---	2622.72	---	2605.53	---	---
MAX	2613.35	2612.81	2615.35	2617.97	2621.93	2630.00	2630.17	2628.23	2622.53	2615.58	---	---
MIN	2609.78	2610.44	2612.95	2615.44	2618.07	2622.49	2628.34	2622.72	2615.76	2605.53	---	---
(†)	537800	556200	575500	595800	627600	695800	681400	634100	578600	503600	a433900	a409800
(‡)	-24000	+18400	+19300	+20300	+31800	+68200	-14400	-47300	-55500	-75000	-69700	-24100

CAL YR 1987 AC-FT‡ -300000
WTR YR 1988 AC-FT‡ -152000

† Contents, in acre-feet, at 2400, on last day of month.
‡ Change in contents, in acre-feet.
a Contents, in acre-feet, computed from elevations furnished by Owyhee Irrigation District.

13183000 OWYHEE RIVER BELOW OWYHEE DAM, OR

LOCATION.--Lat 43°39'17", long 117°15'16", in SE 1/4 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.--Records good except those for Oct. 23 to Mar. 28, which are fair. Flow regulated since October 1932 by Lake Owyhee (station 13182500), and by many smaller reservoirs. Diversion of up to 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. Monthly and annual adjusted flows are furnished by State of Oregon Water Resources Department.

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

AVERAGE DISCHARGE.--56 years (water years 1933-88), 440 ft^3/s, 318,800 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, 207 ft^3/s Oct. 10-15, gage height, 2.05 ft; maximum gage height, 2.05 ft Oct. 3-15; minimum discharge, 1.5 ft^3/s Oct. 23, Dec. 13, 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	203	3.5	2.4	2.2	2.4	2.8	107	153	165	157	151	124
2	202	3.3	2.4	2.2	2.4	2.7	107	153	164	157	147	123
3	204	3.2	2.5	2.2	2.4	2.7	107	155	161	157	145	121
4	205	3.2	2.5	2.4	2.4	2.7	107	156	159	157	145	121
5	205	3.2	2.5	2.5	2.4	2.8	107	155	158	158	146	119
6	205	3.2	2.3	2.5	2.4	2.8	107	155	158	159	140	119
7	205	3.2	2.3	2.5	2.4	2.7	108	155	159	159	145	119
8	205	3.2	2.4	2.5	2.3	2.7	124	156	159	157	144	118
9	205	3.2	13	2.5	2.2	2.8	131	159	159	155	143	117
10	206	3.2	29	2.6	2.2	2.5	131	159	159	155	142	115
11	207	3.2	4.1	2.4	2.2	2.5	133	159	158	157	141	115
12	207	3.2	2.9	2.6	2.2	2.5	145	159	159	154	139	110
13	188	3.1	2.5	2.7	2.2	2.5	153	159	159	153	139	114
14	207	2.6	2.6	2.7	2.2	2.7	153	159	173	153	137	108
15	200	2.5	2.4	2.4	2.2	2.6	153	161	181	153	139	111
16	205	2.5	2.4	2.5	2.3	2.5	155	161	174	153	139	111
17	205	2.8	2.4	2.7	2.3	2.6	157	171	183	153	135	111
18	205	2.9	2.3	2.7	2.2	2.7	156	177	178	155	134	111
19	205	2.8	2.2	2.7	2.3	2.7	142	177	175	157	133	113
20	205	2.8	2.3	2.5	2.4	2.8	149	178	171	157	133	115
21	205	2.8	2.3	2.4	2.4	2.9	149	177	151	156	133	115
22	202	2.6	2.2	2.5	2.4	3.1	152	177	159	155	135	115
23	90	2.5	2.1	2.5	2.5	3.0	153	176	155	155	137	115
24	4.7	2.5	e2.1	2.5	2.5	3.0	153	175	155	154	135	114
25	4.3	2.4	e2.1	2.6	2.5	2.9	153	175	155	153	134	112
26	3.9	2.4	e2.1	2.6	2.5	3.1	152	175	152	151	133	111
27	3.5	2.4	e2.1	2.7	2.5	3.6	151	175	164	149	132	110
28	3.5	2.4	e2.1	2.7	2.6	47	153	173	163	149	131	102
29	3.5	2.4	2.2	2.6	2.8	106	152	168	159	149	129	109
30	3.5	2.4	2.2	2.4	---	108	154	166	157	145	126	109
31	3.5	---	2.2	2.4	---	107	---	165	---	154	125	---
TOTAL	4606.4	85.6	111.1	77.9	68.7	442.9	4154	5119	4882	4786	4267	3427
MEAN	149	2.85	3.58	2.51	2.37	14.3	138	165	163	154	138	114
MAX	207	3.5	29	2.7	2.8	108	157	178	183	159	151	124
MIN	3.5	2.4	2.1	2.2	2.2	2.5	107	153	151	145	125	102
AC-FT	9140	170	220	155	136	878	8240	10150	9680	9490	8460	6800
MEAN†	213	312	317	333	555	1153	524	364	302	124	50	190
AC-FT†	13110	18570	19520	20460	31940	70890	31170	22380	18000	7650	3050	11290

CAL YR 1987 TOTAL 53166.1 MEAN 146 MAX 260 MIN 2.1 AC-FT 105500 MEAN† 357 AC-FT† 258700
WTR YR 1988 TOTAL 32027.6 MEAN 87.5 MAX 207 MIN 2.1 AC-FT 63530 MEAN† 369 AC-FT† 268000

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

13214000 MALHEUR RIVER NEAR DREWSEY, OR

LOCATION.--Lat 43°47'05", long 118°19'50", in NE 1/4 SE 1/4 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.--Records good except those for Dec. 23-26, Jan. 18-28, Feb. 1-5, which are fair; Oct. 7 to Nov. 2, which are poor. Slight regulation by small reservoirs upstream from station. Diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	e48	45	67	e68	217	110	55	36	8.3	.69	.63
2	18	e48	89	70	e62	228	119	53	59	19	.67	.63
3	19	e48	104	66	e54	210	132	58	52	14	.67	.59
4	19	51	85	67	e54	223	178	57	39	13	.67	.56
5	20	52	80	66	e64	251	132	56	36	12	.74	.56
6	e21	52	78	72	67	252	121	49	46	9.9	.79	.54
7	e21	53	84	75	70	202	124	45	48	11	.72	.50
8	e21	53	78	73	79	179	121	46	52	9.5	.72	.53
9	e22	53	68	76	562	186	113	47	49	11	.81	.56
10	e25	56	88	80	508	174	103	46	43	10	.81	.61
11	e24	56	133	101	422	151	101	42	39	12	.74	.57
12	e25	63	88	83	327	140	104	36	31	12	.83	.63
13	e25	71	77	80	264	132	103	28	26	11	.82	1.3
14	e25	71	55	82	172	125	102	24	23	11	.85	1.2
15	e30	64	55	124	171	123	108	23	21	11	1.0	.75
16	e31	61	64	102	184	116	112	20	17	7.4	1.3	.72
17	e33	67	75	84	130	122	117	19	12	8.3	1.1	.79
18	e35	52	73	e62	115	132	133	27	6.7	7.4	.95	.79
19	e35	51	68	e50	112	157	118	34	7.4	4.8	.86	1.0
20	e35	62	71	e54	120	182	152	35	7.5	2.8	.82	1.5
21	e35	66	64	e60	170	205	165	38	6.4	2.9	.82	1.7
22	e35	61	70	e66	219	187	146	42	7.9	1.5	.86	3.8
23	e35	60	e66	e70	169	162	120	37	7.6	1.1	.95	6.7
24	e35	59	e60	e66	144	155	104	33	6.9	1.1	.95	4.5
25	e35	59	e54	e62	142	130	90	33	7.2	1.1	.93	2.6
26	e35	53	e54	e62	159	148	83	36	8.4	1.1	.81	1.9
27	e35	49	54	e66	178	193	75	27	8.9	1.1	.72	2.3
28	e37	50	58	e70	171	148	65	25	8.7	.95	.72	2.2
29	e40	44	61	78	164	127	65	45	14	.95	.72	2.5
30	e45	41	64	78	---	110	57	53	7.7	.85	.72	2.9
31	e48	---	69	74	---	107	---	37	---	.76	.71	---
TOTAL	917	1674	2232	2286	5121	5174	3373	1206	734.3	218.81	25.47	46.06
MEAN	29.6	55.8	72.0	73.7	177	167	112	38.9	24.5	7.06	.82	1.54
MAX	48	71	133	124	562	252	178	58	59	19	1.3	6.7
MIN	18	41	45	50	54	107	57	19	6.4	.76	.67	.50
AC-FT	1820	3320	4430	4530	10160	10260	6690	2390	1460	434	51	91

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	42.3	69.9	105.1	147.1	269.9	464.7	659.4	354.4	140.8	29.1	10.4	14.8
MAX	103.1	177.6	739.3	816.7	1124	1435	2290	1136	501.5	158.2	60.2	68.6
(WY)	1985	1971	1965	1970	1982	1983	1952	1958	1984	1982	1976	1984
MIN	5.32	5.11	8.95	20.0	20.0	55.0	44.1	17.5	7.96	1.87	.000	.000
(WY)	1933	1933	1933	1933	1933	1977	1934	1934	1934	1934	1934	1934

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	62.9		191	
HIGHEST ANNUAL MEAN			473.6	1984
LOWEST ANNUAL MEAN			34.3	1934
HIGHEST DAILY MEAN	562	Feb 9	6910	Dec 23 1964
LOWEST DAILY MEAN	.50	Sep 7	.00	Jul 27 1934
INSTANTANEOUS PEAK FLOW	1500	Feb 9	12000a	Dec 23 1964
INSTANTANEOUS PEAK STAGE (FEET)	6.42	Feb 9	13.50	Dec 23 1964
INSTANTANEOUS LOW FLOW	0.50	Sep 6-8	.00	at times
10 PERCENTILE	150		529	
50 PERCENTILE	51		70	
95 PERCENTILE	.62		2.0	

* Water years 1927-88

a From rating curve extended above 4,500 ft^3/s on basis of contracted-opening measurement at gage height 13.20 ft

13214500 WARMSPRINGS RESERVOIR NEAR RIVERSIDE, OR

LOCATION.--Lat 43°35'07", long 118°12'30", NW 1/4 SW 1/4 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 mi^2, 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, Sept. 23-25, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 47,170 acre-ft Apr. 17, 18, elevation, 3,365.07 ft; no contents Sept. 23-25, elevation, 3,326.82 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 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	3337.45	3342.89	3347.50	---	---	---	---	3352.76	3340.15	3327.12	3327.01
2	---	3337.69	---	3347.61	---	---	---	---	3352.54	3339.45	3327.11	3326.99
3	---	3337.91	---	3347.71	---	---	---	---	3352.42	3338.66	3327.11	3326.97
4	---	3338.12	---	3347.72	---	---	---	---	3352.37	3337.78	3327.10	3326.96
5	---	3338.33	---	3347.80	---	---	---	3361.84	3352.28	3336.81	3327.10	3326.96
6	3330.63	3338.56	---	3348.05	---	---	---	3361.57	3352.16	3335.76	3327.11	3326.95
7	3330.87	3338.75	---	3348.13	---	---	---	3361.31	3352.00	3334.62	3327.10	3326.95
8	3331.10	3338.95	---	3348.31	---	3360.27	3364.45	3361.06	3351.80	3333.44	3327.10	3326.94
9	3331.34	3339.15	---	3348.47	---	3360.50	3364.56	3360.81	3351.60	3332.09	3327.09	3326.94
10	3331.59	3339.35	---	3348.65	---	3360.66	3364.66	---	3351.39	3330.63	3327.08	3326.92
11	3331.82	3339.55	---	3348.81	---	3360.82	3364.76	---	3351.19	3329.51	3327.09	3326.91
12	3332.09	3339.78	---	3348.95	---	3360.95	3364.86	---	3350.96	3328.76	3327.08	3326.89
13	3332.34	3340.03	---	3349.10	---	3361.08	3364.95	---	3350.71	3328.31	3327.10	3326.87
14	3332.67	3340.21	3345.56	3349.26	---	3361.24	3365.00	---	3350.38	3328.06	3327.09	3326.87
15	3332.91	3340.40	3345.68	3349.45	---	3361.32	3365.01	---	3349.99	3327.92	3327.10	3326.88
16	3333.16	3340.64	3345.79	3349.70	---	3361.43	3365.04	---	3349.58	3327.84	3327.08	3326.87
17	3333.43	3340.80	3345.93	3349.79	---	3361.54	3365.06	---	3349.07	3327.74	3327.09	3326.84
18	3333.69	3340.99	3346.08	3349.88	---	3361.67	3365.01	---	3348.53	3327.69	3327.08	3326.83
19	3333.99	3341.14	3346.20	3349.88	---	3361.82	3364.95	3357.33	3347.91	3327.65	3327.07	3326.87
20	3334.26	---	3346.28	---	---	3361.96	3364.87	3356.99	3347.29	3327.61	3327.08	3326.85
21	3334.55	---	3346.44	---	---	3362.17	3364.81	3356.64	3346.68	3327.52	3327.06	3326.85
22	3334.83	---	3346.55	---	3357.07	3362.36	3364.77	3356.31	3346.04	3327.43	3327.06	3326.84
23	3335.12	---	3346.64	---	3357.28	3362.53	3364.67	3355.97	3345.44	3327.38	3327.04	3326.84
24	3335.40	---	3346.71	---	3357.44	3362.69	3364.58	3355.62	3344.70	3327.31	3327.03	3326.83
25	3335.67	3342.08	3346.82	---	3357.60	3362.79	3364.45	3355.28	3344.05	3327.25	3327.02	3326.89
26	3335.94	3342.07	3346.92	---	3357.77	3362.95	3364.30	3354.89	3343.45	3327.22	3327.03	3326.98
27	3336.21	3342.43	3347.01	---	---	3363.09	3364.06	3354.51	3342.76	3327.20	3327.02	3327.01
28	3336.47	3342.55	3347.09	---	---	3363.24	3363.81	3354.12	3342.16	3327.18	3327.01	3327.06
29	3336.72	3342.65	3347.20	---	3358.22	---	3363.58	3353.71	3341.47	3327.15	3327.01	3327.10
30	3336.96	3342.76	3347.29	---	---	---	3363.31	3353.36	3340.83	3327.12	3327.03	3327.15
31	3337.21	---	3347.40	3351.20	---	---	---	3353.03	---	3327.13	3327.02	---
MAX	---	---	---	---	---	---	---	---	3352.76	3340.15	3327.12	3327.15
MIN	---	---	---	---	---	---	---	---	3340.83	3327.12	3327.01	3326.83
(†)	3140	7640	13240	18790	31660	a43620	42910	21810	5800	5	1	6
(‡)	+2969	+4500	+5600	+5550	+12870	+11960	-710	-21100	-16010	-5795	-4	+5

CAL YR 1987 AC-FT‡ -58670
WTR YR 1988 AC-FT‡ -165

† Contents, in acre-feet, at 2400, on last day of month.
‡ Change in contents, in acre-feet.
a Interpolated from elevations at 0800 hours furnished by Warmsprings Irrigation District.

13215000 MALHEUR RIVER BELOW WARMSPRINGS RESERVOIR, NEAR RIVERSIDE, OR

LOCATION.--Lat 43°34'29", long 118°12'31", on line between NW 1/4 SW 1/4 and SW 1/4 NW 1/4 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.

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.--Records good except for estimated daily discharges, which are poor. Flow completely regulated since November 1919 by Warmsprings Reservoir (station 13214500). Diversions for irrigation upstream from station.

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; no flow at times.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	326	287	250	e.20	.00
2	.00	.00	.00	.00	.00	.00	.00	349	238	242	e.10	.00
3	.00	.00	.00	.00	.00	.00	.00	362	154	237	e.07	.00
4	.00	.00	.00	.00	.00	.00	.00	361	70	234	e.07	.00
5	.00	.00	.00	.00	.00	.00	.00	329	69	233	e.06	.00
6	.00	.00	.00	.00	.00	.00	.00	310	101	212	e.06	.00
7	.00	.00	.00	.00	.00	.00	.00	308	170	184	e.06	.00
8	.00	.00	.00	.00	.00	.00	.00	308	209	177	e.06	.00
9	.00	.00	.00	.00	.00	.00	.00	308	219	166	e.05	.00
10	.00	.00	.00	.00	.00	.00	.00	308	203	140	e.05	.00
11	.00	.00	.00	.00	.00	.00	.00	304	193	63	e.05	.00
12	.00	.00	.00	.00	.00	.00	.00	318	193	e15	e.05	.00
13	.00	.00	.00	.00	.00	.00	.00	337	208	e5.0	e.04	.00
14	.00	.00	.00	.00	.00	.00	9.2	371	242	e2.0	e.04	.00
15	.00	.00	.00	.00	.00	.00	18	389	284	e.90	e.04	.00
16	.00	.00	.00	.00	.00	.00	16	385	298	e.90	e.04	.00
17	.00	.00	.00	.00	.00	.00	15	372	340	e.80	e.03	.00
18	.00	.00	.00	.00	.00	.00	151	362	347	e.80	e.03	.00
19	.00	.00	.00	.00	.00	.00	244	347	373	e.70	e.03	.00
20	.00	.00	.00	.00	.00	.00	244	335	366	e.70	e.03	.00
21	.00	.00	.00	.00	.00	.00	244	335	360	e.60	e.02	.00
22	.00	.00	.00	.00	.00	.00	244	331	353	e.60	e.02	.00
23	.00	.00	.00	.00	.00	.00	240	330	350	e.60	e.02	.00
24	.00	.00	.00	.00	.00	.00	240	330	345	e.50	e.02	.00
25	.00	.00	.00	.00	.00	.00	240	330	337	e.50	e.01	.00
26	.00	.00	.00	.00	.00	.00	271	347	319	e.40	e.01	.00
27	.00	.00	.00	.00	.00	.00	316	358	301	e.40	e.01	.00
28	.00	.00	.00	.00	.00	.00	330	358	279	e.30	e.01	.00
29	.00	.00	.00	.00	.00	.00	327	354	263	e.30	e.00	.00
30	.00	.00	.00	.00	---	.00	326	325	257	e.20	e.00	.00
31	.00	---	.00	.00	---	.00	---	308	---	e.20	.00	---
TOTAL	0.00	0.00	0.00	0.00	0.00	0.00	3475.20	10495	7728	2169.40	1.28	0.00
MEAN	.00	.00	.00	.00	.00	.00	116	339	258	70.0	.041	.00
MAX	.00	.00	.00	.00	.00	.00	330	389	373	250	.20	.00
MIN	.00	.00	.00	.00	.00	.00	.00	304	69	.20	.00	.00
AC-FT	.0	.0	.0	.0	.0	.0	6890	20820	15330	4300	2.5	.0

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	33.9	.908	8.46	17.8	37.7	86.6	320.7	440.0	342.4	429.8	355.9	202.8
MAX	137.6	19.8	322.7	452.4	763.1	1440	1603	1162	557.5	677.4	574.8	393.6
(WY)	1953	1920	1984	1971	1983	1983	1984	1958	1953	1945	1946	1928
MIN	.000	.000	.000	.000	.000	.000	.000	31.4	92.0	70.0	.041	.000
(WY)	1934	1933	1933	1933	1933	1933	1935	1932	1942	1988	1988	1988

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	65.2		192	UNADJUSTED
HIGHEST ANNUAL MEAN			566.0	1983
LOWEST ANNUAL MEAN			46.8	1930
HIGHEST DAILY MEAN	389	May 15	3030	Mar 22 1984
LOWEST DAILY MEAN	.00	Oct 1	.00	Oct 5 1932
INSTANTANEOUS PEAK FLOW	389	May 14	3150	Mar 22 1984
INSTANTANEOUS PEAK STAGE (FEET)	4.72	May 14	9.70a	Mar 22 1984
INSTANTANEOUS LOW FLOW	.00	many days	.00	at times
10 PERCENTILE	.00		525	
50 PERCENTILE	.00		7.8	
95 PERCENTILE	.00		.00	

* Regulated period only (1920-88)

a From floodmark

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

LOCATION.--Lat 43°56'54", long 118°10'24", in NW 1/4 NE 1/4 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.--Records good except for estimated daily discharges, which are fair, and those for January to February, which are poor. No regulation. Diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	42	61	e56	e47	103	89	94	83	41	34	33
2	38	42	70	e55	e37	102	99	91	88	40	31	33
3	38	43	62	e54	e35	105	119	93	78	40	33	33
4	38	42	58	e53	e38	102	123	92	68	40	33	32
5	38	42	55	e56	e45	127	107	93	71	39	31	33
6	37	42	58	55	e45	111	109	88	75	38	33	33
7	36	42	64	53	e50	89	120	81	78	37	34	33
8	37	42	e62	49	e55	84	113	81	75	36	33	e33
9	36	43	e55	52	74	91	103	82	69	36	33	e33
10	35	44	e62	56	77	73	97	69	65	35	33	e33
11	37	43	e72	60	78	71	100	73	62	34	34	e34
12	38	49	e65	55	74	68	107	75	59	36	35	e35
13	38	55	e56	50	68	71	108	79	55	34	38	e37
14	38	56	e48	55	54	76	121	86	50	31	40	36
15	38	45	e48	57	64	67	126	88	50	33	40	36
16	38	50	e50	53	60	67	126	87	50	34	36	35
17	38	43	e56	e45	44	66	130	88	48	33	35	34
18	39	37	e56	e37	57	71	131	88	47	33	35	35
19	39	48	e53	e30	49	77	125	85	44	32	35	36
20	38	51	e53	e35	58	86	149	81	44	34	35	39
21	39	51	e53	e40	68	96	149	76	43	29	35	37
22	40	45	e55	e43	76	92	131	77	38	31	35	37
23	39	47	e52	e44	63	89	125	79	38	30	34	37
24	39	44	e50	e40	64	83	117	80	36	29	34	36
25	39	48	e45	e41	70	80	112	83	38	30	31	36
26	40	37	e45	e42	79	92	108	81	53	32	33	36
27	40	e37	e45	e48	81	112	103	80	46	33	35	37
28	40	e37	e48	e53	82	86	103	82	41	33	35	40
29	41	e35	e50	57	90	95	100	90	38	30	35	35
30	41	35	e53	54	---	84	103	83	42	31	34	35
31	41	---	e56	51	---	76	---	75	---	33	34	---
TOTAL	1190	1317	1716	1529	1782	2692	3453	2580	1672	1057	1066	1052
MEAN	38.4	43.9	55.4	49.3	61.4	86.8	115	83.2	55.7	34.1	34.4	35.1
MAX	41	56	72	60	90	127	149	94	88	41	40	40
MIN	35	35	45	30	35	66	89	69	36	29	31	32
AC-FT	2360	2610	3400	3030	3530	5340	6850	5120	3320	2100	2110	2090

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	53.1	58.2	69.0	77.3	123.2	219.9	380.4	322.5	170.5	67.1	46.1	47.3
MAX	80.5	97.9	346.5	280.1	517.5	714.5	906.2	783.6	418.5	190.0	75.4	81.0
(WY)	1985	1974	1965	1974	1982	1984	1952	1984	1984	1982	1983	1984
MIN	32.2	36.5	37.5	31.9	50.7	58.0	110.9	83.2	50.0	33.4	24.4	28.3
(WY)	1937	1940	1937	1937	1946	1977	1955	1988	1987	1936	1939	1936

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	57.7		136	
HIGHEST ANNUAL MEAN			298	1984
LOWEST ANNUAL MEAN			57.7	1988
HIGHEST DAILY MEAN	149	Apr 20	3000	Dec 23 1964
LOWEST DAILY MEAN	29	Jul 21	7.5	Dec 5 1984
INSTANTANEOUS PEAK FLOW	159	Apr 21	3970a	Dec 23 1964
INSTANTANEOUS PEAK STAGE (FEET)	3.18b	Feb 4	11.0c	
INSTANTANEOUS LOW FLOW	13d	Jan 19	8.5d	Dec 13 1967
10 PERCENTILE	97		335	
50 PERCENTILE	49		66	
95 PERCENTILE	33		35	

a From rating curve extended above 1,300 ft^3/s, on basis of slope-area measurement of peak flow
b Backwater from ice
c Ice jam - occurred sometime during period Dec. 17-23, 1964
d Result of freezeup

UPPER MALHEUR RIVER BASIN

13217000 BEULAH RESERVOIR AT BEULAH, OR

LOCATION.--Lat 43°54'41", long 118°09'25", in SW 1/4 SE 1/4 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, 27,630 acre-ft Apr. 21, 22, gage height, 3,319.51 ft; minimum contents recorded, 234 acre-ft Oct. 1, gage height, 3,273.73 ft, but was less during period of no record July 14 to September 30.

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

3,263	0	3,290	3,750	3,320	28,250
3,265	3	3,295	6,090	3,325	35,025
3,270	70	3,300	8,980	3,330	42,530
3,275	310	3,305	12,520	3,335	50,820
3,280	925	3,310	16,950	3,340	59,925
3,285	2,020	3,315	22,220	3,341	61,840

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3274.77	3288.23	3295.21	3301.00	---	3311.18	3316.39	3318.12	3310.96	3296.71	---	---
2	3275.68	3288.50	3295.59	3301.16	---	3311.40	3316.57	3317.91	3310.80	3295.79	---	---
3	3276.47	3288.76	3295.87	3301.28	---	3311.62	3316.77	3317.68	3310.60	3294.81	---	---
4	3277.17	3289.03	3296.13	3301.43	---	3311.87	3316.98	3317.42	3310.36	3294.27	---	---
5	3277.84	3289.29	3296.39	3301.64	---	3312.14	3317.18	3317.17	3310.15	3292.98	---	---
6	3278.42	3289.55	3296.63	3301.80	3306.30	3312.33	3317.32	3316.91	3309.94	3291.40	---	---
7	3278.99	3289.79	3296.86	3301.96	3306.46	3312.52	3317.48	3316.69	3309.75	3289.87	---	---
8	3279.49	3290.04	3297.07	3302.15	3306.65	3312.71	3317.70	3316.47	3309.53	3288.42	---	---
9	3279.96	3290.29	3297.36	3302.36	3307.02	3312.89	3317.87	3316.26	3309.33	3286.93	---	---
10	3280.41	3290.54	3297.65	3302.56	3307.42	3313.03	3318.04	3316.02	3308.98	3284.98	---	---
11	3280.87	3290.80	3297.87	3302.71	3307.70	3313.16	3318.23	3315.78	3308.67	3282.57	---	---
12	3281.33	3291.11	3298.06	3302.85	3307.94	3313.31	3318.40	3315.54	3308.36	3279.34	---	---
13	3281.77	3291.43	3298.16	3303.05	3308.13	3313.46	3318.59	3315.30	3308.04	3275.70	---	---
14	3282.20	3291.69	3298.27	3303.24	3308.31	3313.61	3318.78	3315.09	3307.65	---	---	---
15	3282.61	3291.93	3298.44	3303.41	---	3313.73	3318.96	3314.89	3307.21	---	---	---
16	3283.01	3292.20	3298.65	3303.59	---	3313.87	3319.13	3314.65	3306.79	---	---	---
17	3283.42	3292.40	3298.83	---	---	3314.00	3319.28	3314.42	3306.32	---	---	---
18	3283.80	3292.58	3299.00	---	---	3314.14	3319.40	3314.19	3305.81	---	---	---
19	3284.16	3292.82	---	---	---	3314.29	3319.45	3314.00	3305.27	---	---	---
20	3284.52	3293.07	3299.28	3304.05	---	3314.46	3319.46	3313.81	3304.73	---	---	---
21	3284.87	3293.31	3299.49	---	---	3314.61	3319.48	3313.59	---	---	---	---
22	3285.22	3293.53	3299.67	3304.35	---	3314.79	3319.47	3313.37	---	---	---	---
23	3285.55	3293.74	3299.79	---	3309.96	3314.94	3319.46	3313.14	---	---	---	---
24	3285.88	3293.96	---	---	3310.12	3315.09	3319.40	3312.89	---	---	---	---
25	3286.19	3294.17	---	---	3310.25	3315.25	3319.28	3312.66	---	---	---	---
26	3286.49	3294.32	3300.05	3304.98	3310.46	3315.42	3319.13	3312.41	---	---	---	---
27	3286.78	3294.48	---	3305.15	3310.66	3315.59	3318.96	3312.16	---	---	---	---
28	3287.08	3294.65	3300.32	3305.31	3310.79	3315.75	3318.76	3311.92	---	---	---	---
29	3287.38	3294.75	3300.48	3305.48	3310.97	3315.92	3318.55	3311.65	3298.33	---	---	---
30	3287.66	3294.89	3300.67	3305.61	---	3316.07	3318.33	3311.41	3297.54	---	---	---
31	3287.94	---	3300.84	3305.74	---	3316.22	---	3311.14	---	---	---	---
MAX	3287.94	3294.89	---	---	---	3316.22	3319.48	3318.12	---	---	---	---
MIN	3274.77	3288.23	---	---	---	3311.18	3316.39	3311.14	---	---	---	---
(†)	2940	6030	9520	13130	17920	23640	26190	18090	7460	e10	e10	e10
(‡)	+2710	+3090	+3490	+3610	+4790	+5720	+2550	-8100	-10630	-7450	0	0

CAL YR 1987 AC-FT‡ -18380
WTR YR 1988 AC-FT‡ -222

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

13217500 NORTH FORK MALHEUR RIVER AT BEULAH, OR

LOCATION.--Lat 43°54'28", long 118°09'08", in NW 1/4 NE 1/4 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.--Records fair except for estimated daily discharges, which are poor. Flow regulated since 1935 by Beulah Reservoir (station 13217000). Diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.21	.07	e.02	e.00	e.00	.02	10	218	179	e315	38	37
2	.21	.06	e.02	e.00	e.00	.02	11	218	166	e315	33	37
3	.21	.05	e.02	e.00	e.00	.02	12	236	165	e336	34	36
4	.17	.05	e.02	e.00	e.00	.02	13	247	165	e336	34	36
5	.11	.04	e.02	e.00	e.00	.02	13	247	165	e362	33	34
6	.10	.04	e.02	e.00	e.00	.02	12	239	165	e362	29	34
7	.98	.04	e.01	e.00	e.00	.03	12	217	163	e362	29	34
8	.68	.03	e.01	e.00	e.00	.03	13	209	174	e359	30	34
9	.20	.03	e.01	e.00	e.00	.03	12	209	180	e362	28	34
10	.14	.03	e.01	e.00	.01	.03	13	206	180	e362	27	34
11	.14	.03	e.01	e.00	.01	.50	13	206	195	e362	25	36
12	.14	.03	e.01	e.00	.01	1.2	13	198	197	e356	26	36
13	.48	.03	e.00	e.00	.01	1.4	13	194	205	e343	27	e34
14	1.1	.03	e.00	e.00	.01	1.7	14	191	236	e309	28	e34
15	.83	.03	e.00	e.00	.01	2.4	39	191	253	e262	28	e38
16	1.3	.03	e.00	e.00	.01	2.3	50	203	253	e40	28	e38
17	.47	.03	e.00	e.00	.02	2.3	50	209	272	e40	28	e35
18	.12	.02	e.00	e.00	.02	2.4	76	208	295	e40	28	e36
19	.70	.02	e.00	e.00	.02	3.0	126	196	302	e40	28	e38
20	1.5	.02	e.00	e.00	.02	4.0	154	191	318	e40	29	e40
21	2.1	.02	e.00	e.00	.02	4.3	149	191	325	38	30	e39
22	3.1	.02	e.00	e.00	.02	5.0	143	191	339	35	31	e36
23	2.1	.02	e.00	e.00	.02	6.0	142	202	346	35	31	e34
24	.95	.02	e.00	e.00	.02	6.4	141	206	358	33	33	e33
25	.38	.02	e.00	e.00	.02	6.4	191	206	e346	e33	32	e35
26	.19	.02	e.00	e.00	.02	7.1	200	206	e346	e34	33	e35
27	.12	.02	e.00	e.00	.02	9.1	207	206	e315	e34	36	e36
28	.09	.02	e.00	e.00	.02	9.5	231	204	e315	e35	37	e38
29	.09	.02	e.00	e.00	.02	10	224	203	e315	36	35	e38
30	.08	.02	e.00	e.00	---	11	218	199	e315	36	36	e38
31	.07	---	e.00	e.00	---	11	---	202	---	38	36	---
TOTAL	19.06	0.91	0.18	0.00	0.33	107.24	2515	6449	7548	5690	960	1077
MEAN	.61	.030	.006	.00	.011	3.46	83.8	208	252	184	31.0	35.9
MAX	3.1	.07	.02	.00	.02	11	231	247	358	362	38	40
MIN	.07	.02	.00	.00	.00	.02	10	191	163	33	25	33
AC-FT	38	1.8	.4	.0	.7	213	4990	12790	14970	11290	1900	2140

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	38.4	1.18	2.02	8.02	25.3	88.6	300.9	357.3	284.1	279.7	224.5	146.5
MAX	134.2	35.5	62.7	287.4	477.6	936.2	856.0	810.3	509.9	401.9	399.1	340.7
(WY)	1954	1936	1943	1943	1965	1983	1958	1983	1974	1979	1980	1945
MIN	.086	.000	.000	.000	.000	.000	2.29	120.0	53.7	58.4	31.0	31.9
(WY)	1974	1938	1938	1936	1938	1938	1981	1977	1939	1945	1988	1961

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	66.6		147	
HIGHEST ANNUAL MEAN			334.5	1983
LOWEST ANNUAL MEAN			54.6	1936
HIGHEST DAILY MEAN	362	Jul 5	3700	May 7 1942
LOWEST DAILY MEAN	.00	Dec 13	.00	Dec 22 1935
INSTANTANEOUS PEAK FLOW	365	Jun 24	7000a	May 7 1942
INSTANTANEOUS PEAK STAGE (FEET)	3.25	Jun 24	9.4b	May 7 1942
INSTANTANEOUS LOW FLOW	.00c		.00	at times
10 PERCENTILE	248		381	
50 PERCENTILE	11		48	
95 PERCENTILE	.00		.05	

* Regulated period only (1936-88)
a Caused by failure of Agency Valley Dam, from rating curve extended above 1,100 ft^3/s on basis of computation of peak flow over dam
b From floodmark
c No flow many days during December to February

13226800 BULLY CREEK RESERVOIR NEAR VALE, OR

LOCATION.--Lat 44°00'55", long 117°23'45", in SE 1/4 SW 1/4 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, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 14,300 acre-ft Apr. 23, elevation, 2,497.15 ft; no usable contents observed Sept. 29, elevation, 2,456.27 ft, no usable contents estimated August 26 to September 30.

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

2,456.5	0	2,480	5,430	2,505	20,130
2,460	465	2,485	7,430	2,510	24,370
2,465	1,310	2,490	9,930	2,515	29,000
2,470	2,401	2,495	12,900	2,520	34,040
2,475	3,770	2,500	16,290		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	2464.22	2467.14	2486.75	2495.40	2495.74	2488.73	2478.52	---	---
2	---	---	---	2464.34	2467.21	2487.21	2495.56	2495.52	2488.53	2478.17	---	---
3	---	---	---	2464.45	2467.29	2487.72	2495.64	2495.32	2488.31	2477.79	---	---
4	---	---	---	2464.58	2467.37	2488.35	2495.71	2495.15	---	2477.47	---	---
5	---	---	---	2464.71	2467.45	2488.90	2495.87	2494.93	2487.91	2477.04	---	---
6	---	---	---	2464.83	2467.53	2489.39	2496.08	2494.69	2487.71	2476.65	---	---
7	---	---	---	2464.96	2467.63	2489.88	2496.14	2494.51	2487.53	2476.24	---	---
8	---	---	---	2465.10	2467.74	2490.37	2496.25	2494.35	---	2475.85	---	---
9	---	---	---	2465.25	2467.85	2490.80	2496.36	2494.16	---	2475.40	---	---
10	---	---	2461.70	2465.38	2469.69	2491.17	2496.47	2494.01	2486.82	2474.95	---	---
11	---	---	2461.86	2465.51	2472.14	2491.50	2496.56	2493.85	2486.58	2474.44	---	---
12	---	---	2461.99	2465.60	2474.44	2491.82	2496.62	2493.69	2486.28	---	---	---
13	---	---	2462.09	2465.73	2476.28	2492.16	2496.68	2493.43	2486.02	---	---	---
14	---	---	2462.18	2465.86	2477.92	2492.49	2496.70	---	2485.71	---	---	---
15	---	---	2462.33	2465.96	2479.20	2492.73	2496.73	2493.01	2485.39	---	---	---
16	---	---	2462.50	2466.08	2480.18	2492.97	2496.75	2492.81	2485.08	---	---	---
17	---	---	2462.64	2466.13	2480.96	2493.19	2496.75	2492.58	2484.64	---	---	---
18	---	---	2462.76	2466.17	2481.63	2493.42	2496.78	---	2484.29	---	---	---
19	---	---	2462.89	2466.21	2482.24	2493.63	2496.81	2492.08	2483.96	---	---	---
20	---	---	2462.96	2466.27	2482.78	2493.85	2496.82	2491.83	2483.60	---	---	---
21	---	---	2463.11	2466.33	2483.28	2493.93	2496.90	2491.59	2483.23	---	---	---
22	---	---	2463.27	2466.40	2483.74	2494.10	2497.02	2491.34	2482.77	---	---	---
23	---	---	2463.35	2466.46	2484.17	2494.24	2497.12	2491.08	2482.28	---	---	---
24	---	---	2463.39	2466.52	2484.57	2494.39	2497.04	2490.80	2481.79	---	---	---
25	---	---	2463.46	2466.58	2484.97	2494.54	2496.94	2490.52	2481.25	---	---	---
26	---	---	2463.54	2466.64	2485.35	2494.71	2496.79	2490.22	2480.78	---	---	---
27	---	---	2463.62	2466.71	2485.71	2494.79	2496.67	2489.94	2480.30	---	---	---
28	---	---	2463.72	2466.79	2486.08	2494.86	2496.47	2489.73	2479.81	---	---	---
29	---	---	2463.84	2466.88	2486.42	2495.02	2496.24	2489.48	2479.32	---	---	---
30	---	---	2463.97	2466.97	---	2495.12	2496.01	2489.17	2478.91	---	---	---
31	---	---	2464.11	2467.06	---	2495.25	---	2488.99	---	---	---	---
MAX	---	---	---	2467.06	2486.42	2495.25	2497.12	---	---	---	---	---
MIN	---	---	---	2464.22	2467.14	2486.75	2495.40	---	---	---	---	---
(†)	e200	e530	1140	1730	8090	13060	13550	9380	5040	e2100	e0	e0
(‡)	0	+330	+610	+590	+6360	+4970	+490	-4170	-4340	-2940	-2100	0

CAL YR 1987 AC-FT‡ -12030
WTR YR 1988 AC-FT‡ -200

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

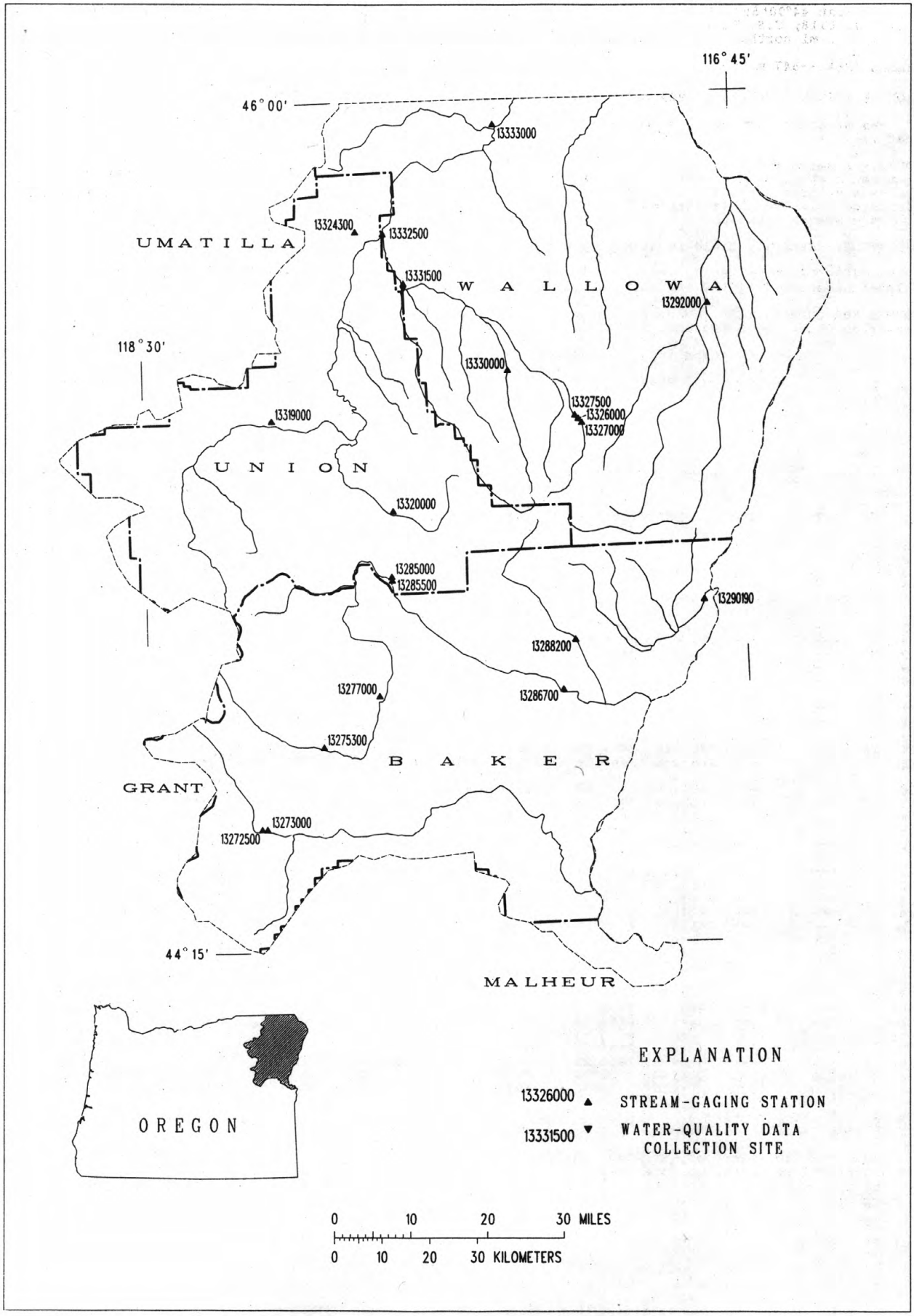

Figure 4.--Location of surface-water and water-quality stations in the Burnt River, Powder River, Imnaha River, Grande Ronde River, and Wallowa River basins.

13272500 UNITY RESERVOIR NEAR UNITY, OR

LOCATION.--Lat 44°30'13", long 118°10'45", in SE 1/4 SW 1/4 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. U.S. Bureau of Reclamation satellite telemeter at station.

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, 25,510 acre-ft May 2, elevation, 3,820.32 ft; minimum contents, 1,550 acre-ft (estimated) Sept. 30, but may have been lower during period of no record Oct. 1-21.

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

3,780	590	3,805	12,960
3,785	1,960	3,810	16,680
3,790	4,020	3,815	20,770
3,795	6,610	3,820	25,220
3,800	9,600	3,821	26,150

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	3785.10	3789.10	3793.79	---	3803.19	3812.02	3820.29	3813.47	3808.79	3800.68	3790.03
2	---	3785.16	3789.33	3794.02	---	3803.63	3812.40	3820.27	3813.31	3808.66	3800.37	3789.62
3	---	3785.32	3789.55	3794.13	---	3803.97	3812.83	3820.26	3813.15	3808.57	3800.04	3789.20
4	---	3785.40	3789.76	3794.29	---	3804.46	3813.29	3820.22	3813.01	3808.44	3799.74	3788.82
5	---	3785.50	3789.97	3794.45	3798.31	3804.96	3813.70	3820.17	3812.96	3808.27	3799.36	3788.41
6	---	3785.64	3790.20	3794.59	3798.41	3805.38	3814.10	3820.06	3812.93	3808.20	3798.99	3788.00
7	---	3785.73	3790.38	3794.74	3798.57	3805.70	3814.44	3819.96	3812.90	3808.01	3798.66	3787.60
8	---	3785.82	3790.54	3794.90	3798.73	3806.01	3814.79	3819.84	3812.83	3807.83	3798.38	3787.20
9	---	3785.93	3790.79	3795.07	3798.88	3806.31	3815.07	3819.76	3812.79	3807.60	3797.94	3786.79
10	---	3785.98	3791.03	3795.24	3799.02	3806.50	3815.33	3819.66	3812.72	3807.41	3797.56	3786.35
11	---	3786.05	3791.23	3795.38	3799.17	3806.69	3815.61	3819.55	3812.60	3807.10	3797.10	3785.95
12	---	---	3791.37	3795.51	3799.35	3806.89	3815.93	3819.38	3812.43	3806.82	3796.73	3785.53
13	---	3786.49	3791.48	3795.67	3799.47	3807.04	3816.30	3819.06	3812.19	3806.58	3796.40	3785.11
14	---	3786.58	3791.62	3795.85	3799.82	3807.20	3816.72	3818.78	3811.94	3806.36	3796.10	3784.69
15	---	3786.67	3791.77	3795.98	3799.99	3807.37	3817.12	3818.56	3811.74	3806.14	3795.82	---
16	---	3786.79	3791.94	3796.12	3800.12	3807.54	3817.55	3818.25	3811.50	3805.92	3795.54	---
17	---	3786.87	3792.09	---	3800.28	3807.71	3817.91	3818.00	3811.27	3805.70	3795.25	---
18	---	3786.96	3792.26	---	3800.41	3807.89	3818.27	3817.80	3811.04	3805.42	3794.94	---
19	---	3787.09	3792.38	3796.27	3800.57	3808.08	3818.56	3817.46	3810.82	3805.11	3794.64	---
20	---	3787.31	3792.49	3796.50	3800.72	3808.30	3818.87	3817.16	3810.56	3804.80	3794.28	---
21	---	3787.48	3792.65	3796.65	3800.89	3808.57	3819.14	3816.88	3810.35	3804.51	3793.95	---
22	3784.44	3787.67	3792.79	3796.78	3801.07	3808.87	3819.38	3816.58	3810.09	3804.18	3793.63	---
23	3784.44	3787.83	3792.92	3796.92	3801.25	3809.12	3819.58	3816.28	3809.82	3803.81	3793.31	---
24	3784.55	3788.04	3793.01	3797.04	3801.43	3809.40	3819.71	3815.98	3809.63	3803.48	3792.98	---
25	3784.56	3788.18	3793.09	3797.16	3801.65	3809.71	3819.89	3815.67	3809.45	3803.13	3792.61	---
26	3784.62	3788.32	3793.16	3797.29	3801.86	3810.04	3819.97	3815.29	3809.36	3802.76	3792.24	---
27	3784.69	3788.47	3793.25	3797.43	3802.11	3810.36	3820.05	3814.94	3809.25	3802.39	3791.88	---
28	3784.74	3788.61	3793.34	3797.60	3802.42	3810.76	3820.09	3814.57	3809.07	3802.04	3791.52	---
29	3784.82	3788.75	3793.44	3797.72	3802.77	3811.12	3820.13	3814.23	3808.97	3801.72	3791.17	---
30	3784.89	3788.90	3793.59	3797.84	---	3811.37	3820.17	3813.99	3808.88	3801.39	3790.79	---
31	3785.02	---	3793.74	3797.95	---	3811.71	---	3813.73	---	3801.06	3790.41	---
MAX	---	---	3793.74	---	---	3811.71	3820.17	3820.29	3813.47	3808.79	3800.68	---
MIN	---	---	3789.10	---	---	3803.19	3812.02	3813.73	3808.88	3801.06	3790.41	---
(†)	1970	3520	5920	8320	11410	18030	25370	19690	15820	10280	4220	e1550
(‡)	+320	+1550	+2400	+2400	+3090	+6620	+7340	-5680	-3870	-5540	-6060	-2670

CAL YR 1987 AC-FT‡ -4680
WTR YR 1988 AC-FT‡ -100

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

13273000 BURNT RIVER NEAR HEREFORD, OR

LOCATION.--Lat 44°30'14", long 118°10'35", in SE 1/4 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.--Records good except those for discharges below 1 ft^3/s, which are poor. Flow regulated since 1938 by Unity Reservoir (station 13272500). Diversions for irrigation upstream from station. U.S. Bureau of Reclamation satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	2.6	.66	.93	2.4	3.0	1.3	38	120	48	107	95
2	6.1	2.0	.67	.99	2.4	3.0	1.5	49	106	48	106	96
3	6.3	1.5	.70	.99	2.4	3.0	1.3	49	83	48	110	94
4	6.2	1.3	.72	1.0	2.3	3.6	.99	66	75	48	112	93
5	6.1	1.2	.73	1.1	2.3	4.9	1.1	84	52	48	111	91
6	6.1	1.0	.78	1.2	2.4	5.4	1.4	84	49	47	110	89
7	6.2	.94	.77	1.2	2.5	5.8	1.1	84	49	68	109	86
8	6.3	.91	.80	1.4	2.2	6.1	1.2	84	49	82	108	84
9	6.3	.87	.89	1.5	2.3	6.0	1.7	84	49	82	109	82
10	6.3	.91	.92	1.6	2.4	6.0	1.9	84	49	85	122	80
11	6.3	.85	.87	1.6	2.5	5.9	2.2	84	67	108	123	78
12	6.3	.84	.82	1.6	2.5	6.1	2.4	105	85	107	121	81
13	6.3	1.3	.78	1.5	2.5	4.6	2.8	145	106	87	101	81
14	6.3	1.1	.80	1.6	2.5	5.1	3.2	163	115	87	93	78
15	6.3	.81	.85	1.7	2.6	4.9	3.6	140	95	83	83	75
16	5.5	.80	.85	1.8	2.8	4.4	3.9	125	103	80	82	72
17	4.6	.72	.79	1.9	2.7	4.2	3.4	136	107	85	82	75
18	4.6	.66	.83	1.9	2.8	4.1	2.7	153	109	101	81	73
19	4.6	.61	.92	1.9	2.7	4.1	3.3	156	108	120	87	69
20	4.6	.61	.92	2.1	2.6	4.0	3.6	155	108	111	92	27
21	4.6	.60	.92	2.1	2.7	2.7	3.9	151	108	106	90	1.0
22	4.7	.61	.92	2.2	2.7	1.8	3.9	145	108	111	89	.67
23	4.8	.61	.99	2.2	2.6	1.1	3.9	148	104	125	88	.44
24	4.8	.61	.99	2.2	2.7	.70	2.9	151	87	124	89	.43
25	5.0	.61	.99	2.2	2.8	.90	7.8	169	78	127	96	.48
26	5.0	.61	.99	2.2	2.9	1.1	33	183	55	123	95	.58
27	5.0	.63	.99	2.2	2.9	.69	42	176	50	120	93	.60
28	4.9	.66	.99	2.2	2.9	.79	38	158	49	119	92	.56
29	3.6	.64	.99	2.3	3.0	.91	27	145	49	114	91	.42
30	2.4	.64	1.0	2.3	---	.60	24	138	48	109	90	.37
31	2.6	---	.96	2.4	---	.76	---	131	---	109	87	---
TOTAL	164.8	27.75	26.80	54.01	75.0	106.25	230.99	3763	2420	2860	3049	1604.55
MEAN	5.32	.92	.86	1.74	2.59	3.43	7.70	121	80.7	92.3	98.4	53.5
MAX	6.3	2.6	1.0	2.4	3.0	6.1	42	183	120	127	123	96
MIN	2.4	.60	.66	.93	2.2	.60	.99	38	48	47	81	.37
AC-FT	327	55	53	107	149	211	458	7460	4800	5670	6050	3180

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	27.3	15.2	18.6	23.9	40.1	107.9	260.1	201.2	123.4	101.8	106.5	77.9
MAX	93.0	63.2	66.4	86.8	286.7	484.5	617.6	484.1	326.3	134.5	147.8	128.3
(WY)	1954	1954	1942	1974	1965	1983	1943	1975	1953	1957	1971	1975
MIN	.201	.449	.697	1.74	.041	1.42	.227	87.3	41.7	59.7	47.0	.198
(WY)	1978	1978	1979	1945	1940	1955	1955	1955	1944	1940	1977	1977

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	39.3		93.0	
HIGHEST ANNUAL MEAN			165.6	1965
LOWEST ANNUAL MEAN			31.7	1977
HIGHEST DAILY MEAN	183	May 26	1250	Apr 8 1971
LOWEST DAILY MEAN	.37	Sep 30	.00	Jan 14 1939
INSTANTANEOUS PEAK FLOW	184	May 25	2220a	Apr 17 1943
INSTANTANEOUS PEAK STAGE (FEET)	4.20	May 25	9.07	Apr 8 1971
INSTANTANEOUS LOW FLOW	0.32	Sep 29, 30	.00	at times

* Regulated period only (1939-88)
a From rating curve extended above 1,300 ft^3/s

13275300 POWDER RIVER NEAR SUMPTER, OR

LOCATION.--Lat 44°40'20", long 117°59'40", in NE 1/4 NE 1/4 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.--Records 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.

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	7.6	4.8	e5.7	13	13	11	139	159	34	236	97
2	9.1	7.5	4.8	e5.7	14	13	12	145	159	32	248	102
3	9.1	7.1	4.8	5.2	14	13	12	165	159	32	248	111
4	9.1	6.9	4.8	5.4	14	14	17	206	152	32	266	115
5	12	6.6	4.9	5.3	13	14	21	206	117	32	275	110
6	16	6.6	5.2	5.8	13	14	26	194	103	32	273	95
7	12	6.6	5.2	5.7	13	14	31	185	100	41	250	77
8	8.6	6.6	5.5	5.6	13	13	33	185	100	46	227	65
9	8.6	6.8	6.4	5.3	14	14	34	169	100	51	227	51
10	8.6	7.1	6.9	6.1	14	12	35	151	117	79	238	42
11	8.6	7.1	6.8	6.4	14	12	38	147	127	145	193	41
12	8.6	7.1	6.8	5.7	14	12	56	147	128	125	172	37
13	8.6	6.7	5.7	6.1	15	12	69	148	128	97	159	44
14	8.6	4.8	6.7	7.2	16	12	69	145	135	83	137	52
15	8.6	4.9	8.2	8.4	17	12	71	144	154	105	137	51
16	8.6	5.2	8.2	7.1	17	12	70	144	179	128	137	51
17	8.6	4.8	8.1	5.7	18	13	77	144	206	134	137	51
18	8.6	4.8	7.9	6.0	19	13	113	144	218	157	154	51
19	8.6	4.8	7.4	5.7	19	13	146	148	218	159	162	36
20	8.6	4.8	6.9	5.0	20	13	147	162	201	136	151	25
21	8.0	4.8	6.6	8.7	20	13	151	181	169	145	144	25
22	7.6	4.8	6.6	12	20	13	187	191	169	164	139	25
23	7.6	4.8	6.6	12	20	13	196	191	158	172	127	26
24	7.6	4.8	7.0	12	21	13	197	200	137	172	123	26
25	7.6	4.8	7.1	12	17	13	190	206	123	172	123	24
26	7.6	4.8	e6.6	12	14	13	173	223	121	172	139	20
27	7.6	4.8	e6.6	12	14	13	152	242	67	172	147	19
28	7.6	4.8	7.1	12	14	13	139	226	41	170	138	19
29	7.6	4.8	7.1	12	14	13	139	205	40	173	115	19
30	7.6	4.8	6.4	13	---	13	139	177	35	212	97	19
31	7.6	---	e5.7	13	---	11	---	163	---	224	92	---
TOTAL	281.1	172.4	199.4	249.8	458	399	2751	5423	4020	3628	5411	1526
MEAN	9.07	5.75	6.43	8.06	15.8	12.9	91.7	175	134	117	175	50.9
MAX	18	7.6	8.2	13	21	14	197	242	218	224	275	115
MIN	7.6	4.8	4.8	5.0	13	11	11	139	35	32	92	19
AC-FT	558	342	396	495	908	791	5460	10760	7970	7200	10730	3030

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	11.7	8.85	8.17	15.0	18.3	61.8	144.4	317.0	299.7	209.6	213.7	84.8
MAX	19.6	16.0	14.0	105.5	67.7	317.1	355.3	518.5	546.0	411.0	301.3	170.9
(WY)	1981	1985	1984	1984	1984	1982	1984	1975	1983	1984	1974	1974
MIN	2.55	.465	.505	.360	.782	1.10	11.2	156.5	134.0	85.7	56.0	21.7
(WY)	1974	1968	1968	1968	1968	1968	1978	1978	1988	1968	1976	1984

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	67.0		117	UNADJUSTED
HIGHEST ANNUAL MEAN			186	1983
LOWEST ANNUAL MEAN			60.0	1968
HIGHEST DAILY MEAN	275	Aug 5	592	Apr 22 1974
LOWEST DAILY MEAN	4.8	Nov 14	.00	Nov 12 1967
INSTANTANEOUS PEAK FLOW	275	Aug 4		
INSTANTANEOUS PEAK STAGE (FEET)	3.11	Aug 4		
INSTANTANEOUS LOW FLOW	2.8	Mar 29	.00	Nov 12 1967
10 PERCENTILE	182		334	
50 PERCENTILE	19		23	
95 PERCENTILE	4.8		2.3	

* Regulated period only (1968-88)

13277000 POWDER RIVER AT BAKER, OR

LOCATION.--Lat 44°46'06", long 117°49'50", in SE 1/4 NE 1/4 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.--Records good except for estimated daily discharges, 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. U.S. Bureau of Reclamation satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	7.9	9.8	e5.8	e28	37	14	75	115	27	158	40
2	14	11	10	e5.2	e25	39	12	79	117	21	181	48
3	10	8.7	9.9	e7.0	e21	41	12	103	123	19	181	52
4	10	7.4	8.5	e8.0	e25	38	11	165	124	19	195	62
5	10	7.6	7.9	e9.0	e28	41	10	174	101	20	219	57
6	12	7.7	8.6	e9.6	e31	42	8.9	170	74	20	219	64
7	13	7.8	9.3	e9.0	e33	35	15	156	68	21	207	53
8	12	7.9	7.8	e9.6	e35	33	15	156	59	27	176	47
9	11	8.1	8.0	e11	e37	30	23	151	57	24	170	36
10	11	8.3	e10	e13	e39	25	21	131	67	32	189	22
11	11	6.9	e8.2	e11	e43	22	22	121	87	78	153	18
12	11	7.8	7.6	e12	e40	21	31	115	86	83	122	19
13	9.8	8.1	e6.8	e13	e38	21	48	105	73	60	111	17
14	7.8	7.5	e6.2	e14	41	21	44	97	68	32	84	26
15	7.6	6.1	e7.2	e16	29	20	48	92	85	35	81	29
16	7.0	6.3	10	e13	e29	20	49	89	102	56	86	34
17	7.1	5.7	9.6	e11	e27	20	48	81	127	68	89	36
18	7.1	6.1	8.7	e10	e25	20	65	77	149	80	90	37
19	7.1	9.2	e7.4	e11	28	20	98	72	148	104	98	36
20	7.3	9.4	e6.4	e14	26	20	102	84	145	86	90	17
21	7.6	9.7	e6.8	e16	28	21	102	94	121	90	74	15
22	8.0	9.3	e7.2	e13	30	20	115	115	124	111	70	16
23	8.5	9.5	e7.2	e16	27	16	128	117	124	121	59	16
24	8.6	9.2	e7.0	e13	27	15	127	114	108	119	52	16
25	8.8	9.4	e6.6	e14	29	15	127	120	86	120	48	16
26	8.3	e8.2	e6.2	e13	31	14	110	131	94	116	52	14
27	6.3	e9.0	e6.4	e20	33	17	100	162	94	112	65	12
28	5.8	e8.0	e6.6	e25	33	18	77	160	41	104	67	9.8
29	6.2	e7.6	e7.2	e28	37	20	79	158	37	94	55	9.5
30	6.8	e8.8	e7.4	e31	---	20	77	132	32	124	48	9.8
31	7.3	---	e6.8	e29	---	16	---	120	---	159	38	---
TOTAL	284.0	244.2	243.3	430.2	903	758	1738.9	3716	2836	2182	3527	884.1
MEAN	9.16	8.14	7.85	13.9	31.1	24.5	58.0	120	94.5	70.4	114	29.5
MAX	16	11	10	31	43	42	128	174	149	159	219	64
MIN	5.8	5.7	6.2	5.2	21	14	8.9	72	32	19	38	9.5
AC-FT	563	484	483	853	1790	1500	3450	7370	5630	4330	7000	1750

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	15.7	18.6	25.3	33.9	77.2	140.0	184.5	263.8	248.6	170.0	166.3	60.9
MAX	22.7	28.5	49.8	120.1	145.3	414.2	456.4	454.8	480.3	334.7	205.8	107.4
(WY)	1985	1985	1984	1984	1982	1982	1984	1982	1984	1984	1984	1981
MIN	9.16	8.14	7.85	11.5	28.4	24.5	49.4	119.9	94.5	70.4	113.8	27.6
(WY)	1988	1988	1988	1979	1987	1988	1979	1988	1988	1988	1988	1984

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	48.5		115	
HIGHEST ANNUAL MEAN			202	1984
LOWEST ANNUAL MEAN			48.5	1988
HIGHEST DAILY MEAN	219	Aug 5	633	Jul 1 1982
LOWEST DAILY MEAN	5.2	Jan 2	3.3	Oct 11 1979
INSTANTANEOUS PEAK FLOW	223	Aug 6	1120	Jan 15 1974
INSTANTANEOUS PEAK STAGE (FEET)	2.71	Aug 6	5.57a	Jan 5 1984
INSTANTANEOUS LOW FLOW	3.3	Nov 19	0.7	Oct 28, 29 1973

* Regulated period only (1972-88)
a Ice jam

13285000 THIEF VALLEY RESERVOIR NEAR NORTH POWDER, OR

LOCATION.--Lat 45°00'45", long 117°46'50", in NE 1/4 SW 1/4 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.

COOPERATION.--Capacity table furnished by Oregon Water Resources Department. Table uncertain below about 3,096 ft, due to siltation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 18,900 acre-ft July 2, 1982, elevation, 3,134.99 ft; no contents observed Sept. 17, 1987; probably no contents most days during September 1987, Sept. 7-18, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 17,720 acre-ft Mar. 3, elevation, 3,133.43 ft; probably no contents Sept. 7-18.

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

3,096	230	3,120	8,950
3,100	966	3,125	11,880
3,105	2,360	3,130	15,210
3,110	4,170	3,135	18,910
3,115	6,370		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3098.70	3106.46	3113.39	3120.86	3127.74	3133.40	3133.28	3133.14	3130.49	3130.98	3122.55	3104.96
2	3098.94	3106.73	3113.72	3121.04	3127.92	3133.41	3133.29	3133.19	3130.46	3130.88	3122.16	3104.06
3	3099.05	3107.01	3114.02	3121.22	3128.11	3133.37	3133.26	3133.18	3130.37	3130.70	3121.75	3103.06
4	3099.09	3107.26	3114.35	3121.43	3128.32	3133.36	3133.23	3133.14	3130.34	3130.52	3121.33	3101.94
5	3099.00	3107.51	3114.60	3121.64	3128.52	3133.36	3133.26	3133.13	3130.47	3130.30	3120.87	3100.47
6	3099.13	3107.78	3114.86	3121.84	3128.72	3133.32	3133.22	3133.08	3130.72	3130.11	3120.35	3098.09
7	---	3107.96	3115.10	3122.04	3128.95	3133.32	3133.15	3133.05	3130.90	3129.90	3119.82	---
8	---	3108.19	3115.34	3122.28	3129.22	3133.36	3133.18	3132.98	3131.05	3129.68	3119.32	---
9	3100.51	3108.40	3115.64	3122.50	3129.52	3133.31	3133.19	3132.89	3131.17	3129.42	3118.81	---
10	3100.80	3108.66	3115.90	3122.81	3129.98	3133.25	3133.21	3132.78	3131.20	3129.16	3118.28	---
11	3101.04	3108.89	3116.32	3122.98	3130.57	3133.26	3133.23	3132.66	3131.19	3128.85	3117.77	---
12	3101.31	3109.18	3116.63	3123.20	3131.16	3133.27	3133.25	3132.56	3131.14	3128.59	3117.21	---
13	3101.64	3109.52	3116.79	3123.44	3131.64	3133.27	3133.24	3132.40	3131.06	3128.31	3116.67	---
14	3101.95	3109.71	3117.01	3123.71	3131.87	3133.23	3133.24	3132.31	3130.97	3128.01	3116.14	---
15	3102.21	3109.95	3117.21	3124.05	3132.52	3133.23	3133.24	3132.22	3130.84	3127.75	3115.56	---
16	3102.50	3110.21	3117.45	3124.38	3132.89	3133.23	3133.24	3132.04	3130.71	3127.46	3115.02	---
17	3102.79	3110.42	3117.76	3124.62	3133.20	3133.25	3133.18	3131.89	---	3127.18	3114.46	---
18	3103.04	3110.61	3118.07	3124.82	3133.27	3133.27	3133.22	3131.75	3130.57	3126.88	3113.87	---
19	3103.29	3110.84	3118.31	3125.01	3133.28	3133.27	3133.23	3131.75	3130.50	3126.61	3113.35	3096.82
20	3103.55	3111.08	3118.49	3125.22	3133.30	3133.29	3133.24	3131.83	3130.43	3126.33	3112.79	3097.29
21	3103.82	3111.28	3118.70	3125.45	3133.35	3133.26	3133.29	3131.89	3130.41	3126.03	3112.25	3097.94
22	3104.09	3111.53	3118.98	3125.67	3133.32	3133.25	3133.29	3131.86	3130.40	3125.72	3111.71	3098.55
23	3104.34	3111.77	3119.19	3125.87	3133.31	3133.23	3133.26	3131.79	3130.34	3125.40	3111.18	3099.02
24	3104.59	3112.00	3119.35	3126.07	3133.34	3133.23	3133.21	3131.74	3130.19	3125.11	3110.63	3099.36
25	3104.85	3112.22	3119.51	3126.23	3133.35	3133.26	3133.20	3131.46	3129.98	3124.80	---	3099.73
26	3105.09	3112.41	3119.69	3126.45	3133.38	3133.21	3133.22	3131.17	3129.94	3124.54	---	3100.07
27	3105.32	3112.59	3119.90	3126.67	3133.39	3133.21	3133.23	3130.94	3130.57	3124.34	---	3100.39
28	3105.54	3112.76	3120.09	3126.90	3133.39	3133.22	3133.21	3130.71	3130.85	3124.15	---	3100.70
29	3105.77	3112.91	3120.28	3127.11	3133.40	3133.24	3133.18	3130.63	3130.95	3123.86	3107.41	3101.17
30	3105.99	3113.03	3120.46	3127.33	---	3133.23	3133.14	3130.57	3131.03	3123.36	3106.62	3101.47
31	3106.22	---	3120.66	3127.58	---	3133.25	---	3130.55	---	3122.97	3105.82	---
MAX	---	3113.03	3120.66	3127.58	3133.40	3133.41	3133.29	3133.19	---	3130.98	---	---
MIN	---	3106.46	3113.39	3120.86	3127.74	3133.21	3133.14	3130.55	---	3122.97	---	---
(†)	2760	5460	9260	13540	17700	17590	17500	15610	15950	10650	2630	1330
(‡)	+2270	+2700	+3850	+4230	+4160	-110	-90	-1890	+340	-5300	-8020	-1300

CAL YR 1987 AC-FT‡ -6730
WTR YR 1988 AC-FT‡ +838

† 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 NE 1/4 NW 1/4 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.--Records good except those below 1.0 ft^3/s, 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, by Pilcher Creek Reservoir since April 1984, usable capacity 5,560 acre-ft, and by Thief Valley Reservoir since February 1932, usable capacity, 17,400 acre-ft. Many diversions for irrigation upstream from station.

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	1.1	1.3	1.5	1.2	175	84	38	e84	96	108	77
2	18	1.1	1.2	1.4	1.2	176	78	37	e84	97	108	74
3	18	1.0	1.2	1.6	1.2	172	81	46	e84	98	112	70
4	18	1.0	1.2	1.6	1.2	159	81	66	e86	98	122	66
5	18	.88	1.2	1.7	1.2	150	74	71	e86	98	128	61
6	14	.91	1.1	1.6	1.2	150	68	66	e86	98	141	52
7	7.5	.95	1.1	1.4	1.1	135	57	65	e86	98	140	20
8	7.9	1.1	1.2	1.4	1.2	130	41	74	e88	98	138	1.8
9	7.5	.99	1.3	1.4	1.3	135	42	73	e88	98	136	1.3
10	7.5	.93	1.3	1.4	1.2	123	41	73	e90	98	135	1.1
11	7.8	.92	1.2	1.3	1.2	106	41	73	92	97	134	.94
12	6.0	.99	1.1	1.2	1.3	96	39	74	92	97	132	.86
13	1.9	.96	1.1	1.3	1.3	95	39	75	92	96	131	.67
14	1.7	.98	1.1	1.5	1.4	104	36	74	92	95	129	.20
15	1.6	1.0	1.1	1.4	1.4	100	37	75	92	94	127	.19
16	1.5	1.0	.89	1.3	1.4	85	46	e75	92	92	125	.15
17	1.4	.98	.93	1.3	21	84	47	e76	92	92	123	.16
18	1.3	1.1	.95	1.3	94	88	36	e76	92	91	120	.17
19	1.3	1.1	.93	1.4	112	87	42	e76	92	90	113	.12
20	1.2	1.0	1.0	1.5	119	89	48	e78	76	89	104	.11
21	1.2	1.1	1.1	1.4	130	90	71	e78	49	89	102	.10
22	1.1	1.1	1.0	1.2	137	91	97	e78	50	89	101	.10
23	1.1	1.1	1.0	1.2	136	91	91	e78	50	88	99	.11
24	1.1	1.1	1.3	1.2	136	77	70	e78	83	87	97	.11
25	1.1	1.2	1.5	1.1	137	81	54	e78	98	87	94	.28
26	1.1	1.1	1.6	1.1	149	86	51	e82	99	78	93	.22
27	1.1	1.2	1.9	1.2	160	75	46	e82	94	52	91	.22
28	.94	1.2	2.0	1.2	163	75	44	e82	95	53	88	.16
29	1.1	1.2	1.9	1.3	164	85	42	e82	95	84	86	.17
30	1.1	1.3	1.7	1.2	---	90	43	e84	95	149	83	.18
31	1.1	---	1.7	1.2	---	84	---	e84	---	110	80	---
TOTAL	171.14	31.59	39.10	41.8	1678.0	3364	1667	2247	2574	2876	3520	429.42
MEAN	5.52	1.05	1.26	1.35	57.9	109	55.6	72.5	85.8	92.8	114	14.3
MAX	18	1.3	2.0	1.7	164	176	97	84	99	149	141	77
MIN	.94	.88	.89	1.1	1.1	75	36	37	49	52	80	.10
AC-FT	339	63	78	83	3330	6670	3310	4460	5110	5700	6980	852

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	54.0	65.7	100.9	142.0	296.5	459.3	421.3	446.6	539.2	246.0	109.8	84.0
MAX	151.2	186.0	213.3	298.3	586.0	883.3	866.8	875.8	1291	794.3	157.4	171.6
(WY)	1983	1983	1983	1984	1982	1984	1984	1984	1984	1982	1984	1984
MIN	5.52	1.05	1.26	1.35	57.9	108.5	55.6	72.5	85.8	92.8	66.1	8.38
(WY)	1988	1988	1988	1988	1988	1988	1988	1988	1988	1988	1980	1987

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	50.9		246	
HIGHEST ANNUAL MEAN			468	1984
LOWEST ANNUAL MEAN			50.9	1988
HIGHEST DAILY MEAN	176	Mar 2	2370	Jul 2 1982
LOWEST DAILY MEAN	.10	Sep 21	.10	Sep 21 1988
INSTANTANEOUS PEAK FLOW	194	Mar 3		
INSTANTANEOUS PEAK STAGE (FEET)	6.09	Mar 3	10.05	Jul 2 1982
INSTANTANEOUS LOW FLOW	0.08	Sep 24		

* Regulated period only (1978-88)
a From rating curve extended above 1,000 ft^3/s

13286700 POWDER RIVER NEAR RICHLAND, OR

LOCATION.--Lat 44°46'40", long 117°17'30", in SE 1/4 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.--Records fair. 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.

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	20	e22	e21	e25	287	100	37	54	48	2.8	19
2	15	22	25	e19	e22	296	90	36	55	47	8.2	30
3	16	22	29	e16	e21	293	86	36	48	43	36	43
4	15	21	30	e22	e24	282	88	40	46	45	17	57
5	15	21	26	e26	e23	265	95	40	44	40	15	41
6	16	21	25	e27	e25	250	75	42	95	43	41	31
7	17	20	24	e28	e27	243	57	43	106	41	23	27
8	17	20	24	e28	e40	218	56	41	52	39	31	25
9	20	21	26	e29	e58	213	56	42	51	36	39	21
10	19	21	30	e32	e80	212	51	38	47	34	55	23
11	20	21	e27	e28	e72	192	51	36	48	30	59	25
12	17	23	e23	e26	e64	170	47	38	44	30	39	23
13	18	25	e20	e30	e72	156	46	35	47	28	47	22
14	18	25	e21	e34	e64	152	49	34	43	24	44	21
15	17	23	e22	e40	e70	155	50	33	40	30	44	20
16	16	22	e23	e30	66	146	54	32	43	32	61	18
17	16	22	e24	e23	63	128	54	30	41	30	47	17
18	18	22	24	e20	53	126	54	29	41	30	47	17
19	16	22	e22	e19	122	133	58	28	42	30	49	19
20	16	22	e19	e22	176	136	56	27	43	28	48	21
21	16	22	e24	e24	193	146	60	31	49	23	47	21
22	16	22	e23	e22	202	114	65	26	46	17	46	20
23	15	22	25	e23	201	128	99	21	42	9.7	45	19
24	16	22	23	e21	199	132	92	19	36	7.5	41	19
25	19	23	e21	e22	204	123	78	12	34	6.3	30	17
26	19	e21	e20	e24	218	127	59	8.9	36	5.3	17	16
27	19	e19	e20	e30	241	131	51	7.9	56	5.5	15	16
28	18	e20	e21	e34	254	124	45	10	69	6.0	12	15
29	18	e17	e25	e40	269	111	41	16	46	4.7	9.3	14
30	17	e19	e24	e35	---	111	39	17	48	2.8	6.8	15
31	18	---	e23	e30	---	108	---	40	---	2.7	7.6	---
TOTAL	528	643	735	825	3148	5408	1902	925.8	1492	798.5	1029.7	692
MEAN	17.0	21.4	23.7	26.6	109	174	63.4	29.9	49.7	25.8	33.2	23.1
MAX	20	25	30	40	269	296	100	43	106	48	61	57
MIN	15	17	19	16	21	108	39	7.9	34	2.7	2.8	14
AC-FT	1050	1280	1460	1640	6240	10730	3770	1840	2960	1580	2040	1370

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	74.6	78.1	130.9	265.1	404.3	649.1	642.7	540.0	557.2	173.1	55.4	75.5
MAX	201.6	224.4	306.3	749.8	1034	1719	1517	1315	1473	797.8	124.8	217.6
(WY)	1985	1985	1983	1971	1982	1984	1984	1984	1984	1982	1984	1984
MIN	16.9	21.4	23.7	26.6	86.4	132.3	37.7	22.5	24.3	9.21	14.0	15.6
(WY)	1978	1988	1988	1988	1977	1977	1977	1977	1977	1977	1973	1977

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	49.5		303	
HIGHEST ANNUAL MEAN			675	1984
LOWEST ANNUAL MEAN			49.5	1988
HIGHEST DAILY MEAN	296	Mar 2	3620	Feb 21 1982
LOWEST DAILY MEAN	2.7	Jul 31	2.0	Jul 22 1977
INSTANTANEOUS PEAK FLOW	304	Mar 2	4090	Feb 21 1982
INSTANTANEOUS PEAK STAGE (FEET)	2.59a	Feb 10	9.29a	Jan 15 1974
INSTANTANEOUS LOW FLOW	2.1	Jul 30, 31		

* Regulated period only (1969-88)
a Ice jam

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

LOCATION.--Lat 44°52'50", long 117°15'10", in SE 1/4 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.--Records good except for November to February, 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	66	e70	e80	e80	129	121	357	620	254	98	64
2	63	68	84	e70	e70	130	134	332	593	240	98	63
3	63	66	79	e50	e62	137	184	325	694	236	96	62
4	63	65	77	e60	e62	131	180	303	728	224	94	62
5	63	64	76	e70	e62	131	165	298	642	227	92	61
6	63	64	89	e76	e64	128	163	287	556	206	99	60
7	63	64	86	e78	e70	120	174	278	530	184	92	60
8	63	63	76	e80	e78	115	168	274	456	173	88	61
9	63	65	88	e90	e74	117	163	288	405	165	84	61
10	63	66	89	e98	e78	112	168	314	388	159	82	60
11	63	64	77	e110	81	107	195	439	423	154	80	63
12	63	77	75	e90	77	102	259	691	446	152	80	62
13	62	110	77	e84	78	103	380	1030	477	145	82	61
14	61	91	e78	e100	76	104	484	836	540	140	79	60
15	62	73	e84	e120	77	102	532	768	617	149	77	60
16	62	72	e90	e110	76	102	564	914	691	146	76	59
17	62	64	108	e100	74	103	669	859	765	139	72	59
18	61	64	89	e90	74	107	622	703	743	134	68	60
19	61	68	82	e72	72	114	566	617	677	127	67	62
20	61	68	98	e64	73	126	510	638	655	123	66	64
21	61	67	126	e60	75	138	573	725	639	116	65	62
22	61	65	113	e66	77	135	488	891	622	113	63	61
23	61	66	98	e70	77	134	436	1040	568	111	62	59
24	61	66	e86	e76	78	129	402	1040	504	108	68	59
25	61	66	e76	e80	80	130	358	1000	439	105	68	58
26	61	59	e70	e84	86	128	338	955	477	103	67	57
27	61	e60	e66	e90	93	131	335	861	557	106	67	71
28	61	e62	e70	e94	102	126	386	855	401	104	67	68
29	60	e64	e80	e94	119	127	435	798	334	104	65	63
30	59	e60	e82	e90	---	122	386	612	283	103	65	61
31	60	---	e84	e88	---	119	---	530	---	100	65	---
TOTAL	1916	2037	2623	2584	2245	3739	10538	19858	16470	4650	2392	1843
MEAN	61.8	67.9	84.6	83.4	77.4	121	351	641	549	150	77.2	61.4
MAX	64	110	126	120	119	138	669	1040	765	254	99	71
MIN	59	59	66	50	62	102	121	274	283	100	62	57
AC-FT	3800	4040	5200	5130	4450	7420	20900	39390	32670	9220	4740	3660

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	110.3	125.4	116.3	112.2	125.8	185.5	407.1	931.6	1041	421.7	147.6	107.1
MAX	323.0	264.1	211.0	190.6	229.6	493.1	649.1	1747	2134	1011	252.5	171.7
(WY)	1960	1974	1959	1974	1963	1986	1962	1958	1974	1975	1983	1978
MIN	61.8	67.9	72.3	58.9	72.0	64.8	191.5	252.5	276.3	84.0	62.8	61.4
(WY)	1988	1988	1977	1977	1966	1977	1967	1977	1977	1977	1977	1988

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD		
AVERAGE FLOW	194		320		
HIGHEST ANNUAL MEAN			519		1974
LOWEST ANNUAL MEAN			118		1977
HIGHEST DAILY MEAN	1040	May 23	3400	Jun 16	1974
LOWEST DAILY MEAN	50	Jan 3	30	Nov 28	1976
INSTANTANEOUS PEAK FLOW	1250	May 23	5310a	Jul 12	1975
INSTANTANEOUS PEAK STAGE (FEET)	2.97	May 23	6.88b	Jan 25	1962
INSTANTANEOUS LOW FLOW	not determined		not determined		

a From rating curve extended above 2,500 ft^3/s on basis of slope-area measurement of peak flow
b Ice jam

13290190 PINE CREEK NEAR OXBOW, OR

LOCATION.--Lat 44°57'13", long 116°52'21", in NE 1/4 SW 1/4 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.--Records good. Diversions upstream from station for irrigation of about 19,000 acres (1966 determination).

AVERAGE DISCHARGE.--21 years, 368 ft^3/s, 266,600 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, 792 ft^3/s June 1, gage height, 4.70 ft; minimum daily discharge, 17 ft^3/s Aug. 31, Sept. 1, 3, 4, 7-10, 15-17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	31	57	e56	99	566	193	288	580	95	23	17
2	22	36	83	e51	93	583	204	258	613	84	22	18
3	21	32	107	e43	86	627	355	233	552	75	23	17
4	21	31	94	e57	80	542	388	234	544	74	22	17
5	22	31	90	e73	86	507	325	232	498	72	21	18
6	22	31	120	e66	88	519	298	218	411	79	22	18
7	22	31	133	63	95	443	332	211	375	70	22	17
8	22	32	106	64	91	386	317	206	315	63	22	17
9	22	33	104	66	100	366	282	220	280	50	22	17
10	22	35	152	71	120	322	262	219	243	43	21	17
11	23	35	156	82	150	286	268	220	229	42	20	18
12	23	48	122	72	178	259	306	263	216	41	20	19
13	23	92	109	71	206	241	399	418	206	40	22	18
14	23	99	90	78	219	229	496	415	179	38	22	18
15	25	59	100	96	214	218	562	346	178	36	23	17
16	24	52	98	95	236	207	564	418	188	33	23	17
17	24	49	95	89	225	200	607	569	185	31	24	17
18	25	42	91	81	203	197	614	478	189	30	24	19
19	25	47	86	68	183	203	538	408	181	29	24	21
20	26	48	68	e60	174	220	493	392	176	30	23	24
21	26	48	87	e70	178	252	556	419	157	29	22	23
22	27	46	83	e80	194	255	529	484	145	27	22	23
23	27	48	74	e85	201	249	497	563	120	26	21	23
24	27	46	54	e77	201	224	438	552	95	25	20	23
25	28	49	e48	e76	213	237	391	528	80	25	19	23
26	28	46	e45	e75	241	231	337	501	110	24	19	23
27	27	46	e50	e78	282	236	310	450	140	23	20	26
28	28	47	e57	82	323	225	315	428	117	23	19	26
29	28	41	e72	88	461	225	344	635	108	23	19	24
30	29	43	e69	104	---	213	337	499	93	23	18	24
31	29	---	e66	98	---	198	---	415	---	23	17	---
TOTAL	763	1354	2766	2315	5220	9666	11857	11720	7503	1326	661	599
MEAN	24.6	45.1	89.2	74.7	180	312	395	378	250	42.8	21.3	20.0
MAX	29	99	156	104	461	627	614	635	613	95	24	26
MIN	21	31	45	43	80	197	193	206	80	23	17	17
AC-FT	1510	2690	5490	4590	10350	19170	23520	23250	14880	2630	1310	1190

CAL YR 1987 TOTAL 66305 MEAN 182 MAX 1770 MIN 19 AC-FT 131500
WTR YR 1988 TOTAL 55750 MEAN 152 MAX 635 MIN 17 AC-FT 110600

e Estimated

13292000 IMNAHA RIVER AT IMNAHA, OR

LOCATION.--Lat 45°33'45", long 116°50'00", in SW 1/4 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 mi^2.

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.--Records good. 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. National Weather Service satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	92	96	117	90	113	298	248	589	766	387	138	96
2	91	102	155	67	76	303	266	536	844	364	137	97
3	91	101	143	87	80	304	456	514	874	357	135	96
4	92	99	143	e110	110	293	538	490	904	351	130	94
5	92	98	135	e130	128	278	466	471	859	358	125	92
6	92	99	152	137	128	284	433	499	772	355	129	91
7	92	99	201	130	130	272	494	493	768	313	135	91
8	92	99	158	127	126	255	465	495	715	293	124	91
9	91	100	142	127	136	257	422	518	672	276	118	95
10	90	104	170	136	140	237	400	521	638	264	116	95
11	92	100	176	137	133	221	418	546	644	256	115	98
12	92	103	150	119	131	200	516	625	641	249	122	98
13	92	111	135	117	144	200	665	832	638	245	125	97
14	93	137	88	124	142	201	817	857	659	237	122	95
15	93	117	79	141	146	194	909	747	699	233	120	93
16	94	107	134	135	144	184	949	795	755	219	119	91
17	93	102	152	124	133	176	995	909	818	204	114	92
18	93	81	136	78	143	181	993	782	864	196	111	95
19	94	97	124	66	133	182	902	690	830	192	109	96
20	95	107	75	99	134	197	830	663	814	184	107	100
21	95	109	112	e120	138	239	920	682	773	178	107	103
22	95	104	147	128	145	265	860	762	768	173	106	101
23	95	107	127	129	149	276	809	875	722	171	104	101
24	96	104	100	110	161	259	755	922	671	171	102	100
25	95	107	68	118	165	247	692	931	594	164	99	97
26	95	101	e45	119	174	244	631	933	602	157	99	97
27	95	88	e50	123	190	290	601	879	617	152	100	112
28	95	97	e80	126	217	290	612	873	545	149	100	112
29	95	65	e110	133	251	284	652	1010	497	145	98	105
30	95	84	e130	132	---	271	655	783	440	143	95	100
31	95	---	122	120	---	250	---	699	---	140	95	---
TOTAL	2892	3025	3856	3639	4140	7632	19369	21921	21403	7276	3556	2921
MEAN	93.3	101	124	117	143	246	646	707	713	235	115	97.4
MAX	96	137	201	141	251	304	995	1010	904	387	138	112
MIN	90	65	45	66	76	176	248	471	440	140	95	91
AC-FT	5740	6000	7650	7220	8210	15140	38420	43480	42450	14430	7050	5790

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	160.1	188.0	214.0	191.8	240.3	398.2	938.7	1574	1350	562.9	193.5	144.7
MAX	501.1	624.6	806.0	393.1	568.6	993.2	1760	2804	2612	1348	379.7	255.9
(WY)	1963	1974	1942	1942	1982	1986	1956	1948	1974	1975	1982	1978
MIN	81.5	80.0	88.6	69.3	82.4	113.6	344.7	444.8	416.9	122.7	78.8	82.8
(WY)	1937	1937	1936	1937	1937	1977	1977	1977	1987	1977	1931	1931

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	278		515	
HIGHEST ANNUAL MEAN			829	1974
LOWEST ANNUAL MEAN			184	1977
HIGHEST DAILY MEAN	1010	May 29	5880	Apr 27 1978
LOWEST DAILY MEAN	45	Dec 26	25	Nov 22, 23 1931
INSTANTANEOUS PEAK FLOW	1140	May 29	10100a	Jan 17 1974
INSTANTANEOUS PEAK STAGE (FEET)	3.61	May 29	7.86	Jan 17 1974
INSTANTANEOUS LOW FLOW	not determined		16b	Nov 22 1931

a From rating curve extended above 3,500 ft^3/s
b result of freezeup

13319000 GRANDE RONDE RIVER AT LA GRANDE, OR

LOCATION.--Lat 45°20'47", long 118°07'26", in NW 1/4 SE 1/4 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.--Records good except for estimated daily discharges, 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	31	e31	e27	e48	695	903	810	348	134	29	19
2	24	36	47	e25	e41	664	1160	734	375	119	28	19
3	23	38	55	e22	e44	782	1640	722	331	111	29	19
4	23	38	59	e27	e50	714	1570	718	319	107	29	19
5	23	33	51	e36	e58	1100	1250	713	417	103	28	19
6	23	32	49	e38	e66	1110	1110	746	438	98	27	18
7	23	31	50	e40	e80	875	1150	697	490	91	27	18
8	24	31	41	e38	94	720	1000	660	557	83	26	18
9	23	32	36	e41	130	776	864	649	579	77	25	18
10	23	33	62	e44	224	715	798	616	555	70	24	19
11	24	33	e50	e49	288	630	809	633	511	67	24	19
12	24	37	44	e45	335	540	916	710	465	66	24	20
13	24	46	34	e48	402	481	1070	818	421	66	27	20
14	24	52	24	e52	317	466	1200	804	381	63	36	20
15	24	49	e28	e70	301	396	1230	694	344	60	34	20
16	25	40	e32	e64	329	364	1230	675	320	56	31	20
17	25	35	e34	e58	247	325	1200	626	305	53	28	20
18	26	24	e35	e54	257	323	1110	565	272	50	26	21
19	26	26	e30	e48	210	331	979	506	244	47	26	23
20	25	36	24	e50	223	390	941	464	219	45	25	28
21	25	40	e29	e52	290	492	1220	434	202	42	24	31
22	27	37	e33	e49	427	554	1370	419	183	39	23	28
23	27	36	e32	e45	356	667	1240	400	166	37	23	26
24	27	36	e29	e49	327	661	1130	371	154	36	22	25
25	26	35	e25	e43	332	636	1020	337	147	35	21	25
26	27	32	e23	e44	376	702	900	308	198	34	20	25
27	27	20	e21	e46	443	990	821	292	230	32	20	29
28	27	e21	e25	e50	516	880	802	309	180	31	20	35
29	27	e18	e29	e56	630	907	879	397	163	31	20	33
30	28	e23	e32	e66	---	870	901	321	155	30	19	29
31	28	---	e30	e60	---	777	---	296	---	29	19	---
TOTAL	776	1011	1124	1436	7441	20533	32413	17444	9669	1942	784	683
MEAN	25.0	33.7	36.3	46.3	257	662	1080	563	322	62.6	25.3	22.8
MAX	28	52	62	70	630	1110	1640	818	579	134	36	35
MIN	23	18	21	22	41	323	798	292	147	29	19	18
AC-FT	1540	2010	2230	2850	14760	40730	64290	34600	19180	3850	1560	1350

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	43.3	94.3	172.9	219.7	349.2	794.2	1292	1060	460.4	104.2	32.5	30.7
MAX	145.0	700.2	669.0	1295	1379	3700	3372	2675	1328	600.0	87.7	88.1
(WY)	1928	1928	1978	1965	1958	1910	1904	1948	1948	1923	1976	1984
MIN	16.2	22.4	20.0	12.0	25.0	82.7	237.2	117.7	58.4	18.1	6.95	8.80
(WY)	1937	1953	1937	1937	1937	1955	1968	1934	1940	1910	1940	1935

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	260		388	
HIGHEST ANNUAL MEAN			718	1984
LOWEST ANNUAL MEAN			141	1966
HIGHEST DAILY MEAN	1640	Apr 3	12200	Jan 30 1965
LOWEST DAILY MEAN	18a	Nov 29	3.0	Jun 25 1905
INSTANTANEOUS PEAK FLOW	1810	Apr 3	14100b	Jan 30 1965
INSTANTANEOUS PEAK STAGE (FEET)	5.96	Apr 3	11.44	Jan 30 1965
INSTANTANEOUS LOW FLOW	not determined		3.9	Aug 26 1940

a Also occurred Sept. 6-9
b From rating curve extended above 7,200 ft^3/s

13320000 CATHERINE CREEK NEAR UNION, OR

LOCATION.--Lat 45°09'20", long 117°46'26", in NW 1/4 SE 1/4 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.--Records excellent 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	24	e18	e21	e18	80	66	209	256	83	29	21
2	19	25	21	e18	e16	79	82	185	230	77	29	21
3	19	23	22	e14	e14	85	115	172	239	73	29	20
4	19	22	22	e16	e18	83	115	157	248	70	28	20
5	19	21	24	e18	e21	78	104	154	233	72	28	20
6	19	21	31	e19	e26	74	100	146	209	66	33	20
7	19	20	27	e20	e25	65	110	137	197	62	29	20
8	19	20	20	e21	e28	59	105	135	178	59	28	20
9	19	20	21	e23	e32	62	100	145	162	56	27	20
10	19	20	29	e26	e31	57	104	161	154	53	26	20
11	19	19	23	e24	31	53	130	214	151	52	26	22
12	19	26	21	e21	32	53	189	317	150	51	26	21
13	19	36	e19	e20	33	50	282	461	151	48	27	21
14	23	30	e17	e26	31	46	354	410	153	46	26	20
15	25	21	e21	e40	32	45	389	378	160	45	25	20
16	25	20	e23	e35	31	45	413	418	169	44	24	20
17	26	e19	e25	30	e30	45	437	394	182	44	24	21
18	25	e17	e28	28	30	45	367	341	204	43	24	22
19	25	19	e20	e16	e30	52	324	300	166	40	23	23
20	25	19	e18	e19	32	66	310	284	152	38	23	25
21	24	19	e23	e21	30	81	370	296	138	37	23	23
22	24	18	e27	e24	33	77	337	344	127	36	22	22
23	23	18	e24	e22	e34	75	302	394	118	35	22	22
24	23	18	e22	e24	36	66	270	388	106	35	21	21
25	23	18	e20	e22	35	64	237	366	100	33	21	20
26	23	e16	e18	e22	40	63	212	353	149	32	21	20
27	23	e17	e15	e23	46	73	208	331	147	32	22	33
28	23	e16	e20	e27	54	73	235	350	104	31	22	26
29	23	e15	e26	e28	66	73	258	335	102	31	22	23
30	22	e16	e28	24	---	69	235	265	90	30	21	21
31	22	---	e25	20	---	64	---	228	---	29	21	---
TOTAL	674	613	698	712	915	2000	6860	8768	4925	1483	772	648
MEAN	21.7	20.4	22.5	23.0	31.6	64.5	229	283	164	47.8	24.9	21.6
MAX	26	36	31	40	66	85	437	461	256	83	33	33
MIN	19	15	15	14	14	45	66	135	90	29	21	20
AC-FT	1340	1220	1380	1410	1810	3970	13610	17390	9770	2940	1530	1290

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	32.9	38.9	46.3	47.9	59.9	96.4	231.8	407.2	310.4	96.3	38.1	30.8
MAX	137.9	100.5	125.3	100.8	136.1	268.0	444.9	742.2	685.9	247.6	61.7	57.8
(WY)	1960	1960	1942	1971	1986	1986	1952	1948	1974	1984	1953	1959
MIN	20.1	20.4	20.0	22.5	22.9	27.6	83.4	121.0	69.7	34.0	18.9	17.5
(WY)	1964	1988	1945	1977	1985	1977	1955	1977	1987	1977	1966	1966

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	79.4		119	
HIGHEST ANNUAL MEAN			180	1984
LOWEST ANNUAL MEAN			48.7	1977
HIGHEST DAILY MEAN	461	May 13	1500	May 27 1948
LOWEST DAILY MEAN	14	Jan 3, Feb 3	11	Dec 14 1955
INSTANTANEOUS PEAK FLOW	478	Apr 16	1740	May 27 1948
INSTANTANEOUS PEAK STAGE (FEET)	2.57	Apr 16, May 13	4.57	May 27 1948
INSTANTANEOUS LOW FLOW	not determined		6.5a	Feb 4 1955

* Regulated period only (1938-88)
a Result of freezeup

13324300 LOOKINGGLASS CREEK NEAR LOOKING GLASS, OR

LOCATION.--Lat 45°43'55", long 117°51'50", in NW 1/4 NW 1/4 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.--Records good. 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	46	52	50	56	101	140	285	168	66	50	50
2	46	46	57	50	57	103	156	255	157	64	50	50
3	47	46	58	50	54	114	208	236	146	64	50	50
4	47	47	53	54	55	109	206	221	141	64	52	50
5	45	46	53	53	55	111	189	209	151	63	52	50
6	52	46	60	51	52	125	190	204	139	62	52	49
7	51	46	56	51	52	117	200	194	132	62	51	49
8	51	46	51	51	53	110	187	195	131	60	50	50
9	51	45	53	51	89	112	178	212	126	59	51	49
10	46	44	80	55	101	105	178	237	121	58	50	49
11	45	45	60	55	93	99	192	257	114	57	51	50
12	45	46	55	53	87	95	227	302	111	57	52	51
13	45	54	51	52	88	91	282	339	108	56	54	50
14	45	52	50	60	83	90	337	336	101	57	52	49
15	45	48	50	71	88	86	379	310	99	56	49	50
16	44	48	50	68	83	85	413	294	97	55	50	50
17	45	46	49	62	78	83	440	279	96	54	50	50
18	45	46	49	59	72	83	424	254	94	54	50	51
19	46	46	49	59	68	86	359	237	90	55	50	51
20	44	46	49	57	67	94	347	222	86	53	50	51
21	44	46	49	53	69	105	449	213	82	53	51	50
22	45	46	48	52	76	108	439	215	78	53	51	51
23	45	49	48	53	76	127	380	213	76	54	50	52
24	45	48	53	52	74	120	343	212	73	53	50	51
25	45	47	53	52	74	138	357	201	73	53	50	51
26	45	47	53	52	76	163	297	183	77	52	50	51
27	45	47	53	52	78	192	287	173	79	50	50	53
28	45	47	54	52	83	173	304	190	71	51	51	51
29	45	47	52	54	90	163	347	194	69	51	51	51
30	46	46	50	59	---	147	321	176	67	51	50	50
31	46	---	50	56	---	141	---	158	---	51	50	---
TOTAL	1428	1405	1648	1699	2127	3576	8756	7206	3153	1748	1570	1510
MEAN	46.1	46.8	53.2	54.8	73.3	115	292	232	105	56.4	50.6	50.3
MAX	52	54	80	71	101	192	449	339	168	66	54	53
MIN	44	44	48	50	52	83	140	158	67	50	49	49
AC-FT	2830	2790	3270	3370	4220	7090	17370	14290	6250	3470	3110	3000

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	56.3	65.8	64.0	78.9	113.0	192.8	288.4	337.4	180.4	74.1	56.6	56.0
MAX	66.7	79.5	86.0	129.1	174.3	313.8	325.1	513.5	424.8	116.9	65.3	61.9
(WY)	1986	1985	1983	1983	1983	1986	1985	1984	1984	1984	1985	1984
MIN	46.1	46.8	53.2	52.9	58.9	83.3	256.2	213.3	77.1	54.6	47.0	47.0
(WY)	1988	1988	1988	1987	1985	1985	1983	1987	1987	1987	1987	1987

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	97.9		130	
HIGHEST ANNUAL MEAN			175	1984
LOWEST ANNUAL MEAN			97.9	1988
HIGHEST DAILY MEAN	449	Apr 21	895	May 30 1984
LOWEST DAILY MEAN	44	Oct 16	35	Oct 11 1983
INSTANTANEOUS PEAK FLOW	507	Apr 17	1100	May 30 1984
INSTANTANEOUS PEAK STAGE (FEET)	5.54	Apr 17	6.52	May 30 1984
INSTANTANEOUS LOW FLOW	36	Oct 22	25a	Oct 11 1983

a Result of regulation at fish hatchery upstream

13326000 WALLOWA LAKE NEAR JOSEPH, OR

LOCATION.--Lat 45°20'10", long 117°13'15", in NW 1/4 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, 37,400 acre-ft June 28, gage height, 23.57 ft; minimum contents, 8,760 acre-ft Sept. 25, gage height, 5.66 ft.

MONTHEND GAGE-HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

Date	Gage Height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	7.10	11,010	--
Oct. 31	6.91	10,710	-300
Nov. 30	6.95	10,770	+60
Dec. 31	7.65	11,860	+1,090
CAL YR 1987	--	--	-6,870
Jan. 31	8.27	12,830	+970
Feb. 29	8.78	13,640	+810
Mar. 31	9.41	14,630	+990
Apr. 30	12.32	19,210	+4,580
May 31	20.49	32,350	+13,140
June 30	23.53	37,340	+4,990
July 31	16.26	25,500	-11,840
Aug. 31	7.21	11,180	-14,320
Sept.30	5.80	8,980	-2,200
WTR 1988	--	--	-2,030

13327500 WALLOWA RIVER AT JOSEPH, OR

LOCATION.--Lat 45°20'15", long 117°13'35", in NW 1/4 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 good. Monthly discharge adjusted for storage in Wallowa Lake (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.--61 years (water years 1928-88), 134 ft^3/s, 35.75 in/yr, 97,080 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, 408 ft^3/s July 27, gage height, 3.45 ft; minimum discharge, 18 ft^3/s Dec. 10, Dec. 18 to Jan. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	29	24	18	19	23	22	24	117	230	327	167
2	28	29	23	18	19	23	22	34	161	223	294	166
3	28	29	23	18	20	22	22	38	171	199	274	143
4	28	29	22	18	20	22	22	37	173	181	258	136
5	28	29	21	18	20	23	22	36	177	173	244	119
6	29	29	20	18	20	23	22	41	188	147	252	108
7	29	29	21	18	20	23	22	43	192	165	247	103
8	29	29	21	18	20	23	22	43	191	200	239	80
9	29	29	20	18	20	23	22	43	183	227	228	48
10	29	29	18	18	20	23	22	43	167	232	214	38
11	29	29	19	18	20	23	22	43	173	246	201	33
12	29	29	19	18	20	23	22	39	184	256	194	33
13	29	29	19	18	21	23	23	25	192	254	197	33
14	30	29	19	18	21	23	23	25	204	249	218	33
15	30	29	19	18	22	23	24	23	208	247	238	32
16	30	29	19	18	22	23	24	23	205	263	229	32
17	30	29	19	18	22	23	24	25	212	261	220	32
18	30	29	18	18	23	23	24	25	210	262	202	32
19	30	29	18	18	23	23	24	23	210	276	183	32
20	28	29	18	18	23	23	24	38	224	281	165	32
21	27	29	18	18	23	23	24	44	276	284	158	32
22	27	29	18	18	23	23	25	43	311	297	149	32
23	28	29	18	19	23	23	25	43	311	336	146	32
24	29	29	18	19	23	23	25	43	313	348	147	31
25	29	29	18	19	23	23	25	47	341	346	150	32
26	29	28	18	19	23	23	25	49	351	344	149	32
27	29	28	18	19	23	23	24	53	348	383	144	32
28	29	28	18	19	23	23	24	94	306	383	140	32
29	29	28	18	19	23	23	25	114	271	353	153	32
30	29	26	18	19	---	23	24	116	229	343	169	32
31	29	---	18	19	---	22	---	116	---	336	159	---
TOTAL	894	863	598	567	622	710	700	1433	6799	8325	6288	1751
MEAN	28.8	28.8	19.3	18.3	21.4	22.9	23.3	46.2	227	269	203	58.4
MAX	30	29	24	19	23	23	25	116	351	383	327	167
MIN	27	26	18	18	19	22	22	23	117	147	140	31
AC-FT	1770	1710	1190	1120	1230	1410	1390	2840	13490	16510	12470	3470
MEAN†	28.3	34.1	40.5	37.1	38.4	42.3	105	264	349	142	28.8	35.1
CFSM†	0.56	0.67	0.80	0.73	0.75	0.83	2.06	5.19	6.86	2.79	0.57	0.69
IN.†	0.64	0.75	0.92	0.84	0.81	0.96	2.30	5.99	7.64	3.21	0.65	0.77
AC-FT†	1740	2030	2490	2280	2210	2600	6230	16240	20740	8710	1770	2090

CAL YR 1987 TOTAL 30255 MEAN 82.9 MAX 276 MIN 16 AC-FT 60010 MEAN† 95.0 CFSM† 1.87 IN.† 25.36 AC-FT† 68810
WTR YR 1988 TOTAL 29550 MEAN 80.7 MAX 383 MIN 18 AC-FT 58610 MEAN† 95.1 CFSM† 1.87 IN.† 25.46 AC-FT† 69080

† 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 NW 1/4 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.--Records excellent. Minam Lake, capacity 440 acre-ft, has stored and diverted flow from Minam River since 1917 for irrigation in Lostine River basin. Diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	18	22	e17	18	35	46	187	423	284	56	29
2	20	20	25	e16	e16	38	54	170	406	284	54	28
3	20	20	23	e15	e17	41	88	163	528	286	52	27
4	20	19	23	e16	e18	39	78	151	607	265	50	26
5	20	19	24	18	19	41	72	141	541	269	48	26
6	20	18	27	18	18	44	74	140	459	226	56	25
7	19	18	30	18	18	41	86	130	437	201	52	24
8	19	18	24	18	18	39	82	125	388	188	55	24
9	19	18	26	19	27	41	77	126	350	183	52	24
10	19	19	37	22	25	39	77	134	383	177	51	24
11	19	18	29	22	24	37	87	201	440	171	50	25
12	19	20	24	21	23	36	118	361	473	158	49	24
13	19	26	20	21	23	36	183	644	520	142	53	24
14	19	28	17	25	22	36	249	530	596	137	50	23
15	19	21	21	31	31	36	286	466	713	131	47	22
16	19	22	20	25	27	34	299	599	857	119	46	22
17	19	18	20	e21	25	34	337	612	958	111	44	22
18	19	16	19	e18	26	34	315	478	973	105	43	23
19	19	20	19	e17	24	35	294	402	901	99	42	24
20	19	20	15	21	24	38	264	415	879	93	40	26
21	19	20	19	21	25	42	270	492	880	90	39	25
22	19	20	19	20	25	43	239	653	854	87	38	24
23	19	20	18	20	24	47	213	812	771	83	37	23
24	19	20	16	19	25	44	197	830	670	79	36	22
25	19	20	e14	19	25	44	182	825	576	75	34	22
26	19	17	e12	19	26	48	166	819	615	71	33	21
27	18	19	e11	19	27	53	163	771	609	68	33	35
28	18	17	e14	19	28	49	190	773	486	65	32	34
29	18	13	17	21	31	49	228	705	407	62	31	29
30	18	15	18	20	---	47	207	514	319	60	30	26
31	18	---	18	20	---	46	---	419	---	58	30	---
TOTAL	590	577	641	616	679	1266	5221	13788	18019	4427	1363	753
MEAN	19.0	19.2	20.7	19.9	23.4	40.8	174	445	601	143	44.0	25.1
MAX	20	28	37	31	31	53	337	830	973	286	56	35
MIN	18	13	11	15	16	34	46	125	319	58	30	21
AC-FT	1170	1140	1270	1220	1350	2510	10360	27350	35740	8780	2700	1490

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	57.3	62.6	58.0	49.3	46.1	54.5	159.7	523.2	793.9	378.3	85.1	50.3
MAX	291.2	226.4	211.9	158.3	116.6	169.2	392.9	908.5	1427	913.2	179.7	104.3
(WY)	1960	1928	1959	1974	1971	1986	1934	1928	1913	1975	1943	1978
MIN	18.0	14.7	15.3	15.0	14.8	16.3	35.7	203.2	332.4	59.7	30.6	23.0
(WY)	1937	1937	1937	1937	1937	1955	1975	1977	1926	1977	1931	1931

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	131		194	
HIGHEST ANNUAL MEAN			288	1974
LOWEST ANNUAL MEAN			90.9	1977
HIGHEST DAILY MEAN	973	Jun 18	2540	May 27 1913
LOWEST DAILY MEAN	11	Dec 27	10	Nov 28-30 1936
INSTANTANEOUS PEAK FLOW	1110	Jun 18	2550	Jun 16 1974
INSTANTANEOUS PEAK STAGE (FEET)	6.06	Jun 18	8.59	Jun 16 1974
INSTANTANEOUS LOW FLOW	11	Dec 27	7.5a	Mar 2 1966

a Result of freezeup

13331500 MINAM RIVER AT MINAM, OR
(Hydrologic bench-mark station)

LOCATION.--Lat 45°37'12", long 117°43'32", in SW 1/4 SW 1/4 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.--Water-discharge records good except for estimated daily discharges, which are 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	39	e94	e54	186	222	243	591	1110	414	108	62
2	40	44	98	e52	116	227	290	540	1100	372	105	62
3	39	44	83	e50	127	238	675	517	1220	354	102	61
4	39	41	78	e54	271	237	632	481	1350	337	100	60
5	39	39	80	e60	229	233	483	471	1240	336	97	59
6	39	39	90	e90	216	249	417	475	1090	310	95	58
7	39	39	112	e100	221	238	442	450	1000	281	95	57
8	39	39	85	e96	211	219	400	436	904	260	94	57
9	38	40	78	e110	381	219	347	453	818	240	92	59
10	38	42	101	149	598	203	328	469	787	227	89	59
11	38	42	100	271	514	193	344	587	831	218	87	61
12	38	46	78	181	437	178	451	899	843	211	86	62
13	38	74	50	129	371	174	662	1480	879	204	88	60
14	38	115	58	174	319	176	853	1340	956	194	92	59
15	38	74	e68	417	327	166	960	1160	1090	187	85	57
16	38	63	77	420	215	159	982	1400	1260	176	82	58
17	38	57	78	358	193	151	1050	1440	1410	169	79	57
18	38	32	71	262	181	152	962	1220	1460	162	77	59
19	38	74	e67	152	160	154	867	1030	1330	157	77	64
20	38	85	e64	194	154	172	797	1010	1280	152	75	69
21	38	76	e63	303	157	195	868	1100	1220	148	74	68
22	38	63	e65	224	166	200	818	1370	1200	142	72	64
23	38	61	e62	186	162	214	747	1690	1090	136	71	64
24	37	59	e56	153	158	203	695	1720	966	133	69	62
25	37	58	e48	145	152	205	619	1670	843	131	67	61
26	38	46	e41	145	151	218	559	1680	828	129	67	60
27	38	47	e40	156	156	295	537	1590	970	126	66	87
28	37	86	e43	161	169	303	592	1580	730	124	66	114
29	36	e80	e52	186	189	287	714	1630	631	118	65	79
30	36	86	e60	223	---	266	661	1230	504	113	63	72
31	37	---	e58	195	---	243	---	1050	---	111	62	---
TOTAL	1181	1730	2198	5450	6887	6589	18995	32759	30940	6372	2547	1931
MEAN	38.1	57.7	70.9	176	237	213	633	1057	1031	206	82.2	64.4
MAX	41	115	112	420	598	303	1050	1720	1460	414	108	114
MIN	36	32	40	50	116	151	243	436	504	111	62	57
AC-FT	2340	3430	4360	10810	13660	13070	37680	64980	61370	12640	5050	3830

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	102.4	155.2	189.8	215.6	250.7	317.7	506.1	1310	1698	674.6	161.4	102.4
MAX	172.5	492.9	603.6	411.7	566.8	697.1	887.6	2016	3125	1392	276.4	179.5
(WY)	1969	1974	1978	1969	1986	1986	1913	1971	1974	1975	1912	1978
MIN	64.7	62.1	62.4	59.6	56.9	66.7	234.6	484.2	496.7	125.1	72.6	45.9
(WY)	1975	1975	1979	1977	1977	1977	1967	1977	1987	1977	1966	1987

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	321		464	
HIGHEST ANNUAL MEAN			713	1974
LOWEST ANNUAL MEAN			188	1977
HIGHEST DAILY MEAN	1720	May 24	5160	Jun 15 1974
LOWEST DAILY MEAN	32	Nov 18	11	Dec 6 1972
INSTANTANEOUS PEAK FLOW	2050	May 28	6260	Jun 16 1974
INSTANTANEOUS PEAK STAGE (FEET)	3.58	May 28	7.3	May 28 1913
INSTANTANEOUS LOW FLOW	28a	Nov 18	10b	Dec 6 1972

a Result of freezeup
b Also occurred Jan. 10, 1973; both occurrences result of freezeup

13331500 MINAM RIVER AT MINAM, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1966 to current year.

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1965 to September 1985.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

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)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	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 (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)
NOV												
24...	1400	57	58	7.8	1.5	12.7	99	K4	K16	24	0	6.9
FEB												
09...	1210	344	55	7.8	0.5	13.6	103	--	--	22	0	6.1
MAY												
16...	1245	1350	30	7.6	8.5	11.5	109	K2	K6	11	0	3.3
AUG												
17...	1100	80	56	8.2	19.0	9.4	112	K6	290	21	0	6.2

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 DIS IT FIELD (MG/L AS CACO3)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3)	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)
NOV											
24...	1.7	2.7	1.1	30	36	0	2.0	1.1	0.1	0.01	<0.1
FEB											
09...	1.6	2.4	1.2	37	45	0	3.0	0.9	0.2	<0.01	0.2
MAY											
16...	0.8	1.4	0.7	11	13	0	1.8	0.4	0.3	<0.01	<0.1
AUG											
17...	1.4	2.6	1.2	23	29	0	1.5	0.4	<0.1	<0.01	<0.1

DATE	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS 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											
24...	<0.2	<0.01	<0.01	<0.01	19	51	52	7.8	0.3	3	0.46
FEB											
09...	0.2	<0.01	0.02	<0.01	20	50	59	46.4	4.4	7	6.5
MAY											
16...	<0.2	<0.01	0.01	0.01	13	28	30	102	1.7	14	51
AUG											
17...	0.2	<0.01	0.01	0.02	16	--	44	9.4	0.8	3	0.64

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 1987 TO SEPTEMBER 1988

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 24...	20	<1	3	<0.5	<1	<1	<3	1	6	<5
FEB 09...	90	<1	11	<0.5	<1	<1	<3	1	120	<5
MAY 16...	40	<1	9	<0.5	<1	<1	<3	1	30	<5
AUG 17...	10	<1	4	<0.5	<1	<1	<3	1	11	<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 24...	<4	<1	<0.1	<10	2	<1	<1	24	<6	6
FEB 09...	<4	3	<0.1	<10	1	<1	<1	21	<6	5
MAY 16...	<4	<1	<0.1	<10	5	<1	1	14	<6	<3
AUG 17...	<4	1	<0.1	<10	1	<1	1	24	<6	4

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 NATURAL DISSOLVED (UG/L AS U)
NOV 24...	--	--	--	--	--	--	--	--
FEB 09...	--	--	--	--	--	--	--	--
MAY 16...	<0.4	<0.4	0.7	0.7	<0.4	<0.4	0.03	1.1
AUG 17...	<0.4	<0.4	1.4	1.3	<0.4	<0.4	0.03	0.13

13332500 GRANDE RONDE RIVER AT RONDOWA, OR

LOCATION.--Lat 45°43'36", long 117°46'59", in SW 1/4 NW 1/4 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 good except those for November to January, which are fair. 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	334	397	488	427	558	2010	2430	3310	3110	1570	318	296
2	321	411	563	422	492	2140	2640	3040	3140	1430	314	274
3	341	425	552	385	489	2230	4140	2910	3310	1380	312	268
4	352	426	540	393	531	2230	4300	2860	3640	1320	305	265
5	358	424	541	467	528	2330	3860	2750	3520	1310	299	252
6	363	433	561	481	516	2820	3480	2800	3250	1260	319	262
7	351	421	566	475	524	2630	3450	2740	3110	1110	357	257
8	342	414	534	470	526	2310	3250	2620	2960	1010	340	267
9	337	419	533	472	1120	2210	2940	2620	2850	944	322	277
10	335	429	632	518	2050	2120	2740	2600	2730	875	310	272
11	351	429	619	556	2000	1960	2720	2760	2810	793	318	282
12	354	439	555	525	1740	1790	3000	3370	2790	723	313	284
13	348	491	499	502	1710	1630	3650	4830	2790	683	320	288
14	346	569	428	549	1490	1540	4420	4760	2850	621	350	290
15	357	524	434	923	1740	1450	4840	4260	3070	593	335	284
16	365	506	467	810	1660	1360	4950	4580	3360	567	338	279
17	375	488	483	700	1450	1270	5110	4660	3680	536	336	288
18	382	435	475	596	1290	1230	4890	4040	3790	515	337	303
19	377	438	457	530	1200	1240	4470	3490	3510	479	336	333
20	379	459	383	541	1120	1330	4140	3250	3410	424	343	369
21	385	479	412	562	1150	1520	4700	3250	3180	422	340	371
22	383	487	475	536	1350	1700	5110	3590	3110	405	336	362
23	385	496	451	533	1400	1940	4750	4160	2850	395	328	353
24	384	487	406	505	1340	2000	4380	4220	2550	372	329	353
25	381	481	359	500	1290	2060	4030	4170	2200	354	315	348
26	375	462	359	492	1300	2210	3620	4150	2180	335	300	344
27	382	445	353	493	1380	2740	3340	3930	2650	334	307	401
28	383	445	374	496	1520	2730	3290	3820	2260	345	311	454
29	393	416	445	529	1720	2620	3540	4230	2040	342	298	416
30	393	380	480	674	---	2600	3560	3500	1780	305	293	391
31	392	---	459	614	---	2530	---	3070	---	323	295	---
TOTAL	11304	13555	14883	16676	35184	62480	115740	110340	88480	22075	9974	9483
MEAN	365	452	480	538	1213	2015	3858	3559	2949	712	322	316
MAX	393	569	632	923	2050	2820	5110	4830	3790	1570	357	454
MIN	321	380	353	385	489	1230	2430	2600	1780	305	293	252
AC-FT	22420	26890	29520	33080	69790	123900	229600	218900	175500	43790	19780	18810

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	648.8	864.2	1225	1324	1841	2810	4282	5535	4701	1713	597.1	549.7
MAX	1978	3346	3942	3554	5029	7600	8089	10010	9662	4692	1152	996.9
(WY)	1960	1928	1978	1965	1965	1972	1943	1948	1948	1975	1984	1984
MIN	342.7	342.5	357.7	297.7	394.8	610.6	1498	1965	1561	344.7	269.2	307.9
(WY)	1937	1937	1936	1937	1937	1977	1973	1977	1934	1977	1931	1987

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	1394		2157	
HIGHEST ANNUAL MEAN			3416	1974
LOWEST ANNUAL MEAN			854	1977
HIGHEST DAILY MEAN	5110	Apr 17, 22	24000	Jan 30 1965
LOWEST DAILY MEAN	252	Sep 5	186	Aug 19 1977
INSTANTANEOUS PEAK FLOW	5260	Apr 21	24700	Jan 30 1965
INSTANTANEOUS PEAK STAGE (FEET)	4.47	Apr 21	10.93	Jan 30 1965
INSTANTANEOUS LOW FLOW	242	Sep 5	179	Aug 24 1977

13333000 GRANDE RONDE RIVER AT TROY, OR

LOCATION.--Lat 45°56'47", long 117°26'54", in NE 1/4 NW 1/4 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.--Records excellent except for estimated daily discharges, which are good. 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	509	556	620	e760	996	2790	3400	4400	3580	1830	478	440
2	488	583	837	e750	894	3020	3640	4010	3750	1630	476	431
3	486	576	823	e700	874	3120	5810	3780	3770	1550	471	417
4	504	580	782	e730	882	3150	6220	3720	4110	1490	468	411
5	514	580	773	e830	876	3090	5530	3580	4100	1460	458	403
6	523	589	828	e850	827	3730	5020	3610	3810	1460	455	400
7	521	585	848	e845	846	3660	5060	3580	3630	1290	494	403
8	510	579	799	e840	845	3210	4690	3430	3510	1200	502	404
9	501	575	779	828	1290	2990	4190	3420	3410	1120	483	422
10	496	585	1030	922	2810	2840	3880	3410	3220	1070	466	421
11	505	585	1050	988	2800	2600	3880	3550	3240	983	466	430
12	520	595	892	944	2500	2390	4330	4140	3210	924	468	434
13	516	652	797	889	2440	2180	5170	5480	3200	891	462	436
14	511	751	722	956	2230	2040	6140	5790	3210	844	489	438
15	514	721	655	1580	2390	1930	6680	5240	3380	792	495	436
16	524	695	682	1820	2530	1800	6810	5350	3670	754	483	428
17	536	666	687	1420	2150	1680	6890	5540	4020	722	490	430
18	544	616	695	1190	1860	1610	6560	5000	4180	701	485	446
19	545	587	669	996	1660	1630	5990	4360	3930	670	484	465
20	546	615	636	984	1530	1790	5540	3980	3780	623	486	514
21	551	632	617	1050	1520	2110	6160	3880	3530	594	488	531
22	554	648	653	943	1780	2360	7070	4170	3460	585	487	523
23	553	671	651	910	1920	2630	6490	4800	3200	566	478	510
24	554	654	630	856	1850	2760	5920	4950	2900	559	475	506
25	546	648	e580	818	1750	2910	5410	4870	2500	536	470	503
26	541	635	e530	815	1740	3360	4910	4830	2410	512	450	495
27	542	611	e560	815	1860	4520	4500	4610	2920	494	446	524
28	546	602	e620	812	2080	4240	4400	4420	2590	498	455	607
29	552	593	e700	835	2360	3850	4750	4990	2330	504	448	588
30	557	577	e790	1050	---	3650	4800	4260	2090	490	437	554
31	546	---	e780	1110	---	3540	---	3700	---	467	437	---
TOTAL	16355	18542	22715	29836	50090	87180	159840	134850	100640	27809	14630	13950
MEAN	528	618	733	962	1727	2812	5328	4350	3355	897	472	465
MAX	557	751	1050	1820	2810	4520	7070	5790	4180	1830	502	607
MIN	486	556	530	700	827	1610	3400	3410	2090	467	437	400
AC-FT	32440	36780	45060	59180	99350	172900	317000	267500	199600	55160	29020	27670

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	919.8	1246	2049	2217	3121	4145	6316	7495	5951	2263	874.4	802.3
MAX	2559	3023	6295	6280	7386	11520	10780	13820	11610	4951	1385	1291
(WY)	1960	1974	1978	1974	1982	1972	1956	1948	1974	1975	1984	1984
MIN	603.5	687.6	684.7	701.9	768.6	888.1	2257	2368	1947	520.1	448.4	472.5
(WY)	1945	1953	1945	1979	1977	1977	1968	1977	1987	1977	1977	1987

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	1848		3082	
HIGHEST ANNUAL MEAN			4912	1974
LOWEST ANNUAL MEAN			1136	1977
HIGHEST DAILY MEAN	7070	Apr 22	35700	Dec 23 1964
LOWEST DAILY MEAN	400	Sep 6	344	Aug 20 1977
INSTANTANEOUS PEAK FLOW	7310	Apr 22	42200	Dec 23 1964
INSTANTANEOUS PEAK STAGE (FEET)	5.86	Apr 22	11.25	Dec 23 1964
INSTANTANEOUS LOW FLOW	386	Sep 5-7	344a	Aug 19 1977

a Also occurred on Aug. 20, 21, 23, 1977

13353000 SNAKE RIVER BELOW ICE HARBOR DAM, WA

LOCATION.--Lat 46°14'53", long 118°52'43", in NE 1/4 SE 1/4 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.--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.--33 years (water years 1910-16, 1963-88), 55,020 ft^3/s, 39,862,000 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, 107,000 ft^3/s May 7; maximum forebay elevation, 439.90 ft Sept. 4; minimum hourly discharge, 300 ft^3/s Jan. 6; minimum forebay elevation, 437.30 ft Oct. 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23100	17200	27400	25400	22000	23800	30600	49400	58300	22600	13800	32600
2	13700	28300	30300	20300	26000	24600	20000	42400	58000	28200	12700	21300
3	13500	10300	26900	21600	16000	28800	25000	44600	61200	23100	11700	10800
4	17400	24800	33700	33300	25100	33200	37900	51100	67400	17800	13000	11000
5	18200	21000	26400	26500	17300	27800	37800	81100	66200	24100	13200	10600
6	16800	22500	23200	23600	15700	25900	35000	77200	73700	19300	17200	26900
7	18900	19900	30900	40900	19100	30400	27300	90400	64700	21900	14900	12000
8	16000	21000	31400	29900	17900	30000	32800	74400	74500	19100	16300	14700
9	19700	25100	35700	16000	17000	31000	32300	81200	67300	19100	11600	18400
10	17600	26300	32200	20400	22800	40400	20600	74900	41500	18500	12100	22000
11	14800	14000	33600	26900	29600	38100	33900	42700	53900	21300	11800	22900
12	22100	24900	34500	25700	22600	24900	25500	61400	43000	18200	16600	24500
13	18900	28800	24400	32500	23500	24900	38700	72800	49600	14500	16700	16800
14	12900	26900	32900	22800	28900	28400	45600	68400	45300	15100	21600	17000
15	21200	13900	39600	27100	22600	33800	50700	58600	46800	21800	22300	20200
16	25000	26800	29800	22900	22300	30800	59100	67700	44600	16800	19100	19600
17	10700	29400	32200	17900	29300	27700	60000	71500	38900	12100	19000	17700
18	12300	38900	26100	24000	25000	19000	63800	82100	37500	21100	13600	12000
19	24800	23100	33000	24100	22800	11400	64100	68500	39400	11800	19300	21700
20	21500	25600	22200	25000	24100	12900	61700	68300	50000	12000	18000	21900
21	18000	29000	29700	25200	16200	22800	62400	54400	41200	12100	17900	23800
22	15000	21400	24700	25100	24500	33500	65000	51400	40500	11600	18900	23600
23	17400	28100	34500	24300	21500	26000	58800	61600	29800	11800	17500	23700
24	11100	31200	26400	15400	23100	36900	50200	80300	27800	11600	22900	19400
25	9600	30400	24200	23100	25100	20600	49100	75900	30600	16300	16000	21600
26	25200	29500	29100	21100	21800	15800	52300	82700	32100	15000	21500	25100
27	20400	25100	21500	24800	21700	12100	35400	76000	30600	16400	19600	22900
28	19700	22300	27600	22500	18100	42700	37100	75600	35200	19000	17800	26900
29	18800	17800	31400	25900	20900	28900	41200	63000	27000	19800	23900	23600
30	18900	28200	30100	15200	---	26700	44600	53400	23800	11800	23900	26900
31	19700	---	32100	23100	---	29500	---	78500	---	12800	14500	---
TOTAL	552900	731700	917700	752500	642500	843300	1298500	2081500	1400400	536600	528900	612100
MEAN	17840	24390	29600	24270	22160	27200	43280	67150	46680	17310	17060	20400
MAX	25200	38900	39600	40900	29600	42700	65000	90400	74500	28200	23900	32600
MIN	9600	10300	21500	15200	15700	11400	20000	42400	23800	11600	11600	10600
AC-FT	1097000	1451000	1820000	1493000	1274000	1673000	2576000	4129000	2778000	1064000	1049000	1214000

CAL YR 1987 TOTAL 10897200 MEAN 29860 MAX 97300 MIN 8900 AC-FT 21610000
WTR YR 1988 TOTAL 10898600 MEAN 29780 MAX 90400 MIN 9600 AC-FT 21620000

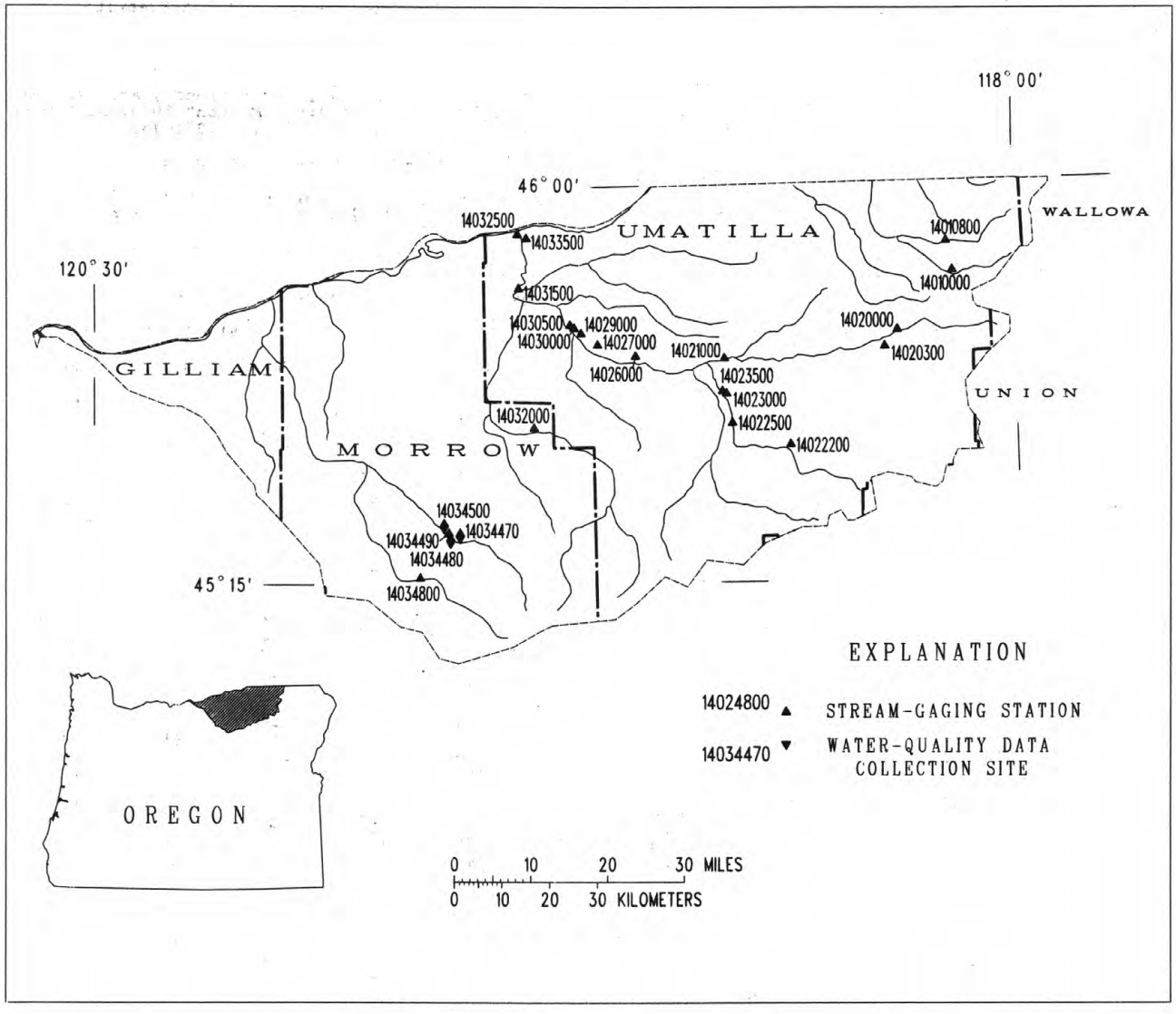

Figure 5.--Location of surface-water and water-quality stations in the Walla Walla River, Umatilla River, and Willow Creek basins.

WALLA WALLA RIVER BASIN

14010000 SOUTH FORK WALLA WALLA RIVER NEAR MILTON-FREEWATER, OR

LOCATION.--Lat 45°49'48", long 118°10'08", in NE 1/4 NE 1/4 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.--Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage about 6 ft Mar. 31, 1931, present site and datum.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	96	98	117	e80	109	144	162	211	147	96	85	77
2	96	99	124	e80	103	139	197	195	138	96	85	76
3	96	98	121	e80	99	152	267	186	132	96	85	76
4	96	96	111	e80	95	144	253	178	130	97	84	76
5	96	96	109	e80	92	153	218	172	144	97	85	76
6	96	96	117	e80	91	162	202	167	132	97	84	76
7	96	96	113	e80	91	154	209	159	132	97	84	76
8	96	96	106	e80	99	146	184	160	135	96	82	76
9	96	96	107	86	160	155	168	163	131	97	81	76
10	96	96	156	105	214	149	164	166	126	97	81	77
11	96	96	121	104	177	145	175	185	121	99	81	77
12	96	99	108	97	160	138	212	209	114	99	81	76
13	96	108	99	96	153	132	272	222	110	100	82	76
14	96	104	94	135	139	129	302	208	107	103	82	76
15	96	99	92	207	152	123	314	188	105	102	79	75
16	96	99	91	155	141	117	324	188	103	100	78	76
17	96	99	90	130	132	112	306	178	104	100	78	76
18	96	96	89	111	120	111	260	169	100	98	78	76
19	96	96	88	103	111	114	240	161	100	97	78	78
20	96	97	87	99	106	120	240	154	100	96	78	78
21	96	99	87	95	107	129	318	151	98	95	78	77
22	96	99	88	94	111	125	327	153	98	95	77	76
23	96	99	87	92	110	136	279	151	97	95	77	76
24	96	100	86	91	107	126	240	147	97	94	77	76
25	96	97	85	89	105	138	214	139	98	91	77	75
26	96	96	e83	89	107	164	200	132	103	91	77	76
27	96	96	e81	90	114	213	198	128	103	91	77	83
28	96	96	e80	97	124	187	211	158	95	90	77	78
29	96	96	e80	112	137	174	248	160	98	90	77	76
30	96	96	e80	135	---	160	231	141	95	89	77	76
31	96	---	e80	125	---	154	---	130	---	88	77	---
TOTAL	2976	2934	3057	3177	3566	4445	7135	5209	3393	2969	2479	2295
MEAN	96.0	97.8	98.6	102	123	143	238	168	113	95.8	80.0	76.5
MAX	96	108	156	207	214	213	327	222	147	103	85	83
MIN	96	96	80	80	91	111	162	128	95	88	77	75
AC-FT	5900	5820	6060	6300	7070	8820	14150	10330	6730	5890	4920	4550

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	111.1	134.8	168.0	173.9	188.6	214.8	280.2	301.8	203.6	123.4	108.8	107.3
MAX	179.9	244.8	375.9	377.6	340.0	399.0	458.0	569.1	483.6	193.5	158.0	177.1
(WY)	1960	1948	1976	1965	1986	1972	1936	1948	1974	1974	1903	1903
MIN	84.0	88.5	92.8	91.8	101.8	110.6	146.5	122.9	96.0	84.9	80.0	76.5
(WY)	1943	1940	1945	1937	1937	1917	1941	1934	1987	1931	1988	1988

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	119		176	
HIGHEST ANNUAL MEAN			255	1974
LOWEST ANNUAL MEAN			119	1988
HIGHEST DAILY MEAN	327	Apr 22	1870	Dec 12 1946
LOWEST DAILY MEAN	75	Sep 15	74	Feb 14 1932
INSTANTANEOUS PEAK FLOW	365	Apr 21	2530	Jan 29 1965
INSTANTANEOUS PEAK STAGE (FEET)	1.90	Apr 21	5.60	Jan 29 1965
INSTANTANEOUS LOW FLOW	74	Sep 13-15, 24-26	72	Feb 14 1932
10 PERCENTILE	185		308	
50 PERCENTILE	99		139	
95 PERCENTILE	77		92	

14010800 NORTH FORK WALLA WALLA RIVER NEAR MILTON-FREEWATER, OR

LOCATION.--Lat 45°53'06", long 118°11'06", in SE 1/4 NW 1/4 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.--Records good. No regulation; one diversion upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.2	6.0	8.2	5.9	26	39	68	90	32	10	4.2	4.1
2	5.1	6.0	12	5.9	21	37	90	81	32	9.7	4.3	4.1
3	5.1	5.9	9.2	5.8	19	43	125	82	31	9.6	4.2	4.1
4	5.2	5.9	8.2	5.9	16	42	132	73	31	9.4	4.2	4.1
5	5.1	5.9	7.5	5.9	15	55	112	67	37	9.5	4.2	4.1
6	5.2	5.9	7.5	5.9	14	73	105	60	35	9.3	4.2	4.1
7	5.1	5.7	7.6	5.9	14	69	109	52	36	8.7	4.2	4.1
8	5.1	5.7	7.3	6.1	18	61	95	50	37	8.3	4.2	4.1
9	5.2	5.8	7.3	6.7	43	72	83	50	36	7.4	4.1	4.1
10	5.2	5.7	17	17	87	69	79	45	33	6.7	4.1	4.3
11	5.2	5.7	12	18	71	60	86	43	31	6.8	4.1	4.3
12	5.2	6.2	9.3	15	58	50	103	42	28	6.8	4.1	4.2
13	5.2	6.7	8.1	13	51	42	129	44	26	7.0	4.2	4.1
14	5.1	7.8	7.5	25	43	38	141	45	24	7.1	4.2	4.1
15	5.2	6.7	7.4	90	52	33	143	35	22	6.6	4.1	4.1
16	5.2	6.5	7.0	53	48	29	141	34	20	6.3	4.1	4.1
17	5.3	6.4	6.9	33	40	26	133	34	19	6.1	4.1	4.2
18	5.4	6.1	6.7	25	33	24	122	34	17	5.9	4.1	4.2
19	5.4	6.0	6.5	20	29	24	104	31	16	5.8	4.2	4.5
20	5.4	5.9	6.3	17	26	25	96	28	15	5.5	4.2	4.6
21	5.4	6.2	6.6	15	25	28	160	26	14	5.5	4.1	4.6
22	5.4	6.2	6.6	14	27	28	190	25	13	5.4	4.1	4.7
23	5.4	6.4	6.4	13	27	36	163	24	13	5.4	4.0	4.6
24	5.4	6.5	6.3	13	25	34	135	23	12	5.3	4.0	4.6
25	5.4	6.4	6.1	12	24	37	109	21	12	5.0	4.1	4.6
26	5.4	6.2	6.1	12	23	57	88	19	13	4.6	4.2	4.7
27	5.5	6.1	5.9	13	26	99	74	18	13	4.5	4.2	5.7
28	5.6	5.9	5.9	17	30	87	69	30	11	4.4	4.2	5.2
29	5.6	5.9	e5.9	28	35	76	96	35	11	4.4	4.2	4.8
30	5.6	5.9	e5.9	40	---	62	100	29	11	4.4	4.2	4.7
31	5.7	---	e5.9	33	---	58	---	27	---	4.4	4.2	---
TOTAL	164.5	184.2	237.1	590.0	966	1513	3380	1297	681	205.8	128.8	131.8
MEAN	5.31	6.14	7.65	19.0	33.3	48.8	113	41.8	22.7	6.64	4.15	4.39
MAX	5.7	7.8	17	90	87	99	190	90	37	10	4.3	5.7
MIN	5.1	5.7	5.9	5.8	14	24	68	18	11	4.4	4.0	4.1
AC-FT	326	365	470	1170	1920	3000	6700	2570	1350	408	255	261

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	10.0	26.8	52.4	73.7	81.6	97.8	116.1	92.1	41.6	12.0	8.19	7.78
MAX	19.1	86.4	170.1	175.4	180.8	236.3	222.2	197.6	135.8	20.5	12.6	11.6
(WY)	1983	1974	1976	1975	1982	1972	1974	1974	1974	1981	1984	1985
MIN	5.31	6.14	7.65	12.3	14.6	42.6	55.1	26.3	9.33	5.09	3.68	4.39
(WY)	1988	1988	1988	1979	1977	1977	1973	1973	1987	1986	1986	1988

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	25.9		51.5	
HIGHEST ANNUAL MEAN			94.5	1974
LOWEST ANNUAL MEAN			21.9	1977
HIGHEST DAILY MEAN	190	Apr 22	872	Feb 23 1986
LOWEST DAILY MEAN	4.0	Aug 23	3.4	Aug 27 1986
INSTANTANEOUS PEAK FLOW	204	Apr 21	1240	Feb 23 1986
INSTANTANEOUS PEAK STAGE (FEET)	4.48	Apr 21	7.02	Feb 23 1986
INSTANTANEOUS LOW FLOW	3.8	Aug 9, 22-24	3.3	Aug 26-28 1986
10 PERCENTILE	73		135	
50 PERCENTILE	8.9		24	
95 PERCENTILE	4.0		5.5	

14020000 UMATILLA RIVER ABOVE MEACHAM CREEK, NEAR GIBBON, OR

LOCATION.--Lat 45°43'11", long 118°19'20", in SE 1/4 SW 1/4 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.--Records excellent. No regulation or diversion upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	45	51	49	166	277	433	414	154	66	42	39
2	41	46	65	e48	142	252	496	377	156	64	43	39
3	41	44	60	e48	122	299	840	361	149	63	42	39
4	41	44	55	e48	108	287	809	338	147	63	42	39
5	41	44	53	48	99	321	634	318	181	62	42	39
6	41	44	56	48	94	379	546	302	183	61	42	39
7	41	44	54	48	93	356	549	277	188	58	42	39
8	41	44	52	49	105	315	463	262	194	56	42	39
9	42	44	60	54	467	355	390	261	192	55	41	39
10	42	44	144	112	712	348	360	251	181	54	41	39
11	42	44	110	127	478	318	399	261	166	54	41	40
12	42	47	87	103	387	282	501	284	152	54	41	40
13	42	53	75	94	343	250	654	292	141	54	42	39
14	42	53	68	292	281	230	708	275	130	53	42	39
15	42	48	64	606	292	209	689	243	120	53	41	39
16	42	50	61	310	287	188	666	235	112	51	41	39
17	42	47	59	205	244	170	624	213	108	50	41	39
18	42	45	57	159	206	158	554	200	100	49	41	40
19	42	45	55	130	177	157	500	184	94	48	41	41
20	42	44	54	115	162	168	482	173	89	48	39	41
21	42	44	54	104	164	191	717	165	85	47	40	41
22	42	45	54	96	188	199	937	161	81	46	40	40
23	42	50	53	94	185	238	748	152	78	46	40	40
24	42	49	52	91	170	227	603	144	74	45	39	40
25	42	49	e50	88	160	265	489	135	74	45	39	40
26	42	46	49	86	160	387	415	126	79	44	e40	40
27	42	45	52	86	175	621	379	120	80	44	e40	44
28	42	45	51	101	202	519	375	150	72	43	e40	42
29	42	45	50	160	241	451	432	169	71	43	e39	41
30	43	45	49	259	---	394	444	145	69	43	e39	41
31	43	---	49	214	---	393	---	135	---	43	39	---
TOTAL	1296	1382	1903	4072	6610	9204	16836	7123	3700	1605	1264	1196
MEAN	41.8	46.1	61.4	131	228	297	561	230	123	51.8	40.8	39.9
MAX	43	53	144	606	712	621	937	414	194	66	43	44
MIN	41	44	49	48	93	157	360	120	69	43	39	39
AC-FT	2570	2740	3770	8080	13110	18260	33390	14130	7340	3180	2510	2370

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	59.1	126.1	239.0	262.8	320.3	380.5	537.6	444.8	195.7	65.8	47.7	47.6
MAX	169.1	405.0	716.5	655.9	909.9	988.6	884.9	1135	591.2	110.1	63.4	81.6
(WY)	1952	1948	1976	1965	1982	1972	1974	1948	1974	1948	1975	1959
MIN	39.1	40.2	44.4	45.7	71.8	188.7	161.7	67.0	63.7	39.5	36.9	34.9
(WY)	1936	1936	1966	1937	1977	1955	1941	1934	1934	1934	1939	1935

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	154		225	
HIGHEST ANNUAL MEAN			415	1974
LOWEST ANNUAL MEAN			114	1977
HIGHEST DAILY MEAN	937	Apr 22	5130	Dec 12 1946
LOWEST DAILY MEAN	39	Aug 20	28	Jan 9 1937
INSTANTANEOUS PEAK FLOW	1020	Apr 21	5930a	Jan 25 1975
INSTANTANEOUS PEAK STAGE (FEET)	4.72	Apr 21	9.50	Jan 29 1965
INSTANTANEOUS LOW FLOW	37	Sep 2	16b	Nov 9 1965

a From rating curve extended above 3,500 ft^3/s
b Result of momentary regulation from unknown source

14020300 MEACHAM CREEK AT GIBBON, OR

LOCATION.--Lat 45°41'20", long 118°21'20", in SE 1/4 SE 1/4 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.--Records good. No regulation or diversion upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e9.2	8.4	14	18	e115	438	533	342	81	34	13	9.0
2	e9.2	8.8	16	17	e100	390	648	324	92	32	12	9.2
3	e9.2	8.8	16	17	e90	424	1060	313	89	30	12	9.1
4	e9.2	8.8	15	17	e80	395	1050	302	88	29	12	9.1
5	9.2	9.2	15	16	e75	458	807	289	102	27	11	9.1
6	9.2	9.2	16	16	e72	526	656	274	109	26	11	9.3
7	9.2	9.2	16	16	e70	457	618	250	117	25	11	9.3
8	8.8	9.2	16	17	e72	378	520	224	131	24	11	9.5
9	8.4	9.6	19	18	e150	369	430	206	138	23	11	9.4
10	8.8	9.6	36	32	e560	346	374	189	139	22	11	9.7
11	8.4	9.6	32	48	489	316	371	179	130	22	11	10
12	8.4	10	30	46	432	288	427	174	119	22	10	10
13	8.0	11	29	44	406	260	508	175	109	21	10	8.7
14	8.4	12	28	180	331	239	534	159	100	21	11	8.7
15	8.0	12	26	405	309	213	497	141	92	20	10	8.9
16	8.0	12	25	253	328	191	447	135	88	19	10	9.1
17	8.0	12	24	164	279	169	404	129	86	19	10	9.4
18	8.0	12	23	117	223	155	351	120	77	18	10	10
19	8.0	12	22	91	181	153	303	113	68	17	10	10
20	8.0	12	21	75	160	171	281	105	61	17	10	11
21	8.0	12	21	68	165	209	395	99	55	16	9.6	11
22	8.4	12	21	59	223	243	595	94	51	16	9.6	10
23	8.4	13	20	56	232	277	553	90	47	15	10	10
24	8.4	13	19	53	204	280	482	86	43	15	9.6	10
25	8.0	14	19	51	187	284	410	71	41	14	9.5	11
26	8.4	13	18	50	190	344	348	64	44	14	9.5	11
27	8.0	14	18	49	238	569	301	60	44	14	9.6	12
28	8.4	13	18	53	304	548	272	68	40	14	9.5	12
29	8.4	13	18	72	373	509	297	87	39	13	9.3	11
30	8.4	13	18	110	---	465	338	80	36	13	9.3	11
31	8.4	---	18	e135	---	470	---	72	---	12	9.0	---
TOTAL	262.8	335.4	647	2363	6638	10534	14810	5014	2456	624	321.5	297.5
MEAN	8.48	11.2	20.9	76.2	229	340	494	162	81.9	20.1	10.4	9.92
MAX	9.2	14	36	405	560	569	1060	342	139	34	13	12
MIN	8.0	8.4	14	16	70	153	272	60	36	12	9.0	8.7
AC-FT	521	665	1280	4690	13170	20890	29380	9950	4870	1240	638	590

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	17.8	66.3	211.2	221.1	394.2	478.5	551.3	300.2	108.5	25.1	13.1	12.8
MAX	26.7	199.6	581.7	502.8	950.2	804.1	956.3	579.4	353.9	52.2	19.6	16.7
(WY)	1985	1987	1976	1984	1986	1984	1985	1984	1984	1984	1976	1978
MIN	8.48	11.2	18.0	22.2	27.1	133.7	228.3	121.6	27.0	13.2	8.48	9.37
(WY)	1988	1988	1977	1977	1977	1977	1986	1977	1987	1977	1986	1987

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	121		199	
HIGHEST ANNUAL MEAN			301	1984
LOWEST ANNUAL MEAN			66.2	1977
HIGHEST DAILY MEAN	1060	Apr 3	4220	Feb 23 1986
LOWEST DAILY MEAN	8.0a	Oct 13	7.5	Aug 11 1977
INSTANTANEOUS PEAK FLOW	1140	Apr 3	5750b	Feb 20 1982
INSTANTANEOUS PEAK STAGE (FEET)	4.45	Apr 3	6.60c	Feb 20 1982
INSTANTANEOUS LOW FLOW	not determined		6.6	Aug 29 1984

a Minimum daily discharge occurred several days in October
b From rating curve extended above 2,600 ft^3/s
c From floodmark

14021000 UMATILLA RIVER AT PENDLETON, OR

LOCATION.--Lat 45°40'20", long 118°47'30", in NW 1/4 NE 1/4 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.--Records good except those for discharges above 360 ft^3/s, and estimated daily discharges, which are fair. No regulation. Many diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	63	66	e82	393	719	1190	787	204	88	32	25
2	44	67	74	e81	e330	695	1430	727	229	83	33	25
3	43	66	87	e80	275	713	e1900	712	229	78	35	25
4	42	65	82	e80	246	741	e2100	706	220	76	35	27
5	43	65	80	e80	224	746	e1900	676	239	75	35	31
6	43	65	81	e80	213	808	e1600	641	270	74	35	31
7	45	65	82	e82	204	817	e1300	618	288	74	34	30
8	49	65	83	e85	200	759	1150	548	303	70	33	26
9	49	65	84	91	433	744	931	506	318	68	30	24
10	49	65	140	109	1260	748	866	468	316	65	28	27
11	49	65	198	172	1100	727	851	453	296	63	27	33
12	49	64	159	139	952	687	880	461	274	e60	27	35
13	49	66	139	235	874	642	e1000	471	251	e58	28	35
14	51	68	127	e900	775	579	e1200	448	226	e57	27	34
15	51	70	122	e1700	711	525	e1150	403	193	e56	31	32
16	51	69	116	e900	711	467	e1080	368	177	e54	30	32
17	51	68	111	e680	675	415	1040	364	165	e53	29	32
18	53	68	105	536	598	356	963	336	154	e52	29	34
19	53	67	100	406	490	328	897	310	144	e50	29	39
20	54	66	97	322	447	328	853	279	132	e49	28	40
21	55	66	94	277	414	349	998	247	122	e47	28	41
22	56	66	92	248	437	421	e1600	234	117	e46	28	39
23	58	66	e90	230	466	488	e1400	218	110	e45	28	37
24	59	66	e88	217	453	523	e1200	211	103	e43	28	39
25	59	67	e86	207	437	535	1010	194	101	e42	28	39
26	59	68	e85	199	414	651	886	182	104	e41	24	39
27	61	67	e84	189	426	1300	822	170	106	e40	23	40
28	61	66	e84	183	506	1240	785	183	102	37	24	42
29	59	66	e83	223	602	1090	781	249	97	35	25	42
30	59	66	e83	441	---	1030	797	231	96	36	24	42
31	59	---	e83	480	---	1050	---	199	---	34	25	---
TOTAL	1607	1986	3085	9734	15266	21221	34560	12600	5686	1749	900	1017
MEAN	51.8	66.2	99.5	314	526	685	1152	406	190	56.4	29.0	33.9
MAX	61	70	198	1700	1260	1300	2100	787	318	88	35	42
MIN	42	63	66	80	200	328	781	170	96	34	23	24
AC-FT	3190	3940	6120	19310	30280	42090	68550	24990	11280	3470	1790	2020

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	73.6	241.6	565.6	647.7	854.0	1040	1336	858.0	315.5	75.0	38.8	45.4
MAX	245.6	855.2	1786	2088	2375	2672	3538	2519	949.4	188.9	76.1	84.6
(WY)	1960	1904	1974	1970	1982	1972	1904	1948	1984	1942	1976	1959
MIN	36.8	51.7	69.3	69.6	107.0	409.7	299.0	197.6	64.4	19.4	16.9	22.9
(WY)	1940	1940	1937	1937	1977	1977	1941	1968	1940	1940	1939	1935

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	299		501	
HIGHEST ANNUAL MEAN			934	1974
LOWEST ANNUAL MEAN			190	1977
HIGHEST DAILY MEAN	2100	Apr 4	13000	Jan 30 1965
LOWEST DAILY MEAN	23	Aug 27	10	Jul 13 1940
INSTANTANEOUS PEAK FLOW	a	Jan 14	16200	Feb 23 1986
INSTANTANEOUS PEAK STAGE (FEET)	6.89	Jan 14	10.16	Feb 23 1986
INSTANTANEOUS LOW FLOW	23	Aug 26-28	10	Jul 13-16 1940
10 PERCENTILE	856		1300	
50 PERCENTILE	97		221	
95 PERCENTILE	28		32	

a Discharge not determined

14022200 NORTH FORK MCKAY CREEK NEAR PILOT ROCK, OR

LOCATION.--Lat 45°30'24", long 118°36'57", in NE 1/4 SE 1/4 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 mi^2.

PERIOD OF RECORD.--May 1973 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,870 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation. Minor diversion upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.98	e.89	1.9	5.2	35	26	83	103	13	3.6	1.3	.69
2	e.98	e.94	2.1	5.3	e30	25	87	90	14	3.3	1.3	.65
3	e.98	e.94	2.2	e5.2	e25	28	111	81	14	3.2	1.3	.63
4	e.98	e.96	2.3	e5.0	22	26	118	82	14	3.0	1.2	.64
5	e.98	e.98	2.3	e5.0	20	38	102	78	16	3.0	1.2	.62
6	e.98	e.99	2.8	e5.0	19	44	90	69	16	2.9	1.1	.60
7	e.98	e1.0	2.6	5.0	19	39	83	59	20	2.8	1.1	.64
8	e.95	e1.0	2.5	5.0	36	38	70	50	24	2.5	1.1	.66
9	e.90	e1.0	4.4	5.3	159	71	60	42	24	2.8	.97	.65
10	e.94	e1.0	34	41	179	77	51	34	23	3.4	.94	.71
11	e.90	e1.1	13	44	130	79	44	27	21	3.3	.90	.72
12	e.90	e1.2	9.4	30	103	71	38	22	18	3.2	.87	.71
13	e.85	e1.3	8.1	26	84	61	33	21	16	3.1	.98	.67
14	e.88	e1.4	7.4	164	66	55	28	23	13	3.0	1.0	.63
15	e.84	e1.4	6.9	226	72	48	24	17	11	2.9	.90	.63
16	e.86	e1.4	6.5	107	60	41	21	16	10	2.7	.89	.63
17	e.86	e1.4	6.2	65	50	36	20	16	9.2	2.6	.87	.69
18	e.86	e1.4	6.2	46	42	32	20	17	7.8	2.4	.87	.87
19	e.86	e1.4	5.9	32	36	29	18	15	7.0	2.3	.82	1.1
20	e.86	e1.4	5.8	26	31	28	22	13	6.4	2.2	.79	1.1
21	e.90	e1.4	5.8	21	29	29	49	11	5.8	2.2	.79	1.1
22	e.90	e1.4	5.8	18	29	29	143	9.6	5.2	2.0	.74	1.0
23	e.90	e1.5	5.7	17	25	37	119	8.2	4.8	2.0	.67	.99
24	e.90	e1.6	e5.6	15	23	36	98	7.8	4.4	1.9	.67	.95
25	e.88	1.8	e5.5	14	21	37	81	6.7	4.5	1.7	.68	.95
26	e.88	1.7	e5.7	14	20	44	66	5.9	4.9	1.6	.65	.96
27	e.84	1.7	e6.0	14	21	59	54	5.5	4.3	1.5	.72	1.3
28	e.84	1.7	6.1	23	22	54	47	8.8	4.1	1.4	.68	1.2
29	e.89	1.6	6.4	41	25	58	75	14	4.2	1.4	.64	1.0
30	e.89	1.6	6.0	59	---	61	117	10	3.8	1.4	.65	.98
31	e.89	---	5.4	46	---	74	---	9.3	---	1.4	.71	---
TOTAL	28.03	39.10	196.5	1135.0	1433	1410	1972	971.8	343.4	76.7	28.00	24.67
MEAN	.90	1.30	6.34	36.6	49.4	45.5	65.7	31.3	11.4	2.47	.90	.82
MAX	.98	1.8	34	226	179	79	143	103	24	3.6	1.3	1.3
MIN	.84	.89	1.9	5.0	19	25	18	5.5	3.8	1.4	.64	.60
AC-FT	56	78	390	2250	2840	2800	3910	1930	681	152	56	49

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	2.99	19.9	58.6	78.5	104.0	112.4	92.7	34.7	12.3	1.98	1.04	1.30
MAX	8.50	72.1	196.9	170.1	212.6	223.3	199.6	61.7	60.4	4.00	1.59	2.74
(WY)	1983	1974	1974	1976	1982	1984	1974	1984	1984	1981	1976	1977
MIN	.904	1.30	3.11	5.01	4.39	45.5	20.2	5.43	2.09	.732	.716	.780
(WY)	1988	1988	1977	1977	1977	1988	1987	1987	1973	1985	1987	1987

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	20.9		43.2	
HIGHEST ANNUAL MEAN			72.5	1974
LOWEST ANNUAL MEAN			10.7	1977
HIGHEST DAILY MEAN	226	Jan 15	1070	Feb 23 1986
LOWEST DAILY MEAN	.60	Sep 6	.45	Aug 11 1979
INSTANTANEOUS PEAK FLOW	340	Jan 15	1980a	Jan 25 1975
INSTANTANEOUS PEAK STAGE (FEET)	3.08	Jan 15	8.48b	Jan 25 1975
INSTANTANEOUS LOW FLOW	.48	Sep 6	.22c	Jun 26 1985

a From rating curve extended above 150 ft^3/s on basis of slope-area measurement of peak flow
b From floodmark
c Result of temporary construction upstream

14022500 MCKAY CREEK NEAR PILOT ROCK, OR

LOCATION.--Lat 45°32'57", long 118°46'24", in NW 1/4 SE 1/4 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.--Records good except those for July 7 to Sept. 30, which are poor, and estimated daily discharges, which are fair. No regulation. Many small diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.78	1.9	7.3	e6.8	53	68	198	285	42	6.3	.48	.17
2	.82	1.9	9.9	e6.8	e45	66	217	245	46	6.1	.59	.29
3	.84	1.9	12	6.7	e38	78	259	220	e48	5.8	.57	.31
4	.84	2.1	12	e6.6	35	78	290	218	e49	5.8	.51	.30
5	.89	2.3	12	e6.4	31	94	265	212	e49	5.8	.49	.27
6	1.1	2.4	11	e6.1	29	118	237	194	e52	5.6	.47	.23
7	1.2	2.4	8.6	e6.0	29	110	224	177	e56	5.1	.46	.22
8	1.2	3.2	8.6	6.9	35	103	195	153	e68	4.0	.45	.22
9	1.3	4.1	8.5	e5.8	150	132	175	139	e76	3.1	.41	.21
10	1.3	4.1	31	32	322	146	154	117	e78	2.4	.41	.18
11	1.3	4.1	29	77	262	154	150	106	e71	2.2	.38	.22
12	1.4	4.1	22	57	216	151	143	88	e64	2.2	.38	.22
13	1.4	4.2	18	50	183	143	140	77	e58	2.1	.38	.22
14	1.4	4.2	16	229	149	129	130	76	e50	2.0	.40	.19
15	1.4	5.4	15	374	147	115	115	69	e35	1.8	.38	.17
16	1.4	7.1	14	204	136	107	100	62	e32	1.7	.38	.17
17	1.2	9.5	13	128	117	94	88	61	e30	1.7	.38	.21
18	1.4	9.7	12	91	103	84	90	60	25	1.6	.38	.27
19	1.4	9.6	12	66	87	78	80	58	22	1.5	.32	.32
20	1.3	9.6	11	51	77	76	84	49	20	1.4	.22	.35
21	1.5	9.1	11	42	71	83	113	45	18	1.4	.34	.38
22	1.8	8.6	10	36	e68	91	280	43	17	1.2	.36	.47
23	1.8	7.8	e8.6	32	e66	107	294	37	15	1.0	.37	.50
24	1.5	8.0	e8.2	30	62	105	253	35	11	.96	.41	.54
25	1.5	9.0	6.4	27	55	104	219	32	5.9	.81	.42	.57
26	1.7	8.9	e7.8	26	52	111	196	32	7.3	.72	.42	.57
27	1.8	8.1	e7.6	25	51	161	174	26	7.3	.61	.42	.67
28	1.6	7.7	e7.4	28	56	159	153	31	6.8	.53	.40	.67
29	1.5	7.5	6.9	43	62	175	199	48	6.5	.52	.36	.67
30	1.3	7.6	e7.2	73	---	178	310	43	6.6	.49	.38	.71
31	1.4	---	e7.0	67	---	186	---	36	---	.47	.41	---
TOTAL	41.27	176.1	371.0	1846.1	2787	3584	5525	3074	1072.4	76.91	12.73	10.49
MEAN	1.33	5.87	12.0	59.6	96.1	116	184	99.2	35.7	2.48	.41	.35
MAX	1.8	9.7	31	374	322	186	310	285	78	6.3	.59	.71
MIN	.78	1.9	6.4	5.8	29	66	80	26	5.9	.47	.22	.17
AC-FT	82	349	736	3660	5530	7110	10960	6100	2130	153	25	21

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	7.39	41.8	117.4	159.8	199.2	268.9	272.6	121.1	37.0	4.51	.736	1.89
MAX	97.2	256.7	459.9	716.1	555.6	757.1	782.2	500.0	179.4	45.0	3.74	28.0
(WY)	1942	1928	1974	1965	1986	1932	1958	1948	1984	1942	1975	1941
MIN	.000	.470	3.78	5.00	11.4	67.4	42.4	8.39	1.01	.000	.000	.000
(WY)	1930	1930	1977	1930	1977	1968	1941	1934	1931	1932	1930	1931

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	50.8		102	
HIGHEST ANNUAL MEAN			188	1948
LOWEST ANNUAL MEAN			26.9	1977
HIGHEST DAILY MEAN	374	Jan 15	5180	Jan 30 1965
LOWEST DAILY MEAN	.17	Sep 1	.00	Aug 4 1927
INSTANTANEOUS PEAK FLOW	483	Jan 15	7400	Jan 30 1965
INSTANTANEOUS PEAK STAGE (FEET)	4.01	Jan 15	8.40	Jan 30 1965
INSTANTANEOUS LOW FLOW	0.07	Sep 1	.00	at times
10 PERCENTILE	158		296	
50 PERCENTILE	10		26	
95 PERCENTILE	.27		.00	

UMATILLA RIVER BASIN

14023000 MCKAY RESERVOIR NEAR PENDLETON, OR

LOCATION.--Lat 45°36'28", long 118°47'30", in SE 1/4 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, 42,540 acre-ft June 14, 15, gage height, 1,291.73 ft; minimum contents, 2,300 acre-ft Sept. 30, gage height, 1,214.19 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, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1226.80	1226.67	1227.51	---	1241.50	1254.77	1268.56	1285.09	1290.17	1282.60	1253.26	1223.90
2	1226.79	1226.67	1227.56	---	1241.77	1255.06	1269.28	1285.71	1290.30	1281.81	1252.04	1223.30
3	1226.77	1226.72	1227.62	---	1242.05	1255.35	1270.11	1286.33	1290.36	1280.99	1250.95	1222.67
4	1226.77	1226.72	1227.67	---	1242.29	1255.69	1271.06	1286.90	1290.45	1280.21	1249.62	1222.05
5	1226.75	1226.72	1227.77	---	1242.53	1256.11	1271.91	1287.45	1290.56	1279.41	1248.36	1221.39
6	1226.73	1226.72	1227.85	---	1242.76	1256.55	1272.66	1287.93	1290.69	1278.98	1247.11	1220.72
7	1226.74	1226.72	1227.85	---	1242.96	1257.00	1273.32	1288.34	1290.80	1278.14	1245.86	1220.06
8	1226.74	1226.72	1227.89	---	1243.22	1257.38	1273.93	1288.72	1290.94	1277.45	1244.71	1219.40
9	1226.71	1226.72	1228.01	---	1243.98	1257.92	1274.49	1289.18	1291.12	1276.74	1243.39	1218.70
10	1226.68	1226.74	1228.07	---	1245.47	1258.48	1274.98	1289.42	1291.27	1276.01	1242.03	1218.01
11	1226.67	1226.75	1228.22	---	1246.65	1259.04	1275.47	1289.63	1291.41	1275.18	1240.72	1217.29
12	1226.66	1226.77	1228.33	---	1247.56	1259.65	1275.88	1289.81	1291.54	1274.36	---	1216.64
13	1226.65	1226.84	1228.43	---	1248.39	1260.18	1276.31	1289.90	1291.63	1273.52	1238.03	1215.77
14	1226.69	1226.84	1228.56	---	1249.03	1260.60	1276.66	1290.07	1291.73	1272.68	1236.70	1214.94
15	1226.69	1226.84	1228.63	---	1249.63	1261.00	1277.00	1290.21	1291.60	1271.82	1235.31	1214.34
16	1226.67	1226.83	1228.70	---	1250.23	1261.52	1277.35	1290.35	1291.32	1270.92	1233.98	1214.29
17	1226.67	1226.84	1228.79	---	1250.72	1261.86	1277.51	1290.47	1291.22	1270.01	1232.60	1214.29
18	1226.67	1226.86	1228.87	---	1251.19	1262.17	1277.90	1290.60	1291.08	1269.10	1231.39	1214.29
19	1226.65	1226.90	1228.93	---	1251.57	1262.46	1278.11	1290.71	1290.70	1268.22	1231.13	1214.29
20	1226.65	1226.96	1229.02	---	1251.91	1262.75	1278.40	1290.77	1290.21	1267.32	1230.61	1214.27
21	1226.65	1226.99	1229.09	---	1252.24	1263.04	1278.68	1290.77	1289.63	1266.35	1230.10	1214.27
22	1226.64	1227.04	1229.16	---	1252.55	1263.43	1279.70	1290.64	1288.96	1265.33	1229.59	1214.27
23	1226.64	1227.08	---	---	1252.87	1263.74	1280.29	1290.55	1288.27	1264.29	1229.07	1214.26
24	1226.64	1227.14	---	1239.14	1253.17	1264.13	1281.15	1290.47	1287.55	1263.23	1228.50	1214.26
25	1226.64	1227.17	---	1239.36	1253.44	1264.51	1281.72	1290.36	1286.85	1262.11	1227.93	1214.26
26	1226.64	1227.22	---	1239.58	1253.67	1264.88	1282.37	1290.17	1286.12	1260.90	1227.35	1214.24
27	1226.64	1227.27	---	1239.78	1253.92	1265.43	1282.59	1289.94	1285.44	1259.62	1226.80	1214.24
28	1226.64	1227.31	---	1239.99	1254.18	1266.01	1282.95	1289.84	1284.75	1258.43	1226.23	1214.22
29	1226.63	1227.36	---	1240.29	1254.46	1266.58	1283.52	1289.89	1284.03	1257.19	1225.62	1214.21
30	1226.64	1227.42	---	1240.72	---	1267.21	1284.37	1290.00	1283.32	1255.92	1225.04	1214.19
31	1226.64	---	---	1241.16	---	1267.87	---	1290.07	---	1254.58	1224.50	---
MAX	1226.80	1227.42	---	---	1254.46	1267.87	1284.37	1290.77	1291.73	1282.60	---	1223.90
MIN	1226.63	1226.67	---	---	1241.50	1254.77	1268.56	1285.09	1283.32	1254.58	---	1214.19
(†)	5900	6180	a7000	11540	17860	25510	36710	41190	35920	17920	5160	2300
(‡)	-50	+280	+820	+4540	+6320	+7650	+11200	+4480	-5270	-18000	-12760	-2860

CAL YR 1987 AC-FT‡ -17530
WTR YR 1988 AC-FT‡ -3650

† Contents, in acre-feet, at 2400, on last day of month.
‡ Change in contents, in acre-feet.
a Contents, in acre-feet, computed from gage reading furnished by U.S. Bureau of Reclamation.

14023500 MCKAY CREEK NEAR PENDLETON, OR

LOCATION.--Lat 45°36'34", long 118°47'55", in SE 1/4 NW 1/4 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.--Records good except for daily discharges below 1.0 ft^3/s, which are poor. Flow completely regulated since 1927 by McKay Reservoir (station 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.05	e.03	e.00	e.00	e.00	e.00	e.11	.22	.14	259	310	85
2	e.05	e.03	e.00	e.00	e.00	e.00	e.12	.41	.19	273	291	85
3	e.05	e.03	e.00	e.00	e.00	e.02	e.15	.41	.15	274	276	84
4	e.05	e.03	e.00	e.00	e.00	e.02	e.15	.78	.16	273	274	82
5	e.05	e.03	e.00	e.00	e.00	e.02	e.15	1.0	.16	256	271	82
6	e.05	e.03	e.00	e.00	e.00	e.02	e.15	1.0	.18	238	270	82
7	e.05	e.03	e.00	e.00	e.00	e.02	e.17	.65	.10	230	264	82
8	e.05	e.03	e.00	e.00	e.00	e.03	e.20	.93	.10	226	242	82
9	e.05	e.03	e.00	e.00	e.00	e.03	e.20	.79	.10	231	267	79
10	e.05	e.03	e.00	e.00	e.00	e.03	1.0	3.3	.10	246	266	78
11	e.03	e.03	e.00	e.00	e.00	e.03	.73	1.4	.16	243	264	78
12	e.03	e.03	e.00	e.00	e.00	e.03	.65	1.5	.37	248	261	77
13	e.03	e.03	e.00	e.00	e.00	e.03	.59	.21	.40	259	258	77
14	e.03	e.00	e.00	e.00	e.00	e.03	.73	.28	15	258	255	78
15	e.03	e.00	e.00	e.00	e.00	e.05	.70	.36	75	259	252	52
16	e.03	e.00	e.00	e.00	e.00	e.05	.72	.36	107	267	250	.66
17	e.03	e.00	e.00	e.00	e.00	e.05	.91	.30	54	266	246	.00
18	e.03	e.00	e.00	e.00	e.00	e.05	1.0	4.1	76	266	216	.00
19	e.03	e.00	e.00	e.00	e.00	e.05	.96	.50	157	263	42	.00
20	e.03	e.00	e.00	e.00	e.00	e.05	.95	26	202	259	82	.00
21	e.03	e.00	e.00	e.00	e.00	e.08	.87	61	232	272	82	.00
22	e.03	e.00	e.00	e.00	e.00	e.08	1.1	61	262	282	81	.00
23	e.03	e.00	e.00	e.00	e.00	e.08	.87	61	270	289	86	.00
24	e.03	e.00	e.00	e.00	e.00	e.08	.60	61	270	291	89	.00
25	e.03	e.00	e.00	e.00	e.00	e.08	.79	72	269	306	89	.00
26	e.03	e.00	e.00	e.00	e.00	e.08	1.1	99	268	329	89	.00
27	e.03	e.00	e.00	e.00	e.00	e.08	1.3	114	251	333	87	.00
28	e.03	e.00	e.00	e.00	e.00	e.08	2.5	68	244	319	87	.00
29	e.03	e.00	e.00	e.00	e.00	e.10	3.2	.20	254	317	87	.00
30	e.03	e.00	e.00	e.00	---	e.10	1.7	.15	258	321	85	.00
31	e.03	---	e.00	e.00	---	e.10	---	.17	---	326	85	---
TOTAL	1.13	0.39	0.00	0.00	0.00	1.55	24.37	642.02	3266.31	8479	5804	1183.66
MEAN	.036	.013	.00	.00	.00	.050	.81	20.7	109	274	187	39.5
MAX	.05	.03	.00	.00	.00	.10	3.2	114	270	333	310	85
MIN	.03	.00	.00	.00	.00	.00	.11	.15	.10	226	42	.00
AC-FT	2.2	.8	.0	.0	.0	3.1	48	1270	6480	16820	11510	2350

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	9.42	3.57	2.21	15.6	35.1	76.4	127.5	97.8	145.5	279.7	269.6	110.3
MAX	228.3	188.0	103.0	197.3	500.6	539.6	614.8	561.7	339.1	417.7	383.5	261.0
(WY)	1930	1929	1943	1943	1965	1972	1958	1948	1963	1961	1959	1948
MIN	.000	.000	.000	.000	.000	.000	.000	5.26	9.03	160.7	88.2	.000
(WY)	1931	1930	1930	1930	1930	1929	1930	1962	1941	1942	1973	1934

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	53.0		97.6	
HIGHEST ANNUAL MEAN			178	1984
LOWEST ANNUAL MEAN			42.4	1973
HIGHEST DAILY MEAN	333	Jul 27	2420	Apr 22 1958
LOWEST DAILY MEAN	.00	Nov 14	.00	Sep 24 1928
INSTANTANEOUS PEAK FLOW	342	Jul 26	3250a	Feb 10 1921
INSTANTANEOUS PEAK STAGE (FEET)	1.50	Jul 26	4.4b	Feb 10 1921
INSTANTANEOUS LOW FLOW	.00	at times	.00	at times
10 PERCENTILE	268		309	
50 PERCENTILE	.05		3.3	
95 PERCENTILE	.00		.00	

* Regulated period only (1928-88)
a From rating curve extended above 1,200 ft^3/s
b Site and datum then in use

14026000 UMATILLA RIVER AT YOAKUM, OR

LOCATION.--Lat 45°40'38", long 119°02'09", in SW 1/4 SW 1/4 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.--Records good except for estimated daily discharges, which are fair. Slight regulation by Furnish Reservoir, capacity 3,900 acre-ft, beginning in 1910 and continuing until 1934 when reservoir filled with silt. Flow regulated to some extent since 1927 by McKay Reservoir (station 14023000). Many diversions for irrigation upstream from station.

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	71	91	e94	427	754	1190	1010	283	342	324	e100
2	51	80	99	e94	e360	752	1360	935	299	355	318	e100
3	51	76	114	e93	e320	755	1890	886	300	347	292	e100
4	49	75	109	e93	e280	798	2320	867	301	347	288	e105
5	48	76	104	e93	e250	825	1940	812	315	341	286	e110
6	49	76	103	e93	e240	963	1580	777	361	324	284	e120
7	52	77	101	e93	e230	986	1470	733	373	302	284	e120
8	54	77	101	e100	e300	872	1300	680	397	284	262	e110
9	55	78	104	e110	e700	874	1110	651	414	280	284	106
10	58	79	132	e140	e1350	890	969	595	412	296	278	105
11	e58	79	208	e200	e1200	842	923	557	389	286	275	108
12	e57	83	171	154	e1100	780	997	530	358	289	274	110
13	57	89	149	225	e950	715	1150	539	e340	305	275	110
14	56	90	138	1220	e850	658	1310	535	e325	310	272	107
15	57	91	132	2200	e750	610	1290	471	e315	303	272	106
16	57	88	127	1070	e700	547	1200	426	e305	304	270	59
17	59	87	123	690	e600	499	1150	423	301	302	266	44
18	59	87	117	502	e550	453	1050	388	231	301	260	44
19	60	85	113	396	e510	423	921	361	313	294	113	45
20	61	85	110	346	477	422	864	328	341	286	123	46
21	63	84	106	320	446	464	965	350	359	291	115	46
22	64	84	106	308	481	534	1770	328	376	301	114	46
23	66	86	e105	283	533	601	1680	321	378	302	e110	41
24	66	90	e102	264	513	651	1430	318	369	314	e110	42
25	66	94	e100	247	471	644	1210	305	366	308	e110	42
26	66	93	e100	235	449	726	1020	310	374	334	e105	42
27	67	90	e97	226	471	1170	891	324	370	353	e100	45
28	68	88	e97	222	550	1320	803	340	351	343	e100	46
29	68	88	e97	244	642	1190	862	329	349	333	e100	46
30	68	87	e96	384	---	1130	1020	301	354	329	e100	44
31	68	---	e95	479	---	1120	---	274	---	338	e100	---
TOTAL	1830	2513	3547	11218	16700	23968	37635	16004	10319	9744	6464	2295
MEAN	59.0	83.8	114	362	576	773	1254	516	344	314	209	76.5
MAX	68	94	208	2200	1350	1320	2320	1010	414	355	324	120
MIN	48	71	91	93	230	422	803	274	231	280	100	41
AC-FT	3630	4980	7040	22250	33120	47540	74650	31740	20470	19330	12820	4550

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	96.1	267.5	611.7	752.3	989.7	1295	1645	1058	488.0	351.4	301.1	161.5
MAX	454.5	1539	2054	2284	3057	3654	3334	3445	1259	456.1	416.4	304.6
(WY)	1928	1928	1965	1965	1982	1972	1974	1948	1984	1960	1959	1974
MIN	44.3	58.8	75.7	82.0	114.9	413.4	358.1	255.6	243.6	211.1	123.4	22.2
(WY)	1940	1937	1937	1937	1977	1977	1941	1968	1968	1931	1973	1935

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	389		677	
HIGHEST ANNUAL MEAN			1237	1974
LOWEST ANNUAL MEAN			248	1977
HIGHEST DAILY MEAN	2320	Apr 4	14900	Jan 30 1965
LOWEST DAILY MEAN	41	Sep 23	16	Aug 27 1934
INSTANTANEOUS PEAK FLOW	3160	Jan 15		
INSTANTANEOUS PEAK STAGE (FEET)	5.14	Jan 15		
INSTANTANEOUS LOW FLOW	40	Sep 23, 24		
10 PERCENTILE	975		1630	
50 PERCENTILE	294		376	
95 PERCENTILE	52		59	

* Regulated period only (1928-88)

14032000 BUTTER CREEK NEAR PINE CITY, OR

LOCATION.--Lat 45°32'48", long 119°18'14", in SE 1/4 SW 1/4 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 September 1988 (discontinued). 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.--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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.2	9.3	11	e12	e17	31	37	49	24	8.9	3.1	3.1
2	5.9	9.4	12	e12	e17	33	54	46	27	7.8	3.3	3.1
3	6.6	9.4	13	e11	23	33	68	45	25	7.5	3.7	3.1
4	7.5	9.4	13	e11	21	35	67	47	25	7.8	3.7	3.1
5	7.3	9.4	13	12	20	40	57	52	26	8.1	3.5	3.1
6	7.0	9.6	12	13	19	45	54	59	28	8.1	3.6	3.1
7	7.0	9.9	12	13	19	40	53	56	28	7.8	3.7	3.3
8	7.0	9.9	12	13	19	37	49	49	30	7.1	3.7	3.4
9	7.0	9.9	12	13	28	39	44	48	30	6.4	3.6	3.7
10	7.0	9.9	15	42	38	39	42	44	29	6.0	3.4	3.7
11	7.0	9.9	17	27	40	36	39	39	27	5.7	3.3	3.9
12	7.4	11	14	18	38	33	39	36	24	6.0	3.4	4.0
13	7.5	12	13	17	35	32	39	32	23	6.2	3.3	4.0
14	7.5	11	12	51	32	31	40	32	21	6.2	3.6	4.0
15	7.5	11	13	34	31	29	39	31	19	6.2	3.7	4.0
16	7.7	11	13	31	33	30	38	28	17	6.0	3.5	4.1
17	7.9	10	13	24	29	28	36	29	16	5.6	3.6	4.1
18	8.0	10	12	20	29	28	37	29	15	5.3	3.7	4.5
19	7.9	10	12	18	27	27	34	28	15	5.1	3.7	5.0
20	8.3	11	12	18	26	29	34	25	13	5.0	3.6	5.6
21	8.4	11	11	18	25	30	41	23	12	4.6	3.7	5.5
22	8.4	10	12	17	25	31	52	21	12	4.2	3.5	5.4
23	8.4	11	12	16	25	32	62	20	11	4.0	3.4	5.1
24	8.6	11	e11	16	24	31	55	20	10	4.0	3.4	5.1
25	8.8	11	e10	16	24	29	52	19	10	4.0	3.1	5.1
26	8.4	11	e10	16	24	30	48	17	11	4.0	3.0	5.1
27	8.4	11	e10	16	25	38	44	16	10	3.8	3.1	5.3
28	8.7	11	e10	16	27	37	42	19	9.4	3.3	3.1	5.4
29	8.9	11	e11	19	29	39	41	27	8.7	3.4	3.1	5.4
30	8.9	11	e12	21	---	37	51	26	8.9	3.4	3.0	5.4
31	8.9	---	e12	e19	---	34	---	23	---	3.4	3.0	---
TOTAL	240.0	312.0	377	600	769	1043	1388	1035	565.0	174.9	106.1	128.7
MEAN	7.74	10.4	12.2	19.4	26.5	33.6	46.3	33.4	18.8	5.64	3.42	4.29
MAX	8.9	12	17	51	40	45	68	59	30	8.9	3.7	5.6
MIN	5.9	9.3	10	11	17	27	34	16	8.7	3.3	3.0	3.1
AC-FT	476	619	748	1190	1530	2070	2750	2050	1120	347	210	255

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	3.30	8.47	23.2	39.1	53.8	72.6	75.8	45.7	14.7	3.40	1.31	1.70
MAX	19.6	47.6	142.2	259.1	215.2	271.8	159.7	128.1	54.0	16.2	8.03	12.7
(WY)	1983	1974	1974	1965	1986	1983	1984	1948	1984	1984	1984	1984
MIN	.000	.000	.000	.000	2.96	7.77	4.47	.919	.000	.000	.000	.000
(WY)	1930	1930	1936	1937	1939	1935	1934	1934	1930	1930	1930	1930

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	18.4		28.5	
HIGHEST ANNUAL MEAN			69.6	1983
LOWEST ANNUAL MEAN			5.08	1934
HIGHEST DAILY MEAN	68	Apr 3	1930	Jan 30 1965
LOWEST DAILY MEAN	3.0	Aug 26	.00	Oct 1 1929
INSTANTANEOUS PEAK FLOW	98	Jan 10	3800a	Feb 21 1949
INSTANTANEOUS PEAK STAGE (FEET)	2.49	Jan 10	12.4b	Feb 21 1949
INSTANTANEOUS LOW FLOW	2.9c	Aug 25	.00	at times
10 PERCENTILE	41		84	
50 PERCENTILE	13		8.5	
95 PERCENTILE	3.3		.00	

a From rating curve extended above 440 ft^3/s on basis of computation of peak flow over dam
b From floodmark
c Also occurred on Aug. 26, 29-31

14033500 UMATILLA RIVER NEAR UMATILLA, OR

LOCATION.--Lat 45°54'11", long 119°19'33", in SW 1/4 NW 1/4 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.--Records good except those for Apr. 2 to May 25, which are fair, and estimated daily discharges, 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.66	82	65	e66	e500	e500	e800	674	69	1.2	1.4	2.8
2	.67	84	66	e66	e400	e550	930	636	98	1.2	2.6	1.8
3	.73	94	68	e66	e350	e550	1220	547	116	1.3	2.5	1.8
4	.80	108	67	e66	e300	e600	1930	496	125	1.3	2.5	1.7
5	9.2	109	65	e66	261	e650	1900	472	132	1.1	2.4	1.7
6	24	109	67	e66	199	e650	1370	417	150	1.3	2.5	1.7
7	26	109	65	e66	139	e650	1190	395	174	1.1	2.6	1.7
8	20	109	64	e68	111	e600	1080	319	247	1.2	2.5	1.6
9	14	111	63	e74	103	e600	823	270	254	1.1	2.5	1.5
10	14	111	68	e150	e300	602	636	225	248	1.0	2.4	1.4
11	10	116	66	e300	e1300	574	472	124	199	1.8	2.5	1.3
12	8.9	138	80	e400	e900	512	395	79	137	.95	2.6	1.2
13	8.2	145	93	346	e800	465	480	57	89	1.1	2.6	1.1
14	10	146	80	634	775	419	664	68	49	1.6	2.4	1.0
15	11	148	71	2600	632	352	772	88	33	2.2	2.6	.94
16	58	149	71	1550	641	281	772	51	34	1.4	2.6	16
17	59	108	70	931	614	207	693	64	19	1.8	2.4	56
18	63	76	67	645	513	143	655	103	28	1.1	2.2	66
19	62	71	75	524	413	95	513	117	17	1.3	2.0	68
20	60	70	77	391	324	55	432	106	1.3	1.1	2.1	67
21	62	68	78	340	275	49	488	70	.94	1.1	2.2	64
22	68	66	74	271	252	45	1160	70	1.4	.89	2.6	65
23	64	65	76	157	e300	138	1560	70	1.1	.86	2.3	59
24	61	64	74	129	e290	583	1390	56	.97	.79	2.2	58
25	60	63	e74	98	e280	410	1110	37	1.1	.95	1.7	55
26	61	62	e70	83	248	351	844	37	1.2	.98	1.9	54
27	62	63	e70	75	242	842	664	25	1.1	1.6	2.1	54
28	61	62	e68	71	e300	1140	547	3.7	1.1	2.2	1.9	55
29	65	62	e68	70	e350	e1000	513	49	1.1	1.6	1.8	56
30	80	63	e68	79	---	e900	609	65	1.2	1.7	1.9	58
31	83	---	e66	e300	---	e800	---	65	---	1.4	2.3	---
TOTAL	1187.16	2831	2194	10748	12112	15313	26612	5855.7	2230.51	40.22	70.8	874.24
MEAN	38.3	94.4	70.8	347	418	494	887	189	74.4	1.30	2.28	29.1
MAX	83	149	93	2600	1300	1140	1930	674	254	2.2	2.6	68
MIN	.66	62	63	66	103	45	395	3.7	.94	.79	1.4	.94
AC-FT	2350	5620	4350	21320	24020	30370	52780	11610	4420	80	140	1730

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	87.0	252.3	548.8	721.1	937.3	1105	1156	547.9	112.5	20.2	21.6	35.7
MAX	480.9	1302	1948	2366	2994	3678	3056	3362	805.1	148.9	68.0	123.7
(WY)	1928	1928	1974	1965	1982	1972	1958	1948	1950	1942	1953	1946
MIN	4.18	40.2	70.8	89.3	86.7	154.2	4.56	1.55	1.33	.815	1.04	.595
(WY)	1978	1932	1988	1930	1977	1977	1968	1977	1979	1985	1985	1987

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	219		459	
HIGHEST ANNUAL MEAN			981	1974
LOWEST ANNUAL MEAN			77.5	1977
HIGHEST DAILY MEAN	2600	Jan 15	15600	Jan 30 1965
LOWEST DAILY MEAN	.66	Oct 1	.00	Apr 20 1930
INSTANTANEOUS PEAK FLOW	3450	Jan 15	19800	Jan 30 1965
INSTANTANEOUS PEAK STAGE (FEET)	5.30	Jan 15	10.75	Jan 30 1965
INSTANTANEOUS LOW FLOW	.60	Oct 1, 3	.00	at times

* For regulated period only (1928-88)

14034470 WILLOW CREEK ABOVE WILLOW CREEK LAKE, NEAR HEPPNER, OR

LOCATION.--Lat 45°20'27", long 119°30'53", in NE 1/4 NE 1/4 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.

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.--Records good except for estimated daily discharges, 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.20	1.1	4.8	3.2	5.1	8.4	12	50	28	3.5	e.01	e.01
2	.20	1.5	6.3	2.6	5.2	8.7	15	48	27	3.6	e.01	e.01
3	.18	1.9	5.9	e3.6	7.3	9.4	22	45	27	4.2	e.01	e.01
4	.19	1.8	5.9	e3.4	7.4	9.7	23	44	27	4.5	e.01	e.01
5	.22	1.6	5.4	e3.4	6.7	12	21	44	28	4.6	e.01	e.01
6	.25	1.5	4.9	e3.4	6.7	12	20	42	29	5.0	e.01	e.01
7	.25	.81	4.7	e3.4	6.7	11	22	42	29	4.5	e.01	e.01
8	.29	.84	4.8	e3.4	7.6	11	19	42	32	2.6	e.01	e.01
9	.37	1.4	5.2	e3.6	9.8	14	17	43	34	2.3	e.01	e.01
10	.37	1.8	8.7	e40	11	13	15	37	35	2.3	e.01	e.01
11	.46	1.9	6.6	e20	10	12	15	33	32	2.5	e.01	e.01
12	.60	1.6	5.4	e10	10	11	14	30	30	2.9	e.01	e.01
13	.71	2.3	3.7	9.0	10	11	15	28	27	2.9	e.01	e.01
14	.79	2.5	3.4	15	9.6	10	13	27	23	2.3	e.01	e.01
15	.77	3.2	4.7	14	9.9	9.2	14	20	21	2.5	e.01	e.02
16	.86	2.9	4.4	11	10	9.6	14	17	18	2.2	e.01	e.04
17	.80	2.8	4.2	8.7	8.9	8.9	16	21	17	.64	e.01	e.04
18	.69	3.4	4.2	7.7	9.4	9.3	17	18	16	.81	e.01	e.06
19	.66	4.5	e4.8	7.0	8.4	9.0	14	19	14	.81	e.01	e.08
20	.77	4.3	e4.2	7.1	8.7	8.8	16	18	11	.54	e.01	e.16
21	.96	4.2	e5.0	7.0	8.2	6.7	25	15	9.6	.35	e.01	e.12
22	1.0	4.4	e5.0	6.8	7.1	6.1	55	13	9.9	e.26	e.01	e.12
23	1.0	5.0	e4.4	6.7	6.3	7.8	63	12	8.8	e.25	e.01	e.14
24	.91	4.1	e4.0	6.0	7.0	8.2	55	11	8.1	e.24	e.01	e.14
25	.89	4.0	e3.6	6.3	7.2	7.7	49	12	7.7	e.24	e.01	e.14
26	.96	4.1	e3.6	5.9	7.2	8.1	42	9.0	7.0	e.24	e.01	e.16
27	1.1	3.8	e3.6	5.9	7.2	11	37	7.9	3.9	.07	e.01	e.18
28	1.1	4.0	e3.6	8.2	7.4	9.7	36	13	4.4	.03	e.01	e.14
29	1.1	3.4	e3.8	9.4	8.0	11	40	24	4.3	.03	e.01	e.12
30	.96	3.1	e3.8	9.0	---	9.7	49	18	3.1	.03	e.01	e.12
31	1.1	---	e4.0	7.8	---	10	---	23	---	e.01	e.01	---
TOTAL	20.71	83.75	146.6	258.5	234.0	304.0	785	825.9	571.8	56.95	0.31	1.92
MEAN	.67	2.79	4.73	8.34	8.07	9.81	26.2	26.6	19.1	1.84	.010	.064
MAX	1.1	5.0	8.7	40	11	14	63	50	35	5.0	.01	.18
MIN	.18	.81	3.4	2.6	5.1	6.1	12	7.9	3.1	.01	.01	.01
AC-FT	41	166	291	513	464	603	1560	1640	1130	113	.6	3.8

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	4.80	10.4	16.9	22.8	42.1	67.9	57.6	46.9	19.1	4.23	1.36	2.09
MAX	7.10	21.2	29.8	53.1	95.5	108.7	116.1	102.3	55.4	10.6	3.44	6.13
(WY)	1983	1987	1984	1984	1986	1983	1984	1983	1984	1984	1984	1984
MIN	.668	2.79	4.73	8.34	8.07	9.81	26.2	17.1	5.22	.881	.010	.064
(WY)	1988	1988	1988	1988	1988	1988	1988	1986	1987	1985	1988	1988

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	8.99		24.6	
HIGHEST ANNUAL MEAN			44.3	1984
LOWEST ANNUAL MEAN			8.99	1988
HIGHEST DAILY MEAN	63	Apr 23	300	Feb 23 1986
LOWEST DAILY MEAN	.01a	Jul 31	.01a	Jul 31 1988
INSTANTANEOUS PEAK FLOW	68	Apr 23	445	Mar 4 1983
INSTANTANEOUS PEAK STAGE (FEET)	5.04	Apr 23	6.93	Mar 4 1983
INSTANTANEOUS LOW FLOW	.01a	Jul 31 to Sep 14	.01a	Jul 31 - Sep 14 1988

a Minimum instantaneous and daily discharge values may have been less during period of no gage-height record July 31 to Sept. 14, 1988.

14034480 BALM FORK NEAR HEPPNER, OR

LOCATION.--Lat 45°19'56", long 119°32'24", in NW 1/4 SE 1/4 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.

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.--Records good except those for Jan. 8-13, which are fair. Diversion for irrigation of about 170 acres upstream from station.

REVISIONS.--The maximum discharge for water year 1987 has been revised to 24 ft^3/s Mar. 15, 1987, gage height 3.81 ft. Revised daily discharges, in cubic feet per second, for periods in March 1987 are given below. These figures supersede those published in the report for 1987.

Mar. 13..... 13	Mar. 18..... 19	Mar. 23..... 15	Mar. 28..... 12
14..... 14	19..... 17	24..... 15	29..... 11
15..... 20	20..... 16	25..... 15	30..... 10
16..... 19	21..... 16	26..... 15	31..... 9.7
17..... 19	22..... 15	27..... 14	

	TOTAL	MEAN	MAX	MIN	AC-FT
March 1987	411.3	13.3	20	5.2	816
Wtr Yr 1987	1168.12	3.20	20	0.19	2320

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.39	.66	.99	.95	2.1	1.4	.85	2.7	2.0	.46	.15	.02
2	.40	.67	1.0	.94	2.2	.97	.86	3.0	1.6	.36	.15	.03
3	.40	.69	.99	.90	2.1	.55	.88	3.8	1.7	.35	.16	.03
4	.41	.73	1.0	.94	2.2	.57	.85	4.6	1.7	.45	.15	.02
5	.41	.75	1.0	.95	2.2	.67	.85	5.4	1.5	.36	.17	.02
6	.42	.77	.99	.95	2.2	.86	.85	4.7	1.6	.33	.14	.02
7	.41	.76	.96	.95	2.3	.92	.77	4.6	1.9	.31	.12	.01
8	.25	.78	1.0	.93	2.3	1.0	.74	5.0	1.8	.30	.11	.03
9	.25	.83	1.0	.90	2.3	1.1	.75	4.7	1.7	.30	.17	.05
10	.23	.82	1.3	12	2.3	.93	.78	4.2	1.9	.29	.09	.03
11	.22	.83	1.1	2.6	2.3	.95	.79	3.8	2.0	.31	.07	.03
12	.23	.91	1.2	2.0	2.3	.90	.81	3.4	2.1	.31	.07	.04
13	.22	.99	1.1	2.5	2.3	.93	.85	3.3	2.1	.30	.11	.06
14	.20	.94	1.1	4.6	2.2	.93	.76	3.2	1.9	.28	.09	.06
15	.21	.90	1.1	2.9	2.3	.90	.58	3.0	1.6	.27	.08	.08
16	.23	.90	1.1	2.4	2.3	.90	.54	2.9	1.4	.25	.10	.07
17	.24	.95	1.1	2.2	2.3	.91	.64	2.8	1.3	.44	.09	.07
18	.31	.94	1.1	2.1	2.4	.89	.64	2.2	1.2	.26	.06	.07
19	.58	.94	1.1	2.0	2.4	.90	.70	2.4	1.2	.24	.12	.09
20	.56	.96	1.1	2.0	2.4	.88	.91	2.5	1.1	.24	.07	.17
21	.57	.92	1.1	2.0	2.4	.72	1.1	2.3	.93	.24	.05	.16
22	.57	.96	1.2	1.9	2.2	.86	5.5	2.1	.84	.19	.04	.13
23	.58	.98	1.1	1.9	1.5	.65	8.5	2.1	.74	.21	.04	.10
24	.59	.99	1.1	1.8	1.3	.64	5.8	1.9	.65	.18	.04	.10
25	.58	.95	1.1	1.9	1.3	.63	5.0	1.6	.60	.16	.03	.07
26	.58	.95	1.1	1.8	1.3	.67	4.0	1.6	.55	.16	.02	.08
27	.60	.95	1.0	1.9	1.3	.64	2.3	1.4	.51	.16	.02	.07
28	.60	.95	1.0	2.0	1.3	.63	2.0	1.8	.47	.18	.03	.04
29	.60	.95	.96	2.0	1.3	.65	2.0	2.4	.46	.37	.03	.09
30	.62	.95	.95	2.1	---	.58	2.2	2.0	.46	.20	.03	.07
31	.63	---	.95	2.2	---	.82	---	1.9	---	.17	.02	---
TOTAL	13.09	26.27	32.89	67.21	59.3	25.55	53.80	93.3	39.51	8.63	2.62	1.91
MEAN	.42	.88	1.06	2.17	2.04	.82	1.79	3.01	1.32	.28	.085	.064
MAX	.63	.99	1.3	12	2.4	1.4	8.5	5.4	2.1	.46	.17	.17
MIN	.20	.66	.95	.90	1.3	.55	.54	1.4	.46	.16	.02	.01
AC-FT	26	52	65	133	118	51	107	185	78	17	5.2	3.8

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	.735	1.56	3.08	4.13	7.86	11.9	6.05	4.16	1.47	.500	.237	.390
MAX	1.53	3.01	4.60	7.81	17.1	19.9	16.4	10.4	3.82	1.10	.509	1.02
(WY)	1985	1987	1984	1984	1986	1984	1984	1983	1984	1984	1984	1984
MIN	.064	.549	1.06	2.17	2.04	.824	1.79	1.51	.816	.220	.011	.018
(WY)	1983	1983	1988	1988	1988	1988	1988	1982	1982	1985	1982	1982

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	1.16		3.52	
HIGHEST ANNUAL MEAN			6.15	1984
LOWEST ANNUAL MEAN			1.16	1988
HIGHEST DAILY MEAN	12	Jan 10	80	Feb 22 1986
LOWEST DAILY MEAN	.01	Sep 7	.01	Jul 29 1982
INSTANTANEOUS PEAK FLOW	25	Jan 10	190a	Mar 4 1983
INSTANTANEOUS PEAK STAGE (FEET)	3.87	Jan 10	4.90	Mar 4 1983
INSTANTANEOUS LOW FLOW	.01	Sep 4-7	.00	Sep 8, 9 1982

a From rating curve extended above 82 ft^3/s on basis of slope-area measurement of peak flow

14034490 WILLOW CREEK LAKE AT HEPPNER, OR

LOCATION.--Lat 45°20'50", long 119°32'37", in NW 1/4 SE 1/4 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 mi^2.

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, 6,200 acre-ft June 11-13, 1988, elevation, 2,076.16 ft; no usable contents at times.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 6,200 acre-ft June 11-13, elevation, 2,076.16 ft; minimum contents, 3,580 acre-ft Nov. 11, elevation, 2,056.88 ft.

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

2,050	2,840	2,060	3,950	2,070	5,280	2,080	6,820
2,055	3,370	2,065	4,590	2,075	6,020		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2058.51	2057.05	2057.46	2058.66	2062.13	2063.00	2064.15	2070.94	2076.09	2074.91	2071.00	2065.05
2	2058.45	2057.03	2057.55	2058.68	2062.17	2063.10	2064.25	2071.44	2076.07	2074.83	2070.81	2064.90
3	2058.38	2057.01	2057.60	2058.69	2062.25	2063.17	2064.43	2071.94	2076.06	2074.76	2070.62	2064.79
4	2058.32	2056.99	2057.63	2058.71	2062.35	2063.30	2064.65	2072.42	2076.00	2074.69	2070.44	2064.58
5	2058.25	2056.98	2057.75	2058.75	2062.42	2063.49	2064.75	2072.94	2075.98	2074.61	2070.25	2064.41
6	2058.20	2056.96	2057.73	2058.77	2062.51	2063.63	2064.74	2073.37	2075.98	2074.55	2070.03	2064.21
7	2058.14	2056.93	2057.79	2058.79	2062.58	2063.75	2064.74	2073.80	2075.98	2074.50	2069.85	2064.01
8	2058.07	2056.91	2057.78	2058.82	2062.70	2063.93	2064.71	2074.22	2075.99	2074.40	2069.67	2063.82
9	2058.00	2056.90	2057.83	2058.91	2062.81	2064.10	2064.67	2074.63	2076.06	2074.30	2069.52	2063.60
10	2057.93	2056.89	2057.96	2059.42	2062.89	2064.21	2064.58	2074.96	2076.12	2074.20	2069.32	2063.39
11	2057.87	2056.89	2058.04	2059.60	2062.95	2064.18	2064.54	2075.17	2076.16	2074.09	2069.12	2063.20
12	2057.81	2056.89	2058.11	2059.74	2062.96	2064.13	2064.56	2075.27	2076.15	2074.00	2068.92	2063.00
13	2057.76	2056.92	2058.14	2059.92	2062.97	2064.07	2064.65	2075.41	2076.12	2073.89	2068.74	2062.81
14	2057.70	2056.91	2058.17	2060.22	2062.98	2064.03	2064.70	2075.60	2076.02	2073.79	2068.55	2062.64
15	2057.65	2056.93	2058.25	2060.49	2062.99	2064.02	2064.76	2075.68	2075.99	2073.69	2068.34	2062.44
16	2057.61	2056.93	2058.29	2060.67	2063.01	2064.02	2064.79	2075.76	2075.98	2073.55	2068.16	2062.21
17	2057.55	2056.94	2058.31	---	2063.00	2064.01	2064.94	2075.86	2075.92	2073.42	2067.96	2062.03
18	2057.51	2056.96	2058.36	---	2063.01	2064.02	2065.10	2075.96	2075.86	2073.30	2067.77	2061.83
19	2057.45	2057.00	2058.39	---	2063.01	2064.02	2065.18	2076.00	2075.77	2073.19	2067.59	2061.66
20	2057.41	2057.04	2058.41	---	2063.00	2064.01	2065.32	2076.01	2075.68	2073.02	2067.40	2061.48
21	2057.38	2057.07	2058.44	---	2062.97	2063.96	2065.63	2075.99	2075.61	2072.90	2067.21	2061.30
22	2057.35	2057.12	2058.48	---	2062.94	2063.92	2066.36	2075.90	2075.58	2072.75	2067.01	2061.09
23	2057.31	2057.19	2058.51	---	2062.88	2063.88	2067.21	2075.82	2075.52	2072.61	2066.81	2060.90
24	2057.27	2057.22	2058.52	---	2062.85	2063.89	2067.90	2075.77	2075.48	2072.48	2066.64	2060.72
25	2057.24	2057.25	2058.52	2061.50	2062.84	2063.93	2068.45	2075.72	2075.43	2072.34	2066.44	2060.52
26	2057.20	2057.28	2058.54	2061.54	2062.86	2063.95	2068.90	2075.65	2075.35	2072.16	2066.24	2060.37
27	2057.17	2057.30	2058.56	2061.60	2062.87	2064.04	2069.25	2075.57	2075.27	2071.95	2066.05	2060.13
28	2057.15	2057.33	2058.58	2061.75	2062.90	2064.07	2069.53	2075.61	2075.14	2071.76	2065.85	2059.93
29	2057.12	2057.35	2058.59	2061.84	2062.93	2064.09	2069.87	2075.76	2075.07	2071.59	2065.65	2059.74
30	2057.10	2057.39	2058.62	2061.96	---	2064.10	2070.38	2075.81	2074.99	2071.41	2065.45	2059.55
31	2057.08	---	2058.64	2062.07	---	2064.11	---	2075.97	---	2071.20	2065.29	---
MAX	2058.51	2057.39	2058.64	---	2063.01	2064.21	2070.38	2076.01	2076.16	2074.91	2071.00	2065.05
MIN	2057.08	2056.89	2057.46	---	2062.13	2063.00	2064.15	2070.94	2074.99	2071.20	2065.29	2059.55
(†)	3600	3640	3790	4210	4320	4470	5330	6170	6020	5450	4620	3900
(‡)	-180	+40	+150	+420	+110	+150	+860	+840	-150	-570	-830	-720

CAL YR 1987 MEAN 2061.02 MAX 2064.23 MIN 2056.89 AC-FT‡ -390
WTR YR 1988 MEAN ------- MAX ------- MIN ------- AC-FT‡ +120

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

14034500 WILLOW CREEK AT HEPPNER, OR

LOCATION.--Lat 45°21'02", long 119°32'56", in SE 1/4 NW 1/4 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.

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.--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, 27 ft^3/s June 1-15, gage-height, 3.45 ft; minimum discharge, 2.9 ft^3/s Mar. 3-10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.4	3.3	3.3	3.6	3.4	5.0	10	12	20	9.5	13	13
2	3.4	3.2	3.6	3.6	3.4	3.0	10	13	27	9.5	13	13
3	3.4	3.2	3.6	3.6	3.6	3.0	11	12	27	9.5	13	13
4	3.4	3.3	3.6	3.4	3.6	2.9	11	12	27	9.5	13	13
5	3.4	3.3	3.6	3.4	3.6	2.9	15	12	27	9.5	13	13
6	3.4	3.3	3.6	3.5	3.6	2.9	23	13	27	9.5	13	13
7	3.4	3.3	3.6	3.5	3.5	2.9	23	13	27	9.3	13	13
8	3.4	3.3	3.6	3.6	3.4	2.9	22	13	27	9.2	13	13
9	3.4	3.3	3.6	3.6	3.4	2.9	23	13	27	9.1	13	13
10	3.4	3.2	3.6	3.8	7.7	7.9	23	13	27	9.0	13	13
11	3.4	3.1	3.6	3.6	9.9	15	20	19	27	10	13	13
12	3.4	3.1	3.6	3.6	9.9	15	14	22	27	11	13	12
13	3.2	3.1	3.6	3.6	9.9	15	12	17	27	11	13	12
14	3.3	3.1	3.6	4.1	9.9	13	12	14	27	11	13	12
15	3.2	3.1	3.6	3.7	9.9	11	11	14	22	11	13	12
16	3.1	3.1	3.6	3.6	9.9	10	11	14	19	10	14	12
17	3.1	3.4	4.0	3.6	10	9.9	11	14	19	10	14	12
18	3.1	3.1	3.6	3.6	9.9	9.9	11	14	19	10	14	12
19	3.5	3.1	3.6	3.6	9.9	9.9	11	16	19	10	14	13
20	3.1	3.1	3.6	3.6	9.9	9.9	11	18	16	10	14	12
21	3.1	3.1	3.6	3.6	9.9	9.9	11	18	14	10	14	12
22	3.1	3.2	3.6	3.7	10	9.9	11	18	11	10	14	12
23	3.1	3.1	3.6	3.7	10	9.9	11	16	11	10	14	12
24	3.1	3.2	3.6	3.7	9.9	7.7	11	14	11	10	14	12
25	3.2	3.1	3.6	3.7	8.3	6.5	11	14	11	10	14	12
26	3.3	3.1	3.6	3.7	7.5	6.5	12	14	11	12	14	12
27	3.3	3.1	3.6	3.7	7.5	6.5	13	14	11	13	14	12
28	3.3	3.1	3.6	3.6	7.5	9.1	12	14	10	13	13	12
29	3.3	3.1	3.6	3.6	7.3	10	12	14	9.5	13	13	12
30	3.3	3.1	3.6	3.6	---	10	12	14	9.5	13	13	12
31	3.3	---	3.6	3.6	---	10	---	14	---	13	13	---
TOTAL	101.8	95.2	111.7	112.4	216.2	250.9	411	452	594.0	324.6	415	372
MEAN	3.28	3.17	3.60	3.63	7.46	8.09	13.7	14.6	19.8	10.5	13.4	12.4
MAX	3.5	3.4	4.0	4.1	10	15	23	22	27	13	14	13
MIN	3.1	3.1	3.3	3.4	3.4	2.9	10	12	9.5	9.0	13	12
AC-FT	202	189	222	223	429	498	815	897	1180	644	823	738

CAL YR 1987 TOTAL 7137.4 MEAN 19.6 MAX 142 MIN 1.5 AC-FT 14160
WTR YR 1988 TOTAL 3456.8 MEAN 9.44 MAX 27 MIN 2.9 AC-FT 6860

14034800 RHEA CREEK NEAR HEPPNER, OR

LOCATION.--Lat 45°15'46", long 119°36'51", in NW 1/4 SW 1/4 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.--Records good except for estimated daily discharges, those above 50 ft^3/s, and those below 2.0 ft^3/s, which are fair. No regulation. Many diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	6.0	6.9	e5.0	e6.0	10	12	33	22	7.0	3.0	2.1
2	4.1	6.3	9.7	e4.5	e5.9	9.7	12	32	20	6.4	3.1	1.7
3	4.1	6.3	8.2	e4.5	e7.5	9.2	15	31	20	6.5	3.0	1.5
4	4.2	6.5	7.6	e4.5	e8.0	7.9	14	32	20	5.3	2.9	.99
5	4.2	6.7	7.4	e4.6	e7.9	11	14	33	21	6.0	2.9	.99
6	4.1	6.7	7.0	e4.7	8.6	13	14	32	22	5.9	3.0	.92
7	4.2	6.7	6.5	e4.8	9.1	12	14	31	23	5.0	2.9	.94
8	4.4	6.8	6.0	e5.6	12	12	13	30	25	4.5	2.9	1.0
9	4.6	7.3	6.8	8.2	17	15	13	30	28	4.7	2.8	1.0
10	4.8	7.5	13	21	20	13	12	27	27	4.5	2.8	1.2
11	5.1	7.2	9.1	12	20	12	9.0	25	26	4.8	2.8	1.3
12	5.1	8.1	7.4	9.6	19	12	7.8	23	24	5.0	2.8	1.3
13	5.2	8.7	5.5	9.2	17	12	9.5	24	22	4.6	2.9	1.2
14	5.5	8.4	5.8	33	15	13	10	22	20	4.2	3.2	1.2
15	5.8	7.2	6.8	32	16	12	10	21	19	4.3	3.2	1.3
16	4.8	7.2	6.7	18	15	11	10	20	17	3.8	3.2	1.4
17	4.8	6.4	6.7	13	13	11	17	23	17	3.6	3.3	1.4
18	5.1	5.4	6.3	11	13	11	19	20	15	3.4	3.3	1.4
19	5.3	5.3	6.1	9.8	12	11	16	17	14	3.2	3.2	1.7
20	5.5	5.4	5.2	9.5	12	10	18	16	12	2.9	3.2	4.0
21	5.7	5.1	7.0	8.8	12	10	34	15	9.0	2.9	3.3	3.1
22	5.9	5.2	6.5	8.3	11	11	159	14	8.7	2.9	3.1	3.3
23	5.9	5.8	e5.4	8.2	9.7	12	109	13	8.0	3.0	2.7	3.6
24	5.9	5.7	e4.7	7.2	10	11	72	12	7.4	3.0	2.3	3.7
25	5.9	5.9	e4.5	7.8	10	10	54	11	8.3	2.9	2.1	3.7
26	5.9	5.0	e4.4	7.6	10	11	42	10	8.4	3.1	1.8	3.9
27	6.3	5.6	4.5	7.7	9.9	13	36	10	8.0	3.1	1.8	4.6
28	6.3	5.7	4.6	11	10	11	33	17	6.9	3.0	1.9	3.6
29	6.3	4.3	e4.0	11	10	12	36	24	7.4	3.0	1.8	3.2
30	6.7	5.3	e4.4	11	---	12	36	19	7.1	3.0	1.7	3.2
31	7.0	---	e5.0	9.1	---	11	---	18	---	2.9	1.8	---
TOTAL	163.0	189.7	199.7	322.2	346.6	351.8	870.3	685	493.2	128.4	84.7	64.44
MEAN	5.26	6.32	6.44	10.4	12.0	11.3	29.0	22.1	16.4	4.14	2.73	2.15
MAX	7.0	8.7	13	33	20	15	159	33	28	7.0	3.3	4.6
MIN	4.1	4.3	4.0	4.5	5.9	7.9	7.8	10	6.9	2.9	1.7	.92
AC-FT	323	376	396	639	687	698	1730	1360	978	255	168	128

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	3.85	8.96	24.5	38.6	47.0	57.0	47.8	30.6	11.3	3.57	1.85	2.23
MAX	12.5	48.5	86.7	123.7	131.7	201.5	155.0	90.6	52.1	19.8	9.69	10.3
(WY)	1985	1974	1974	1974	1986	1983	1984	1983	1984	1984	1984	1984
MIN	.788	2.49	2.85	3.18	3.23	7.24	4.69	2.44	.661	.051	.000	.183
(WY)	1977	1977	1977	1977	1977	1968	1968	1968	1973	1973	1973	1967

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	10.7		23.0	
HIGHEST ANNUAL MEAN			59.0	1984
LOWEST ANNUAL MEAN			3.64	1968
HIGHEST DAILY MEAN	159	Apr 22	803	Jan 30 1965
LOWEST DAILY MEAN	.92	Sep 6	.00	Jul 25 1961
INSTANTANEOUS PEAK FLOW	189	Apr 22	1280a	Jun 10 1969
INSTANTANEOUS PEAK STAGE (FEET)	3.54	Apr 22	7.41	Dec 22 1964
INSTANTANEOUS LOW FLOW	.81	Sep 6	.00	at times

a From rating curve extended above 130 ft^3/s on basis of slope-area measurement at gage height 6.72 ft

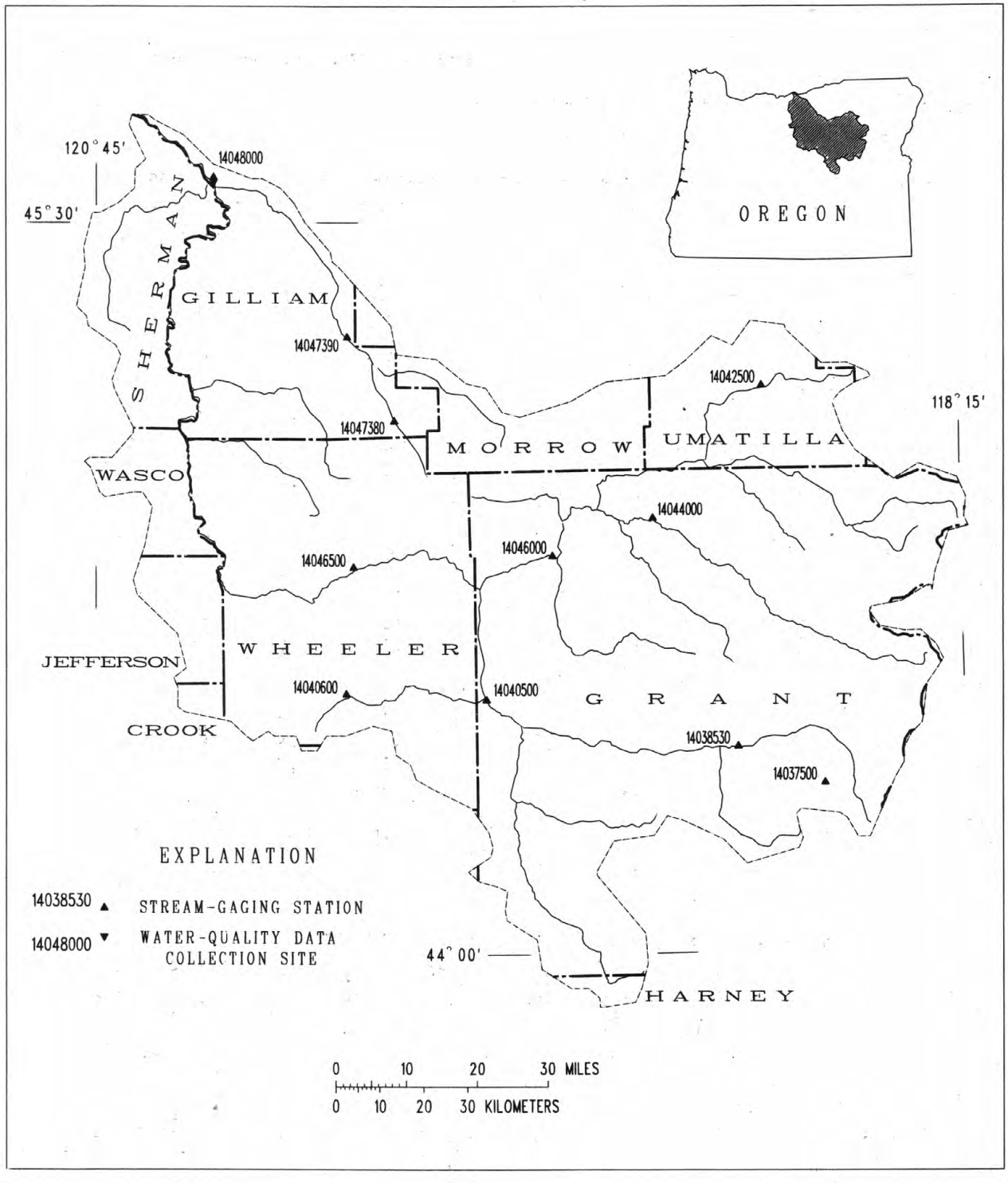

Figure 6.--Location of surface-water and water-quality stations in the John Day River basin.

14037500 STRAWBERRY CREEK ABOVE SLIDE CREEK, NEAR PRAIRIE CITY, OR

LOCATION.--Lat 44°20'30", long 118°39'20", in SE 1/4 NW 1/4 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.--Records fair. Flow affected by natural storage in Strawberry Lake. No diversion upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	1.5	2.0	2.4	e1.6	2.4	3.1	12	46	16	5.7	2.9
2	2.1	1.5	2.3	e1.5	e1.4	2.4	3.0	12	43	16	5.5	2.7
3	2.1	1.4	2.4	e1.5	e1.5	2.4	3.4	12	42	15	5.2	2.7
4	2.1	1.4	2.3	e1.6	e1.6	2.5	3.1	11	41	15	5.0	2.7
5	2.1	1.4	2.5	2.1	e1.6	2.5	3.2	11	43	14	5.0	2.7
6	2.1	1.4	2.6	2.1	1.8	2.7	3.4	11	42	14	5.0	2.7
7	2.0	1.4	2.4	2.1	1.7	2.6	3.9	11	39	13	4.6	2.7
8	1.9	1.4	2.4	2.1	1.7	2.4	3.9	11	32	13	4.5	2.7
9	1.9	1.5	2.5	2.1	1.8	2.5	3.6	10	28	12	4.2	2.7
10	1.9	1.4	2.9	2.2	1.8	2.4	3.6	11	26	12	4.2	2.7
11	1.9	1.5	2.7	2.1	1.7	2.4	4.0	12	25	11	4.2	2.7
12	1.9	1.8	2.7	2.1	1.7	2.4	4.9	15	23	11	4.2	2.6
13	1.9	2.5	e2.6	2.1	1.7	2.4	6.6	20	23	10	4.2	2.4
14	1.9	1.8	e2.6	2.3	1.7	2.4	8.4	20	23	10	4.0	2.4
15	1.9	1.7	2.7	2.2	1.9	2.4	11	20	23	10	4.0	2.3
16	1.9	1.9	2.7	2.1	1.7	2.4	12	23	23	9.8	3.9	2.2
17	1.8	1.7	2.7	e1.9	1.7	2.2	15	24	24	9.3	3.8	2.1
18	1.7	1.8	2.7	e1.9	1.7	2.2	15	23	24	9.1	3.5	2.1
19	1.7	1.8	2.6	e2.0	1.7	2.3	15	23	24	9.1	3.5	2.1
20	1.7	1.9	e2.3	e2.1	1.7	2.4	15	25	26	8.8	3.4	2.1
21	1.7	1.7	2.4	2.2	1.7	2.6	15	28	25	8.5	3.2	2.1
22	1.7	1.7	2.4	2.1	1.7	2.9	14	32	25	8.0	3.2	2.1
23	1.7	1.7	2.4	2.0	1.7	2.9	14	36	25	7.9	3.2	2.1
24	1.6	1.7	e2.3	1.9	1.7	2.9	14	40	24	7.7	3.2	2.1
25	1.4	1.7	e2.3	1.9	1.7	2.9	13	45	24	7.1	3.2	2.1
26	1.4	1.7	e2.3	1.9	1.8	3.1	12	54	22	6.8	3.2	2.1
27	1.4	1.7	e2.3	1.9	1.9	3.2	12	58	20	6.6	3.2	2.2
28	1.4	e1.7	2.4	1.9	2.0	3.2	12	58	19	6.3	3.1	2.1
29	1.4	e1.8	2.4	1.9	2.1	3.2	13	56	18	6.1	2.9	2.1
30	1.4	1.9	2.4	1.9	---	3.2	13	50	17	5.9	2.9	2.1
31	1.4	---	2.4	1.9	---	3.2	---	47	---	5.9	2.9	---
TOTAL	55.1	50.0	76.6	62.0	50.0	81.6	273.1	821	839	314.9	121.8	71.3
MEAN	1.78	1.67	2.47	2.00	1.72	2.63	9.10	26.5	28.0	10.2	3.93	2.38
MAX	2.1	2.5	2.9	2.4	2.1	3.2	15	58	46	16	5.7	2.9
MIN	1.4	1.4	2.0	1.5	1.4	2.2	3.0	10	17	5.9	2.9	2.1
AC-FT	109	99	152	123	99	162	542	1630	1660	625	242	141

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	3.30	3.59	4.12	3.63	3.50	3.80	9.40	37.1	53.4	21.6	7.35	4.01
MAX	7.03	10.6	14.4	8.40	12.9	16.0	22.5	71.4	130.2	65.3	15.4	7.07
(WY)	1963	1974	1938	1965	1963	1986	1934	1956	1974	1984	1984	1984
MIN	1.44	1.67	1.62	1.69	1.46	1.32	1.86	9.59	16.4	6.65	2.75	1.60
(WY)	1932	1988	1932	1931	1937	1955	1955	1977	1934	1977	1977	1931

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	7.70		12.9	
HIGHEST ANNUAL MEAN			22.2	1974
LOWEST ANNUAL MEAN			4.82	1977
HIGHEST DAILY MEAN	58	May 27	215	Jun 1 1983
LOWEST DAILY MEAN	1.4	Oct 25	1.2	Feb 25 1955
INSTANTANEOUS PEAK FLOW	60	May 28	354a	May 31 1983
INSTANTANEOUS PEAK STAGE (FEET)	1.73b	Jan 2	3.23c	May 24 1956
INSTANTANEOUS LOW FLOW	1.2	Nov 6, 7	1.0	Mar 20 1955

a From rating curve extended above 190 ft^3/s
b Ice jam
c Backwater from logs

14038530 JOHN DAY RIVER NEAR JOHN DAY, OR

LOCATION.--Lat 44°25'07", long 118°54'19", in SW 1/4 SE 1/4 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.--Records good. No regulation upstream. Many diversions upstream from station for irrigation.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	84	92	93	109	147	137	173	218	70	12	12
2	48	86	99	75	82	153	152	164	210	65	14	13
3	47	88	106	84	e83	154	202	181	176	59	16	13
4	46	89	100	e90	e95	151	200	175	177	58	16	13
5	48	88	98	e100	e100	173	181	185	287	58	14	15
6	51	87	102	e95	106	170	171	164	277	53	14	14
7	54	84	111	e90	110	157	179	150	302	49	14	12
8	57	85	102	99	160	149	170	150	235	44	14	13
9	58	85	112	99	226	169	160	164	214	43	14	13
10	59	86	168	134	262	155	154	133	184	43	13	13
11	61	85	138	138	189	142	149	117	150	43	13	14
12	65	99	119	110	170	135	157	120	124	41	12	15
13	72	104	108	106	163	133	162	151	112	41	13	16
14	74	100	101	192	141	130	177	154	95	43	15	17
15	74	96	109	210	146	125	190	141	79	45	17	16
16	73	94	107	138	136	120	196	154	88	42	17	17
17	78	90	105	116	125	118	235	172	93	39	19	20
18	77	88	100	102	126	115	263	147	129	36	19	23
19	77	90	100	110	120	114	225	127	95	34	18	25
20	75	91	93	118	119	115	250	108	85	30	17	36
21	76	89	104	116	119	121	256	91	82	24	15	42
22	76	87	101	105	121	125	246	88	75	22	15	50
23	76	88	96	106	117	130	210	101	66	17	16	46
24	77	88	e90	101	118	125	198	99	62	10	16	45
25	78	89	e90	101	119	124	205	93	68	12	15	46
26	81	84	e90	101	122	124	187	91	120	13	15	48
27	79	85	e95	103	126	138	174	100	111	13	14	69
28	74	85	e105	113	133	136	171	172	90	11	15	70
29	75	83	114	136	140	145	166	275	84	10	14	69
30	76	86	100	138	---	142	177	170	78	10	13	70
31	79	---	96	115	---	133	---	145	---	10	12	---
TOTAL	2086	2663	3251	3534	3883	4268	5700	4455	4166	1088	461	885
MEAN	67.3	88.8	105	114	134	138	190	144	139	35.1	14.9	29.5
MAX	81	104	168	210	262	173	263	275	302	70	19	70
MIN	45	83	90	75	82	114	137	88	62	10	12	12
AC-FT	4140	5280	6450	7010	7700	8470	11310	8840	8260	2160	914	1760

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	96.5	129.5	167.3	221.6	255.2	329.5	342.1	439.8	364.3	119.8	44.5	58.6
MAX	156.0	243.7	384.7	514.4	689.1	746.3	718.4	845.0	809.8	313.7	116.4	145.4
(WY)	1983	1974	1974	1971	1982	1984	1984	1984	1982	1982	1984	1984
MIN	67.3	87.5	92.1	88.1	88.8	88.6	88.1	108.3	73.8	25.9	10.4	25.2
(WY)	1988	1979	1977	1977	1977	1977	1977	1977	1977	1973	1973	1987

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	100		214	
HIGHEST ANNUAL MEAN			393	1984
LOWEST ANNUAL MEAN			73.5	1977
HIGHEST DAILY MEAN	302	Jun 7	2330	Jan 18 1971
LOWEST DAILY MEAN	10	Jul 24	3.5	Aug 27 1969
INSTANTANEOUS PEAK FLOW	380	Jan 14, May 29	5830	June 9 1969
INSTANTANEOUS PEAK STAGE (FEET)	4.60	Jan 14, May 29	10.80a	June 9 1969
INSTANTANEOUS LOW FLOW	10	Jul 23, 24, 28-31	3.5	Aug 26-28 1969
10 PERCENTILE	177		485	
50 PERCENTILE	96		139	
95 PERCENTILE	13		24	

a From floodmark

14040500 JOHN DAY RIVER AT PICTURE GORGE, NEAR DAYVILLE, OR

LOCATION.--Lat 44°31'15", long 119°37'30", in SW 1/4 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.--Records good except those for June 9 to Aug. 3, which are fair, and estimated daily discharges, which are poor. No regulation. Many diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	160	189	194	247	393	345	506	309	157	12	e15
2	54	165	202	187	e180	411	356	472	372	152	11	e15
3	53	170	222	182	e170	426	445	467	337	147	11	e15
4	56	172	223	e170	e190	431	507	472	317	141	9.6	e15
5	65	173	217	e200	e220	476	472	463	353	138	9.3	e17
6	71	174	213	e200	237	494	429	455	452	130	9.6	e15
7	75	174	220	204	235	468	422	426	480	114	e9.4	e15
8	82	171	220	206	250	428	430	387	465	95	e10	e15
9	89	172	222	211	363	438	390	408	439	86	e10	e15
10	88	175	266	223	504	442	363	387	415	81	e10	e15
11	90	174	316	279	518	406	339	328	374	74	e10	e16
12	104	182	269	247	458	379	318	294	332	67	e10	e18
13	107	198	241	234	435	364	320	293	298	65	e12	e19
14	110	202	212	243	380	358	345	309	267	61	e16	e20
15	115	198	222	401	366	345	374	292	235	58	e20	e20
16	127	192	227	348	365	334	367	282	219	51	e21	e24
17	126	189	220	280	326	321	492	301	208	49	e22	e28
18	139	186	212	238	313	315	722	301	207	48	e22	e32
19	148	185	208	236	299	308	599	284	205	47	e21	e38
20	155	188	191	227	290	311	596	267	187	46	e20	e43
21	161	186	200	249	293	323	876	245	171	41	e20	e50
22	165	184	213	231	309	340	838	221	168	33	e20	e60
23	163	184	203	232	306	344	787	208	163	27	e20	e54
24	160	186	187	219	302	339	697	193	155	26	e20	e50
25	159	189	182	215	302	331	670	184	148	24	e20	e50
26	161	184	197	220	311	329	625	182	148	22	e18	e70
27	164	179	201	225	331	344	596	181	168	19	e18	e80
28	164	183	218	228	350	359	554	189	172	15	e17	e80
29	160	180	223	243	376	366	514	344	171	13	e17	e80
30	160	174	205	295	---	375	518	338	165	12	e16	e80
31	160	---	204	274	---	355	---	297	---	13	e15	---
TOTAL	3681	5429	6745	7341	9226	11653	15306	9976	8100	2052	476.9	1064
MEAN	119	181	218	237	318	376	510	322	270	66.2	15.4	35.5
MAX	165	202	316	401	518	494	876	506	480	157	22	80
MIN	50	160	182	170	170	308	318	181	148	12	9.3	15
AC-FT	7300	10770	13380	14560	18300	23110	30360	19790	16070	4070	946	2110

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	145.5	232.7	372.4	473.2	665.0	964.3	1243	1055	604.2	137.0	47.7	64.0
MAX	336.9	639.9	1377	1706	2493	3083	3310	2955	1899	577.4	227.9	319.5
(WY)	1985	1985	1965	1965	1982	1983	1952	1948	1948	1982	1984	1984
MIN	14.7	74.7	104.6	97.1	136.1	196.2	146.2	79.0	78.3	7.21	1.57	2.55
(WY)	1936	1937	1937	1937	1929	1977	1934	1934	1931	1936	1936	1934

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	221		499	
HIGHEST ANNUAL MEAN			1207	1984
LOWEST ANNUAL MEAN			125	1934
HIGHEST DAILY MEAN	876	Apr 21	6940	Dec 23 1964
LOWEST DAILY MEAN	9.3	Aug 5	1.0	Aug 6 1930
INSTANTANEOUS PEAK FLOW	939	Apr 21	8170	Dec 22 1964
INSTANTANEOUS PEAK STAGE (FEET)	6.11	Apr 21	14.97	Dec 22 1964
INSTANTANEOUS LOW FLOW	9.3	Aug 5	1.0a	Sep 9 1966

a Also occurred for several days in August and September 1930, Aug. 8, 9, 1936

14040600 MOUNTAIN CREEK NEAR MITCHELL, OR

LOCATION.--Lat 44°32'06", long 120°01'45", in NW 1/4 NE 1/4 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 current year. May 1966 to September 1985 available from Oregon Water Resources Department.

GAGE.--Water-stage recorder.

REMARKS.--Records fair except for estimated daily discharges and those below 1.0 ft^3/s, which are poor. Several diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.79	2.5	e3.0	e1.8	e2.4	11	4.5	15	6.6	.86	.02	.04
2	.73	2.7	e3.7	e1.6	e2.1	10	5.3	13	5.5	.77	.02	.04
3	.68	2.5	e4.8	e1.7	e2.1	11	9.1	14	7.5	.81	.03	.04
4	.74	2.3	e4.0	e1.9	e2.1	11	8.2	14	8.0	.89	.03	.04
5	.73	2.2	e3.5	e2.2	e2.4	13	7.5	16	11	.95	.03	.06
6	.74	2.2	4.1	e2.2	e3.0	11	6.8	13	9.6	.99	.04	.06
7	.79	2.2	3.2	e2.3	e4.5	9.4	7.9	12	7.3	.82	.03	.06
8	.79	2.2	2.6	e2.5	e10	7.3	6.9	12	6.8	.69	.03	.06
9	.79	2.6	6.6	e3.0	e8.0	9.4	6.7	12	6.1	.60	.03	.05
10	.79	2.5	e7.5	e5.5	e6.8	8.5	6.6	10	5.4	.57	.02	.05
11	.83	2.4	e4.5	e3.5	e6.0	7.1	6.6	8.7	4.6	.50	.01	.05
12	.90	2.8	e3.0	e2.8	e5.5	7.4	7.1	7.5	4.0	.61	.02	.06
13	.93	3.5	e2.5	e3.0	e4.8	6.8	7.7	7.1	3.4	.63	.11	.08
14	.92	3.0	e2.3	e4.0	e4.8	5.8	8.0	8.2	2.8	.61	.19	.10
15	.93	e2.4	e2.5	e7.0	e4.4	5.0	7.9	7.3	2.7	.58	.19	.10
16	.93	e2.1	e2.6	e3.0	e4.3	5.2	8.2	6.9	2.7	.48	.16	.10
17	.93	e2.0	e2.6	e2.5	e4.3	5.1	22	7.7	4.8	.39	.13	.10
18	.93	e2.0	e2.5	e2.2	e4.3	5.1	15	6.9	2.9	.33	.11	.10
19	.93	e2.3	e2.3	e2.5	e4.5	5.8	13	6.0	2.4	.25	.04	.16
20	.92	2.5	e2.2	e2.6	e4.8	6.2	25	5.6	2.1	.19	.02	.20
21	.99	2.5	e2.5	e2.7	5.0	7.1	36	5.1	1.6	.12	.03	.19
22	1.0	2.3	e2.7	e2.6	5.0	6.7	37	4.7	1.6	.10	.04	.19
23	1.1	e2.4	e2.4	e2.5	e5.1	7.8	25	3.7	1.5	.09	.04	.17
24	1.1	2.5	e2.2	e2.5	e5.2	6.8	21	2.0	1.3	.09	.04	.15
25	1.1	e2.1	e2.0	e2.5	e5.2	6.6	20	2.1	1.2	.07	.03	.13
26	1.1	e1.9	e1.9	e2.5	5.3	7.5	17	2.0	1.4	.08	.04	.13
27	1.0	e1.9	e2.0	e2.8	6.5	8.6	15	2.1	1.2	.07	.04	.18
28	1.2	e1.9	e2.0	e3.2	7.5	6.9	13	5.2	1.1	.06	.05	.18
29	1.9	e2.0	e2.2	e3.2	10	7.4	19	5.9	1.2	.03	.03	.14
30	2.0	e2.3	e2.5	e3.0	---	6.7	17	3.7	1.1	.03	.02	.16
31	2.2	---	e2.5	e2.7	---	4.7	---	3.5	---	.03	.03	---
TOTAL	31.41	70.7	94.9	88.0	145.9	237.9	410.0	242.9	119.4	13.29	1.65	3.17
MEAN	1.01	2.36	3.06	2.84	5.03	7.67	13.7	7.84	3.98	.43	.053	.11
MAX	2.2	3.5	7.5	7.0	10	13	37	16	11	.99	.19	.20
MIN	.68	1.9	1.9	1.6	2.1	4.7	4.5	2.0	1.1	.03	.01	.04
AC-FT	62	140	188	175	289	472	813	482	237	26	3.3	6.3

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	2.77	7.43	5.98	7.99	13.3	27.9	36.0	17.4	5.69	2.15	.831	.924
MAX	5.83	20.5	11.4	13.0	24.8	42.1	66.8	24.9	8.88	3.57	1.33	1.59
(WY)	1985	1985	1985	1987	1986	1987	1985	1985	1985	1987	1985	1985
MIN	1.01	2.36	2.80	2.84	5.03	7.67	13.7	7.84	3.98	.429	.053	.106
(WY)	1988	1988	1987	1988	1988	1988	1988	1988	1988	1988	1988	1988

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	3.99		11.4	
HIGHEST ANNUAL MEAN			14.8	1985
LOWEST ANNUAL MEAN			3.99	1988
HIGHEST DAILY MEAN	37	Apr 22	124	Mar 13 1987
LOWEST DAILY MEAN	.01	Aug 11	.01	Aug 11 1988
INSTANTANEOUS PEAK FLOW	117	Feb 8	538	Jun 9 1969
INSTANTANEOUS PEAK STAGE (FEET)	2.23a		3.57b	Feb 14 1981
INSTANTANEOUS LOW FLOW	0.01	Aug 10-12, 30	.00	at times
10 PERCENTILE	8.7		31	
50 PERCENTILE	2.3		4.2	
95 PERCENTILE	.03		.22	

a Backwater from ice, occurred sometime between Dec. 28 and Jan. 27; gage height from inside high-water mark
b Backwater from ice

14042500 CAMAS CREEK NEAR UKIAH, OR

LOCATION.--Lat 45°09'25", long 118°49'10", in SE 1/4 SE 1/4 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.--Records good except for estimated daily discharges, which are poor. No regulation. Diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.9	5.1	17	e9.2	e9.0	138	202	169	51	17	5.0	3.2
2	3.7	7.2	9.2	e7.4	e6.6	141	346	155	54	16	5.2	2.9
3	3.8	6.2	9.8	e7.0	e7.1	182	494	154	50	15	5.4	2.9
4	3.8	5.6	9.2	e8.4	e9.0	171	378	154	50	15	4.6	2.8
5	3.8	5.3	8.6	e11	e9.0	297	285	149	53	14	4.7	2.9
6	3.8	4.9	8.6	e10	e20	253	273	144	56	14	4.8	3.2
7	3.8	5.0	8.7	e9.2	e66	192	289	131	70	12	4.5	2.9
8	3.8	5.0	6.9	e8.6	141	161	245	124	74	12	4.2	3.0
9	3.8	5.5	8.2	e11	209	187	210	124	75	11	4.2	3.0
10	3.8	5.5	14	e14	283	164	202	112	72	11	4.4	2.9
11	4.0	5.3	11	e13	228	145	219	109	66	11	3.8	3.2
12	4.1	6.7	9.5	e9.8	197	128	251	115	60	11	3.6	3.3
13	4.0	7.9	e7.6	e9.4	132	116	285	128	54	11	5.7	3.4
14	4.0	8.4	e7.5	e13	66	112	313	124	48	10	7.7	3.4
15	4.1	6.8	e8.0	e12	77	100	292	98	43	9.9	5.9	3.3
16	4.1	6.2	e8.4	e10	69	91	281	86	40	8.8	5.1	3.3
17	4.2	11	e9.0	e9.4	62	82	287	86	39	8.3	4.9	3.3
18	4.3	9.9	e10	e9.0	52	81	268	78	35	7.8	4.4	3.6
19	4.3	7.0	e9.7	e9.2	47	89	230	67	31	7.7	4.1	4.7
20	4.2	6.3	e10	e10	46	108	213	55	28	7.3	3.9	6.3
21	4.5	5.6	e11	e11	52	129	226	49	24	6.4	3.8	5.5
22	4.3	5.4	e12	e10	61	131	281	45	22	6.3	3.7	4.9
23	4.3	5.6	e11	e9.7	58	164	250	44	21	6.1	3.6	4.6
24	4.4	5.6	e9.5	e9.5	56	156	215	43	19	6.1	3.5	4.3
25	4.4	5.6	e7.8	e10	59	146	190	38	20	5.9	3.2	4.3
26	4.4	8.9	e8.0	e11	69	173	163	34	26	5.7	3.1	4.2
27	4.4	17	e8.4	e11	90	218	145	33	21	5.8	3.2	5.3
28	4.4	15	e7.2	e13	107	185	138	43	19	5.2	3.6	5.8
29	4.4	12	e9.6	e15	125	168	163	53	25	5.2	3.2	5.1
30	4.4	17	e10	e14	---	150	179	41	21	5.1	3.0	4.8
31	4.6	---	e10	e12	---	140	---	36	---	5.0	3.2	---
TOTAL	127.8	228.5	295.4	326.8	2412.7	4698	7513	2821	1267	292.6	133.2	116.3
MEAN	4.12	7.62	9.53	10.5	83.2	152	250	91.0	42.2	9.44	4.30	3.88
MAX	4.6	17	17	15	283	297	494	169	75	17	7.7	6.3
MIN	3.7	4.9	6.9	7.0	6.6	81	138	33	19	5.0	3.0	2.8
AC-FT	253	453	586	648	4790	9320	14900	5600	2510	580	264	231

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	9.08	28.3	64.7	75.3	114.0	189.0	334.9	235.7	78.8	15.2	5.12	5.43
MAX	39.0	140.3	263.5	338.5	384.3	575.0	658.4	925.3	314.2	77.0	10.9	14.3
(WY)	1942	1974	1956	1965	1916	1972	1920	1917	1917	1923	1976	1941
MIN	3.40	4.35	4.66	3.48	5.00	5.00	52.7	18.6	4.87	3.06	2.18	2.42
(WY)	1975	1917	1955	1915	1915	1917	1968	1934	1940	1932	1973	1967

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	55.3		96.1	
HIGHEST ANNUAL MEAN			171	1948
LOWEST ANNUAL MEAN			36.3	1968
HIGHEST DAILY MEAN	494	Apr 3	3130	Jan 30 1965
LOWEST DAILY MEAN	2.8	Sep 4	1.0	Jun 24 1940
INSTANTANEOUS PEAK FLOW	533	Apr 3	3840	Jan 30 1965
INSTANTANEOUS PEAK STAGE (FEET)	2.42	Apr 3	5.92a	Jan 24 1982
INSTANTANEOUS LOW FLOW	not determined		1.0b	Aug 9 1932

a Ice jam
b Also occurred from June 24 to July 2, 1940

14044000 MIDDLE FORK JOHN DAY RIVER AT RITTER, OR

LOCATION.--Lat 44°53'20", long 119°08'25", in SW 1/4 NW 1/4 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.--Records good. No regulation. Diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	34	49	e50	58	233	311	346	261	74	17	14
2	25	37	68	e42	55	256	360	314	302	68	16	15
3	25	39	81	e38	50	280	474	308	262	65	17	14
4	24	38	73	e35	52	272	503	315	239	62	17	15
5	25	37	64	e37	56	327	439	304	237	59	17	15
6	25	36	66	e40	54	349	401	305	238	58	15	15
7	26	36	69	e44	56	287	415	282	257	55	16	15
8	26	36	60	e48	75	244	391	269	256	52	15	17
9	25	37	50	54	132	280	345	301	232	48	15	16
10	24	40	74	59	203	278	319	288	208	46	15	17
11	24	39	109	63	164	231	324	301	187	42	15	15
12	25	43	72	60	154	192	362	363	170	42	15	18
13	25	61	46	60	152	179	451	471	157	40	17	19
14	27	69	25	62	120	176	531	452	146	38	19	19
15	28	55	24	71	125	156	556	400	136	37	20	19
16	29	46	39	73	116	145	594	427	133	36	20	19
17	29	43	50	73	94	135	600	396	128	35	19	18
18	30	34	47	69	96	138	579	348	121	33	19	19
19	31	40	37	58	91	140	499	313	112	31	18	22
20	31	43	25	54	89	158	478	302	102	30	16	25
21	32	42	35	53	96	190	578	301	96	28	16	26
22	32	43	59	59	117	211	561	319	91	25	16	25
23	32	42	50	53	116	215	507	332	82	23	16	24
24	32	43	35	59	116	216	452	313	77	23	16	23
25	32	43	18	50	117	208	418	277	74	23	15	22
26	32	36	17	52	129	231	378	267	95	22	15	23
27	32	31	e22	52	149	305	347	256	104	22	14	25
28	32	42	e30	55	175	299	366	265	90	21	15	33
29	32	28	e40	58	208	317	382	341	87	19	15	31
30	33	27	e50	66	---	303	386	258	80	19	15	28
31	34	---	e62	62	---	260	---	228	---	18	15	---
TOTAL	885	1220	1546	1709	3215	7211	13307	9962	4760	1194	506	606
MEAN	28.5	40.7	49.9	55.1	111	233	444	321	159	38.5	16.3	20.2
MAX	34	69	109	73	208	349	600	471	302	74	20	33
MIN	24	27	17	35	50	135	311	228	74	18	14	14
AC-FT	1760	2420	3070	3390	6380	14300	26390	19760	9440	2370	1000	1200

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	44.3	73.1	126.9	159.2	241.6	452.9	748.5	699.3	359.1	80.2	30.4	31.2
MAX	99.5	231.4	482.2	579.9	706.6	1214	1425	1457	1127	285.3	98.4	108.0
(WY)	1983	1974	1956	1965	1958	1972	1984	1984	1984	1984	1984	1984
MIN	17.4	20.2	29.0	23.4	31.3	69.8	174.9	79.2	80.3	17.4	3.75	10.0
(WY)	1937	1937	1933	1937	1937	1977	1968	1934	1931	1973	1966	1935

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	126		253	
HIGHEST ANNUAL MEAN			538	1984
LOWEST ANNUAL MEAN			85.1	1977
HIGHEST DAILY MEAN	600	Apr 17	4360	Jan 30 1965
LOWEST DAILY MEAN	14	Aug 27	.90	Aug 20 1966
INSTANTANEOUS PEAK FLOW	621	Apr 16	4730a	Jan 30 1965
INSTANTANEOUS PEAK STAGE (FEET)	4.30	Apr 16	9.13b	Feb 1 1963
INSTANTANEOUS LOW FLOW	11c	Dec 15	.90	Aug 19, 20 1966

a From rating curve extended above 2,200 ft^3/s
b Ice jam
c Result of freezeup

14046000 NORTH FORK JOHN DAY RIVER AT MONUMENT, OR

LOCATION.--Lat 44°48'50", long 119°25'50", in SE 1/4 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.--No estimated daily discharges. Records good except those below 80 ft^3/s, which are fair. Very slight regulation by small reservoirs upstream. Many small diversions for irrigation upstream from station. National Weather Service gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	89	116	105	207	286	1190	1330	2130	1140	411	86	60
2	90	118	199	187	220	1200	1840	1900	1410	365	82	59
3	90	124	241	183	217	1350	3060	1800	1300	341	81	59
4	89	132	250	149	267	1400	3120	1810	1210	321	81	58
5	87	135	236	170	275	1730	2510	1760	1200	311	82	57
6	87	129	235	177	281	1860	2260	1750	1280	298	82	58
7	88	128	234	185	286	1600	2380	1650	1320	283	77	58
8	89	128	244	188	333	1380	2220	1550	1390	257	75	60
9	89	130	219	192	685	1460	1960	1660	1310	237	75	62
10	89	132	251	229	1240	1450	1820	1600	1220	220	73	63
11	87	135	355	284	1160	1230	1860	1590	1120	204	73	64
12	89	142	311	279	1010	1100	2130	1760	1030	193	71	66
13	91	160	205	272	963	974	2620	2160	955	190	75	66
14	92	209	145	321	800	941	3230	2240	901	187	89	69
15	93	245	129	585	773	864	3460	2000	843	180	102	70
16	95	201	138	590	793	805	3730	1940	811	172	105	69
17	98	165	186	431	657	725	3770	1920	805	164	96	66
18	103	144	187	351	597	706	3660	1720	776	156	86	67
19	104	118	164	322	559	728	3110	1570	710	148	82	72
20	106	124	108	287	527	822	2820	1450	635	140	78	85
21	107	147	114	305	552	977	3380	1380	579	133	74	97
22	106	153	199	293	623	1100	3960	1400	550	127	72	109
23	110	159	170	279	612	1100	3530	1450	494	118	70	103
24	112	154	120	261	582	1150	2970	1410	454	113	69	97
25	111	158	105	254	591	1080	2610	1310	422	109	68	92
26	111	144	75	249	629	1100	2310	1210	453	106	66	89
27	111	125	77	247	735	1390	2060	1170	563	102	63	88
28	112	96	87	265	882	1420	2040	1150	516	97	62	92
29	112	122	137	294	1050	1460	2190	1540	467	94	60	109
30	113	86	192	342	---	1360	2400	1300	456	91	60	122
31	114	---	219	350	---	1210	---	1100	---	89	61	---
TOTAL	3064	4259	5637	8728	18185	36862	80340	50380	26320	5957	2376	2286
MEAN	98.8	142	182	282	627	1189	2678	1625	877	192	76.6	76.2
MAX	114	245	355	590	1240	1860	3960	2240	1410	411	105	122
MIN	87	86	75	149	217	706	1330	1100	422	89	60	57
AC-FT	6080	8450	11180	17310	36070	73120	159400	99930	52210	11820	4710	4530

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	164.0	322.4	726.5	939.3	1419	2341	3619	3580	1726	388.1	130.0	120.9
MAX	420.0	1621	3374	4126	4970	6456	6695	8794	5227	1211	344.7	423.2
(WY)	1983	1974	1965	1965	1982	1983	1943	1948	1948	1982	1984	1984
MIN	58.5	64.5	96.6	75.8	133.9	345.4	822.3	378.3	325.8	97.4	36.6	45.2
(WY)	1937	1937	1937	1937	1929	1977	1968	1934	1931	1973	1931	1934

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	668		1283	
HIGHEST ANNUAL MEAN			2608	1984
LOWEST ANNUAL MEAN			441	1977
HIGHEST DAILY MEAN	3960	Apr 22	31900	Jan 30 1965
LOWEST DAILY MEAN	57	Sep 5	17	Dec 12 1932
INSTANTANEOUS PEAK FLOW	4250	Apr 22	33400a	Jan 30 1965
INSTANTANEOUS PEAK STAGE (FEET)	6.97	Apr 22	18.45	Jan 30 1965
INSTANTANEOUS LOW FLOW	53b	Aug 4	6c	

a From rating curve extended above 17,000 ft^3/s
b Result of momentary storage upstream
c result of freezeup; occurred sometime during period November 2-13, 1936

14046500 JOHN DAY RIVER AT SERVICE CREEK, OR

LOCATION.--Lat 44°47'38", long 120°00'20", in NW 1/4 NE 1/4 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.--Records good. Slight regulation by several small reservoirs upstream from station. Many small diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	139	314	313	493	648	1540	1590	3110	1400	587	87	49
2	148	321	354	433	515	1640	1990	2810	1660	533	83	49
3	156	326	475	454	436	1680	3040	2600	1760	487	78	51
4	159	338	530	356	475	1900	3990	2560	1590	455	77	49
5	157	353	533	367	558	1970	3280	2530	1540	430	76	50
6	159	359	514	e390	574	2580	2770	2460	1690	415	81	48
7	169	352	515	e420	597	2390	2730	2340	1770	397	81	46
8	172	347	519	455	600	1980	2800	2160	1920	365	77	47
9	178	349	543	479	760	1860	2470	2120	1880	326	69	51
10	184	353	560	563	1440	2080	2200	2230	1760	300	69	55
11	192	355	641	635	1900	1830	2130	2050	1620	280	67	59
12	193	366	721	663	1600	1610	2280	2070	1470	254	63	64
13	209	390	615	620	1480	1430	2720	2370	1340	242	68	66
14	220	428	476	670	1390	1350	3330	2740	1230	231	103	65
15	224	480	438	836	1170	1330	3800	2540	1140	222	128	71
16	229	494	420	1160	1230	1200	4050	2290	1060	207	110	74
17	244	445	425	909	1140	1130	4310	2350	1030	197	118	71
18	249	409	464	695	980	1060	4690	2180	992	187	109	74
19	267	385	452	624	954	1070	4060	1980	946	179	98	77
20	281	357	395	602	881	1090	3680	1780	872	168	88	91
21	293	367	345	600	867	1220	4630	1660	783	156	79	122
22	303	391	385	596	911	1420	5430	1590	727	145	77	129
23	310	396	462	595	984	1470	5180	1610	687	135	79	136
24	311	405	368	553	930	1540	4340	1620	634	127	69	132
25	310	404	261	531	928	1490	3860	1530	590	121	57	125
26	308	405	302	538	942	1440	3490	1410	563	114	54	120
27	310	382	267	559	1010	1580	3140	1360	632	111	58	123
28	314	361	273	545	1160	1930	2930	1380	682	104	56	124
29	315	329	391	572	1330	1840	3010	1610	638	98	53	130
30	311	348	435	632	---	1860	3270	1890	610	89	54	138
31	312	---	492	712	---	1700	---	1530	---	85	50	---
TOTAL	7326	11309	13884	18257	28390	50210	101190	64460	35216	7747	2416	2486
MEAN	236	377	448	589	979	1620	3373	2079	1174	250	77.9	82.9
MAX	315	494	721	1160	1900	2580	5430	3110	1920	587	128	138
MIN	139	314	261	356	436	1060	1590	1360	563	85	50	46
AC-FT	14530	22430	27540	36210	56310	99590	200700	127900	69850	15370	4790	4930

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	328.5	602.4	1220	1584	2356	3630	5259	4924	2484	573.0	178.7	185.3
MAX	810.7	2284	5540	6335	7930	9773	10280	12050	8327	1850	593.7	861.9
(WY)	1985	1974	1965	1965	1982	1983	1984	1948	1948	1982	1984	1984
MIN	70.5	152.1	215.9	195.2	358.1	597.2	1010	490.5	415.8	90.6	15.2	31.4
(WY)	1937	1937	1936	1937	1937	1977	1968	1934	1931	1973	1973	1935

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	937		1924	
HIGHEST ANNUAL MEAN			4115	1984
LOWEST ANNUAL MEAN			619	1977
HIGHEST DAILY MEAN	5430	Apr 22	36400	Jan 30 1965
LOWEST DAILY MEAN	46	Sep 7	6.2	Aug 23 1973
INSTANTANEOUS PEAK FLOW	5780	Apr 22	40200a	Dec 23 1964
INSTANTANEOUS PEAK STAGE (FEET)	7.05	Apr 22	17.85	Dec 23 1964
INSTANTANEOUS LOW FLOW	38	Aug 26	6	Aug 23, 24 1973

a From rating curve extended above 14,000 ft^3/s on basis of slope-area measurement of peak flow

14047380 LONE ROCK CREEK NEAR LONEROCK, OR

LOCATION.--Lat 45°05'30", long 119°53'10", in SE 1/4 NE 1/4 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.--Records good except those below 0.6 ft^3/s, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.29	.64	2.6	1.3	e5.0	20	13	28	8.4	.52	.08	.01
2	.28	.65	5.2	1.5	e3.9	18	11	24	9.1	.52	.08	.01
3	.26	.73	3.8	1.4	e4.2	20	15	24	9.1	.62	.08	.01
4	.29	.73	2.6	1.3	e4.7	16	13	26	9.8	.54	.07	.01
5	.29	.73	2.2	1.4	5.0	30	11	36	9.9	.48	.07	.0
6	.29	.73	2.7	1.5	5.1	21	10	28	11	.45	.08	.0
7	.28	.73	2.2	1.5	5.5	15	9.7	23	11	.42	.08	.0
8	.29	.73	1.9	1.6	8.2	13	8.8	20	11	.29	.15	.0
9	.31	.80	2.3	2.0	22	21	7.9	19	11	.16	.06	.00
10	.32	.82	19	8.7	25	14	7.1	16	9.8	.10	.05	.00
11	.34	.82	7.1	5.4	26	12	6.5	14	8.6	.31	.05	.0
12	.35	1.0	3.6	4.4	23	10	6.2	12	8.4	.21	.04	.00
13	.36	1.5	2.5	5.7	20	9.4	5.6	12	7.1	.27	.04	.00
14	.37	1.4	2.5	20	15	9.3	5.4	12	5.6	.24	.04	.00
15	.38	1.0	2.6	27	17	8.6	5.0	11	4.9	.21	.04	.00
16	.40	.97	2.4	12	13	8.1	4.7	9.9	4.4	.11	.03	.00
17	.40	.84	2.4	7.8	11	7.4	30	9.5	3.8	.11	.03	.00
18	.40	.87	2.3	7.1	9.8	7.5	29	9.0	3.1	.09	.03	.00
19	.40	.93	2.0	5.8	9.0	7.4	16	7.8	2.4	.08	.03	.0
20	.42	.97	1.6	5.1	9.3	7.3	45	6.6	2.0	.08	.02	.00
21	.44	1.0	2.6	4.5	11	7.9	104	5.8	1.6	.08	.02	.00
22	.43	.95	2.2	4.1	14	8.6	145	4.7	1.3	.16	.02	.00
23	.45	1.0	1.7	3.8	11	9.9	83	3.4	.91	.18	.01	.0
24	.46	1.2	1.4	3.7	9.5	9.1	55	1.7	.56	.14	.01	.00
25	.45	1.1	1.5	3.8	9.8	9.5	49	1.8	.72	.11	.01	.00
26	.45	.93	1.3	3.8	12	11	44	1.6	.61	.10	.01	.0
27	.54	1.1	1.1	4.3	16	13	31	1.7	.51	.09	.01	.01
28	.55	1.1	1.1	7.3	18	10	32	6.0	.40	.09	.01	.03
29	.55	.64	.99	12	22	12	37	11	.49	.09	.01	.03
30	.58	1.1	1.0	12	---	12	33	8.9	.61	.08	.01	.04
31	.60	---	1.1	8.8	---	12	---	7.2	---	.08	.01	---
TOTAL	12.22	27.71	89.49	190.6	365.0	390.0	872.9	401.6	158.11	7.01	1.28	0.15
MEAN	.39	.92	2.89	6.15	12.6	12.6	29.1	13.0	5.27	.23	.041	.005
MAX	.60	1.5	19	27	26	30	145	36	11	.62	.15	.04
MIN	.26	.64	.99	1.3	3.9	7.3	4.7	1.6	.40	.08	.01	.00
AC-FT	24	55	178	378	724	774	1730	797	314	14	2.5	.3

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	1.91	3.65	3.95	17.5	62.1	78.5	26.9	9.19	3.00	.407	.131	.320
MAX	3.05	7.06	4.55	41.8	130.7	122.5	33.6	13.0	5.27	.541	.239	.747
(WY)	1986	1987	1987	1986	1986	1987	1987	1988	1988	1987	1987	1986
MIN	.394	.924	2.89	4.44	12.6	12.6	17.9	6.87	1.74	.226	.041	.000
(WY)	1988	1988	1988	1987	1988	1988	1986	1987	1987	1988	1988	1988

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	6.87		19.2	
HIGHEST ANNUAL MEAN			25.4	1986
LOWEST ANNUAL MEAN			6.87	1988
HIGHEST DAILY MEAN	145	Apr 22	460	Feb 23 1986
LOWEST DAILY MEAN	.00	Sep 5	.00	Sep 5 1988
INSTANTANEOUS PEAK FLOW	216	Apr 22	1210	Jan 23 1970
INSTANTANEOUS PEAK STAGE (FEET)	3.22	Apr 22	5.78	Jan 23 1970
INSTANTANEOUS LOW FLOW	.00	Sep - most days	.00	at times

14047390 ROCK CREEK ABOVE WHYTE PARK, NEAR CONDON, OR

LOCATION.--Lat 45°15'53", long 120°01'15", in NE 1/4 SW 1/4 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.--Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	6.0	8.1	8.0	16	41	28	e57	e20	3.3	.60	.60
2	3.0	6.0	11	7.9	13	39	27	e57	20	3.1	.64	.60
3	3.0	6.1	13	e7.5	21	38	28	e57	21	2.9	.71	.63
4	3.2	6.1	12	e7.5	20	36	30	e57	21	3.0	.71	.66
5	3.3	6.4	12	e9.3	18	47	29	e55	21	3.0	.64	.63
6	3.5	6.6	11	9.0	16	51	26	e53	25	2.7	.65	.63
7	3.6	6.7	11	9.0	17	43	24	e49	27	2.5	.68	.63
8	3.7	6.7	10	9.0	18	37	22	e44	28	2.2	.71	.64
9	3.7	7.0	12	9.7	39	41	20	e39	27	2.0	.67	.64
10	3.7	7.0	25	63	75	44	18	e34	24	1.8	.67	.66
11	3.9	6.9	30	46	89	35	17	e30	21	1.7	.58	.73
12	4.1	7.8	21	26	80	31	16	e28	18	1.8	.57	.74
13	4.2	8.9	16	26	71	28	15	e26	16	1.9	.59	.81
14	4.4	8.0	13	164	56	26	14	e25	14	1.8	.64	.81
15	4.3	7.9	e11	156	53	25	14	e25	12	1.5	.64	.78
16	4.3	7.7	e11	71	53	23	12	e23	11	1.4	.69	.79
17	4.4	7.3	e11	43	40	21	21	e22	9.5	1.3	.64	.82
18	4.4	7.2	e10	31	39	20	82	e20	8.8	1.2	.73	.90
19	4.4	7.2	e10	28	33	20	55	e18	7.9	1.1	.77	1.2
20	4.7	7.2	e10	25	31	20	54	e15	7.0	.94	.72	1.3
21	4.9	7.2	11	22	33	19	230	e14	6.3	.88	.71	1.3
22	4.9	7.2	12	20	36	20	615	e13	5.5	.80	.70	1.3
23	4.9	7.4	11	19	32	22	408	e11	5.0	.78	.70	1.2
24	4.8	7.6	e9.5	16	29	24	220	e10	4.7	.81	.68	1.2
25	4.7	7.5	e8.0	16	28	24	161	e10	4.4	.76	.67	1.2
26	4.8	6.9	e8.0	16	28	24	136	e15	4.4	.74	.64	1.2
27	5.0	6.9	e8.0	16	32	28	105	e17	4.0	.72	.63	1.3
28	5.3	6.9	e8.0	16	36	28	96	e20	3.8	.67	.63	1.4
29	5.6	6.9	8.1	20	39	28	e70	e26	3.7	.67	.62	1.4
30	5.7	6.6	8.2	28	---	29	e57	e25	3.4	.67	.60	1.4
31	5.8	---	8.3	28	---	29	---	e21	---	.64	.60	---
TOTAL	133.2	211.8	368.2	972.9	1091	941	2650	916	404.4	49.28	20.43	28.10
MEAN	4.30	7.06	11.9	31.4	37.6	30.4	88.3	29.5	13.5	1.59	.66	.94
MAX	5.8	8.9	30	164	89	51	615	57	28	3.3	.77	1.4
MIN	3.0	6.0	8.0	7.5	13	19	12	10	3.4	.64	.57	.60
AC-FT	264	420	730	1930	2160	1870	5260	1820	802	98	41	56

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	5.65	15.4	47.6	72.2	160.6	204.1	131.9	63.0	18.6	4.32	2.53	2.95
MAX	13.9	53.9	185.7	145.5	434.2	467.4	396.3	297.7	83.8	14.1	6.60	9.53
(WY)	1985	1985	1982	1984	1986	1983	1984	1983	1984	1984	1979	1984
MIN	.385	3.53	3.89	4.56	5.68	11.7	21.7	14.9	3.03	.299	.322	.123
(WY)	1978	1977	1977	1977	1977	1977	1977	1977	1977	1977	1977	1977

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	21.3		60.2	
HIGHEST ANNUAL MEAN			125	1983
LOWEST ANNUAL MEAN			5.98	1977
HIGHEST DAILY MEAN	615	Apr 22	1860	May 5 1983
LOWEST DAILY MEAN	.57	Aug 12	.10	Aug 20 1977
INSTANTANEOUS PEAK FLOW	840	Apr 22	3360	May 5 1983
INSTANTANEOUS PEAK STAGE (FEET)	7.45a	Apr 22	9.4	Feb 6 1979
INSTANTANEOUS LOW FLOW	.55b	Aug 10-13	.08c	Aug 17, 19 1977
10 PERCENTILE	44		170	
50 PERCENTILE	9.5		14	
95 PERCENTILE	.57		.59	

a From crest-stage gage
b Also occurred on August 30, 31, September 1-3
c Also occurred on Aug. 20, 22, 1977

14048000 JOHN DAY RIVER AT MCDONALD FERRY, OR
(National stream quality accounting network station)

LOCATION.--Lat 45°35'16", long 120°24'30", in NE 1/4 NW 1/4 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.

GAGE AREA.--7,580 mi^2, approximately.

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.--Water-discharge records good. No regulation. Many diversions for irrigation upstream from station.

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	168	344	400	495	827	1390	2010	3360	1780	647	95	46
2	164	350	402	560	877	1570	1860	3290	1570	608	91	39
3	160	349	412	620	826	1740	1980	3040	1590	584	84	39
4	165	351	385	604	738	1790	2770	2830	1900	536	74	42
5	176	360	456	451	630	1960	4010	2740	1780	492	67	46
6	181	363	562	445	646	2020	3590	2750	1690	461	65	45
7	195	374	565	421	726	2480	3100	2670	1710	429	72	45
8	193	381	546	497	747	2520	2990	2580	1880	417	71	46
9	188	384	590	557	777	2190	3080	2410	1980	391	65	49
10	197	384	655	689	829	1990	2810	2280	2010	356	61	45
11	197	384	760	1510	1120	2110	2550	2400	1880	338	67	39
12	207	392	708	1030	1950	2030	2410	2240	1750	308	54	33
13	220	401	732	876	1910	1810	2420	2160	1610	296	47	26
14	226	401	807	3130	1720	1670	2730	2330	1480	273	44	27
15	230	403	707	4000	1650	1530	3240	2740	1370	252	48	26
16	243	428	604	1650	1470	1460	3690	2700	1270	236	47	31
17	260	469	516	1430	1380	1390	3960	2440	1170	230	51	30
18	262	510	493	1400	1410	1320	4230	2430	1090	224	60	39
19	265	487	481	1140	1290	1250	4500	2360	1070	213	68	61
20	278	453	510	957	1180	1200	4270	2130	1030	196	96	62
21	281	435	515	870	1140	1210	4180	1950	984	182	87	73
22	299	405	499	832	1060	1290	5230	1810	910	177	96	81
23	318	389	416	805	1050	1470	6030	1720	803	171	92	70
24	324	407	448	797	1100	1620	5480	1690	738	168	87	66
25	330	427	494	778	1140	1650	4640	1700	702	150	73	90
26	331	430	582	748	1090	1730	4150	1640	648	140	71	124
27	333	434	472	715	1090	1650	3750	1540	604	137	62	141
28	332	435	430	716	1110	1670	3400	1480	555	134	52	139
29	332	428	489	729	1220	2010	3160	1470	592	125	47	134
30	334	406	417	736	---	2040	3170	1510	678	116	44	130
31	342	---	466	787	---	2100	---	1970	---	107	48	---
TOTAL	7731	12164	16519	30975	32703	53860	105390	70360	38824	9094	2086	1864
MEAN	249	405	533	999	1128	1737	3513	2270	1294	293	67.3	62.1
MAX	342	510	807	4000	1950	2520	6030	3360	2010	647	96	141
MIN	160	344	385	421	630	1200	1860	1470	555	107	44	26
AC-FT	15330	24130	32770	61440	64870	106800	209000	139600	77010	18040	4140	3700

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	330.5	619.6	1212	1691	2642	3920	5686	5174	2742	659.8	192.6	185.2
MAX	892.2	2310	7030	6402	8882	11450	11900	13180	9531	2130	700.0	922.8
(WY)	1985	1974	1965	1965	1982	1983	1984	1917	1948	1984	1984	1984
MIN	59.9	156.7	220.9	216.8	374.4	556.7	963.8	533.1	376.3	88.0	5.70	23.8
(WY)	1937	1937	1937	1937	1933	1977	1968	1934	1926	1926	1973	1934

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	1043		2091	
HIGHEST ANNUAL MEAN			4724	1984
LOWEST ANNUAL MEAN			603	1977
HIGHEST DAILY MEAN	6030	Apr 23	39400	Dec 24 1964
LOWEST DAILY MEAN	26	Sep 13	.00	Aug 15 1973
INSTANTANEOUS PEAK FLOW	6210	Apr 23	42800a	Dec 24 1964
INSTANTANEOUS PEAK STAGE (FEET)	6.06	Apr 23	13.59b	Dec 24 1964
INSTANTANEOUS LOW FLOW	22	Sep 15	.00c	Aug 13 1977

a From rating curve extended above 11,000 ft^3/s on basis of slope-area measurement of peak flow
b From floodmark
c Also occurred from August 15 to September 16, 1973, Aug. 14, 19-25, 1977

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 TEMPERATURE: October 1962 to September 1968, October 1975 to September 1981.
SEDIMENT CONCENTRATION: October 1962 to September 1968.
SEDIMENT DISCHARGE: October 1962 to September 1968.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

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)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	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 (MG/L AS CACO3	CALCIUM DIS-SOLVED (MG/L AS CA)
NOV												
25...	1110	427	268	8.6	4.5	12.8	98	K8	160	120	0	27
FEB												
10...	1225	840	247	8.5	8.5	12.4	106	--	--	100	0	25
MAY												
11...	1115	2470	152	8.3	18.5	9.5	102	K13	31	63	0	15
AUG												
16...	1055	45	293	8.8	20.0	10.0	112	56	230	110	0	22

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 DIS IT FIELD (MG/L AS CACO3)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3)	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)
NOV											
25...	12	16	2.3	151	147	18	11	4.0	0.2	0.01	<0.1
FEB											
10...	10	15	2.3	133	126	18	11	3.8	0.2	0.02	<0.1
MAY											
11...	6.3	8.4	1.5	72	88	0	6.7	1.6	0.3	0.02	<0.1
AUG											
16...	13	23	3.0	136	151	7	11	7.5	0.2	0.02	<0.1

DATE	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS 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											
25...	<0.2	<0.01	<0.01	0.02	27	164	190	189	2.3	4	4.6
FEB											
10...	0.3	<0.01	0.01	<0.01	25	160	173	363	3.8	24	54
MAY											
11...	<0.2	<0.01	0.02	0.03	29	112	113	746	10	34	226
AUG											
16...	0.5	<0.01	0.02	0.02	28	181	190	22.0	1.0	2	0.24

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 1987 TO SEPTEMBER 1988

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 25...	20	1	13	<0.5	<1	<1	<3	2	9	<5
FEB 10...	30	1	21	<0.5	<1	<1	<3	2	30	<5
MAY 11...	50	1	16	<0.5	<1	<1	<3	6	38	<5
AUG 16...	10	2	13	<0.5	<1	<1	<3	2	21	<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 25...	<4	2	0.2	<10	2	<1	1	110	8	--
FEB 10...	<4	8	<0.1	<10	2	<1	<1	100	8	9
MAY 11...	<4	4	<0.1	<10	4	<1	<1	66	7	<3
AUG 16...	5	10	<0.1	<10	<1	<1	<1	110	13	6

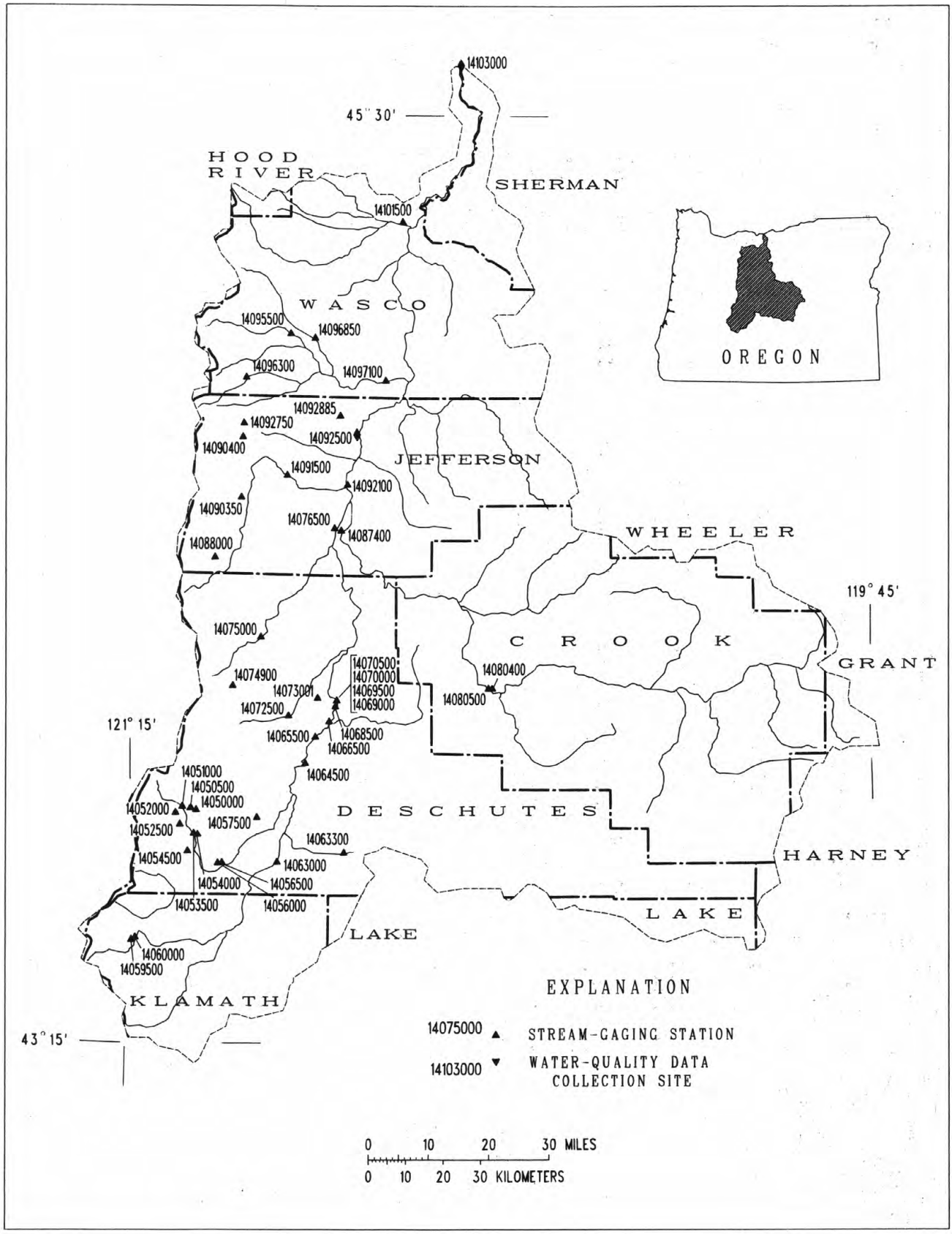

Figure 7.--Location of surface-water and water-quality stations in the Deschutes River and Crooked River basins.

14050000 DESCHUTES RIVER BELOW SNOW CREEK, NEAR LA PINE, OR

LOCATION.--Lat 43°48'51", long 121°46'33", in NW 1/4 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.--Records excellent. 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	106	91	93	85	75	70	71	74	72	75	79	87
2	105	90	92	e85	e76	69	73	74	71	75	78	87
3	105	90	91	85	76	70	74	74	71	75	78	89
4	104	90	91	83	75	71	73	73	72	75	78	89
5	103	90	90	82	74	69	72	72	71	75	79	90
6	103	90	91	82	73	69	73	72	71	75	81	92
7	103	90	89	82	73	69	73	73	72	75	81	92
8	102	90	89	82	74	70	71	72	73	76	81	93
9	101	90	94	85	75	71	71	72	73	75	81	93
10	100	89	95	85	74	70	73	72	72	75	81	95
11	100	89	88	83	74	70	74	72	72	75	81	95
12	100	90	88	81	73	69	74	73	72	75	82	95
13	99	92	87	81	73	69	75	72	72	76	83	95
14	98	90	87	82	72	69	77	71	73	76	83	96
15	98	90	87	82	72	69	76	71	73	76	83	96
16	98	89	86	81	72	69	76	71	74	76	84	97
17	96	89	86	80	72	69	75	71	74	76	85	96
18	96	89	88	79	72	69	74	70	74	76	85	96
19	96	89	88	79	72	70	75	70	74	76	85	98
20	94	89	87	79	71	71	76	70	74	76	86	98
21	95	89	88	78	71	72	76	70	74	76	86	98
22	95	90	88	78	71	71	75	69	74	76	86	98
23	94	90	87	78	70	74	75	69	74	76	87	98
24	93	91	e87	77	70	71	74	69	74	76	87	98
25	93	89	e86	76	70	72	74	69	75	76	87	98
26	93	89	86	76	70	73	74	69	75	76	87	98
27	92	89	86	76	69	73	74	69	75	77	89	100
28	92	89	85	76	69	71	74	70	75	77	89	98
29	92	89	84	77	69	72	75	70	75	77	89	98
30	92	89	84	76	---	71	75	70	75	79	88	98
31	92	---	84	75	---	71	---	71	---	79	87	---
TOTAL	3030	2690	2732	2486	2097	2183	2222	2204	2196	2354	2596	2851
MEAN	97.7	89.7	88.1	80.2	72.3	70.4	74.1	71.1	73.2	75.9	83.7	95.0
MAX	106	92	95	85	76	74	77	74	75	79	89	100
MIN	92	89	84	75	69	69	71	69	71	75	78	87
AC-FT	6010	5340	5420	4930	4160	4330	4410	4370	4360	4670	5150	5650

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	175.7	148.0	131.7	116.6	105.9	99.0	103.4	134.2	160.1	181.9	223.9	211.0
MAX	314.9	236.1	204.6	191.7	172.7	166.3	195.0	267.0	330.7	418.6	457.0	408.1
(WY)	1975	1973	1951	1951	1965	1951	1951	1956	1956	1956	1972	1974
MIN	64.1	61.8	61.6	59.6	61.4	59.0	58.5	58.3	56.3	58.2	60.2	62.8
(WY)	1942	1978	1942	1942	1942	1941	1941	1941	1941	1941	1941	1941

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	81.0		150	
HIGHEST ANNUAL MEAN			243	1972
LOWEST ANNUAL MEAN			65.9	1941
HIGHEST DAILY MEAN	106	Oct 1	476	Aug 19 1974
LOWEST DAILY MEAN	69	Feb 27	55a	Apr 23 1941
INSTANTANEOUS PEAK FLOW	107	Oct 1, 2	480	Aug 19 1974
INSTANTANEOUS PEAK STAGE (FEET)	1.25b	Dec 25	4.12c	Jan 21 1943
INSTANTANEOUS LOW FLOW	68	Mar 6, 7, 15	40d	
10 PERCENTILE	96		258	
50 PERCENTILE	77		127	
95 PERCENTILE	70		75	

a Occurred many days from April to June 1941
b Backwater from ice
c Result of ice jam
d Occurred sometime during period Dec. 22, 1959, to Mar. 2, 1960, result of freezeup

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.--Records good except for estimated daily discharges, which are fair. No regulation or diversions upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	48	45	36	e36	e35	37	45	50	53	54	56
2	52	49	40	38	e36	34	38	45	50	54	52	56
3	53	48	39	41	e36	34	39	46	50	54	53	54
4	54	48	39	41	e36	36	38	46	51	54	54	54
5	52	47	39	39	e36	36	38	46	52	54	55	54
6	52	47	39	42	e36	36	39	46	52	54	56	53
7	53	48	39	43	e36	36	39	46	52	53	55	54
8	54	47	39	43	e36	36	39	46	52	54	57	54
9	54	46	40	e41	e36	36	39	46	53	54	57	55
10	52	46	40	e38	e36	36	40	46	52	54	58	54
11	52	46	39	34	e36	35	39	47	52	54	58	52
12	54	46	39	34	e36	34	39	46	50	53	56	52
13	54	46	39	34	e36	35	39	48	51	53	56	52
14	52	44	39	35	e36	35	40	48	52	52	56	52
15	52	45	39	36	e36	36	41	50	52	52	56	53
16	53	46	39	36	e35	37	41	50	52	52	57	52
17	52	46	39	37	e35	37	41	51	52	52	56	52
18	52	44	39	e37	e35	37	41	52	52	51	57	52
19	52	45	39	e37	e35	35	42	52	53	51	56	52
20	52	45	38	e37	e35	34	43	52	54	51	56	50
21	52	44	37	e37	e35	36	43	52	54	51	56	50
22	52	44	38	e37	e35	36	43	53	54	51	56	50
23	51	44	37	e37	e35	35	43	54	52	51	56	49
24	50	45	37	e37	e35	36	43	54	52	50	56	50
25	52	44	37	e37	e35	37	43	51	53	50	56	50
26	50	44	37	e37	e35	37	43	50	54	51	55	49
27	49	44	37	e37	e35	37	43	50	54	51	54	49
28	50	44	36	e37	e35	37	44	51	54	51	54	48
29	50	44	36	e37	e35	37	44	52	54	52	55	48
30	50	44	36	e37	---	37	46	52	54	54	56	48
31	49	---	36	e37	---	37	---	52	---	54	56	---
TOTAL	1608	1368	1192	1166	1030	1112	1227	1525	1569	1625	1725	1554
MEAN	51.9	45.6	38.5	37.6	35.5	35.9	40.9	49.2	52.3	52.4	55.6	51.8
MAX	54	49	45	43	36	37	46	54	54	54	58	56
MIN	49	44	36	34	35	34	37	45	50	50	52	48
AC-FT	3190	2710	2360	2310	2040	2210	2430	3020	3110	3220	3420	3080

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	64.6	60.7	56.6	53.1	50.7	50.4	54.4	71.4	74.0	75.1	73.8	68.7
MAX	93.2	90.8	88.0	85.7	84.1	80.5	96.1	141.6	136.3	126.5	116.9	102.6
(WY)	1957	1957	1951	1951	1951	1951	1957	1956	1956	1956	1951	1956
MIN	32.3	31.4	33.5	32.0	30.2	31.9	30.6	35.9	34.3	37.4	38.3	33.6
(WY)	1942	1942	1942	1942	1942	1941	1941	1941	1941	1941	1941	1941

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	45.6		62.9	
HIGHEST ANNUAL MEAN			96.5	1951
LOWEST ANNUAL MEAN			36.3	1941
HIGHEST DAILY MEAN	58	Aug 10	177	May 31 1956
LOWEST DAILY MEAN	34	Jan 11	26	May 26 1959
INSTANTANEOUS PEAK FLOW	58	Aug 8-18	178	May 31 1956
INSTANTANEOUS PEAK STAGE (FEET)	1.01a	Jan 10	1.32b	May 16 1972
INSTANTANEOUS LOW FLOW	34c	Jan 11-13	26d	May 26-31 1959
10 PERCENTILE	.00		92	
50 PERCENTILE	47		60	
95 PERCENTILE	36		38	

a Backwater from ice
b Backwater from Crane Prarie Reservoir
c Also occurred March 2, 3, 13, 20
d Also occurred from November 23 to December 4, 1959

14051000 CULTUS CREEK ABOVE CRANE PRAIRIE RESERVOIR, NEAR LA PINE, OR

LOCATION.--Lat 43°49'17", long 121°49'22", in SW 1/4 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.--Records good except those for Jan. 11 to Feb. 6, which are fair, and those for Mar. 27 to Apr. 2 and estimated daily discharges, which are poor. Some regulation by fish screens at Cultus Lake since 1962. No diversion upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	e.08	e8.3	9.9	6.7	50	57	24	6.1	2.6
2	.00	.00	1.4	e.08	e8.3	9.7	7.7	48	57	23	6.0	2.6
3	.00	.00	.02	e.08	e8.3	9.9	11	47	56	22	6.2	e2.5
4	.00	.00	.01	e.08	e8.3	10	13	45	58	20	6.3	e2.4
5	.00	.00	.01	e.08	e8.3	10	14	44	57	19	6.1	e2.3
6	.00	.00	.01	e.08	e8.3	11	14	41	55	18	5.5	e2.2
7	.00	.00	.00	e.10	8.3	11	14	40	53	17	5.2	e2.1
8	.00	.00	.00	e.25	9.1	11	14	39	52	16	5.0	e2.0
9	.00	.00	.16	e.80	10	12	14	36	51	15	5.3	e1.9
10	.00	.00	.32	e5.0	10	12	14	35	49	15	5.2	e1.8
11	.00	.00	.03	e30	11	12	15	33	47	14	5.2	e1.7
12	.00	.00	.02	6.5	11	12	15	33	44	13	4.9	e1.6
13	.00	.00	.00	6.7	11	12	15	33	42	13	4.8	e1.5
14	.00	.00	.00	8.2	11	12	16	36	40	12	4.4	e1.4
15	.00	.00	.02	9.5	11	11	20	39	40	11	4.4	e1.3
16	.00	.00	.03	10	11	11	24	44	40	11	4.5	e1.2
17	.00	.00	.03	10	11	11	29	47	40	11	4.3	e1.1
18	.00	.00	.03	e10	11	11	33	49	39	11	4.2	e1.0
19	.00	.00	.03	e10	11	10	39	50	39	10	4.1	e.90
20	.00	.00	.07	e10	11	10	45	50	38	9.7	3.6	e.80
21	.00	.00	.14	e10	11	11	49	51	37	9.3	3.5	e.70
22	.00	.00	.08	10	10	10	49	54	35	8.7	3.6	e.60
23	.00	.00	e.08	10	10	11	48	55	34	8.2	3.8	e.40
24	.00	.00	e.08	10	10	12	48	55	32	7.9	3.7	e.30
25	.00	.00	e.08	10	10	12	47	56	31	7.9	3.2	e.20
26	.00	.00	e.08	10	10	11	45	56	30	7.8	3.2	.04
27	.00	.00	e.08	9.8	9.9	4.8	44	55	28	7.3	3.2	.10
28	.00	.00	e.08	9.6	9.6	4.2	44	59	26	6.9	3.2	.07
29	.00	.00	e.08	9.8	9.6	5.4	48	61	25	7.3	3.0	.10
30	.00	.00	e.08	e9.5	---	6.0	51	58	24	7.4	2.8	.08
31	.00	---	e.08	e8.3	---	6.1	---	54	---	6.9	2.6	---
TOTAL	0.00	0.00	3.13	224.53	287.3	312.0	846.4	1453	1256	390.3	137.1	37.49
MEAN	.00	.00	.10	7.24	9.91	10.1	28.2	46.9	41.9	12.6	4.42	1.25
MAX	.00	.00	1.4	30	11	12	51	61	58	24	6.3	2.6
MIN	.00	.00	.00	.08	8.3	4.2	6.7	33	24	6.9	2.6	.04
AC-FT	.0	.0	6.2	445	570	619	1680	2880	2490	774	272	74

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	.911	4.02	18.8	23.4	22.1	20.7	18.3	46.5	71.1	26.2	5.82	1.34
MAX	6.23	16.1	79.7	75.8	54.5	68.2	46.3	82.5	176.4	70.5	16.0	6.07
(WY)	1963	1969	1978	1965	1965	1972	1972	1972	1975	1975	1983	1982
MIN	.000	.000	.101	.074	.010	.019	1.77	12.4	17.4	2.46	.029	.000
(WY)	1965	1988	1988	1977	1977	1977	1977	1977	1977	1977	1977	1968

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	13.5		22.4	
HIGHEST ANNUAL MEAN			38.0	1971
LOWEST ANNUAL MEAN			3.01	1977
HIGHEST DAILY MEAN	61	May 29	300	Dec 25 1964
LOWEST DAILY MEAN	.00	Oct 1	.00	Sep 26 1939
INSTANTANEOUS PEAK FLOW	63	May 29	336a	Dec 25 1964
INSTANTANEOUS PEAK STAGE (FEET)	2.58b	Jan 11	4.15c	Dec 25 1964
INSTANTANEOUS LOW FLOW	.00	at times	.00	many days
10 PERCENTILE	.00		56	
50 PERCENTILE	8.3		12	
95 PERCENTILE	.00		.00	

* Regulated period only (1963-88)
a From rating curve extended above 90 ft^3/s
b Backwater from ice
c From floodmark

14052000 DEER CREEK ABOVE CRANE PRAIRIE RESERVOIR, NEAR LA PINE, OR

LOCATION.--Lat 43°48'48", long 121°50'18", in SE 1/4 SW 1/4 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 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.--Records good except for discharges below 1.0 ft^3/s and estimated daily discharges, which are poor. No regulation or diversion upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.01	.02	e.14	e.68	2.0	2.4	8.9	23	13	.79	.11	.05
2	.01	.03	.39	e.64	e1.7	2.4	9.7	22	13	.73	.09	.05
3	.01	.03	.18	e.64	e1.6	2.7	12	20	12	.67	.09	.02
4	.01	.03	.16	e.64	e1.5	3.3	13	19	13	.63	.09	.02
5	.01	.03	.14	e.64	e1.5	3.9	13	18	12	.59	.09	.02
6	.01	.03	.14	e.64	e1.5	4.7	13	16	11	.53	.08	.03
7	.01	.03	.08	e.64	1.6	4.6	14	15	10	.49	.08	.03
8	.01	.03	.05	e.70	2.0	4.8	13	15	10	.47	.08	.03
9	.01	.03	.29	1.3	3.8	6.6	12	14	9.6	.43	.08	.02
10	.01	.03	1.3	7.9	3.9	6.8	12	13	9.1	.38	.08	.01
11	.00	.02	.95	16	3.8	6.2	12	13	8.0	.36	.08	.01
12	.00	.04	.91	13	3.7	5.5	13	13	6.9	.30	.08	.01
13	.00	.08	e.86	7.5	4.2	5.0	12	14	5.9	.25	.09	.01
14	.00	.03	e.86	6.7	3.9	4.6	16	16	5.0	.20	.09	.02
15	.00	.0	e.88	6.4	4.0	4.1	20	18	4.3	.17	.08	.02
16	.01	.03	e.88	5.9	3.9	3.8	22	19	3.8	.17	.08	.01
17	.01	.03	e.85	5.2	3.8	3.5	23	19	3.4	.16	.08	.01
18	.01	.03	e.84	e4.7	3.9	3.4	25	19	3.0	.15	.07	.01
19	.01	.03	e.79	4.3	3.7	3.4	26	18	2.6	.13	.06	.02
20	.01	.04	e.76	4.0	3.5	3.5	28	17	2.3	.12	.06	.01
21	.01	.08	e.76	3.1	3.3	4.4	29	17	2.0	.11	.06	.01
22	.01	.07	e.76	2.7	2.9	4.8	25	16	1.7	.11	.06	.02
23	.01	.07	e.76	2.5	2.8	7.3	23	15	1.5	.10	.06	.01
24	.01	.06	e.70	2.4	2.6	7.6	20	14	1.3	.09	.06	.01
25	.01	.02	e.66	2.3	2.4	7.6	19	14	1.2	.09	.06	.01
26	.01	e.02	e.66	2.2	2.3	8.6	18	13	1.1	.09	.06	.03
27	.01	e.02	e.66	2.1	2.2	10	18	12	.93	.08	.06	.08
28	.01	.02	e.68	2.0	2.2	10	18	12	.78	.08	.06	.06
29	.01	e.02	e.72	2.1	2.2	10	20	13	.84	.10	.06	.06
30	.01	.02	e.68	2.3	---	9.9	22	12	.87	.11	.05	.06
31	.01	---	e.72	2.5	---	9.1	---	12	---	.11	.05	---
TOTAL	0.26	1.02	19.21	114.32	82.4	174.5	529.6	491	170.12	8.79	2.28	0.76
MEAN	.008	.034	.62	3.69	2.84	5.63	17.7	15.8	5.67	.28	.074	.025
MAX	.01	.08	1.3	16	4.2	10	29	23	13	.79	.11	.08
MIN	.00	.00	.05	.64	1.5	2.4	8.9	12	.78	.08	.05	.01
AC-FT	.5	2.0	38	227	163	346	1050	974	337	17	4.5	1.5

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	.358	2.15	6.78	6.41	6.42	6.31	12.0	28.5	17.2	2.29	.353	.188
MAX	2.00	14.3	30.0	20.7	24.4	31.5	32.6	54.7	60.7	7.42	1.19	.657
(WY)	1951	1951	1943	1943	1982	1972	1943	1946	1974	1974	1976	1951
MIN	.000	.000	.100	.100	.100	.581	1.40	6.10	.567	.000	.000	.000
(WY)	1940	1940	1941	1941	1941	1977	1977	1977	1940	1940	1940	1940

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	4.36		7.42	
HIGHEST ANNUAL MEAN			15.2	1943
LOWEST ANNUAL MEAN			1.17	1977
HIGHEST DAILY MEAN	29	Apr 21	108	Dec 15 1977
LOWEST DAILY MEAN	.00	Oct 11	.00	Sep 8 1939
INSTANTANEOUS PEAK FLOW	30	Apr 21	200e	Dec 25 1964
INSTANTANEOUS PEAK STAGE (FEET)	2.43	Apr 21	not determined	
INSTANTANEOUS LOW FLOW	.00a	Oct 10-15	.00	at times
10 PERCENTILE	.00		22	
50 PERCENTILE	.76		2.5	
95 PERCENTILE	.01		.01	

a Also occurred November 15
e Estimated discharge

UPPER DESCHUTES RIVER BASIN

14052500 QUINN RIVER NEAR LA PINE, OR

LOCATION.--Lat 43°47'03", long 121°50'06", in SW 1/4 NW 1/4 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.--No estimated daily discharges. Records good. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--54 years, 24.1 ft^3/s, 17,460 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, 24 ft^3/s July 19, gage height, 1.74 ft; minimum discharge, 7.1 ft^3/s Feb. 9-20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	11	8.4	9.1	8.5	7.9	10	14	20	21	23	20
2	12	9.9	7.8	9.1	8.4	8.0	11	15	20	21	23	20
3	12	10	7.7	9.1	8.4	8.4	11	15	20	21	23	20
4	12	10	7.7	9.3	8.4	8.4	9.5	15	20	21	23	20
5	12	11	7.7	9.9	8.4	8.4	10	15	20	22	23	20
6	12	9.9	8.0	9.9	8.4	8.1	11	16	20	22	23	20
7	12	9.9	7.8	9.9	8.4	8.1	10	16	20	22	23	20
8	11	9.9	8.5	9.8	8.4	8.7	10	16	20	22	23	20
9	11	9.5	8.7	9.3	7.7	8.7	11	16	21	22	23	19
10	11	9.7	8.4	9.6	7.1	8.4	11	16	21	22	23	18
11	11	9.9	8.4	9.0	7.4	8.4	12	17	21	23	23	18
12	11	9.9	8.6	9.3	7.7	8.4	11	17	21	22	22	18
13	11	9.6	8.7	9.6	7.1	8.7	11	17	21	22	22	18
14	11	9.1	8.9	9.9	7.4	9.1	11	17	21	22	22	18
15	11	9.4	9.1	9.5	7.3	8.5	12	18	21	22	22	18
16	11	9.4	8.4	9.6	7.1	8.4	12	19	21	22	22	17
17	11	9.1	9.1	9.1	7.5	8.5	13	18	21	22	22	17
18	11	9.1	9.1	9.1	7.1	8.1	13	18	21	22	22	17
19	11	9.1	9.1	9.1	7.3	8.4	14	19	21	23	22	17
20	11	9.1	9.1	9.2	7.4	8.4	14	19	21	24	22	17
21	11	8.5	9.1	9.1	7.7	8.0	14	19	21	23	22	17
22	11	8.4	9.8	9.2	7.7	8.2	14	19	21	23	22	17
23	11	8.4	9.9	9.1	7.7	8.0	13	19	22	23	21	17
24	11	8.5	9.9	9.1	8.0	8.3	14	19	22	23	21	17
25	11	8.4	9.9	9.1	8.2	8.4	14	19	22	23	21	17
26	11	8.4	9.9	9.1	8.2	9.2	14	19	22	23	21	17
27	11	8.4	9.9	9.1	8.0	8.4	15	19	22	23	21	16
28	11	8.4	9.9	9.1	8.4	8.7	15	20	22	23	21	16
29	11	8.4	9.9	8.5	8.4	9.1	15	19	21	23	21	17
30	11	8.4	9.2	8.4	---	9.1	15	19	21	23	21	17
31	11	---	9.1	8.7	---	9.5	---	20	---	23	21	---
TOTAL	348	278.7	275.7	286.9	227.7	262.9	370.5	544	628	693	684	540
MEAN	11.2	9.29	8.89	9.25	7.85	8.48	12.3	17.5	20.9	22.4	22.1	18.0
MAX	12	11	9.9	9.9	8.5	9.5	15	20	22	24	23	20
MIN	11	8.4	7.7	8.4	7.1	7.9	9.5	14	20	21	21	16
AC-FT	690	553	547	569	452	521	735	1080	1250	1370	1360	1070

CAL YR 1987 TOTAL 6453.4 MEAN 17.7 MAX 24 MIN 7.7 AC-FT 12800
WTR YR 1988 TOTAL 5139.4 MEAN 14.0 MAX 24 MIN 7.1 AC-FT 10190

14053500 CRANE PRAIRIE RESERVOIR NEAR LA PINE, OR

LOCATION.--Lat 43°45'20", long 121°47'00", in SW 1/4 NW 1/4 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, 31,520 acre-ft June 10, 11, elevation, 4,439.72 ft; minimum contents, 18,110 acre-ft Oct. 1, elevation, 4,436.18 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	4,436.18	18,110	-
Oct. 31	4,437.05	21,200	+3090
Nov. 30	4,437.16	21,610	+410
Dec. 31	4,438.45	26,480	+4,870
CAL YR 1987	-	-	-12,570
Jan. 31	4,438.87	28,110	+1,630
Feb. 28	4,438.74	27,600	-510
Mar. 31	4,438.85	28,030	+430
Apr. 30	4,439.43	30,350	+2,320
May 31	4,439.57	30,920	+570
June 30	4,439.39	30,190	-730
July 31	4,438.48	26,590	-3,600
Aug. 31	4,437.60	23,240	-3,350
Sept.30	4,437.07	21,280	-1,960
WTR YR 1988	-	-	+3,170

14054000 DESCHUTES RIVER BELOW CRANE PRAIRIE RESERVOIR, NEAR LA PINE, OR

LOCATION.--Lat 43°45'13", long 121°46'57", in SW 1/4 NW 1/4 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.--Records good. Flow regulated since 1922 by Crane Prairie Reservoir (station 14053500). No diversion upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	95	93	86	86	134	134	134	129	176	179	176	172
2	95	93	86	86	134	134	134	129	176	179	176	172
3	95	93	86	86	134	134	134	129	176	179	176	172
4	95	93	86	86	134	134	134	129	176	179	176	172
5	95	93	86	86	134	134	134	129	176	180	176	172
6	95	93	86	86	134	134	134	129	176	182	176	172
7	95	93	86	86	134	134	134	129	176	182	176	172
8	95	93	86	86	134	134	134	129	179	182	176	172
9	95	123	86	86	134	134	134	129	179	182	174	172
10	95	154	86	86	134	134	134	129	179	182	172	172
11	94	154	86	108	134	134	134	149	179	182	172	172
12	93	154	86	134	134	134	134	176	179	182	172	172
13	93	154	86	134	134	134	132	176	179	182	172	172
14	93	157	86	134	134	134	129	176	179	182	172	171
15	93	157	86	134	134	134	129	176	179	182	172	169
16	93	157	86	134	134	134	129	176	179	182	172	169
17	93	157	86	134	134	134	129	176	179	180	171	169
18	93	157	86	134	134	134	129	176	179	179	169	169
19	93	157	86	134	134	134	129	176	179	179	166	169
20	93	157	86	134	134	134	129	176	179	179	168	169
21	93	157	86	134	134	134	129	176	179	179	169	169
22	93	155	86	134	134	134	129	176	179	179	169	169
23	93	154	86	134	134	134	129	176	179	179	170	169
24	93	154	86	134	134	134	129	176	179	179	172	169
25	95	154	86	134	134	134	129	176	179	179	172	169
26	94	154	86	134	134	134	129	176	179	179	172	169
27	95	154	86	134	134	134	129	176	179	178	172	169
28	95	154	86	134	134	134	129	176	179	176	172	169
29	95	154	86	134	134	134	129	176	179	176	172	169
30	95	132	86	134	---	134	129	176	179	176	172	169
31	95	---	86	134	---	134	---	176	---	176	172	---
TOTAL	2917	4104	2666	3648	3886	4154	3933	4959	5349	5571	5344	5111
MEAN	94.1	137	86.0	118	134	134	131	160	178	180	172	170
MAX	95	157	86	134	134	134	134	176	179	182	176	172
MIN	93	93	86	86	134	134	129	129	176	176	166	169
AC-FT	5790	8140	5290	7240	7710	8240	7800	9840	10610	11050	10600	10140

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	207.7	147.0	112.9	105.7	103.6	102.0	135.9	257.0	341.1	358.1	342.7	295.2
MAX	674.6	700.1	489.0	334.0	380.2	272.7	370.4	749.9	782.2	647.1	709.1	635.0
(WY)	1950	1953	1952	1928	1924	1922	1924	1950	1950	1956	1956	1971
MIN	12.6	5.23	3.34	3.35	5.57	4.97	7.70	14.4	106.8	119.5	109.1	19.1
(WY)	1978	1943	1978	1978	1941	1941	1942	1943	1942	1943	1949	1948

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	141		209	
HIGHEST ANNUAL MEAN			323	1956
LOWEST ANNUAL MEAN			101	1941
HIGHEST DAILY MEAN	182	Jul 6	1160	Jul 29 1947
LOWEST DAILY MEAN	86	Dec 1	.90	Mar 15 1977
INSTANTANEOUS PEAK FLOW	586a	Oct 22	1170	Jul 28 1947
INSTANTANEOUS PEAK STAGE (FEET)	2.06	Oct 22	3.34	Jul 28 1947
INSTANTANEOUS LOW FLOW	7.7a	Oct 22	.00b	Nov 15 1978
10 PERCENTILE	179		436	
50 PERCENTILE	134		177	
95 PERCENTILE	87		13	

* Regulated period only (1922-88)
a Result of regulation at Crane Prairie Reservoir
b Due to closure of gates in Crane Prairie Dam

14054500 BROWN CREEK NEAR LA PINE, OR

LOCATION.--Lat 43°42'57", long 121°48'10", in NE 1/4 SW 1/4 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.--Records excellent. No regulation. No diversion upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	29	32	27	25	25	24	24	25	27	28	30
2	30	29	34	27	e24	25	24	24	25	27	28	30
3	30	29	32	27	24	26	25	24	25	27	28	31
4	30	29	31	26	24	26	25	23	26	27	28	31
5	30	30	30	26	24	26	25	24	25	27	28	31
6	30	30	30	26	24	26	24	24	25	27	28	32
7	30	30	29	26	24	25	24	25	26	27	28	32
8	30	29	29	26	24	24	24	24	26	27	28	31
9	30	29	32	27	25	24	24	24	26	27	28	31
10	30	29	38	28	25	24	24	24	26	27	28	31
11	30	29	30	28	26	24	24	23	26	27	28	31
12	30	29	29	27	25	24	23	23	26	27	29	31
13	30	30	28	27	25	23	23	23	26	27	29	31
14	30	29	28	27	25	23	26	23	26	27	29	31
15	30	29	28	27	25	23	25	23	26	27	29	30
16	30	29	28	27	24	23	24	24	26	27	29	30
17	30	29	28	29	24	23	23	24	26	27	29	30
18	30	29	28	26	24	23	23	24	26	27	29	30
19	30	29	28	26	24	24	24	24	26	27	29	31
20	29	29	28	26	24	24	24	24	26	28	29	31
21	29	29	28	26	24	24	24	24	26	28	30	31
22	29	28	28	26	24	24	24	24	26	28	30	31
23	29	29	27	26	24	26	23	24	26	28	30	31
24	29	29	e27	26	24	25	23	24	26	28	30	31
25	29	29	27	25	24	25	23	24	27	28	29	31
26	29	29	27	25	24	25	23	24	27	28	29	30
27	29	28	27	25	25	25	24	24	27	28	29	30
28	29	28	27	25	25	25	23	25	27	28	30	30
29	29	28	27	25	25	25	24	24	27	28	30	30
30	29	28	27	25	---	24	24	24	27	28	30	30
31	29	---	27	25	---	24	---	24	---	28	30	---
TOTAL	918	869	899	815	708	757	717	740	781	849	896	921
MEAN	29.6	29.0	29.0	26.3	24.4	24.4	23.9	23.9	26.0	27.4	28.9	30.7
MAX	30	30	38	29	26	26	26	25	27	28	30	32
MIN	29	28	27	25	24	23	23	23	25	27	28	30
AC-FT	1820	1720	1780	1620	1400	1500	1420	1470	1550	1680	1780	1830

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	42.1	40.5	38.2	35.9	34.7	34.7	36.8	37.5	38.3	39.5	42.4	42.8
MAX	70.9	66.0	61.7	55.3	52.8	53.6	56.4	68.8	71.1	74.9	77.4	70.0
(WY)	1957	1957	1957	1957	1957	1957	1951	1956	1956	1956	1956	1956
MIN	18.0	17.5	16.9	16.1	16.2	16.7	17.0	17.5	17.0	16.9	17.5	17.1
(WY)	1942	1942	1942	1942	1942	1942	1941	1941	1941	1941	1941	1941

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	27.0		38.6	
HIGHEST ANNUAL MEAN			59.3	1951
LOWEST ANNUAL MEAN			18.2	1942
HIGHEST DAILY MEAN	38	Dec 10	86	Aug 4 1956
LOWEST DAILY MEAN	23	Mar 13	16	Jul 22 1941
INSTANTANEOUS PEAK FLOW	44	Dec 10	104	Aug 4 1956
INSTANTANEOUS PEAK STAGE (FEET)	1.22a	Feb 2	3.50a	Jan 30 1980
INSTANTANEOUS LOW FLOW	23b		16c	Jul 22-25 1941
10 PERCENTILE	.00		55	
50 PERCENTILE	.00		38	
95 PERCENTILE	24		23	

a Backwater from ice
b Occurred many days in March, April, and May
c Also occurred at times for period December 1941 to March 1942

14056000 WICKIUP RESERVOIR NEAR LA PINE, OR

LOCATION.--Lat 43°41'02", long 121°41'20", in SW 1/4 NE 1/4 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, 187,700 acre-ft Apr. 4, elevation, 4,336.53 ft; minimum contents observed, 21,330 acre-ft Sept. 21, 22, elevation, 4,295.44 ft.

MONTHEND ELEVATION AND CONTENTS AT 0800, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	4,303.89	35,740	-
Oct. 31	4,311.50	52,240	+16,500
Nov. 30	4,322.83	86,430	+34,190
Dec. 31	4,328.09	114,500	+28,070
CAL YR 1987	-	-	-47,900
Jan. 31	4,331.71	141,700	+27,200
Feb. 28	4,334.14	163,500	+21,800
Mar. 31	4,336.33	185,600	+22,100
Apr. 30	4,336.08	182,900	-2,700
May 31	4,332.15	145,400	-37,500
June 30	4,327.79	112,600	-32,800
July 31	4,317.02	66,980	-45,620
Aug. 31	4,304.89	37,740	-29,240
Sept.30	4,296.13	22,340	-15,400
WTR YR 1988	-	-	-13,400

14056500 DESCHUTES RIVER BELOW WICKIUP RESERVOIR, NEAR LA PINE, OR

LOCATION.--Lat 43°41'10", long 121°41'13", in NW 1/4 NE 1/4 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.--Records good except those for June 2 to June 12, which are fair. 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	732	23	23	24	27	26	32	630	1010	1380	1490	1400
2	722	24	22	24	27	26	143	683	978	1380	1470	1400
3	700	24	22	25	26	26	264	699	915	1370	1450	1390
4	701	23	24	25	26	26	292	713	696	1370	1440	1390
5	701	23	26	25	27	26	387	714	486	1370	1410	1370
6	702	23	25	26	27	26	401	715	549	1370	1370	1350
7	703	23	24	26	27	26	391	781	604	1370	1370	1340
8	704	24	24	26	28	26	397	822	706	1370	1360	1340
9	737	24	24	e27	28	27	520	850	802	1370	1330	1340
10	824	24	25	28	28	27	592	878	862	1390	1310	1320
11	823	24	25	e27	28	27	606	992	862	1520	1290	1320
12	821	24	24	e26	27	27	678	1140	885	1540	1290	1260
13	821	24	e24	e25	27	27	730	1150	1020	1630	1290	1200
14	820	24	e24	27	28	27	729	1230	1300	1670	1280	1120
15	819	24	e24	27	28	28	728	1320	1450	1670	1280	1070
16	500	24	e24	26	28	28	726	1300	1460	1670	1270	1050
17	214	23	24	26	28	28	726	1190	1480	1670	1260	1020
18	27	21	24	27	28	28	698	1130	1320	1620	1260	1010
19	24	22	24	26	29	28	668	1160	1270	1600	1250	991
20	23	22	24	26	29	29	557	1220	1340	1600	1250	887
21	23	22	e25	26	27	29	407	1230	1370	1600	1240	797
22	24	21	e26	26	28	29	361	1250	1430	1600	1240	791
23	22	22	e26	27	28	30	362	1360	1500	1600	1270	760
24	22	23	e25	27	28	30	362	1420	1510	1600	1300	734
25	23	23	e25	27	27	31	386	1410	1590	1600	1340	736
26	23	24	e24	26	25	31	433	1420	1620	1600	1330	733
27	23	24	24	26	24	31	428	1410	1560	1600	1330	716
28	23	24	24	27	25	32	393	1360	1530	1600	1380	710
29	23	24	24	27	25	32	361	1320	1430	1560	1400	710
30	23	24	24	27	---	32	399	1240	1350	1530	1390	649
31	23	---	24	27	---	32	---	1110	---	1530	1390	---
TOTAL	12370	698	751	812	788	878	14157	33847	34885	47350	41330	31904
MEAN	399	23.3	24.2	26.2	27.2	28.3	472	1092	1163	1527	1333	1063
MAX	824	24	26	28	29	32	730	1420	1620	1670	1490	1400
MIN	22	21	22	24	24	26	32	630	486	1370	1240	649
AC-FT	24540	1380	1490	1610	1560	1740	28080	67140	69190	93920	81980	63280

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	574.4	164.7	171.9	216.5	253.7	269.8	553.8	1038	1346	1646	1520	1216
MAX	1200	1050	887.1	850.8	779.5	735.0	990.4	1542	1788	2079	2123	1698
(WY)	1947	1944	1985	1944	1975	1972	1959	1973	1952	1962	1951	1950
MIN	111.7	14.4	16.0	17.7	16.3	17.6	268.0	476.0	638.1	922.0	908.3	802.7
(WY)	1978	1960	1960	1980	1961	1961	1971	1945	1948	1943	1944	1985

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	600		750	
HIGHEST ANNUAL MEAN			997	1957
LOWEST ANNUAL MEAN			552	1945
HIGHEST DAILY MEAN	1670	Jul 14	2280	Jul 29 1956
LOWEST DAILY MEAN	21	Nov 18	10	Jan 17 1952
INSTANTANEOUS PEAK FLOW	1680	Jul 15	2280a	
INSTANTANEOUS PEAK STAGE (FEET)	6.01	Jul 15	not determined	
INSTANTANEOUS LOW FLOW	15	Oct 17	1.9	Nov 10 1973
10 PERCENTILE	1430		1650	
50 PERCENTILE	425		651	
95 PERCENTILE	23		22	

* Regulated period only (1943-88)
a Occurred July 28 to Aug. 1, 1956, July 31, Aug. 1, 2, 1962

14057500 FALL RIVER NEAR LA PINE, OR

LOCATION.--Lat 43°47'48", long 121°34'18", in NW 1/4 SE 1/4 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.--Records excellent except for estimated daily discharges, which are good. 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	127	124	124	118	116	114	114	114	114	e111	e108	107
2	127	124	122	117	115	113	114	114	113	e111	e108	107
3	127	124	121	117	115	114	115	114	113	e110	e108	107
4	127	124	122	117	116	114	115	114	113	e110	e108	107
5	127	124	122	117	116	114	115	115	113	e110	e108	107
6	127	124	122	117	117	114	114	114	113	e110	e108	107
7	127	124	122	118	117	114	114	115	112	e110	e108	107
8	127	123	121	119	117	113	114	115	112	e110	e108	107
9	127	123	126	119	116	115	114	114	113	e110	e108	107
10	126	122	126	119	116	115	114	114	112	e110	e108	107
11	126	122	122	118	116	115	114	114	112	e110	e108	106
12	126	122	122	117	117	115	114	114	112	e110	e107	106
13	126	124	121	118	117	115	114	113	112	e110	e107	106
14	126	122	121	119	117	115	116	114	e112	e110	e107	107
15	126	123	122	118	116	115	115	114	e112	e110	e107	107
16	126	122	122	119	116	114	115	114	e112	e109	e107	106
17	126	122	121	118	115	115	115	113	e112	e109	e107	105
18	125	122	119	118	115	115	114	113	e112	e109	107	105
19	126	121	120	117	115	115	116	112	e111	e109	107	106
20	125	122	119	117	115	115	116	113	e111	e109	107	105
21	125	122	119	117	115	114	116	113	e111	e109	107	105
22	126	121	119	116	115	115	116	113	e111	e109	107	105
23	126	121	119	117	115	116	115	113	e111	e109	107	105
24	125	121	118	117	115	115	115	113	e111	e109	108	105
25	125	121	117	117	114	115	115	113	e111	e109	107	105
26	125	121	118	117	114	114	115	113	e111	e109	107	105
27	125	121	118	117	113	114	115	113	e111	e109	107	105
28	125	121	119	117	114	114	115	113	e111	e109	107	105
29	125	121	118	118	113	114	115	113	e111	e109	107	105
30	124	121	119	117	---	114	114	112	e111	e108	107	105
31	124	---	119	117	---	114	---	113	---	e108	107	---
TOTAL	3902	3669	3740	3644	3348	3548	3443	3519	3356	3394	3329	3179
MEAN	126	122	121	118	115	114	115	114	112	109	107	106
MAX	127	124	126	119	117	116	116	115	114	111	108	107
MIN	124	121	117	116	113	113	114	112	111	108	107	105
AC-FT	7740	7280	7420	7230	6640	7040	6830	6980	6660	6730	6600	6310

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	147.7	145.6	143.7	142.0	141.9	144.1	152.1	158.2	156.8	155.5	153.0	149.6
MAX	206.7	198.7	197.9	191.4	186.9	193.0	217.8	233.3	232.7	223.6	218.1	208.3
(WY)	1952	1952	1952	1952	1957	1954	1954	1951	1951	1951	1951	1951
MIN	83.4	80.8	79.3	78.0	78.0	77.5	79.5	80.0	82.2	87.0	86.0	85.8
(WY)	1943	1942	1942	1942	1942	1942	1942	1942	1942	1942	1942	1942

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	115		149	
HIGHEST ANNUAL MEAN			202	1952
LOWEST ANNUAL MEAN			81.5	1942
HIGHEST DAILY MEAN	127	Oct 1	244	Jun 5 1951
LOWEST DAILY MEAN	105	Sep 17	77	Feb 28 1942
INSTANTANEOUS PEAK FLOW	152a	Oct 11	254	Jun 5 1965
INSTANTANEOUS PEAK STAGE (FEET)	1.37a	Oct 11	2.02	Jun 5 1965
INSTANTANEOUS LOW FLOW	93a	Sep 28	67b	
10 PERCENTILE	.00		189	
50 PERCENTILE	.00		149	
95 PERCENTILE	107		100	

a Result of regulation by fish hatchery
b Occurred sometime during period Sept. 20-30, 1969

14059500 CRESCENT LAKE NEAR CRESCENT, OR

LOCATION.--Lat 43°30'05", long 121°58'20", in SW 1/4 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, 60,980 acre-ft May 11, elevation, 4,838.83 ft; minimum contents, 31,340 acre-ft Sept. 28, elevation, 4,830.85 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	4,835.95	50,100	-
Oct. 31	4,836.11	50,690	+590
Nov. 30	4,836.43	51,890	+1,200
Dec. 31	4,837.11	54,450	+2,560
CAL YR 1987	-	-	-14,840
Jan. 31	4,837.65	56,500	+2,050
Feb. 28	4,837.74	56,840	+340
Mar. 31	4,837.98	57,750	+910
Apr. 30	4,838.71	60,530	+2,780
May 31	4,838.70	60,490	-40
June 30	4,838.32	59,050	-1,440
July 31	4,836.52	52,240	-6,810
Aug. 31	4,833.95	42,660	-9,580
Sept.30	4,830.92	31,590	-11,070
WTR YR 1988	-	-	-18,510

14060000 CRESCENT CREEK AT CRESCENT LAKE, NEAR CRESCENT, OR

LOCATION.--Lat 43°30'11", long 121°58'20", in SE 1/4 SW 1/4 sec.11, T.24 S., R.6 E., Klamath County, Hydrologic Unit 17070302, Deschutes National Forest, on left bank 400 ft downstream from Crescent Lake Dam, 0.5 mi south of town of Crescent Lake, 14 mi west of Crescent, and at mile 29.9.

DRAINAGE AREA.--60.7 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.--No estimated daily discharges. Records good above 10 ft^3/s, fair below. Flow regulated since 1922 by Crescent Lake (station 14059500). No diversion upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.2	6.9	6.9	6.9	7.0	6.5	6.9	7.7	74	74	144	162
2	7.2	6.9	7.3	6.9	6.9	6.5	7.3	7.7	74	74	144	161
3	7.3	6.9	7.3	6.9	6.9	6.5	7.3	7.7	74	74	143	160
4	7.2	6.9	7.3	6.9	6.9	6.6	7.3	7.7	74	74	143	160
5	7.2	6.9	7.3	6.9	6.9	6.8	7.3	7.7	74	73	142	159
6	7.1	6.9	7.3	6.9	6.5	6.9	7.3	7.7	74	73	141	158
7	7.1	6.9	7.3	6.9	6.5	6.8	7.3	7.7	74	73	141	157
8	7.1	7.0	7.3	6.9	6.5	6.9	7.3	7.7	74	73	140	157
9	7.2	7.3	7.3	6.9	6.5	6.9	7.3	7.7	74	73	140	192
10	7.2	7.3	7.3	7.3	6.5	6.9	7.3	7.7	74	73	140	243
11	7.0	7.3	7.3	7.3	6.5	6.9	7.3	33	74	73	140	240
12	7.0	7.3	7.3	7.3	6.5	6.9	7.3	74	74	72	140	238
13	6.9	7.3	7.3	7.3	6.5	6.9	7.3	75	74	72	139	236
14	6.9	7.3	7.3	7.0	6.5	6.9	7.3	74	74	72	139	234
15	6.9	7.3	7.3	7.0	6.5	6.9	7.3	74	74	72	138	232
16	6.9	7.3	7.3	7.3	6.5	6.9	7.3	75	74	72	138	231
17	6.9	7.3	7.3	6.9	6.5	6.9	7.3	74	74	72	137	229
18	6.9	7.3	7.3	7.0	6.5	6.9	7.3	74	74	72	136	227
19	6.9	7.3	7.3	6.9	6.5	6.9	7.3	74	74	110	136	225
20	6.9	7.3	7.2	6.9	6.5	6.9	7.3	74	75	149	136	223
21	6.9	7.3	7.2	6.9	6.5	6.9	7.3	74	75	149	135	221
22	6.9	7.3	7.3	6.9	6.5	6.9	7.3	74	75	149	135	219
23	6.9	7.3	7.2	6.9	6.5	6.9	7.4	74	75	148	135	218
24	6.9	7.0	7.0	6.9	6.5	6.9	7.6	74	75	148	148	215
25	6.9	6.9	6.9	6.9	6.5	6.9	7.6	74	75	148	167	213
26	6.9	6.9	6.9	6.9	6.5	6.9	7.7	74	75	147	166	211
27	6.9	6.9	6.9	6.9	6.5	6.9	7.7	74	75	147	166	210
28	6.9	6.9	6.9	6.9	6.5	6.9	7.7	74	75	146	165	116
29	6.9	6.9	6.9	6.9	6.5	6.9	7.7	74	74	146	165	7.1
30	6.9	6.9	6.9	6.9	---	6.9	7.7	74	74	146	164	5.7
31	6.9	---	6.9	6.9	---	6.9	---	74	---	145	163	---
TOTAL	216.9	213.2	222.5	216.2	190.6	212.2	221.3	1592.0	2229	3189	4506	5659.8
MEAN	7.00	7.11	7.18	6.97	6.57	6.85	7.38	51.4	74.3	103	145	189
MAX	7.3	7.3	7.3	7.3	7.0	6.9	7.7	75	75	149	167	243
MIN	6.9	6.9	6.9	6.9	6.5	6.5	6.9	7.7	74	72	135	5.7
AC-FT	430	423	441	429	378	421	439	3160	4420	6330	8940	11230

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	21.4	13.5	16.0	18.1	20.0	23.8	24.2	57.4	107.6	163.7	152.0	73.5
MAX	232.8	134.7	146.3	147.5	146.7	166.5	148.0	172.6	260.5	286.7	276.5	250.0
(WY)	1957	1952	1951	1951	1951	1954	1954	1957	1957	1958	1958	1956
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	14.3	10.8	.000
(WY)	1929	1929	1929	1929	1929	1929	1929	1931	1931	1956	1931	1930

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	51.0		58.1	
HIGHEST ANNUAL MEAN			148	1957
LOWEST ANNUAL MEAN			8.16	1931
HIGHEST DAILY MEAN	243	Sep 10	311	Jul 10 1929
LOWEST DAILY MEAN	5.7	Sep 30	.00	Sep 18 1928
INSTANTANEOUS PEAK FLOW	271	Jul 19	313a	Jul 9 1929
INSTANTANEOUS PEAK STAGE (FEET)	2.86	Jul 19	not determined	
INSTANTANEOUS LOW FLOW	1.0	Sep 29	.00	at times
10 PERCENTILE	152		186	
50 PERCENTILE	7.1		8.0	
95 PERCENTILE	6.4		.00	

* Regulated period only (1928-88)
a Also occurred on August 9, 1936

14063000 LITTLE DESCHUTES RIVER NEAR LA PINE, OR

LOCATION.--Lat 43°41'21", long 121°30'06", in SW 1/4 SW 1/4 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.--Records good Oct. 1 to Nov. 24, and Sept. 12-30; poor Nov. 25 to Sept. 11. Flow regulated since 1922 by Crescent Lake (station 14059500). Many diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58	39	e100	83	e100	135	142	178	228	141	e168	e183
2	54	39	e180	87	e90	139	139	182	253	138	e168	e182
3	51	39	e240	85	e88	136	144	173	286	134	e167	e181
4	50	39	e210	88	e88	139	183	168	311	132	e160	e183
5	47	39	e190	90	e87	149	198	163	320	129	e160	e182
6	46	38	138	91	e89	167	191	160	331	124	e159	e181
7	45	38	123	92	136	162	181	162	341	122	e159	e181
8	44	38	117	96	164	147	180	166	313	120	e158	e180
9	44	38	114	105	210	142	178	163	287	118	e157	e179
10	43	38	195	123	258	152	170	150	271	114	e157	e177
11	43	38	328	150	292	144	163	138	259	111	e155	e177
12	42	40	305	202	293	132	159	132	240	111	e155	214
13	42	46	204	242	269	129	158	179	221	108	e155	227
14	41	51	157	220	224	130	171	200	204	106	e155	234
15	41	54	128	246	200	128	220	214	187	106	e155	234
16	40	54	110	244	178	124	236	223	182	104	e154	235
17	40	57	117	228	145	119	216	223	184	103	e154	235
18	40	62	113	201	134	117	203	223	184	101	e153	234
19	40	62	108	184	123	117	198	213	182	98	e153	235
20	39	62	102	169	121	119	203	204	180	99	e152	236
21	39	60	102	169	123	121	233	197	174	e150	e151	236
22	38	59	102	162	124	127	236	190	172	e171	e151	236
23	40	58	89	169	127	140	216	185	168	e171	e151	236
24	40	57	85	166	126	160	197	189	160	e171	e150	237
25	40	e57	87	159	120	158	180	195	155	e171	e150	234
26	39	e58	77	158	121	151	167	197	155	e170	e150	232
27	38	e62	81	158	124	156	162	193	151	e170	e164	232
28	38	e62	79	157	129	168	156	193	146	e170	e185	230
29	38	e58	80	161	133	162	153	212	143	e169	e184	226
30	38	e56	87	165	---	154	169	234	142	e169	e184	117
31	38	---	90	e110	---	148	---	232	---	e168	e183	---
TOTAL	1316	1498	4238	4760	4416	4372	5502	5831	6530	4169	4957	6286
MEAN	42.5	49.9	137	154	152	141	183	188	218	134	160	210
MAX	58	62	328	246	293	168	236	234	341	171	185	237
MIN	38	38	77	83	87	117	139	132	142	98	150	117
AC-FT	2610	2970	8410	9440	8760	8670	10910	11570	12950	8270	9830	12470

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	84.4	115.2	159.7	157.9	187.3	205.6	294.4	382.2	331.1	240.9	195.0	120.8
MAX	350.2	356.4	711.7	656.1	562.1	709.3	715.8	989.9	788.0	469.7	341.8	319.5
(WY)	1957	1951	1965	1965	1951	1972	1943	1956	1974	1974	1976	1956
MIN	17.3	27.1	32.1	35.0	30.0	60.4	67.5	82.5	63.2	92.7	30.0	11.7
(WY)	1932	1932	1940	1929	1929	1933	1977	1926	1931	1931	1931	1931

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	147		207	
HIGHEST ANNUAL MEAN			374	1956
LOWEST ANNUAL MEAN			65.8	1931
HIGHEST DAILY MEAN	341	Jun 7	3240	Dec 25 1964
LOWEST DAILY MEAN	38	Oct 22	9.0	Sep 2 1931
INSTANTANEOUS PEAK FLOW	376	Dec 11	3660	Dec 25 1964
INSTANTANEOUS PEAK STAGE (FEET)	4.84	Dec 11	8.18	Dec 25 1964
INSTANTANEOUS LOW FLOW	38a	Oct 22, 26-31	8	Sep 2, 3 1931
10 PERCENTILE	230		412	
50 PERCENTILE	154		169	
95 PERCENTILE	40		42	

* Regulated period only (1924-88)
a Also occurred Nov. 1-3, 5-12

LITTLE DESCHUTES RIVER BASIN

14063300 PAULINA CREEK NEAR LA PINE, OR

LOCATION.--Lat 43°42'47", long 121°16'39", in SW 1/4 NE 1/4 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.--Records good except for estimated daily discharges, which are fair. Flow regulated by dam at outlet of Paulina Lake 180 ft upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	15	4.0	7.1	18	16	e20	23	22	16	20	19
2	21	15	4.0	6.9	18	16	e20	23	23	16	20	19
3	21	13	4.0	7.4	18	17	e22	23	25	15	20	18
4	20	13	4.0	8.3	18	18	e23	22	27	15	20	18
5	20	13	4.0	8.6	17	e18	e23	22	27	14	20	18
6	20	13	4.0	8.8	17	e18	e23	21	29	14	20	18
7	21	13	4.0	9.1	17	e18	e23	22	27	14	20	18
8	21	13	4.0	9.9	20	e18	e22	22	26	14	20	18
9	23	13	4.0	12	22	e20	e21	22	25	16	20	18
10	23	13	4.0	21	22	e21	e20	22	24	17	20	18
11	23	13	4.0	28	21	e21	e20	21	23	16	20	18
12	22	13	4.0	26	21	e19	e20	20	22	15	20	17
13	22	9.7	4.0	24	21	e18	e19	21	21	15	20	17
14	22	3.5	4.0	24	20	e18	18	20	21	14	20	17
15	22	6.3	4.0	27	20	e17	18	20	20	14	20	17
16	19	13	4.0	25	20	e17	18	20	20	14	20	17
17	19	13	4.3	25	19	e16	18	21	19	14	20	17
18	17	13	4.8	24	19	e16	18	20	18	14	20	17
19	16	13	4.8	23	18	e16	18	19	18	13	20	17
20	14	13	4.8	22	18	e16	19	19	18	13	20	14
21	16	13	4.8	21	17	e17	26	18	18	13	20	10
22	16	13	4.8	20	17	e17	27	18	17	13	20	8.2
23	16	13	5.0	20	17	e19	25	17	17	13	20	7.7
24	17	13	5.1	19	17	e20	24	17	17	14	19	7.9
25	17	10	5.1	19	17	e21	24	17	17	14	19	7.9
26	17	4.0	5.1	18	17	e22	23	16	17	13	19	7.9
27	15	4.0	5.1	18	16	e22	23	16	16	13	19	7.9
28	15	4.0	5.3	18	16	e22	22	19	16	15	19	7.7
29	15	4.0	5.4	18	16	e22	25	20	16	20	19	7.9
30	15	4.0	5.8	19	---	e21	25	20	16	20	19	7.9
31	15	---	6.6	18	---	e20	---	20	---	20	19	---
TOTAL	581	326.5	140.8	555.1	534	577	647	621	622	461	612	431.0
MEAN	18.7	10.9	4.54	17.9	18.4	18.6	21.6	20.0	20.7	14.9	19.7	14.4
MAX	23	15	6.6	28	22	22	27	23	29	20	20	19
MIN	14	3.5	4.0	6.9	16	16	18	16	16	13	19	7.7
AC-FT	1150	648	279	1100	1060	1140	1280	1230	1230	914	1210	855

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	16.1	9.10	11.3	19.4	26.4	22.8	20.1	22.7	24.0	23.3	25.1	22.5
MAX	21.4	13.8	21.5	21.3	36.3	27.4	25.5	29.5	32.7	29.1	32.8	31.1
(WY)	1984	1984	1985	1986	1983	1983	1984	1983	1984	1985	1983	1984
MIN	12.4	5.69	4.54	17.4	18.4	18.6	16.7	19.6	18.9	14.9	16.8	14.4
(WY)	1986	1986	1988	1984	1988	1988	1986	1985	1987	1988	1987	1988

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	16.7		20.2	
HIGHEST ANNUAL MEAN			23.4	1984
LOWEST ANNUAL MEAN			16.7	1988
HIGHEST DAILY MEAN	29	Jun 6	59	Apr 30 1983
LOWEST DAILY MEAN	3.5	Nov 14	.23	Nov 23 1983
INSTANTANEOUS PEAK FLOW	41a	Oct 9	66	Apr 29 1983
INSTANTANEOUS PEAK STAGE (FEET)	1.85a	Oct 9	2.35	Apr 29 1983
INSTANTANEOUS LOW FLOW	0.24a	Oct 6, 20	0.19b	Oct 19 1982
10 PERCENTILE	23		31	
50 PERCENTILE	18		21	
95 PERCENTILE	4.0		4.5	

a Result of regulation by dam at Paulina Lake
b Also occurred Nov. 22, 1983

14064500 DESCHUTES RIVER AT BENHAM FALLS, NEAR BEND, OR

LOCATION.--Lat 43°55'49", long 121°24'39", in SW 1/4 NE 1/4 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.--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.

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1350	517	551	525	567	595	628	988	1810	1960	2020	1880
2	1270	518	578	517	548	599	625	1240	1700	1940	2000	1890
3	1240	517	590	502	553	604	680	1320	1670	1940	1970	1890
4	1210	515	631	503	543	605	856	1330	1650	1930	1950	1880
5	1200	515	675	531	531	608	918	1350	1420	1930	1930	1880
6	1200	515	659	532	532	613	1030	1340	1230	1920	1910	1880
7	1200	515	635	528	534	626	1050	1340	1270	1920	1870	1850
8	1200	512	613	528	551	627	1030	1420	1320	1920	1860	1830
9	1190	515	634	535	582	617	1030	1460	1420	1910	1850	1830
10	1220	514	669	567	604	611	1140	1490	1500	1910	1820	1830
11	1300	512	687	581	636	615	1220	1510	1540	1910	1800	1820
12	1300	517	747	570	663	610	1230	1620	1540	1980	1780	1830
13	1300	526	761	581	694	599	1300	1740	1550	2010	1780	1830
14	1300	525	673	621	690	594	1370	1780	1670	2060	1780	1790
15	1300	525	643	644	682	591	1380	1860	1880	2120	1790	1730
16	1300	532	616	642	648	592	1410	1950	2020	2130	1780	1670
17	1060	533	589	637	636	587	1440	1950	2080	2130	1770	1650
18	780	534	584	622	624	583	1420	1880	2080	2130	1760	1620
19	594	535	578	603	612	581	1380	1820	2030	2110	1760	1620
20	538	536	552	608	600	582	1350	1840	1950	2080	1760	1600
21	528	535	555	589	588	585	1250	1880	1940	2060	1750	1520
22	525	535	577	579	585	590	1090	1890	1950	2070	1750	1430
23	522	534	563	573	584	604	1040	1890	1990	2090	1740	1420
24	521	532	521	571	587	618	1010	1960	2050	2100	1760	1390
25	519	532	499	570	585	631	996	2040	2070	2100	1790	1360
26	517	527	533	564	582	640	1000	2050	2120	2090	1820	1360
27	516	515	530	560	580	631	1040	2050	2160	2080	1830	1350
28	515	509	532	559	583	633	1030	2050	2150	2080	1840	1340
29	515	517	532	565	588	644	991	2010	2110	2080	1860	1320
30	515	526	523	570	---	640	944	1960	2020	2060	1890	1320
31	515	---	525	570	---	633	---	1920	---	2020	1890	---
TOTAL	28760	15690	18555	17647	17292	18888	32878	52928	53890	62770	56860	49610
MEAN	928	523	599	569	596	609	1096	1707	1796	2025	1834	1654
MAX	1350	536	761	644	694	644	1440	2050	2160	2130	2020	1890
MIN	515	509	499	502	531	581	625	988	1230	1910	1740	1320
AC-FT	57050	31120	36800	35000	34300	37460	65210	105000	106900	124500	112800	98400

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	1197	787.8	839.8	884.9	962.7	1021	1361	1942	2201	2366	2202	1857
MAX	2089	1540	1661	1540	1620	2068	2103	2521	3017	2938	2795	2486
(WY)	1957	1944	1985	1975	1951	1972	1952	1956	1952	1957	1952	1956
MIN	645.7	486.7	519.7	542.9	514.5	541.9	901.6	1199	1264	1489	1403	1256
(WY)	1978	1970	1970	1949	1969	1969	1948	1945	1945	1944	1944	1944

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	1163		1387	
HIGHEST ANNUAL MEAN			1977	1957
LOWEST ANNUAL MEAN			1021	1945
HIGHEST DAILY MEAN	2160	Jun 27	3410	Dec 26 1964
LOWEST DAILY MEAN	499	Dec 25	438	Nov 30 1969
INSTANTANEOUS PEAK FLOW	2170	Jun 27		
INSTANTANEOUS PEAK STAGE (FEET)	5.60	Jun 27		
INSTANTANEOUS LOW FLOW	470	Dec 25	363	Jan 20 1962
10 PERCENTILE	1990		2430	
50 PERCENTILE	1050		1420	
95 PERCENTILE	514		564	

* Regulated period only (1943-88)

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 (station 14064500) and below Bend (station 14070500).

14065500 ARNOLD CANAL NEAR BEND diverts at mile 174.5 from right bank at head of Lava Island, in SW 1/4 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 NE 1/4 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 SW 1/4 SE 1/4 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 NE 1/4 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 NE 1/4 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 NE 1/4 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 1987 to SEPTEMBER 1988

MONTH	ARNOLD CANAL	CENTRAL OREGON CANAL	DESCHUTES COUNTY MUNICIPAL IMPROVEMENT DISTRICT CANAL	NORTH UNIT MAIN CANAL	NORTH CANAL	SWALLEY CANAL	TOTAL
OCTOBER	2,300	11,220	0	14,340	9,710	3,610	41,180
NOVEMBER	434	1,900	0	0	1,690	567	4,590
DECEMBER	463	1,880	0	0	1,440	284	4,070
JANUARY	19	1,500	0	0	1,410	198	3,130
FEBRUARY	436	1,990	0	0	1,720	361	4,510
MARCH	342	0	0	0	0	363	705
APRIL	1,860	16,190	149	19,910	14,150	3,500	55,760
MAY	5,860	27,160	2,720	31,810	23,750	6,160	97,460
JUNE	6,550	24,340	2,710	30,270	26,540	7,160	97,570
JULY	7,270	31,720	7,980	34,750	29,390	7,500	118,600
AUGUST	6,590	32,270	8,550	21,670	30,230	7,590	106,900
SEPTEMBER	5,410	28,350	5,430	21,620	27,010	5,870	93,690
WTR YR 1988	37,530	178,500	27,540	174,400	167,000	43,160	628,200

14070500 DESCHUTES RIVER BELOW BEND, OR

LOCATION.--Lat 44°04'59", long 121°18'24", in SE 1/4 SE 1/4 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.--Records good except for estimated daily discharges Jan. 13 to July 6, which are fair. 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.

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	496	538	491	533	557	549	45	56	e30	30	28
2	49	497	549	487	518	558	524	31	32	e30	29	27
3	32	496	559	483	513	565	530	30	32	e30	29	26
4	32	495	577	459	517	567	264	29	241	e30	29	27
5	31	495	626	491	485	567	41	29	468	e30	28	27
6	31	490	627	497	480	572	38	30	243	e30	29	27
7	31	495	605	496	475	580	40	29	229	30	28	26
8	31	491	581	497	476	586	40	30	177	31	28	27
9	31	492	620	508	503	580	33	30	32	29	28	26
10	30	492	651	537	520	539	33	32	32	31	28	27
11	32	489	646	520	510	512	33	34	41	30	29	27
12	33	498	697	535	526	512	33	35	39	31	29	27
13	32	504	738	541	586	526	36	37	e30	31	28	27
14	31	504	565	580	622	523	34	38	e30	32	28	27
15	33	498	360	493	516	507	34	38	e30	33	29	27
16	32	298	326	392	375	507	34	40	e30	34	29	27
17	223	52	290	387	360	505	35	42	e30	33	28	27
18	285	32	368	375	349	501	34	39	e30	31	28	27
19	579	49	522	418	396	541	33	36	e30	31	28	28
20	476	103	388	570	577	540	34	34	e30	31	28	28
21	451	455	263	505	557	540	36	34	e30	29	29	28
22	431	505	318	413	410	544	36	34	e30	31	28	28
23	445	499	337	338	349	555	34	33	e30	31	28	29
24	443	471	427	349	348	570	31	35	e30	30	28	29
25	438	429	469	402	344	576	31	37	e30	30	28	29
26	436	437	486	533	432	593	31	35	e30	29	27	31
27	431	434	497	527	546	585	31	35	e30	30	29	29
28	434	419	497	527	545	582	31	36	e30	30	28	29
29	432	454	498	530	551	591	30	35	e30	29	30	28
30	435	491	491	535	---	591	30	34	e30	29	30	28
31	464	---	488	535	---	595	---	33	---	30	28	---
TOTAL	6984	12560	15604	14951	13919	17167	2753	1069	2162	946	883	828
MEAN	225	419	503	482	480	554	91.8	34.5	72.1	30.5	28.5	27.6
MAX	579	505	738	580	622	595	549	45	468	34	30	31
MIN	30	32	263	338	344	501	30	29	30	29	27	26
AC-FT	13850	24910	30950	29660	27610	34050	5460	2120	4290	1880	1750	1640

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	266.6	613.8	702.3	769.3	825.4	825.9	349.8	113.3	130.0	80.0	105.8	141.6
MAX	855.3	1194	1552	1369	1495	1767	1193	585.9	798.8	411.9	570.1	522.7
(WY)	1952	1944	1985	1975	1951	1957	1984	1956	1952	1943	1951	1951
MIN	30.7	289.2	338.2	435.3	453.7	269.9	22.0	21.6	23.9	24.3	21.1	19.0
(WY)	1965	1950	1970	1981	1948	1968	1968	1968	1968	1968	1964	1968

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	245		408	
HIGHEST ANNUAL MEAN			718	1952
LOWEST ANNUAL MEAN			205	1968
HIGHEST DAILY MEAN	738	Dec 13	2720	Dec 27 1964
LOWEST DAILY MEAN	26	Sep 3	8.0	Aug 7 1944
INSTANTANEOUS PEAK FLOW	880	Dec 13	2820	Dec 27 1964
INSTANTANEOUS PEAK STAGE (FEET)	3.40	Dec 13	4.90	Dec 27 1964
INSTANTANEOUS LOW FLOW	15	Nov 17, 18		
10 PERCENTILE	557		1020	
50 PERCENTILE	41		284	
95 PERCENTILE	27		25	

* Regulated period only (1943-88)

14074900 SNOW CREEK NEAR SISTERS, OR

LOCATION.--Lat 44°06'59", long 121°39'34", in NE 1/4 SW 1/4 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 current year. 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.--Records good except for discharges greater than 50 ft^3/s, which are fair, and estimated estimated daily discharges, which are poor. No regulation or diversion upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.7	4.7	7.5	2.8	2.5	2.0	2.3	3.2	6.0	8.3	6.7	5.2
2	4.7	4.4	19	2.8	2.5	2.0	e3.3	3.2	8.0	8.8	6.7	5.1
3	4.7	e4.4	61	2.7	2.5	2.0	e2.9	3.0	8.5	8.2	6.7	5.1
4	4.7	4.2	21	2.6	2.4	2.0	2.1	3.0	7.2	7.0	6.7	5.0
5	4.4	4.2	8.4	2.6	2.6	2.0	e3.0	3.0	6.1	7.0	6.7	4.7
6	4.4	4.4	4.3	2.6	2.5	2.0	e4.0	3.0	5.7	6.9	6.6	4.7
7	4.4	4.4	3.9	2.6	2.5	2.0	e3.8	2.8	5.7	7.7	6.3	4.7
8	4.4	4.7	4.2	2.6	2.6	2.0	3.3	2.8	5.6	7.8	6.3	4.7
9	4.4	4.6	39	2.6	2.5	2.0	2.9	2.8	5.7	7.8	6.3	4.7
10	4.7	4.6	85	2.7	2.3	2.0	e3.5	3.3	5.7	7.9	6.1	4.7
11	4.7	4.8	6.9	2.6	2.3	2.0	e4.0	4.3	6.4	7.9	6.0	4.7
12	4.7	4.9	3.2	2.5	2.3	2.0	e4.5	5.2	7.1	7.9	6.0	4.7
13	4.7	5.7	3.1	2.5	2.3	2.0	e4.0	4.7	7.7	7.9	6.0	4.7
14	4.6	5.3	2.9	3.1	2.4	2.0	e3.8	4.4	8.5	7.9	6.0	4.7
15	e4.7	e5.0	3.0	2.7	2.4	2.0	3.8	5.6	9.8	7.8	6.0	4.7
16	4.7	5.2	3.0	2.6	2.3	2.0	4.4	5.2	12	7.5	6.0	4.7
17	4.8	4.7	3.0	2.6	2.3	2.0	4.2	4.9	12	7.5	6.0	4.6
18	5.0	4.4	2.8	2.6	2.3	2.0	3.8	5.5	12	7.5	5.8	5.6
19	e4.9	4.5	2.8	2.6	2.3	1.7	3.6	6.0	12	7.4	5.6	4.8
20	4.7	4.4	2.8	2.7	2.3	1.8	3.4	6.7	12	7.4	5.6	4.7
21	4.7	4.4	2.8	2.8	2.3	1.5	3.2	7.9	12	7.4	5.6	4.4
22	4.7	e4.3	2.8	2.8	2.3	1.1	3.2	9.2	11	7.4	5.6	4.4
23	4.4	e4.0	2.8	2.8	2.2	1.0	3.1	8.6	12	7.2	5.6	4.4
24	4.4	4.2	2.8	2.8	2.1	.90	3.0	8.4	11	7.1	5.5	4.4
25	4.4	e4.0	2.8	2.7	2.1	1.5	3.0	8.1	10	7.1	5.4	4.4
26	e4.5	e4.0	3.0	2.6	2.2	e2.7	3.1	8.5	9.9	7.1	5.4	4.5
27	4.7	e4.0	3.0	2.6	2.1	e2.0	3.7	9.3	9.3	7.1	5.3	4.6
28	4.4	e4.0	3.0	2.6	2.2	1.3	4.1	10	8.8	7.0	5.3	4.4
29	4.4	e4.0	3.0	2.6	2.1	1.1	3.8	7.1	8.4	7.1	5.3	4.4
30	4.7	3.9	2.8	2.5	---	.93	3.3	7.0	8.0	7.0	5.3	4.6
31	4.8	---	2.8	2.5	---	1.4	---	6.6	---	6.7	5.2	---
TOTAL	143.1	134.3	318.4	82.4	67.7	54.93	104.1	173.3	264.1	232.3	183.6	141.0
MEAN	4.62	4.48	10.3	2.66	2.33	1.77	3.47	5.59	8.80	7.49	5.92	4.70
MAX	5.0	5.7	85	3.1	2.6	2.7	4.5	10	12	8.8	6.7	5.6
MIN	4.4	3.9	2.8	2.5	2.1	.90	2.1	2.8	5.6	6.7	5.2	4.4
AC-FT	284	266	632	163	134	109	206	344	524	461	364	280

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	6.12	5.43	5.38	3.51	3.34	3.22	3.94	7.32	12.1	9.22	7.02	5.65
MAX	7.74	8.79	10.3	4.43	4.79	5.32	4.73	10.0	15.1	10.5	7.97	6.62
(WY)	1985	1985	1988	1986	1986	1986	1986	1987	1985	1985	1986	1985
MIN	4.62	3.85	3.33	2.66	2.33	1.77	3.47	5.56	8.80	7.49	5.92	4.70
(WY)	1988	1986	1986	1988	1988	1988	1988	1985	1988	1988	1988	1988

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	5.19		6.69	
HIGHEST ANNUAL MEAN			6.77	1986
LOWEST ANNUAL MEAN			5.19	1988
HIGHEST DAILY MEAN	85	Dec 10	85	Dec 10 1987
LOWEST DAILY MEAN	.90	Mar 24	.90	Mar 24 1988
INSTANTANEOUS PEAK FLOW	341	Dec 10	341	Dec 10 1987
INSTANTANEOUS PEAK STAGE (FEET)	2.68	Dec 10	5.73a	Jan 18 1971
INSTANTANEOUS LOW FLOW	0.82	Mar 24, 25, 31	0.82	Mar 24, 25, 31 1988
10 PERCENTILE	8.1		10	
50 PERCENTILE	4.2		4.7	
95 PERCENTILE	1.9		2.5	

a Backwater from ice

14075000 SQUAW CREEK NEAR SISTERS, OR

LOCATION.--Lat 44°14'02", long 121°33'57", in SE 1/4 SW 1/4 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.--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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58	47	62	e40	46	51	52	74	122	158	104	80
2	59	46	56	e40	e46	49	62	71	127	188	97	82
3	59	45	76	e40	e47	51	76	69	145	181	94	84
4	57	45	71	e43	e49	52	62	66	142	153	94	85
5	57	45	62	e45	e48	54	61	66	123	141	98	85
6	57	45	61	e45	e48	52	76	64	113	128	95	82
7	57	44	52	e45	47	51	77	63	106	129	90	77
8	56	45	50	e48	50	50	67	64	101	136	91	74
9	55	46	95	e55	72	51	64	63	103	143	93	73
10	54	45	157	e57	58	50	64	65	101	146	95	68
11	53	46	91	e50	55	49	69	80	106	150	96	65
12	53	53	79	e43	53	49	80	99	116	142	95	65
13	52	71	72	e47	52	49	90	110	125	153	93	65
14	51	49	e70	e54	52	47	96	95	136	154	88	66
15	50	46	e70	e54	56	46	93	102	161	145	88	66
16	49	47	e70	e54	52	45	102	117	191	138	86	64
17	49	47	e70	e45	51	45	108	104	211	135	86	61
18	49	46	e60	e44	51	45	96	103	230	133	83	60
19	49	46	e55	e43	50	45	93	107	225	130	83	70
20	49	47	62	e40	49	47	90	116	234	132	84	61
21	48	45	53	e47	49	48	85	131	234	137	82	58
22	48	44	50	55	49	46	79	154	237	136	80	57
23	48	44	e48	53	49	50	75	160	269	134	82	57
24	48	44	e43	53	48	47	73	148	237	123	84	57
25	47	42	e43	51	48	50	69	148	208	117	87	57
26	47	47	e45	50	48	64	72	149	196	116	85	61
27	47	48	e47	51	48	60	79	159	187	119	84	67
28	47	47	e50	51	49	56	90	190	168	118	84	57
29	47	50	e48	52	50	53	95	151	150	117	85	58
30	47	59	e45	49	---	51	82	132	144	115	83	59
31	48	---	e43	50	---	51	---	125	---	111	80	---
TOTAL	1595	1421	1956	1494	1470	1554	2377	3345	4948	4258	2749	2021
MEAN	51.5	47.4	63.1	48.2	50.7	50.1	79.2	108	165	137	88.7	67.4
MAX	59	71	157	57	72	64	108	190	269	188	104	85
MIN	47	42	43	40	46	45	52	63	101	111	80	57
AC-FT	3160	2820	3880	2960	2920	3080	4710	6630	9810	8450	5450	4010

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	64.6	76.9	81.5	70.3	67.5	61.2	76.1	141.6	224.0	190.7	120.3	80.7
MAX	132.4	255.0	219.5	179.7	200.0	157.7	132.6	278.6	389.7	346.7	208.9	136.2
(WY)	1948	1910	1965	1971	1982	1972	1934	1956	1933	1917	1916	1913
MIN	39.9	36.5	35.1	23.6	24.3	33.5	36.9	57.9	113.3	69.5	67.7	50.6
(WY)	1978	1940	1932	1937	1937	1966	1929	1977	1977	1977	1944	1944

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	79.7		105	
HIGHEST ANNUAL MEAN			164	1956
LOWEST ANNUAL MEAN			60.6	1977
HIGHEST DAILY MEAN	269	Jun 23	1230	Dec 25 1980
LOWEST DAILY MEAN	40	Jan 1	20	Jan 8 1937
INSTANTANEOUS PEAK FLOW	317	Jun 23	2000a	Dec 25 1980
INSTANTANEOUS PEAK STAGE (FEET)	4.26b	Jan 6	9.2c	Jan 10 1979
INSTANTANEOUS LOW FLOW	40d	Nov 25, 26	14	Mar 2 1966
10 PERCENTILE	141		205	
50 PERCENTILE	63		78	
95 PERCENTILE	45		40	

a From rating curve extended above 690 ft^3/s on basis of slope-area measurement of peak flow
b Backwater from ice
c Observed on Jan. 11, 1979, from water-borne ice
d Also occurred Jan. 1-3, 20

14076500 DESCHUTES RIVER NEAR CULVER, OR

LOCATION.--Lat 44°29'56", long 121°19'12", in NW 1/4 SE 1/4 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 good. Flow regulated by Crescent Lake and Crane Prairie and Wickiup Reservoirs (see elsewhere in this report). Many diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	516	1010	1070	1060	1110	1080	1140	512	512	537	530	530
2	554	1020	1130	1050	1080	1080	1080	514	518	539	529	531
3	579	1020	1110	1020	1070	1080	1090	523	528	556	532	529
4	561	1020	1120	1030	1100	1090	1120	516	526	551	527	531
5	563	1020	1150	1020	1090	1140	659	517	767	538	525	534
6	562	1020	1180	1060	1060	1160	543	514	878	534	528	533
7	561	1010	1160	1080	1060	1150	536	513	708	536	527	532
8	560	1020	1140	1070	1050	1170	535	514	717	534	529	530
9	558	1020	1200	1090	1040	1170	534	514	661	535	528	532
10	560	1020	1420	1220	1010	1150	531	512	531	532	528	532
11	562	1010	1320	1180	1010	1100	525	512	523	531	528	531
12	563	1020	1270	1120	1020	1100	525	513	518	534	528	535
13	563	1030	1300	1130	1070	1100	527	513	533	536	530	534
14	563	1040	1310	1210	1120	1120	533	519	528	539	534	533
15	563	1030	1020	1240	1160	1090	559	516	532	537	535	531
16	564	1060	910	1020	929	1070	553	511	554	533	533	531
17	564	750	862	970	864	1070	534	518	580	531	530	533
18	750	603	829	968	854	1070	543	521	582	535	528	537
19	917	560	977	968	873	1070	539	517	621	533	531	543
20	991	570	1050	1090	993	1080	543	515	677	533	531	541
21	941	670	886	1110	1090	1090	563	516	626	534	529	542
22	928	991	823	1010	1070	1090	555	516	598	533	527	537
23	910	1020	878	932	855	1100	543	529	599	530	529	534
24	928	1070	870	874	844	1100	537	547	619	529	527	536
25	925	1020	998	931	835	1120	529	537	588	529	525	537
26	919	998	999	1040	871	1130	527	532	581	532	525	537
27	920	1020	1030	1110	1030	1150	529	528	573	530	525	536
28	917	1010	1040	1110	1060	1130	524	534	562	527	528	536
29	948	995	1040	1110	1050	1130	517	557	544	530	530	538
30	965	1050	1040	1110	---	1140	515	533	540	528	531	539
31	966	---	1050	1120	---	1140	---	512	---	529	533	---
TOTAL	22441	28697	33182	33053	29268	34460	18488	16145	17824	16565	16400	16035
MEAN	724	957	1070	1066	1009	1112	616	521	594	534	529	534
MAX	991	1070	1420	1240	1160	1170	1140	557	878	556	535	543
MIN	516	560	823	874	835	1070	515	511	512	527	525	529
AC-FT	44510	56920	65820	65560	58050	68350	36670	32020	35350	32860	32530	31810

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	705.9	1176	1309	1383	1440	1383	863.2	589.2	639.3	552.5	539.3	565.7
MAX	1172	1706	2130	2012	2034	2360	1799	1228	1020	766.1	855.5	869.2
(WY)	1985	1985	1985	1975	1975	1972	1984	1956	1956	1975	1952	1952
MIN	469.8	837.4	952.5	1010	1009	839.0	510.0	457.5	455.0	430.3	440.6	455.4
(WY)	1964	1965	1964	1963	1988	1964	1968	1964	1964	1964	1964	1963

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	772		925	
HIGHEST ANNUAL MEAN			1283	1984
LOWEST ANNUAL MEAN			677	1964
HIGHEST DAILY MEAN	1420	Dec 10	4790	Dec 24 1964
LOWEST DAILY MEAN	511	May 16	425	Jul 7 1964
INSTANTANEOUS PEAK FLOW	1510	Dec 10	6680a	Dec 24 1964
INSTANTANEOUS PEAK STAGE (FEET)	4.49	Dec 10	10.00	Dec 24 1964
INSTANTANEOUS LOW FLOW	507	May 16	418	Jul 7, 8 1964
10 PERCENTILE	1120		1630	
50 PERCENTILE	581		752	
95 PERCENTILE	518		469	

a From rating curve extended above 2,200 ft^3/s on basis of slope-area measurement of peak flow

14080400 PRINEVILLE RESERVOIR NEAR PRINEVILLE, OR

LOCATION.--Lat 44°06'50", long 120°46'50", in SW 1/4 NW 1/4 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 elevations 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, 147,400 acre-ft May 11, elevation, 3,232.99 ft; minimum contents, 72,980 acre-ft Oct. 26, elevation, 3,201.00 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 1987 TO SEPTEMBER 1988
OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3207.66	3201.24	3203.48	3206.40	3210.18	3219.05	3228.31	3232.60	3230.50	3226.52	3219.23	3210.03
2	3207.18	3201.29	3203.56	3206.46	3210.28	3219.74	3228.47	3232.65	3230.37	3226.36	3218.91	3209.72
3	3206.72	3201.35	3203.69	3206.49	3210.36	3220.37	3228.61	3232.66	3230.27	3226.18	3218.68	3209.42
4	3206.25	3201.39	3203.80	3206.54	3210.45	3220.97	3228.79	3232.67	3230.12	3225.95	3218.42	3209.12
5	3205.79	3201.49	3203.96	3206.60	3210.52	3221.63	3228.93	3232.75	3230.01	3225.72	3218.07	3208.79
6	3205.34	3201.50	3204.06	3206.69	3210.62	3222.28	3229.08	3232.82	3229.89	3225.50	3217.74	3208.46
7	3204.86	3201.58	3204.23	3206.75	3210.72	3222.76	3229.15	3232.86	3229.82	3225.30	3217.47	3208.10
8	3204.37	3201.62	3204.32	3206.83	3210.86	3223.15	3229.19	3232.89	3229.73	3225.13	3217.17	3207.82
9	3203.93	3201.69	3204.45	3206.92	3211.27	3223.47	3229.24	3232.90	3229.61	3224.94	3216.91	3207.57
10	3203.54	3201.77	3204.64	3207.08	3211.83	3223.89	3229.27	3232.96	3229.52	3224.67	3216.64	3207.30
11	3203.15	3201.84	3204.86	3207.19	3212.44	3224.19	3229.29	3232.99	3229.45	3224.43	3216.36	3207.09
12	3202.82	3201.93	3205.04	3207.37	3212.94	3224.46	3229.30	3232.98	3229.31	3224.20	3216.04	3206.93
13	3202.52	3202.00	3205.16	3207.50	3213.43	3224.69	3229.33	3232.94	3229.22	3223.93	3215.76	3206.72
14	3202.25	3202.08	3205.29	3207.67	3213.83	3224.88	3229.33	3232.84	3229.09	3223.69	3215.48	3206.58
15	3202.00	3202.17	3205.34	3207.85	3214.13	3225.11	3229.42	3232.76	3229.01	3223.42	3215.20	3206.35
16	3201.82	3202.24	3205.43	3208.07	3214.43	3225.25	3229.50	3232.68	3228.85	3223.23	3214.85	3206.12
17	3201.63	3202.33	3205.55	3208.32	3214.78	3225.41	3229.50	3232.59	3228.73	3222.99	3214.52	3205.92
18	3201.41	3202.41	3205.63	3208.48	3214.96	3225.58	3229.68	3232.47	3228.60	3222.77	3214.21	3205.73
19	3201.26	3202.47	3205.70	3208.64	3215.16	3225.77	3229.91	3232.37	3228.48	3222.56	3213.98	3205.54
20	3201.17	3202.56	3205.72	3208.76	3215.41	3225.95	3230.14	3232.28	3228.32	3222.33	3213.66	3205.38
21	3201.05	3202.64	3205.81	3208.89	3215.63	3226.13	3230.49	3232.16	3228.17	3222.10	3213.37	3205.28
22	3201.05	3202.72	3205.91	3209.00	3215.92	3226.33	3230.94	3232.05	3228.02	3221.86	3213.09	3205.16
23	3201.04	3202.80	3205.96	3209.10	3216.21	3226.54	3231.36	3231.89	3227.83	3221.61	3212.79	3205.02
24	3201.04	3202.90	3206.00	3209.19	3216.50	3226.78	3231.67	3231.75	3227.69	3221.37	3212.50	3204.90
25	3201.04	3202.98	3206.01	3209.31	3216.77	3226.99	3231.91	3231.59	3227.55	3221.13	3212.18	3204.76
26	3201.00	3203.04	3206.04	3209.43	3217.03	3227.21	3232.09	3231.39	3227.38	3220.86	3211.88	3204.61
27	3201.04	3203.09	3206.09	3209.53	3217.45	3227.37	3232.25	3231.27	3227.16	3220.60	3211.57	3204.47
28	3201.10	3203.20	3206.17	3209.57	3217.84	3227.59	3232.35	3231.11	3226.96	3220.33	3211.29	3204.34
29	3201.12	3203.27	3206.24	3209.75	3218.43	3227.76	3232.48	3230.93	3226.78	3220.06	3210.95	3204.22
30	3201.18	3203.36	3206.28	3209.91	---	3227.95	3232.54	3230.79	3226.65	3219.80	3210.65	3204.12
31	3201.20	---	3206.36	3210.05	---	3228.18	---	3230.64	---	3219.50	3210.32	---
MAX	3207.66	3203.36	3206.36	3210.05	3218.43	3228.18	3232.54	3232.99	3230.50	3226.52	3219.23	3210.03
MIN	3201.00	3201.24	3203.48	3206.40	3210.18	3219.05	3228.31	3230.64	3226.65	3219.50	3210.32	3204.12
(†)	73350	77330	83070	90480	108900	133700	146100	140600	129500	111400	91040	78760
(‡)	-13220	+3980	+5740	+7410	+18420	+24800	+12400	-5500	-11100	-18100	-20360	-12280

CAL YR 1987 MAX -- MIN -- AC-FT‡ -8220
WTR YR 1988 MAX 3232.99 MIN 3201.00 AC-FT‡ -7810

† 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 SW 1/4 NE 1/4 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 (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.

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	522	25	11	29	31	32	82	209	273	237	342	331
2	521	21	11	29	30	32	82	209	273	237	342	331
3	518	14	11	29	30	32	110	209	273	236	342	331
4	518	12	8.3	29	30	32	156	209	273	284	342	331
5	518	12	11	29	30	32	155	209	273	318	342	329
6	518	13	11	29	30	32	155	209	273	318	340	329
7	517	13	11	29	30	32	154	209	273	318	340	329
8	514	13	11	29	30	32	175	209	273	318	340	295
9	471	12	11	29	30	32	205	209	273	318	340	241
10	423	12	11	29	30	32	205	209	252	318	340	221
11	424	12	11	29	30	32	205	209	238	318	339	221
12	376	12	11	29	31	32	205	221	238	317	338	207
13	337	12	11	29	31	32	205	229	238	315	338	194
14	309	12	15	30	31	32	205	228	238	315	337	194
15	280	12	25	30	31	32	205	229	238	315	337	194
16	256	12	25	30	31	32	205	229	238	315	337	194
17	232	12	25	30	31	32	205	230	238	315	337	195
18	232	12	27	30	31	32	205	230	238	315	337	194
19	198	12	28	30	31	32	205	230	238	315	337	195
20	173	12	28	30	31	32	206	229	238	315	335	165
21	124	12	28	31	31	32	207	228	238	315	334	126
22	82	12	28	31	31	32	207	229	238	315	334	126
23	83	11	28	31	31	32	207	251	238	314	334	141
24	83	11	27	31	32	32	207	290	238	313	334	154
25	83	11	27	31	32	32	207	290	238	313	334	154
26	44	11	28	31	32	32	207	290	238	313	334	154
27	16	11	28	31	32	32	207	280	238	313	334	154
28	20	11	28	31	32	32	208	274	237	313	332	154
29	25	11	29	31	32	32	209	273	236	331	332	154
30	25	11	29	31	---	32	209	273	236	342	331	155
31	26	---	29	31	---	61	---	273	---	342	331	---
TOTAL	8468	379	622.3	928	895	1021	5605	7305	7464	9581	10446	6493
MEAN	273	12.6	20.1	29.9	30.9	32.9	187	236	249	309	337	216
MAX	522	25	29	31	32	61	209	290	273	342	342	331
MIN	16	11	8.3	29	30	32	82	209	236	236	331	126
AC-FT	16800	752	1230	1840	1780	2030	11120	14490	14800	19000	20720	12880

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	172.7	148.8	276.6	373.9	535.8	638.4	845.2	595.0	270.1	249.7	239.0	212.5
MAX	315.3	791.1	1037	1682	1625	2035	3001	2004	678.8	330.7	337.0	350.5
(WY)	1985	1985	1965	1965	1965	1972	1984	1984	1984	1983	1988	1987
MIN	27.2	12.6	20.1	29.9	30.9	32.9	117.1	132.4	169.1	159.2	156.2	99.9
(WY)	1969	1988	1988	1988	1988	1988	1968	1977	1962	1964	1968	1968

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	162		367	
HIGHEST ANNUAL MEAN			885	1984
LOWEST ANNUAL MEAN			126	1968
HIGHEST DAILY MEAN	522	Oct 1	3280	Mar 15 1984
LOWEST DAILY MEAN	8.3	Dec 4	7.0	Dec 13 1970
INSTANTANEOUS PEAK FLOW	522	Oct 1-3		
INSTANTANEOUS PEAK STAGE (FEET)	4.29	Oct 1-3		
INSTANTANEOUS LOW FLOW	1.7	Dec 4		
10 PERCENTILE	340		978	
50 PERCENTILE	191		224	
95 PERCENTILE	12		33	

* Regulated period only (1962-88)

14087400 CROOKED RIVER BELOW OPAL SPRINGS, NEAR CULVER, OR

LOCATION.--Lat 44°29'33", long 121°17'50", in NW 1/4 NE 1/4 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 current year.

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 good. Flow regulated since December 1960 by Prineville Reservoir (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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1680	1270	1250	1240	1250	1260	1230	1220	1370	1170	1220	1210
2	1680	1270	1250	1240	1240	1280	1210	1220	1330	1150	1210	1220
3	1670	1270	1250	1240	1230	1260	1200	1220	1380	1150	1220	1220
4	1680	1270	1250	1240	1240	1260	1200	1200	1410	1160	1230	1220
5	1690	1270	1240	1240	1240	1260	1250	1200	1410	1170	1210	1230
6	1670	1270	1240	1250	1240	1270	1290	1190	1410	1200	1200	1240
7	1670	1260	1220	1240	1250	1260	1220	1200	1410	1210	1210	1210
8	1680	1260	1230	1240	1250	1260	1200	1200	1430	1190	1230	1210
9	1670	1250	1240	1250	1250	1250	1210	1200	1420	1190	1220	1210
10	1640	1250	1260	1280	1260	1260	1230	1210	1410	1200	1220	1180
11	1610	1250	1260	1390	1260	1260	1240	1170	1400	1210	1200	1160
12	1610	1260	1250	1300	1270	1250	1220	1150	1380	1220	1190	1170
13	1660	1260	1260	1270	1270	1250	1160	1150	1310	1220	1190	1180
14	1600	1250	1240	1270	1260	1250	1150	1170	1240	1200	1220	1170
15	1580	1250	1250	1280	1260	1250	1160	1160	1210	1220	1230	1170
16	1550	1250	1250	1300	1260	1240	1150	1160	1180	1220	1230	1160
17	1540	1250	1260	1280	1260	1240	1140	1160	1170	1220	1230	1160
18	1540	1250	1280	1280	1260	1240	1150	1150	1180	1220	1220	1170
19	1510	1250	1290	1280	1260	1240	1160	1150	1180	1220	1220	1190
20	1470	1250	1280	1270	1270	1240	1160	1150	1180	1220	1220	1240
21	1440	1250	1250	1280	1260	1240	1180	1140	1180	1220	1220	1270
22	1410	1240	1270	1250	1250	1240	1240	1150	1160	1230	1220	1250
23	1350	1250	1260	1260	1250	1240	1250	1150	1150	1230	1220	1230
24	1340	1240	1270	1290	1270	1240	1260	1160	1150	1250	1220	1220
25	1340	1240	1250	1290	1260	1240	1270	1160	1160	1230	1220	1230
26	1330	1240	1250	1280	1260	1240	1260	1160	1190	1220	1210	1270
27	1330	1240	1250	1250	1260	1230	1260	1170	1200	1210	1200	1260
28	1300	1240	1250	1250	1250	1240	1250	1200	1190	1170	1200	1270
29	1280	1240	1240	1240	1250	1240	1230	1210	1180	1170	1220	1270
30	1260	1240	1240	1250	---	1230	1230	1240	1180	1180	1220	1280
31	1270	---	1250	1250	---	1230	---	1300	---	1210	1220	---
TOTAL	47050	37580	38830	39270	36390	38690	36360	36670	38150	37280	37690	36470
MEAN	1518	1253	1253	1267	1255	1248	1212	1183	1272	1203	1216	1216
MAX	1690	1270	1290	1390	1270	1280	1290	1300	1430	1250	1230	1280
MIN	1260	1240	1220	1240	1230	1230	1140	1140	1150	1150	1190	1160
AC-FT	93320	74540	77020	77890	72180	76740	72120	72730	75670	73940	74760	72340

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	1454	1396	1551	1665	1886	2026	2173	1726	1328	1279	1309	1386
MAX	1650	2069	2686	3551	3490	4208	4793	3295	1777	1475	1593	1541
(WY)	1970	1985	1965	1965	1965	1972	1984	1984	1984	1983	1976	1965
MIN	1239	1232	1179	1182	1250	1232	1192	1173	1196	1122	1133	1187
(WY)	1969	1964	1964	1964	1977	1977	1977	1964	1977	1981	1980	1980

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	1258		1596	
HIGHEST ANNUAL MEAN			2196	1984
LOWEST ANNUAL MEAN			1258	1988
HIGHEST DAILY MEAN	1690	Oct 5	6130	Dec 24 1964
LOWEST DAILY MEAN	1140	Apr 17, May 21	1090	May 11 1981
INSTANTANEOUS PEAK FLOW	2380a	Oct 21	6660	Dec 24 1964
INSTANTANEOUS PEAK STAGE (FEET)	4.39a	Oct 21	9.36	Dec 24 1964
INSTANTANEOUS LOW FLOW	b	not determined	not determined	
10 PERCENTILE	1340		2330	
50 PERCENTILE	1250		1390	
95 PERCENTILE	1160		1170	

a Due to powerplant operation
b Occurred when stage briefly dropped below intakes on many days, due to powerplant operation

14088000 LAKE CREEK NEAR SISTERS, OR

LOCATION.--Lat 44°25'35", long 121°43'30", in NE 1/4 SW 1/4 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.--Records good. Flow occasionally regulated by Suttle Lake 150 ft upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	32	42	35	e44	49	67	76	57	36	25	26
2	27	31	49	34	e42	47	67	75	55	37	25	27
3	30	35	46	35	e40	47	75	74	56	37	26	28
4	30	37	39	35	37	49	77	70	57	36	28	25
5	28	33	35	34	37	52	79	68	56	34	29	26
6	30	22	34	33	e42	56	86	65	57	33	29	26
7	28	16	34	33	37	54	86	63	56	35	28	25
8	26	23	33	34	41	55	78	63	52	33	28	23
9	28	26	49	40	56	62	77	61	51	33	28	24
10	27	23	66	59	51	57	75	60	50	32	29	22
11	27	29	53	55	48	56	73	59	48	30	28	22
12	27	31	49	47	51	55	72	59	47	29	27	23
13	26	31	e48	49	56	54	70	59	46	31	27	26
14	27	32	e47	64	55	52	70	60	44	32	27	27
15	27	32	e45	68	57	51	72	62	44	32	28	28
16	29	23	e44	66	58	52	77	65	44	31	28	26
17	32	20	e43	65	56	51	77	65	43	31	29	24
18	27	22	e41	e63	54	50	78	65	42	34	28	24
19	28	25	40	e61	52	49	81	64	41	35	27	28
20	27	29	40	e60	51	48	86	63	41	34	25	27
21	30	27	41	e58	50	50	90	61	39	33	26	26
22	26	29	40	e56	48	51	83	60	38	32	28	26
23	27	31	38	53	48	65	79	57	37	30	26	25
24	30	37	37	50	48	62	76	56	36	30	28	25
25	26	37	36	48	47	61	73	55	37	30	28	24
26	25	28	34	46	47	64	69	53	37	30	25	26
27	29	28	33	44	46	73	66	51	35	30	26	29
28	27	29	34	43	46	71	68	53	34	29	28	28
29	30	28	34	47	47	76	73	54	34	28	28	27
30	27	27	35	47	---	72	76	52	34	29	27	27
31	30	---	37	45	---	69	---	53	---	29	24	---
TOTAL	867	853	1276	1507	1392	1760	2276	1901	1348	995	843	770
MEAN	28.0	28.4	41.2	48.6	48.0	56.8	75.9	61.3	44.9	32.1	27.2	25.7
MAX	32	37	66	68	58	76	90	76	57	37	29	29
MIN	25	16	33	33	37	47	66	51	34	28	24	22
AC-FT	1720	1690	2530	2990	2760	3490	4510	3770	2670	1970	1670	1530

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	32.7	40.7	59.4	63.8	62.7	57.2	62.7	79.0	65.3	39.0	32.2	30.9
MAX	67.4	97.8	177.7	147.5	132.0	169.0	110.7	157.2	162.3	69.1	42.9	40.2
(WY)	1927	1951	1978	1923	1953	1972	1931	1949	1933	1917	1954	1954
MIN	17.4	24.4	23.0	23.1	27.7	26.7	33.5	38.3	28.5	22.3	21.6	19.1
(WY)	1943	1945	1945	1941	1931	1937	1977	1934	1940	1941	1942	1941

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	43.1		52.4	
HIGHEST ANNUAL MEAN			77.0	1956
LOWEST ANNUAL MEAN			27.4	1941
HIGHEST DAILY MEAN	90	Apr 21	524	Dec 16 1977
LOWEST DAILY MEAN	16	Nov 7	8.0a	Nov 5 1940
INSTANTANEOUS PEAK FLOW	97	Apr 21	446	Dec 15 1977
INSTANTANEOUS PEAK STAGE (FEET)	2.82	Apr 21	4.78b	Dec 15 1977
INSTANTANEOUS LOW FLOW	13	Nov 16	1	Nov 4, 5 1940
10 PERCENTILE	68		87	
50 PERCENTILE	38		43	
95 PERCENTILE	25		26	

a Also occurred on October 6, 1942
b May have been higher during period of no gage-height record Dec. 23, 1964

14090350 JEFFERSON CREEK NEAR CAMP SHERMAN, OR

LOCATION.--Lat 44°34'18", long 121°38'17", in SW 1/4 SE 1/4 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 above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--5 years, 93.1 ft^3/s, 45.48 in/yr, 67,450 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 428 ft^3/s Feb. 23, 1986, gage height, 3.21 ft; minimum discharge, 45 ft^3/s Jan. 2, 1988.

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)
Dec. 10	0100	*415	*3.17	No other peak greater than base discharge.			

Minimum discharge, 45 ft^3/s Jan. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	60	75	51	56	71	75	97	113	109	92	79
2	65	59	69	49	54	69	84	94	108	121	90	80
3	66	59	106	48	62	71	101	92	121	115	90	79
4	65	59	81	49	60	75	86	90	118	105	90	79
5	65	58	74	49	59	80	82	89	108	102	90	79
6	65	58	74	50	59	73	87	88	102	100	90	79
7	64	58	67	50	59	70	90	87	99	100	88	78
8	64	58	64	50	64	71	83	90	99	101	88	77
9	63	59	162	66	90	71	81	91	100	102	88	77
10	63	58	207	110	79	68	81	92	103	103	89	76
11	63	59	97	77	74	67	85	105	104	102	88	75
12	63	62	80	68	71	66	95	121	107	101	87	75
13	63	78	72	67	69	66	104	126	111	106	87	74
14	62	63	72	113	68	66	113	112	115	104	86	74
15	62	60	68	99	73	65	111	112	127	100	86	74
16	62	61	67	79	69	65	126	122	136	99	85	74
17	61	59	65	71	67	64	122	112	139	98	85	73
18	61	59	64	69	66	64	107	108	145	97	84	73
19	61	59	62	65	65	65	107	109	131	97	84	83
20	61	59	62	66	65	68	112	113	135	97	84	79
21	61	59	62	64	65	69	111	122	136	98	83	78
22	61	58	61	64	65	67	104	135	136	98	83	77
23	60	58	60	64	65	72	99	130	135	97	82	77
24	60	59	54	62	64	68	96	119	124	96	83	76
25	60	57	56	62	64	73	94	120	121	95	84	77
26	60	57	54	61	64	91	93	122	121	95	83	79
27	60	57	53	62	65	89	96	130	116	95	82	89
28	60	56	53	63	66	80	112	162	110	95	81	78
29	59	56	53	64	71	77	117	124	106	94	82	77
30	59	57	53	62	---	74	103	108	105	94	81	77
31	59	---	53	61	---	74	---	106	---	93	79	---
TOTAL	1923	1779	2300	2035	1918	2209	2957	3428	3531	3109	2654	2322
MEAN	62.0	59.3	74.2	65.6	66.1	71.3	98.6	111	118	100	85.6	77.4
MAX	66	78	207	113	90	91	126	162	145	121	92	89
MIN	59	56	53	48	54	64	75	87	99	93	79	73
AC-FT	3810	3530	4560	4040	3800	4380	5870	6800	7000	6170	5260	4610
CFSM	2.23	2.13	2.67	2.36	2.38	2.56	3.55	3.98	4.23	3.61	3.08	2.78
IN.	2.57	2.38	3.08	2.72	2.57	2.96	3.96	4.59	4.72	4.16	3.55	3.11

CAL YR 1987 TOTAL 28925 MEAN 79.2 MAX 207 MIN 53 AC-FT 57370 CFSM 2.85 IN. 38.71
WTR YR 1988 TOTAL 30165 MEAN 82.4 MAX 207 MIN 48 AC-FT 59830 CFSM 2.96 IN. 40.36

14090400 WHITEWATER RIVER NEAR CAMP SHERMAN, OR

LOCATION.--Lat 44°43'04", long 121°38'07", in SE 1/4 NE 1/4 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 above National Geodetic Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	38	65	42	59	70	76	100	86	104	85	66
2	53	37	62	41	59	66	86	89	87	140	76	72
3	52	36	110	40	56	68	99	86	103	155	74	76
4	47	36	81	40	55	72	89	82	110	129	78	78
5	47	36	58	39	54	75	87	80	100	114	80	78
6	49	36	73	38	54	72	95	79	84	88	77	73
7	47	36	57	38	54	68	97	77	80	89	74	64
8	47	36	50	39	59	68	91	77	78	95	76	62
9	45	36	205	55	80	69	89	75	77	103	80	62
10	44	35	260	86	75	64	87	74	78	109	84	54
11	43	36	116	63	69	63	88	83	79	123	79	51
12	42	38	91	56	68	62	95	98	82	125	75	50
13	41	53	70	55	68	62	104	108	87	136	72	51
14	40	38	65	125	66	61	114	96	94	123	70	54
15	39	37	62	107	71	61	111	91	108	124	71	54
16	39	37	59	90	67	59	118	98	125	110	68	49
17	39	37	57	82	65	58	117	94	142	98	69	43
18	39	36	55	78	63	58	109	89	159	98	68	43
19	38	36	53	73	63	58	110	87	165	96	67	58
20	39	36	52	71	63	58	115	90	157	100	67	45
21	39	37	53	68	63	61	123	94	167	104	65	42
22	39	36	51	67	63	61	109	109	167	106	63	41
23	39	36	50	66	63	68	103	116	177	103	67	40
24	39	37	48	63	63	61	98	121	158	97	73	43
25	38	35	47	62	61	68	94	124	145	97	79	43
26	38	34	46	61	61	89	93	122	137	97	75	54
27	38	34	44	61	61	85	92	131	137	101	71	66
28	38	34	44	61	62	78	102	147	118	99	71	46
29	38	34	43	63	68	78	110	132	108	98	73	50
30	38	34	43	63	---	73	103	117	96	96	69	51
31	38	---	43	61	---	75	---	94	---	92	65	---
TOTAL	1301	1097	2213	1954	1833	2089	3004	3060	3491	3349	2261	1659
MEAN	42.0	36.6	71.4	63.0	63.2	67.4	100	98.7	116	108	72.9	55.3
MAX	53	53	260	125	80	89	123	147	177	155	85	78
MIN	38	34	43	38	54	58	76	74	77	88	63	40
AC-FT	2580	2180	4390	3880	3640	4140	5960	6070	6920	6640	4480	3290

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	53.5	64.8	65.4	72.7	82.0	87.1	87.5	106.4	131.5	115.8	87.7	64.3
MAX	65.3	97.9	93.9	121.4	125.4	132.4	100.1	119.6	156.6	139.4	109.3	76.1
(WY)	1983	1985	1983	1983	1986	1986	1988	1983	1983	1983	1983	1983
MIN	42.0	36.6	46.5	45.0	47.7	50.1	74.3	94.9	91.9	76.6	69.7	54.3
(WY)	1988	1988	1986	1987	1985	1985	1984	1986	1987	1987	1987	1985

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	74.6		84.3	
HIGHEST ANNUAL MEAN			106	1983
LOWEST ANNUAL MEAN			70.0	1987
HIGHEST DAILY MEAN	260	Dec 10	460	Feb 23 1986
LOWEST DAILY MEAN	34	Nov 26	34	Nov 26 1987
INSTANTANEOUS PEAK FLOW	613	Dec 10	613a	Dec 10 1987
INSTANTANEOUS PEAK STAGE (FEET)	3.24	Dec 10	3.24	Dec 10 1987
INSTANTANEOUS LOW FLOW	34	Nov 25 to Dec 1	34	Nov 25 - Dec 1 1987
10 PERCENTILE	115		132	
50 PERCENTILE	69		77	
95 PERCENTILE	37		44	

a From rating curve extended above 170 ft^3/s

14091500 METOLIUS RIVER NEAR GRANDVIEW, OR

LOCATION.--Lat 44°37'33", long 121°28'55", in SE 1/4 SW 1/4 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 good. No regulation. Many small diversions for irrigation upstream from station. Stream is spring fed. Records herein are for measuring site.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1260	1250	1340	1240	1300	1370	1400	1480	1450	1400	1320	1270
2	1260	1240	1340	1240	1280	1360	1420	1470	1450	1440	1310	1280
3	1270	1240	1420	1240	1300	1360	1510	1460	1480	1460	1310	1290
4	1260	1240	1340	1240	1290	1370	1480	1440	1500	1410	1310	1290
5	1260	1240	1300	1240	1290	1390	1450	1440	1450	1380	1320	1290
6	1260	1230	1310	1230	1290	1380	1470	1420	1430	1370	1310	1280
7	1260	1220	1280	1230	1290	1360	1490	1420	1420	1360	1310	1270
8	1260	1220	1260	1240	1300	1360	1460	1420	1410	1370	1310	1270
9	1260	1230	1570	1290	1410	1380	1440	1420	1400	1380	1310	1270
10	1250	1220	2020	1500	1420	1360	1440	1410	1410	1380	1320	1260
11	1250	1230	1490	1440	1410	1350	1440	1420	1400	1390	1310	1250
12	1250	1250	1390	1360	1400	1340	1460	1450	1400	1370	1300	1250
13	1250	1280	1340	1350	1410	1340	1480	1480	1410	1410	1300	1250
14	1250	1250	1330	1550	1390	1330	1510	1460	1420	1390	1300	1260
15	1240	1240	1320	1610	1410	1330	1500	1450	1450	1380	1300	1260
16	1240	1240	1310	1500	1400	1320	1540	1480	1490	1370	1300	1250
17	1250	1220	1290	1450	1390	1320	1540	1470	1520	1360	1300	1250
18	1240	1220	1290	1420	1380	1320	1510	1450	1540	1360	1290	1250
19	1240	1220	1280	1390	1370	1320	1520	1440	1510	1360	1290	1270
20	1240	1230	1270	1380	1360	1320	1570	1440	1510	1360	1290	1260
21	1240	1230	1280	1370	1360	1330	1620	1450	1510	1370	1280	1250
22	1240	1230	1270	1350	1360	1330	1560	1490	1520	1370	1280	1250
23	1240	1230	1270	1350	1350	1390	1520	1500	1520	1360	1280	1250
24	1240	1240	1250	1330	1340	1360	1500	1470	1480	1350	1290	1250
25	1240	1230	1250	1330	1340	1370	1480	1460	1460	1350	1300	1250
26	1230	1220	1250	1320	1340	1430	1470	1460	1450	1350	1290	1260
27	1240	1220	1240	1320	1340	1460	1470	1470	1450	1350	1280	1290
28	1240	1220	1250	1320	1340	1420	1500	1560	1420	1350	1290	1260
29	1240	1220	1250	1330	1360	1420	1530	1520	1400	1340	1290	1250
30	1240	1220	1250	1330	---	1410	1510	1460	1390	1340	1290	1250
31	1240	---	1250	1320	---	1400	---	1430	---	1340	1280	---
TOTAL	38680	36970	41300	41810	39220	42300	44790	45190	43650	42570	40260	37880
MEAN	1248	1232	1332	1349	1352	1365	1493	1458	1455	1373	1299	1263
MAX	1270	1280	2020	1610	1420	1460	1620	1560	1540	1460	1320	1290
MIN	1230	1220	1240	1230	1280	1320	1400	1410	1390	1340	1280	1250
AC-FT	76720	73330	81920	82930	77790	83900	88840	89630	86580	84440	79860	75130

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	1353	1399	1489	1518	1559	1534	1545	1604	1638	1521	1420	1370
MAX	1619	1816	2454	2250	2333	2504	1960	2095	2118	1910	1746	1631
(WY)	1914	1922	1965	1923	1982	1972	1956	1956	1974	1972	1972	1972
MIN	1081	1140	1110	1154	1148	1157	1162	1244	1196	1173	1136	1103
(WY)	1943	1940	1945	1979	1941	1941	1941	1941	1941	1941	1931	1942

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	1351		1495	
HIGHEST ANNUAL MEAN			1845	1956
LOWEST ANNUAL MEAN			1167	1941
HIGHEST DAILY MEAN	2020	Dec 10	7100	Dec 24 1964
LOWEST DAILY MEAN	1220	Nov 7	1080	Feb 17 1932
INSTANTANEOUS PEAK FLOW	2500	Dec 10	7530	Dec 24 1964
INSTANTANEOUS PEAK STAGE (FEET)	2.78	Dec 10	6.81	Dec 24 1964
INSTANTANEOUS LOW FLOW	1210	Nov 26-30	1080a	Feb 17 1932
10 PERCENTILE	1490		1800	
50 PERCENTILE	1340		1460	
95 PERCENTILE	1240		1180	

a Also occurred Oct. 2-31, Nov. 6, 7, 10-14, 1942

14092100 LAKE BILLY CHINOOK NEAR METOLIUS, OR

LOCATION.--Lat 44°36'14", long 121°16'40", in SW 1/4 NE 1/4 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, 535,300 acre-ft June 8, elevation, 1,945.14 ft; minimum contents observed, 489,600 acre-ft Jan. 2, elevation, 1,933.25 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	1,944.30	532,000	--
Oct. 31	1,942.65	525,500	-6,500
Nov. 30	1,943.44	528,600	+3,100
Dec. 31	1,933.49	490,500	-38,100
CAL YR 1987	--	--	-2,200
Jan. 31	1,937.23	504,700	+14,200
Feb. 29	1,943.50	528,800	+24,100
Mar. 31	1,943.39	528,400	-400
Apr. 30	1,943.30	528,000	-400
May 31	1,943.93	530,500	+2,500
June 30	1,944.39	532,300	+1,800
July 31	1,944.08	531,100	-1,200
Aug. 31	1,944.17	531,400	+300
Sept.30	1,944.27	531,800	+400
WTR YR 1988	--	--	-200

14092150 SEEKSEEQUA CREEK NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°40'28", long 121°13'57", in SW 1/4 NW 1/4 sec.27, T.10 S., R.12 E., Jefferson County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank 75 ft upstream from culvert, 8.3 mi east of Madras, and at mile 2.5.

DRAINAGE AREA.--93.3 mi^2.

PERIOD OF RECORD.--May 1987 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,860 ft, from topographic map.

REMARKS.--Records fair. No regulation or diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 92 ft^3/s Jan. 14, 1988, gage height, 5.48 ft; minimum discharge, 0.77 ft^3/s Aug. 20, 1987, Sept. 1, 1988.

EXTREMES FOR CURRENT PERIOD.--
MAY TO SEPTEMBER 1987.--Maximum discharge, 8.1 ft^3/s July 23, gage height, 4.02 ft; minimum discharge, 0.77 ft^3/s Aug. 20.

WATER YEAR 1988.--Maximum discharge, 92 ft^3/s Jan. 14, gage height, 5.48 ft; minimum discharge, 0.77 ft^3/s Sept. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	2.0	1.8	2.0	1.2
2	---	---	---	---	---	---	---	---	1.9	1.9	2.0	1.3
3	---	---	---	---	---	---	---	---	2.0	1.9	1.8	1.4
4	---	---	---	---	---	---	---	---	1.8	2.0	1.7	1.5
5	---	---	---	---	---	---	---	---	1.8	1.9	1.7	1.5
6	---	---	---	---	---	---	---	---	1.7	2.0	1.5	e1.5
7	---	---	---	---	---	---	---	---	1.6	2.0	1.4	e1.5
8	---	---	---	---	---	---	---	---	1.7	2.1	1.5	e1.5
9	---	---	---	---	---	---	---	---	1.9	2.0	e1.4	e1.5
10	---	---	---	---	---	---	---	---	1.9	2.0	e1.3	e1.5
11	---	---	---	---	---	---	---	---	1.7	2.0	e1.3	e1.5
12	---	---	---	---	---	---	---	---	1.7	2.0	e1.2	e1.5
13	---	---	---	---	---	---	---	---	1.6	2.0	e1.2	e1.5
14	---	---	---	---	---	---	---	---	1.6	1.9	1.0	e1.5
15	---	---	---	---	---	---	---	---	1.9	1.8	1.0	e1.5
16	---	---	---	---	---	---	---	---	2.0	1.8	1.1	e1.5
17	---	---	---	---	---	---	---	---	2.0	2.0	1.1	e1.6
18	---	---	---	---	---	---	---	---	2.0	3.3	1.0	e1.6
19	---	---	---	---	---	---	---	---	1.9	3.2	1.0	e1.6
20	---	---	---	---	---	---	---	---	1.9	2.7	1.0	e1.6
21	---	---	---	---	---	---	---	---	1.8	2.7	.99	e1.6
22	---	---	---	---	---	---	---	2.6	1.7	2.5	.97	e1.5
23	---	---	---	---	---	---	---	2.5	1.7	3.2	.99	e1.5
24	---	---	---	---	---	---	---	2.9	1.7	3.5	1.0	1.5
25	---	---	---	---	---	---	---	3.3	1.7	3.1	1.0	1.5
26	---	---	---	---	---	---	---	2.9	1.6	2.8	.97	1.5
27	---	---	---	---	---	---	---	2.2	1.7	2.5	1.0	1.5
28	---	---	---	---	---	---	---	2.0	1.6	2.2	1.1	1.5
29	---	---	---	---	---	---	---	1.9	1.7	2.2	1.0	1.5
30	---	---	---	---	---	---	---	2.0	1.7	2.2	1.0	1.6
31	---	---	---	---	---	---	---	2.0	---	2.1	1.0	---
TOTAL	---	---	---	---	---	---	---	---	53.5	71.3	38.22	45.0
MEAN	---	---	---	---	---	---	---	---	1.78	2.30	1.23	1.50
MAX	---	---	---	---	---	---	---	---	2.0	3.5	2.0	1.6
MIN	---	---	---	---	---	---	---	---	1.6	1.8	.97	1.2
AC-FT	---	---	---	---	---	---	---	---	106	141	76	89
CFSM	---	---	---	---	---	---	---	---	.02	.02	.01	.02
IN.	---	---	---	---	---	---	---	---	.02	.03	.02	.02

e Estimated

DESCHUTES RIVER BASIN

14092150 SEEKSEEQUA CREEK NEAR WARM SPRINGS, OR--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	2.5	6.3	4.4	15	21	8.0	7.0	3.0	2.0	1.9	1.1
2	1.6	2.9	7.6	4.4	9.4	19	8.0	6.4	3.0	1.9	1.9	1.0
3	1.6	3.0	4.6	3.9	14	18	6.9	6.4	3.5	1.7	1.6	1.1
4	1.6	3.0	4.0	3.9	13	17	7.1	6.3	5.1	1.9	1.7	1.1
5	1.6	3.0	4.4	4.1	13	15	6.8	5.8	4.4	2.1	1.7	1.2
6	1.6	3.0	4.4	4.0	13	15	7.8	5.6	3.8	2.1	1.7	1.3
7	1.6	3.0	4.2	3.9	13	15	7.1	5.6	3.4	2.0	1.7	1.3
8	1.6	3.0	3.9	3.9	14	13	7.4	5.1	3.9	1.7	1.7	1.3
9	1.6	3.0	8.8	4.2	22	13	7.6	5.0	3.5	1.6	1.7	1.3
10	1.6	3.0	27	5.2	27	12	6.9	5.0	3.5	1.7	1.6	1.3
11	1.6	3.0	14	10	33	11	6.0	4.1	3.0	1.3	1.5	1.3
12	1.7	3.0	9.1	8.7	32	10	6.0	4.0	3.0	1.6	1.5	1.5
13	1.7	3.2	7.5	13	35	10	6.2	3.7	2.9	1.7	1.5	1.6
14	1.7	3.2	7.4	53	33	9.2	5.6	3.7	2.8	1.7	1.5	1.6
15	1.7	3.2	7.1	48	36	9.5	5.7	3.7	2.4	1.7	1.5	1.6
16	1.7	3.2	6.4	30	30	9.7	5.8	3.3	2.6	1.8	1.5	1.6
17	1.7	3.2	6.1	25	26	9.1	5.6	3.4	2.3	1.8	1.3	1.6
18	1.7	3.2	5.7	22	24	8.9	5.5	3.3	2.3	1.8	1.3	1.7
19	1.7	3.2	5.2	16	22	9.1	5.0	2.8	2.3	1.8	1.3	1.9
20	1.7	3.2	5.5	17	23	7.8	8.0	2.7	2.1	1.6	1.2	1.9
21	1.9	3.2	5.6	15	24	6.5	18	2.5	2.1	1.6	1.2	2.0
22	2.0	3.2	5.8	14	24	6.7	16	2.6	2.1	1.6	1.2	2.1
23	2.0	3.2	4.9	14	15	8.8	14	2.3	2.1	1.6	1.2	2.1
24	2.1	3.2	4.7	12	13	8.3	e12	2.6	1.9	1.9	1.2	2.0
25	2.1	3.2	4.4	12	13	8.4	e11	2.6	2.0	1.9	1.2	2.0
26	2.1	3.2	3.7	11	19	8.5	e10	2.4	2.3	1.9	1.1	2.1
27	2.2	3.2	3.7	15	15	8.4	8.9	2.4	2.3	2.2	.92	2.1
28	2.3	3.2	3.9	17	17	7.9	13	2.5	2.3	2.4	.92	1.9
29	2.3	3.2	4.0	18	21	7.7	9.0	2.8	2.3	2.3	.97	2.0
30	2.3	3.3	4.3	18	---	7.6	7.7	2.4	2.1	2.1	1.0	2.2
31	2.3	---	4.5	19	---	8.1	---	2.6	---	1.9	1.0	---
TOTAL	56.5	93.1	198.7	449.6	608.4	339.2	252.6	120.6	84.3	56.9	43.21	48.8
MEAN	1.82	3.10	6.41	14.5	21.0	10.9	8.42	3.89	2.81	1.84	1.39	1.63
MAX	2.3	3.3	27	53	36	21	18	7.0	5.1	2.4	1.9	2.2
MIN	1.6	2.5	3.7	3.9	9.4	6.5	5.0	2.3	1.9	1.3	.92	1.0
AC-FT	112	185	394	892	1210	673	501	239	167	113	86	97
CFSM	.02	.03	.07	.16	.22	.12	.09	.04	.03	.02	.01	.02
IN.	.02	.04	.08	.18	.24	.14	.10	.05	.03	.02	.02	.02

WTR YR 1988 TOTAL 2351.91 MEAN 6.43 MAX 53 MIN .92 AC-FT 4670 CFSM .07 IN. .94

e Estimated

14092500 DESCHUTES RIVER NEAR MADRAS, OR

LOCATION.--Lat 44°43'34", long 121°14'45", in SE 1/4 SW 1/4 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4590	4210	4310	4410	3720	4650	4490	4050	3980	3930	3810	3830
2	4580	4210	4900	4420	3730	4840	4480	4050	3990	3940	3620	3610
3	4450	4210	5150	4420	3740	4840	4480	4050	3980	3940	3600	3610
4	4450	4210	5120	4400	3740	4840	4470	4050	3980	3950	3620	3630
5	4460	4210	4900	4420	3740	4840	4520	4050	4040	3940	3640	3940
6	4460	4230	4850	4410	3740	4850	4570	4040	4220	3940	3880	3990
7	4460	4300	4850	4410	3740	4850	4560	4050	4720	3950	3870	3970
8	4480	4300	4850	4410	3740	4870	4610	4050	4720	3960	3860	3980
9	4570	4300	4860	4410	4080	4860	4670	4050	4730	3950	3850	3970
10	4570	4280	5050	4600	4540	4860	4600	4040	4680	3950	3740	3870
11	4560	4230	5750	4720	4590	4810	4520	4030	4150	3960	3840	3830
12	4490	4420	6210	4710	4580	4660	4480	3990	4150	3950	3830	3830
13	4170	4530	6840	4710	4590	4660	4160	3760	4140	3960	3840	3890
14	4170	4450	7070	4720	4580	4670	4130	3810	3950	3940	3840	3860
15	4170	4440	7110	4720	4590	4600	4050	3800	3940	3820	3820	3790
16	4240	4450	7080	4720	4590	4450	4070	3820	3940	3720	3770	3760
17	4460	4450	6740	4720	4580	4460	4070	3820	3930	3720	3840	3760
18	4470	4450	6150	4720	4580	4430	4070	3930	3910	3710	3840	3750
19	4460	4420	5570	4720	4350	4340	4080	3920	3930	3610	3860	3750
20	4480	4190	5120	4720	4020	4350	3950	3940	3970	3630	3870	3740
21	4470	3980	4730	4720	3950	4340	3950	3990	4150	3870	3860	3740
22	4480	3980	4760	4690	3960	4350	3940	3990	4120	4060	3860	3750
23	4480	3990	4720	4120	3960	4350	3950	3990	4150	4080	3850	3750
24	4470	4030	4560	3720	3960	4350	3990	3980	4130	4070	3830	3760
25	4470	4060	4420	3720	3960	4370	3930	3980	3910	4040	3830	3790
26	4470	4170	4420	3720	3950	4480	3930	3980	3920	4060	3800	3760
27	4360	4180	4420	3720	3950	4480	3940	3990	3930	4100	3840	3760
28	4340	4180	4420	3720	3950	4480	3940	3980	3950	4070	4040	3970
29	4220	4180	4420	3720	4230	4480	3970	3980	3940	3820	4010	3960
30	4220	4200	4420	3720	---	4480	4030	3980	3930	3810	3850	3940
31	4210	---	4410	3720	---	4480	---	3980	---	3820	3830	---
TOTAL	136930	127440	162180	134780	119430	142370	126600	123120	123180	121270	118440	114540
MEAN	4417	4248	5232	4348	4118	4593	4220	3972	4106	3912	3821	3818
MAX	4590	4530	7110	4720	4590	4870	4670	4050	4730	4100	4040	3990
MIN	4170	3980	4310	3720	3720	4340	3930	3760	3910	3610	3600	3610
AC-FT	271600	252800	321700	267300	236900	282400	251100	244200	244300	240500	234900	227200

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	4220	4748	5293	5628	5530	5719	5259	4501	4333	4112	4006	4041
MAX	5097	6124	6655	8097	8182	9590	8988	6346	5134	4786	4718	4553
(WY)	1973	1985	1982	1965	1965	1972	1984	1984	1974	1974	1976	1984
MIN	3085	3521	3951	4139	3326	3970	3602	3578	3649	3619	3621	3581
(WY)	1965	1965	1970	1987	1969	1969	1968	1968	1968	1968	1968	1968

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	4236		4779	
HIGHEST ANNUAL MEAN			5878	1984
LOWEST ANNUAL MEAN			3976	1968
HIGHEST DAILY MEAN	7110	Dec 15	15100	Dec 28 1964
LOWEST DAILY MEAN	3600	Aug 3	2770	Feb 21 1969
INSTANTANEOUS PEAK FLOW	7470	Dec 15	22500a	Jul 16 1983
INSTANTANEOUS PEAK STAGE (FEET)	4.01	Dec 15	7.70b	Jul 16 1983
INSTANTANEOUS LOW FLOW	not determined		916c	Jul 4 1982
10 PERCENTILE	4760		6310	
50 PERCENTILE	4090		4430	
95 PERCENTILE	3700		3580	

* Regulated period only (1965-88)
a Caused by accidental release from Pelton Dam
b From floodmarks
c Caused by power company testing control gates on dam

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: October 1971 to current year.

INSTRUMENTATION.--Temperature recorder since October 1971.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: 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 TEMPERATURE: Maximum recorded, 14.0°C many days in August, September; minimum, 6.0°C Feb. 1-6.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1				---	---	---	9.5	9.5	9.5	7.5	7.0	7.5
2				---	---	---	9.5	9.5	9.5	7.5	7.0	7.0
3				---	---	---	9.5	9.5	9.5	7.0	7.0	7.0
4				---	---	---	10.0	9.5	10.0	7.0	7.0	7.0
5				12.0	---	---	10.0	9.5	9.5	7.0	7.0	7.0
6				12.0	11.5	11.5	10.0	9.5	9.5	7.0	6.5	7.0
7				11.5	11.5	11.5	9.5	9.5	9.5	7.0	6.5	7.0
8				11.5	11.5	11.5	9.5	9.0	9.0	7.0	6.5	7.0
9				11.5	11.5	11.5	9.5	9.0	9.5	7.0	6.5	7.0
10				11.5	11.0	11.5	9.5	9.5	9.5	7.0	7.0	7.0
11				11.5	11.0	11.5	9.5	9.0	9.5	7.0	6.5	7.0
12				11.5	11.5	11.5	9.5	9.5	9.5	7.0	6.5	6.5
13				11.5	11.5	11.5	9.5	9.0	9.0	7.0	6.5	6.5
14				11.5	11.0	11.0	9.0	9.0	9.0	7.0	6.5	7.0
15				11.0	11.0	11.0	9.0	8.5	9.0	7.0	6.5	7.0
16				11.0	10.5	11.0	9.0	8.5	8.5	7.0	6.5	7.0
17				11.0	10.5	11.0	8.5	8.5	8.5	7.0	6.5	7.0
18				10.5	10.5	10.5	8.5	8.5	8.5	7.0	6.5	7.0
19				11.0	10.5	10.5	8.5	8.5	8.5	7.0	6.5	6.5
20				10.5	10.5	10.5	8.5	8.0	8.0	6.5	6.5	6.5
21				10.5	10.5	10.5	8.5	8.0	8.0	6.5	6.5	6.5
22				10.5	10.5	10.5	8.0	8.0	8.0	6.5	6.5	6.5
23				10.5	10.0	10.5	8.0	8.0	8.0	7.0	6.5	6.5
24				10.5	10.0	10.5	8.0	7.5	8.0	7.0	6.5	6.5
25				10.5	10.0	10.0	8.0	7.5	7.5	7.0	6.5	6.5
26				10.0	10.0	10.0	7.5	7.5	7.5	6.5	6.5	6.5
27				10.0	10.0	10.0	7.5	7.5	7.5	6.5	6.5	6.5
28				10.0	10.0	10.0	7.5	7.0	7.5	6.5	6.5	6.5
29				10.0	9.5	10.0	7.5	7.5	7.5	7.0	6.5	6.5
30				10.0	9.5	9.5	7.5	7.5	7.5	6.5	6.5	6.5
31				---	---	---	7.5	7.0	7.5	6.5	6.5	6.5
MONTH				---	---	---	10.0	7.0	8.5	7.5	6.5	7.0

14092500 DESCHUTES RIVER NEAR MADRAS, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	6.5	6.0	6.5	7.5	6.5	7.0	8.0	7.5	8.0	9.5	9.0	9.5
2	6.5	6.0	6.0	7.5	7.0	7.0	8.5	7.5	8.0	9.5	9.0	9.0
3	6.5	6.0	6.0	7.5	7.0	7.0	8.5	8.0	8.0	9.5	9.0	9.0
4	6.5	6.0	6.0	7.0	7.0	7.0	8.0	8.0	8.0	9.5	9.0	9.0
5	6.0	6.0	6.0	7.0	7.0	7.0	8.0	8.0	8.0	9.5	9.0	9.0
6	6.5	6.0	6.5	7.5	6.5	7.0	8.5	8.0	8.0	9.5	8.5	9.5
7	6.5	6.5	6.5	7.5	6.5	7.0	8.0	8.0	8.0	10.0	9.5	9.5
8	6.5	6.5	6.5	7.0	6.5	7.0	8.5	7.5	8.0	9.5	9.5	9.5
9	7.0	6.5	6.5	7.5	6.5	7.0	8.5	7.5	8.0	10.0	9.0	9.5
10	7.0	6.5	6.5	7.0	6.5	7.0	8.5	7.5	8.0	10.0	9.5	9.5
11	7.0	6.5	7.0	7.5	6.5	7.0	8.5	8.0	8.0	10.0	9.5	10.0
12	7.0	6.5	7.0	7.5	6.5	7.0	8.5	8.0	8.5	10.0	9.5	10.0
13	7.0	6.5	6.5	7.5	6.5	7.0	8.5	8.0	8.5	10.0	9.5	10.0
14	7.0	6.5	6.5	7.5	6.5	7.0	8.5	8.0	8.5	10.5	9.5	10.0
15	7.0	6.5	6.5	7.5	7.0	7.0	9.0	8.0	8.5	10.5	9.5	10.0
16	7.0	6.5	6.5	7.5	6.5	7.0	9.0	8.5	9.0	10.0	9.5	9.5
17	7.0	6.5	6.5	7.5	6.5	7.0	8.5	8.5	8.5	10.0	9.5	10.0
18	7.0	6.5	6.5	7.5	7.0	7.5	9.5	8.5	9.0	10.0	9.5	10.0
19	7.0	6.5	6.5	7.5	7.0	7.5	9.0	8.5	9.0	10.5	9.5	10.0
20	7.0	6.5	6.5	8.0	7.0	7.5	9.0	8.5	8.5	10.5	9.5	10.0
21	7.0	6.5	6.5	7.5	7.5	7.5	9.0	8.5	8.5	10.5	9.5	10.5
22	7.0	6.5	7.0	8.0	7.5	7.5	9.0	8.5	9.0	10.5	10.0	10.5
23	7.0	6.5	7.0	8.0	7.5	7.5	9.0	8.5	9.0	10.5	10.0	10.5
24	7.0	6.5	7.0	7.5	7.0	7.5	9.0	8.5	9.0	11.0	10.0	10.5
25	7.0	6.5	7.0	8.0	7.5	7.5	9.5	8.5	9.0	11.0	10.0	10.5
26	7.0	6.5	7.0	8.0	7.5	8.0	9.5	9.0	9.0	11.0	10.0	10.5
27	7.0	6.5	7.0	8.0	7.5	7.5	9.5	9.0	9.0	11.0	10.5	10.5
28	7.0	6.5	7.0	8.0	7.5	7.5	9.0	8.5	9.0	10.5	10.0	10.5
29	7.0	6.5	7.0	8.0	7.5	7.5	9.5	8.5	9.0	11.0	10.0	10.5
30	---	---	---	8.0	7.5	7.5	9.5	9.0	9.5	11.0	10.0	10.5
31	---	---	---	8.0	7.0	7.5	---	---	---	10.5	10.0	10.5
MONTH	7.0	6.0	6.5	8.0	6.5	7.0	9.5	7.5	8.5	11.0	8.5	10.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	11.0	10.5	10.5	12.0	11.5	12.0	13.5	13.0	13.5	14.0	13.5	13.5
2	10.5	10.5	10.5	12.5	11.5	12.0	14.0	13.0	13.5	14.0	13.5	13.5
3	11.0	10.5	10.5	12.0	11.5	12.0	13.5	13.0	13.5	14.0	13.5	14.0
4	11.0	10.5	10.5	12.0	11.5	12.0	13.5	13.0	13.5	14.0	13.5	13.5
5	11.0	10.5	10.5	12.0	11.5	12.0	13.5	13.0	13.5	14.0	13.5	14.0
6	11.0	10.5	10.5	12.5	11.5	12.0	13.5	13.0	13.5	14.0	13.5	14.0
7	11.0	10.5	10.5	12.5	11.5	12.0	13.5	13.0	13.5	14.0	13.5	13.5
8	11.0	10.0	10.5	12.5	12.0	12.5	13.5	13.0	13.5	14.0	13.5	13.5
9	11.0	10.5	10.5	12.5	12.0	12.5	13.5	13.0	13.5	14.0	13.5	14.0
10	11.0	10.5	11.0	12.5	12.0	12.5	14.0	13.5	13.5	14.0	13.5	13.5
11	11.5	10.5	11.0	12.5	12.0	12.5	14.0	13.5	13.5	14.0	13.5	13.5
12	11.5	10.5	11.0	12.5	12.0	12.5	14.0	13.5	13.5	14.0	13.5	14.0
13	11.5	10.5	11.0	12.5	12.0	12.5	13.5	13.5	13.5	14.0	13.5	14.0
14	11.5	11.0	11.0	13.0	12.0	12.5	14.0	13.0	13.5	14.0	13.5	14.0
15	11.5	11.0	11.5	12.5	12.5	12.5	14.0	13.5	13.5	14.0	13.5	13.5
16	11.5	11.0	11.5	13.0	12.0	12.5	14.0	13.5	13.5	14.0	13.5	13.5
17	11.5	11.0	11.5	13.0	12.5	12.5	14.0	13.5	13.5	14.0	13.0	13.5
18	12.0	11.5	11.5	13.0	12.5	12.5	14.0	13.5	13.5	14.0	13.0	13.5
19	12.0	11.0	11.5	13.0	12.5	12.5	14.0	13.5	13.5	13.5	13.5	13.5
20	12.0	11.5	11.5	13.0	12.5	13.0	14.0	13.5	13.5	13.5	13.0	13.5
21	12.0	11.5	11.5	13.0	12.5	13.0	14.0	13.5	13.5	14.0	13.0	13.5
22	11.5	11.5	11.5	13.0	12.5	13.0	14.0	13.5	13.5	13.5	13.0	13.5
23	12.0	11.5	11.5	13.5	12.5	13.0	14.0	13.5	13.5	13.5	13.0	13.5
24	12.0	11.5	11.5	13.5	12.5	13.0	14.0	13.5	13.5	14.0	13.0	13.5
25	11.5	11.5	11.5	13.5	13.0	13.0	14.0	13.5	13.5	13.5	13.0	13.5
26	12.0	11.5	11.5	13.5	13.0	13.0	14.0	13.5	13.5	13.5	13.5	13.5
27	12.0	11.5	11.5	13.5	13.0	13.0	14.0	13.5	13.5	13.5	13.0	13.0
28	12.0	11.5	11.5	13.5	13.0	13.0	14.0	13.5	13.5	13.5	13.0	13.0
29	12.0	11.5	11.5	13.5	13.0	13.5	14.0	13.5	13.5	13.5	13.0	13.0
30	12.0	11.5	12.0	13.5	13.0	13.5	14.0	13.5	13.5	13.5	13.0	13.0
31	---	---	---	13.5	13.0	13.5	14.0	13.5	13.5	---	---	---
MONTH	12.0	10.0	11.0	13.5	11.5	12.5	14.0	13.0	13.5	14.0	13.0	13.5

14092750 SHITIKE CREEK AT PETERS PASTURE, NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°45'02", long 121°37'56", in NW 1/4 NE 1/4 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.--Records good except for periods of ice effect, which are poor. No regulation or diversion upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	22	43	33	53	75	89	108	102	83	50	32
2	21	22	52	32	e51	76	95	100	100	107	49	32
3	21	21	133	32	e51	75	140	92	119	102	48	32
4	21	21	105	32	53	78	132	85	116	83	47	31
5	21	21	75	28	48	89	119	79	106	76	47	31
6	20	21	94	e27	45	89	122	75	95	72	46	30
7	20	21	77	e27	45	83	131	72	90	71	46	30
8	20	21	62	27	47	77	121	70	84	75	45	30
9	20	21	230	39	88	77	110	72	83	79	44	29
10	20	21	530	115	100	74	103	71	87	80	43	29
11	21	21	200	77	98	69	100	78	88	80	42	29
12	20	23	130	68	93	65	106	116	88	73	42	29
13	20	33	101	62	90	62	123	147	95	90	41	28
14	20	33	87	145	85	60	154	127	104	82	41	28
15	21	28	75	185	87	56	149	115	117	75	40	28
16	20	27	68	153	86	54	160	123	133	70	40	28
17	20	26	60	129	81	52	174	120	145	68	39	28
18	20	24	56	109	76	51	146	108	145	66	38	28
19	20	24	51	94	71	50	136	103	128	65	38	32
20	20	24	47	83	67	51	155	104	132	65	37	32
21	20	24	46	76	67	54	176	110	129	64	36	31
22	21	24	45	70	67	55	148	130	131	63	36	29
23	20	24	43	65	64	71	130	141	127	61	35	28
24	20	25	38	60	62	65	117	120	110	57	35	28
25	20	25	37	56	60	72	109	113	106	56	34	28
26	20	24	34	53	58	108	102	112	106	55	34	28
27	20	24	e33	52	56	141	98	117	104	54	33	43
28	20	23	34	52	57	123	107	163	94	53	33	34
29	20	23	33	54	67	110	135	152	82	53	33	31
30	20	22	33	57	---	99	122	117	76	52	33	29
31	20	---	35	57	---	91	---	99	---	50	32	---
TOTAL	628	713	2687	2149	1973	2352	3809	3339	3222	2180	1237	905
MEAN	20.3	23.8	86.7	69.3	68.0	75.9	127	108	107	70.3	39.9	30.2
MAX	21	33	530	185	100	141	176	163	145	107	50	43
MIN	20	21	33	27	45	50	89	70	76	50	32	28
AC-FT	1250	1410	5330	4260	3910	4670	7560	6620	6390	4320	2450	1800

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	40.6	63.8	66.6	79.8	99.1	100.1	94.4	122.6	123.0	81.3	49.7	38.5
MAX	60.2	103.2	116.7	152.1	190.1	165.9	127.0	156.2	153.6	118.6	69.9	49.3
(WY)	1983	1985	1983	1983	1986	1986	1988	1983	1983	1982	1982	1982
MIN	20.3	23.8	36.1	38.2	37.4	41.4	68.9	102.0	67.4	42.7	29.4	22.7
(WY)	1988	1988	1986	1985	1985	1985	1984	1986	1987	1987	1987	1987

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	68.8		78.8	
HIGHEST ANNUAL MEAN			106	1983
LOWEST ANNUAL MEAN			59.4	1987
HIGHEST DAILY MEAN	530	Dec 10	930	Feb 23 1986
LOWEST DAILY MEAN	20	Oct 6	20	Oct 6 1987
INSTANTANEOUS PEAK FLOW	1000	Dec 10	1170a	Feb 23 1986
INSTANTANEOUS PEAK STAGE (FEET)	3.49	Dec 10	3.65	Feb 23 1986
INSTANTANEOUS LOW FLOW	19b		19b	
10 PERCENTILE	128		140	
50 PERCENTILE	60		64	
95 PERCENTILE	21		28	

a From rating curve extended above 170 ft^3/s
b Occurred several days in October 1987

14092885 SHITIKE CREEK BELOW WOLFORD CANYON, NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°46'20", long 121°18'15", in NW 1/4 SE 1/4 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.--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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	37	50	53	e72	115	112	139	118	88	59	48
2	33	38	69	49	e70	114	114	127	120	111	59	47
3	33	36	111	48	e75	113	165	119	135	124	58	47
4	33	35	113	46	e70	111	166	112	146	97	57	47
5	34	35	85	44	68	123	148	105	131	89	56	46
6	34	35	91	43	64	124	145	100	116	86	56	45
7	34	35	88	47	61	113	162	96	112	81	55	45
8	34	35	76	45	65	107	150	91	102	82	57	45
9	34	36	149	50	115	107	138	93	100	86	61	45
10	33	35	606	137	147	100	129	89	102	87	62	45
11	33	36	264	103	144	95	124	91	101	90	61	45
12	33	38	172	90	138	90	127	122	100	84	61	45
13	33	41	131	79	140	85	143	169	104	96	61	44
14	34	48	109	170	129	83	176	156	111	93	60	43
15	34	43	98	243	139	79	183	138	124	86	59	43
16	34	41	86	195	128	76	191	142	143	82	59	43
17	34	40	77	157	120	74	209	145	160	79	59	43
18	34	39	72	134	113	72	185	131	162	77	59	43
19	34	38	68	113	106	71	166	122	152	75	58	46
20	34	38	65	105	102	73	198	121	141	75	57	50
21	34	38	64	95	100	76	238	127	146	74	56	48
22	34	38	62	85	101	75	203	144	144	72	55	45
23	35	38	60	81	98	93	178	166	143	71	55	44
24	35	38	56	76	94	87	160	147	126	68	53	43
25	35	39	53	72	90	90	147	137	119	66	53	42
26	35	38	50	68	88	114	136	134	113	64	52	41
27	35	38	47	66	86	175	128	135	118	63	51	50
28	35	37	48	66	86	154	132	179	105	62	51	53
29	34	37	45	71	100	141	164	190	92	61	51	46
30	34	37	47	76	---	127	158	142	86	60	51	43
31	35	---	55	73	---	116	---	121	---	59	50	---
TOTAL	1053	1137	3167	2780	2909	3173	4775	4030	3672	2488	1752	1360
MEAN	34.0	37.9	102	89.7	100	102	159	130	122	80.3	56.5	45.3
MAX	35	48	606	243	147	175	238	190	162	124	62	53
MIN	33	35	45	43	61	71	112	89	86	59	50	41
AC-FT	2090	2260	6280	5510	5770	6290	9470	7990	7280	4930	3480	2700

e Estimated

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	50.1	75.0	120.7	104.0	142.0	121.0	106.7	128.6	131.1	87.7	57.4	48.3
MAX	76.5	134.0	237.8	183.1	323.8	262.9	159.2	172.6	217.2	146.8	86.5	67.9
(WY)	1983	1985	1978	1976	1982	1986	1988	1982	1982	1982	1983	1982
MIN	17.9	29.7	43.9	40.4	39.2	40.3	50.8	56.3	65.8	37.6	29.0	25.7
(WY)	1979	1979	1986	1979	1977	1977	1977	1977	1978	1977	1978	1978

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	88.2		97.4	
HIGHEST ANNUAL MEAN			143	1982
LOWEST ANNUAL MEAN			46.8	1977
HIGHEST DAILY MEAN	606	Dec 10	1360	Feb 23 1986
LOWEST DAILY MEAN	33	Oct 1	17	Oct 12 1978
INSTANTANEOUS PEAK FLOW	926	Dec 10	1980a	Feb 23 1986
INSTANTANEOUS PEAK STAGE (FEET)	5.46	Dec 10	7.35	Dec 13 1977
INSTANTANEOUS LOW FLOW	32	Oct 2, 4	17b	Oct 12-15, 1978
10 PERCENTILE	149		172	
50 PERCENTILE	78		79	
95 PERCENTILE	35		34	

a From rating curve extended above 860 ft^3/s
b Also occurred Oct. 24-27, Nov. 12, 1978.

14095500 WARM SPRINGS RIVER NEAR SIMNASHO, OR

LOCATION.--Lat 44°58'10", long 121°28'35", in SE 1/4 SW 1/4 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 mi^2.

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.--Records excellent. No regulation or diversions.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	106	108	134	109	120	187	224	247	162	124	116	111
2	106	107	128	109	120	186	227	238	162	124	116	110
3	105	106	141	109	120	191	283	232	162	125	115	110
4	106	106	120	110	120	193	281	226	174	124	115	110
5	105	106	113	110	120	200	261	220	167	124	115	110
6	106	106	116	110	120	200	259	218	164	123	115	110
7	106	106	112	110	118	191	265	213	163	123	115	110
8	106	106	110	110	120	187	247	209	160	121	114	110
9	106	106	142	114	167	193	236	214	161	121	114	110
10	106	106	243	145	230	185	232	206	158	121	114	110
11	106	107	165	130	223	178	231	203	152	121	114	110
12	106	108	138	123	210	174	236	207	148	121	114	109
13	106	112	128	120	208	169	242	213	145	122	114	109
14	106	110	125	136	196	167	257	212	143	121	113	110
15	106	107	121	153	201	164	259	206	141	120	113	109
16	106	106	120	148	189	160	267	201	139	119	113	109
17	106	106	115	141	182	157	275	198	138	119	113	109
18	106	105	112	135	178	155	266	192	135	119	113	110
19	106	105	112	132	173	154	260	187	133	119	113	115
20	106	105	112	130	172	157	274	183	132	119	112	112
21	106	106	113	124	170	163	358	179	131	119	112	112
22	106	105	111	122	171	164	309	177	130	119	112	110
23	106	106	110	122	165	204	283	174	129	119	112	110
24	106	107	110	121	161	194	266	171	127	120	112	110
25	106	107	109	120	159	197	253	167	127	120	111	110
26	106	105	109	120	158	223	243	164	126	120	111	110
27	106	105	109	119	157	271	240	162	126	119	111	112
28	106	105	109	118	156	255	274	171	125	119	111	110
29	106	105	109	121	173	253	282	179	125	119	111	110
30	106	106	109	123	---	239	260	167	125	118	111	109
31	106	---	109	121	---	227	---	162	---	116	111	---
TOTAL	3284	3191	3814	3815	4757	5938	7850	6098	4310	3738	3506	3306
MEAN	106	106	123	123	164	192	262	197	144	121	113	110
MAX	106	112	243	153	230	271	358	247	174	125	116	115
MIN	105	105	109	109	118	154	224	162	125	116	111	109
AC-FT	6510	6330	7570	7570	9440	11780	15570	12100	8550	7410	6950	6560

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	119.3	135.5	130.2	140.1	224.6	229.7	219.2	183.5	145.4	125.6	119.2	117.0
MAX	125.2	175.5	150.0	189.0	412.5	373.5	261.7	210.7	172.8	137.4	129.5	124.1
(WY)	1984	1985	1985	1984	1986	1986	1988	1984	1984	1984	1984	1984
MIN	105.9	106.4	116.3	122.6	142.2	175.6	171.2	142.2	117.5	112.6	107.4	106.0
(WY)	1988	1988	1986	1987	1985	1985	1987	1987	1987	1987	1987	1987

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	146		171	
HIGHEST ANNUAL MEAN			179	1986
LOWEST ANNUAL MEAN			134	1987
HIGHEST DAILY MEAN	358	Apr 21	1600	Feb 23 1986
LOWEST DAILY MEAN	105	Oct 3	100	Dec 23 1983
INSTANTANEOUS PEAK FLOW	392	Apr 21	1700	Feb 23 1986
INSTANTANEOUS PEAK STAGE (FEET)	3.72	Apr 21	5.70a	Feb 23 1986
INSTANTANEOUS LOW FLOW	105	sev days in Oct., Nov.	97b	Jul 30 1915
10 PERCENTILE	231		221	
50 PERCENTILE	122		133	
95 PERCENTILE	106		106	

a From floodmark
b Also occurred Sept. 5, 30, 1915

14096300 MILL CREEK NEAR BADGER BUTTE, NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°51'42", long 121°37'35", in SW 1/4 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.--No estimated daily discharges. Records good. No regulation or diversion upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	39	61	42	58	78	83	104	100	46	36	36
2	36	38	67	42	56	74	88	97	99	46	36	36
3	36	37	81	40	54	75	122	92	98	46	36	36
4	35	36	59	40	51	77	120	85	109	46	36	35
5	35	35	55	40	50	82	110	82	106	46	36	36
6	35	35	58	39	49	80	104	81	99	46	36	36
7	35	35	59	38	48	78	108	78	94	46	36	37
8	35	35	55	39	58	76	104	77	88	45	36	35
9	35	36	107	61	88	80	93	82	86	42	36	36
10	36	36	305	110	91	76	89	77	83	42	36	36
11	36	37	176	95	90	70	86	73	79	42	36	36
12	36	40	133	93	85	69	83	80	77	42	37	37
13	36	47	108	88	83	66	90	104	74	44	36	37
14	36	44	87	146	77	64	104	113	73	44	36	37
15	36	39	73	157	85	62	108	109	71	44	36	37
16	36	41	64	133	79	62	112	105	69	43	36	37
17	36	40	58	113	76	60	115	105	69	40	36	37
18	35	38	54	99	74	57	111	105	69	42	36	37
19	35	38	52	97	70	56	110	99	67	42	36	45
20	35	38	51	80	68	59	134	96	67	40	36	42
21	35	38	53	72	67	62	178	94	63	40	36	39
22	35	38	50	68	67	63	137	94	60	38	36	38
23	35	39	48	67	64	85	114	96	58	38	36	38
24	35	40	46	63	59	77	102	97	58	38	36	38
25	35	40	44	60	56	82	93	93	54	38	36	38
26	35	38	38	57	56	109	88	91	54	38	36	40
27	36	37	40	56	56	125	84	89	51	38	36	46
28	36	37	38	56	57	111	90	102	51	38	36	42
29	36	37	37	62	72	101	110	120	50	38	36	40
30	36	37	36	63	---	94	114	115	49	38	35	39
31	37	---	44	60	---	87	---	98	---	38	36	---
TOTAL	1102	1145	2237	2276	1944	2397	3184	2933	2225	1294	1116	1139
MEAN	35.5	38.2	72.2	73.4	67.0	77.3	106	94.6	74.2	41.7	36.0	38.0
MAX	37	47	305	157	91	125	178	120	109	46	37	46
MIN	35	35	36	38	48	56	83	73	49	38	35	35
AC-FT	2190	2270	4440	4510	3860	4750	6320	5820	4410	2570	2210	2260

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	44.7	62.0	62.6	68.4	79.3	76.3	83.0	88.5	75.2	47.9	40.7	42.0
MAX	50.6	80.5	72.8	90.5	121.3	105.7	106.1	94.6	92.1	56.5	47.3	48.6
(WY)	1985	1985	1984	1984	1986	1986	1988	1988	1984	1984	1984	1984
MIN	35.5	38.2	50.7	55.5	58.1	59.5	68.4	80.0	61.8	41.7	36.0	35.2
(WY)	1988	1988	1986	1987	1985	1985	1984	1986	1986	1988	1988	1987

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	62.8		64.1	
HIGHEST ANNUAL MEAN			69.0	1984
LOWEST ANNUAL MEAN			59.6	1987
HIGHEST DAILY MEAN	305	Dec 10	324	Feb 23 1986
LOWEST DAILY MEAN	35	Oct 4	34	Aug 28 1987
INSTANTANEOUS PEAK FLOW	406	Dec 10	406	Dec 10 1987
INSTANTANEOUS PEAK STAGE (FEET)	6.86a	Dec 10	7.30b	Feb 23 1986
INSTANTANEOUS LOW FLOW	34c	Oct 5-7	34c	Oct 5-7 1987
10 PERCENTILE	106		95	
50 PERCENTILE	53		59	
95 PERCENTILE	35		37	

a From crest-stage gage
b From high-water mark on crest-stage gage
c Occurred several days August to September, 1987

14096850 BEAVER CREEK BELOW QUARTZ CREEK, NEAR SIMNASHO, OR

LOCATION.--Lat 44°57'32", long 121°23'35", in NE 1/4 SW 1/4 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 above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records excellent. No regulation or diversions upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	37	45	40	90	185	156	138	66	45	37	35
2	36	37	54	39	77	173	157	132	66	44	37	35
3	36	36	55	39	77	168	194	130	70	44	37	35
4	36	35	51	39	70	162	195	124	81	44	37	35
5	36	35	45	39	66	165	175	118	76	44	36	35
6	36	35	45	39	64	158	169	113	68	44	36	35
7	36	35	44	39	65	144	177	109	70	42	36	34
8	36	35	41	39	146	135	160	106	66	42	36	34
9	36	35	58	40	522	137	149	107	65	42	36	34
10	35	35	221	56	636	131	142	100	64	41	36	34
11	36	35	109	66	437	121	139	96	61	41	37	34
12	36	36	74	61	314	114	139	96	59	41	36	34
13	36	38	59	60	292	109	142	102	57	41	36	35
14	36	38	55	207	248	104	153	101	56	41	36	35
15	36	36	51	305	280	101	156	97	55	41	36	35
16	36	36	49	204	219	96	154	94	54	40	36	34
17	36	36	47	143	185	92	154	90	53	40	36	35
18	36	35	45	123	171	89	148	86	52	40	35	35
19	36	35	44	104	155	89	142	84	52	40	35	36
20	36	35	42	94	146	91	152	81	51	39	35	37
21	36	35	45	85	141	98	486	79	50	39	35	35
22	36	35	43	79	139	98	298	78	49	39	35	35
23	36	36	42	79	129	136	214	76	49	39	35	35
24	36	35	38	81	120	131	181	74	48	39	35	35
25	36	36	38	78	116	136	162	72	48	39	35	35
26	35	35	39	73	113	151	148	71	48	39	35	35
27	35	35	39	70	109	194	142	68	47	38	35	35
28	36	35	39	76	109	180	162	70	46	37	35	35
29	36	35	39	134	135	175	170	73	46	37	35	35
30	36	35	39	147	---	176	149	69	46	37	35	35
31	36	---	38	119	---	163	---	67	---	37	35	---
TOTAL	1113	1067	1673	2797	5371	4202	5265	2901	1719	1256	1107	1046
MEAN	35.9	35.6	54.0	90.2	185	136	175	93.6	57.3	40.5	35.7	34.9
MAX	36	38	221	305	636	194	486	138	81	45	37	37
MIN	35	35	38	39	64	89	139	67	46	37	35	34
AC-FT	2210	2120	3320	5550	10650	8330	10440	5750	3410	2490	2200	2070

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	40.0	57.5	61.0	107.7	250.7	170.7	122.5	79.6	56.2	42.2	38.3	38.0
MAX	42.6	104.1	85.5	243.5	634.5	304.8	175.5	93.6	68.8	45.4	40.2	40.4
(WY)	1985	1985	1984	1984	1986	1986	1988	1988	1984	1984	1984	1986
MIN	35.9	35.6	40.0	47.6	111.1	113.8	75.3	55.1	41.7	38.7	35.7	34.9
(WY)	1988	1988	1986	1987	1985	1987	1987	1987	1987	1987	1988	1988

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	80.6		87.6	
HIGHEST ANNUAL MEAN			123	1986
LOWEST ANNUAL MEAN			58.0	1987
HIGHEST DAILY MEAN	636	Feb 10	3680	Feb 23 1986
LOWEST DAILY MEAN	34	Sep 7	34	Sep 7 1988
INSTANTANEOUS PEAK FLOW	958	Feb 9	4340	Feb 23 1986
INSTANTANEOUS PEAK STAGE (FEET)	4.78	Feb 9	7.96	Feb 23 1986
INSTANTANEOUS LOW FLOW	31	Sep 7	31	Sep 7 1988
10 PERCENTILE	160		158	
50 PERCENTILE	47		51	
95 PERCENTILE	34		36	

14097100 WARM SPRINGS RIVER NEAR KAHNEETA HOT SPRINGS, OR

LOCATION.--Lat 44°51'24", long 121°08'55", in SE 1/4 SW 1/4 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.--Records excellent. No regulation. Small diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	224	243	282	257	380	617	640	692	423	281	233	225
2	224	245	456	253	320	617	631	652	430	278	240	224
3	222	235	426	247	380	609	764	632	437	278	239	224
4	222	232	420	240	345	602	823	606	474	279	232	224
5	221	231	346	241	338	626	760	582	474	276	235	224
6	221	231	331	242	335	619	723	567	431	276	237	223
7	223	230	338	241	335	589	755	548	439	272	237	223
8	223	228	315	243	396	561	709	532	416	268	236	222
9	220	233	396	251	1230	565	663	552	415	264	235	223
10	220	232	1320	393	1640	557	636	529	405	261	235	220
11	221	234	842	410	1250	524	623	508	386	259	236	222
12	224	250	545	381	983	501	626	514	370	261	235	223
13	223	261	439	388	905	483	642	552	359	266	236	224
14	222	278	390	625	786	468	693	582	351	266	239	223
15	225	256	361	962	843	455	729	564	344	256	237	223
16	227	244	338	795	739	442	733	545	339	253	234	221
17	227	245	320	655	653	427	755	544	336	250	233	221
18	225	238	302	569	621	418	745	521	331	246	230	224
19	224	234	289	481	579	415	712	500	324	246	230	233
20	226	232	268	451	560	420	767	485	320	245	229	242
21	227	235	289	432	543	442	1330	472	314	242	227	235
22	228	235	279	396	540	450	1150	467	309	240	227	229
23	227	240	269	400	516	531	918	466	307	241	227	227
24	228	238	241	392	494	566	816	459	299	240	226	227
25	226	243	234	373	478	552	754	443	298	240	227	227
26	224	236	244	358	469	597	701	431	296	237	226	228
27	225	233	241	349	462	802	670	418	289	237	226	234
28	228	232	243	351	458	779	710	426	285	236	227	237
29	228	232	236	420	515	734	769	486	284	238	227	231
30	228	234	237	511	---	715	747	465	284	237	226	228
31	231	---	246	458	---	665	---	432	---	234	225	---
TOTAL	6964	7170	11483	12765	18093	17348	22694	16172	10769	7903	7189	6791
MEAN	225	239	370	412	624	560	756	522	359	255	232	226
MAX	231	278	1320	962	1640	802	1330	692	474	281	240	242
MIN	220	228	234	240	320	415	623	418	284	234	225	220
AC-FT	13810	14220	22780	25320	35890	34410	45010	32080	21360	15680	14260	13470

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	267.2	326.6	523.7	605.1	754.7	656.6	562.7	514.6	397.3	284.3	259.5	257.0
MAX	318.0	569.6	1210	1520	1732	1285	804.6	819.5	803.0	400.7	322.9	301.4
(WY)	1973	1985	1978	1974	1986	1986	1974	1974	1974	1974	1974	1974
MIN	219.7	239.0	264.2	201.0	264.2	274.5	277.8	278.0	245.6	216.1	211.5	215.4
(WY)	1978	1988	1986	1979	1977	1977	1977	1977	1977	1977	1977	1977

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	397		449	
HIGHEST ANNUAL MEAN			660	1974
LOWEST ANNUAL MEAN			259	1977
HIGHEST DAILY MEAN	1640	Feb 10	7560	Feb 23 1986
LOWEST DAILY MEAN	220	Oct 9	160	Jan 1, 2 1979
INSTANTANEOUS PEAK FLOW	2020	Feb 9	9240	Feb 23 1986
INSTANTANEOUS PEAK STAGE (FEET)	4.54	Feb 9	10.54	Feb 23 1986
INSTANTANEOUS LOW FLOW	214	Dec 25, Sep 8, 14	not determined	
10 PERCENTILE	701		738	
50 PERCENTILE	303		328	
95 PERCENTILE	223		225	

14101500 WHITE RIVER BELOW TYGH VALLEY, OR

LOCATION.--Lat 45°14'30", long 121°05'38", in NE 1/4 NE 1/4 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.--No estimated daily discharges. Records fair. No regulation. Diversions upstream from station for irrigation.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	98	102	134	163	324	703	726	818	381	177	120	101
2	97	112	229	155	264	729	754	770	384	180	120	99
3	97	103	329	149	315	732	1050	730	398	186	121	97
4	96	101	286	143	296	696	984	696	462	179	115	98
5	95	101	214	145	278	711	864	654	427	176	115	98
6	97	101	233	147	267	671	843	632	392	178	117	98
7	98	100	239	151	289	613	899	600	447	166	118	98
8	99	99	188	150	477	597	802	574	421	167	118	96
9	97	101	331	152	730	594	736	607	389	166	119	97
10	96	101	1300	249	942	553	696	580	395	161	120	96
11	96	101	635	266	896	513	701	604	372	158	121	98
12	97	110	416	230	792	485	763	690	356	157	119	98
13	97	116	315	223	760	455	865	789	342	164	118	96
14	98	135	275	529	693	429	976	742	326	161	117	96
15	96	117	243	908	719	417	969	679	316	152	116	95
16	95	110	223	666	662	404	997	664	299	150	116	94
17	96	112	207	504	602	399	1010	605	302	148	114	95
18	96	106	196	419	565	387	932	562	309	147	112	102
19	96	105	187	361	521	378	885	539	299	145	110	110
20	95	103	176	331	504	391	950	515	288	145	111	118
21	96	108	188	308	490	437	1360	494	275	143	110	105
22	96	110	176	292	493	440	1280	511	256	140	109	101
23	96	118	167	332	484	535	1130	507	242	136	105	100
24	95	115	145	308	466	530	1020	463	227	134	102	100
25	94	119	141	285	449	589	922	451	210	133	101	98
26	94	112	145	276	434	795	858	434	205	132	102	100
27	95	109	142	270	426	1130	826	430	204	127	102	106
28	95	108	143	274	433	958	981	450	197	126	104	106
29	95	106	145	333	537	876	997	446	191	128	103	101
30	96	107	154	423	---	807	892	394	183	125	100	100
31	98	---	158	383	---	751	---	363	---	124	100	---
TOTAL	2982	3248	8060	9525	15108	18705	27668	17993	9495	4711	3475	2997
MEAN	96.2	108	260	307	521	603	922	580	316	152	112	99.9
MAX	99	135	1300	908	942	1130	1360	818	462	186	121	118
MIN	94	99	134	143	264	378	696	363	183	124	100	94
AC-FT	5910	6440	15990	18890	29970	37100	54880	35690	18830	9340	6890	5940

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	151.8	267.2	500.9	597.6	663.4	591.6	695.9	740.8	456.8	196.4	134.1	126.9
MAX	286.2	621.8	1683	1998	1599	1428	1445	1818	1222	392.2	189.6	182.5
(WY)	1960	1922	1965	1923	1986	1972	1943	1949	1974	1974	1950	1959
MIN	87.9	108.3	120.1	117.1	127.9	129.0	223.0	201.7	131.9	96.0	80.0	85.8
(WY)	1943	1988	1977	1977	1977	1977	1941	1934	1940	1941	1941	1977

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	339		425	
HIGHEST ANNUAL MEAN			726	1956
LOWEST ANNUAL MEAN			139	1977
HIGHEST DAILY MEAN	1360	Apr 21	10900	Jan 6 1923
LOWEST DAILY MEAN	94	Oct 25	66	Jan 7 1979
INSTANTANEOUS PEAK FLOW	1810	Dec 10	13300a	Jan 6 1923
INSTANTANEOUS PEAK STAGE (FEET)	4.59	Dec 10	13.3	Jan 6 1923
INSTANTANEOUS LOW FLOW	92	Oct 25, 26, Sep 16	7.5	Aug 31 1961
10 PERCENTILE	775		917	
50 PERCENTILE	205		271	
95 PERCENTILE	96		105	

a From rating curve extended above 5,000 ft^3/s

14103000 DESCHUTES RIVER AT MOODY, NEAR BIGGS, OR
(National stream quality accounting network station)

LOCATION.--Lat 45°37'20", long 120°54'05", in SW 1/4 SE 1/4 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 excellent. 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.

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4930	4650	4700	4900	4740	5630	5870	5720	4940	4570	4370	4300
2	4950	4660	5050	4910	4530	6130	5850	5620	4940	4560	4320	4250
3	4950	4650	5670	4890	4510	6150	6080	5540	4970	4580	4180	4070
4	4830	4630	5890	4910	4600	6130	6340	5480	5070	4600	4160	4070
5	4870	4630	5650	4880	4550	6130	6190	5410	5090	4580	4170	4160
6	4870	4630	5410	4880	4520	6140	6130	5360	5100	4580	4230	4410
7	4860	4670	5430	4890	4520	6090	6210	5310	5340	4560	4430	4440
8	4870	4710	5370	4910	4750	6030	6180	5260	5670	4550	4410	4420
9	4900	4710	5480	4920	5290	6010	6120	5270	5610	4550	4400	4430
10	4970	4710	7500	5160	7050	5980	6050	5270	5610	4540	4360	4400
11	4970	4670	7940	6270	7190	5900	5950	5220	5400	4540	4290	4310
12	4970	4710	7220	5910	6680	5760	5920	5260	5020	4560	4370	4290
13	4820	4890	7260	5680	6410	5640	5860	5320	4980	4570	4370	4300
14	4610	4930	7770	8860	6280	5580	5810	5180	4910	4590	4380	4340
15	4620	4880	7780	12500	6190	5550	5870	5200	4750	4520	4370	4340
16	4630	4840	7750	7850	6180	5410	5840	5130	4730	4380	4330	4250
17	4760	4850	7670	6770	5980	5310	5910	5090	4750	4310	4300	4230
18	4890	4840	7040	6250	5870	5280	5880	5070	4740	4300	4340	4250
19	4870	4830	6440	5950	5790	5220	5790	5070	4720	4270	4350	4280
20	4870	4760	5840	5760	5420	5160	5800	5030	4710	4180	4350	4310
21	4870	4550	5440	5700	5130	5210	6630	5020	4760	4240	4370	4300
22	4870	4400	5260	5610	5080	5260	7170	5050	4870	4470	4360	4290
23	4870	4400	5260	5500	5080	5330	6470	5050	4850	4630	4350	4280
24	4860	4430	5200	5020	5030	5480	6090	5040	4850	4660	4320	4280
25	4870	4450	4930	4640	4990	5450	5930	4990	4750	4630	4300	4280
26	4860	4510	4870	4590	4960	5680	5720	4950	4610	4610	4300	4320
27	4830	4580	4890	4560	4940	6250	5610	4930	4600	4620	4280	4290
28	4770	4580	4880	4560	4930	6300	5680	4970	4610	4640	4360	4360
29	4710	4580	4890	4680	5010	6150	5830	5060	4600	4560	4500	4510
30	4640	4590	4890	5080	---	6050	5830	5040	4590	4380	4440	4480
31	4630	---	4930	4940	---	5940	---	4940	---	4370	4310	---
TOTAL	149790	139920	184300	175930	156200	178330	180610	160850	148140	139700	134370	129240
MEAN	4832	4664	5945	5675	5386	5753	6020	5189	4938	4506	4335	4308
MAX	4970	4930	7940	12500	7190	6300	7170	5720	5670	4660	4500	4510
MIN	4610	4400	4700	4560	4510	5160	5610	4930	4590	4180	4160	4070
AC-FT	297100	277500	365600	349000	309800	353700	358200	319000	293800	277100	266500	256300

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)*

MEAN	4748	5469	6831	7556	7610	7514	6815	5984	5378	4706	4462	4533
MAX	5594	7814	13150	11290	13090	13580	10930	8267	7643	5917	5359	5185
(WY)	1973	1985	1965	1974	1986	1972	1984	1984	1974	1974	1976	1984
MIN	3385	3910	4610	5004	4401	5058	4467	4141	4202	3992	3980	3957
(WY)	1965	1965	1970	1987	1977	1977	1977	1977	1968	1968	1968	1968

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD*	
AVERAGE FLOW	5129		5960	
HIGHEST ANNUAL MEAN			7376	1984
LOWEST ANNUAL MEAN			4687	1977
HIGHEST DAILY MEAN	12500	Jan 15	62400	Dec 23 1964
LOWEST DAILY MEAN	4070	Sep 3	3320	Oct 14 1964
INSTANTANEOUS PEAK FLOW	18000	Jan 14	75500a	Dec 22 1964
INSTANTANEOUS PEAK STAGE (FEET)	5.95	Jan 14	11.80	Dec 22 1964
INSTANTANEOUS LOW FLOW	4040	Sep 3-5		
10 PERCENTILE	6140		8350	
50 PERCENTILE	4900		5320	
95 PERCENTILE	4290		4020	

* Regulated period only (1965-88)
a From rating curve extended above 47,000 ft^3/s

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 TEMPERATURE: December 1952 to February 1954, November 1954 to September 1958, June 1962 to September 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

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)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	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 (MG/L AS CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA
NOV 18...	1210	4840	131	8.1	8.5	12.5	106	K2	K5	46	0	8.
JAN 25...	1200	4660	128	7.7	5.0	13.1	102	K2	30	46	0	8.
MAR 31...	1510	6000	107	8.4	10.0	12.6	112	K1	K5	35	0	6.
MAY 25...	1236	5070	110	8.4	14.5	11.0	109	K18	140	37	0	6.
JUL 07...	1221	4630	117	8.4	16.0	10.6	108	K3	K3	--	--	-
SEP 20...	1235	4310	124	8.2	14.5	11.0	109	K2	K2	41	0	7.

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 DIS IT FIELD (MG/L AS CACO3)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3)	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 18...	5.9	12	2.1	67	82	0	3.3	2.3	0.2	0.08	0.5	0.2
JAN 25...	5.7	12	2.1	67	82	0	4.4	2.5	0.2	<0.01	0.3	0.4
MAR 31...	4.2	9.1	1.6	53	60	2	3.1	1.8	0.2	<0.01	<0.1	<0.2
MAY 25...	4.7	9.3	1.7	54	65	0	2.9	1.8	0.3	<0.01	<0.1	0.7
JUL 07...	--	--	1.8	57	68	0	3.2	2.0	<0.1	<0.01	<0.1	<0.2
SEP 20...	5.4	11	1.8	60	74	0	2.5	2.1	0.1	<0.01	<0.1	0.5

DATE	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P)	PHOS-PHOROUS 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)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 18...	0.02	0.03	0.06	29	96	106	1250	0.7	7	91	84
JAN 25...	0.04	0.08	0.08	32	100	110	1260	2.7	15	189	75
MAR 31...	0.03	0.05	0.07	28	85	87	1380	1.9	14	227	54
MAY 25...	0.03	0.05	0.06	27	84	88	1150	1.1	15	205	52
JUL 07...	0.04	0.06	0.06	--	86	--	--	0.6	12	150	63
SEP 20...	0.04	0.05	0.09	28	85	95	1670	2.0	--	--	--

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

14103000 DESCHUTES RIVER AT MODDY, NEAR BIGGS, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

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 18...	<10	2	4	<0.5	<1	<1	<3	3	11	<5
JAN 25...	--	--	--	--	--	--	--	--	--	--
MAR 31...	20	1	4	<0.5	<1	<1	<3	3	16	<5
MAY 25...	<10	1	5	<0.5	<1	<1	<3	5	19	<5
JUL 07...	--	--	--	--	--	--	--	--	--	--
SEP 20...	10	1	4	<0.5	<1	1	<3	5	33	<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 18...	<4	2	<0.1	<10	<1	<1	<1	43	14	<3
JAN 25...	--	--	--	--	--	--	--	--	--	--
MAR 31...	9	1	<0.1	<10	2	<1	<1	39	12	<3
MAY 25...	6	3	<0.1	<10	<1	<1	<1	40	12	--
JUL 07...	--	--	--	--	--	--	--	--	--	--
SEP 20...	5	2	<0.1	<10	<1	<1	<1	42	14	10

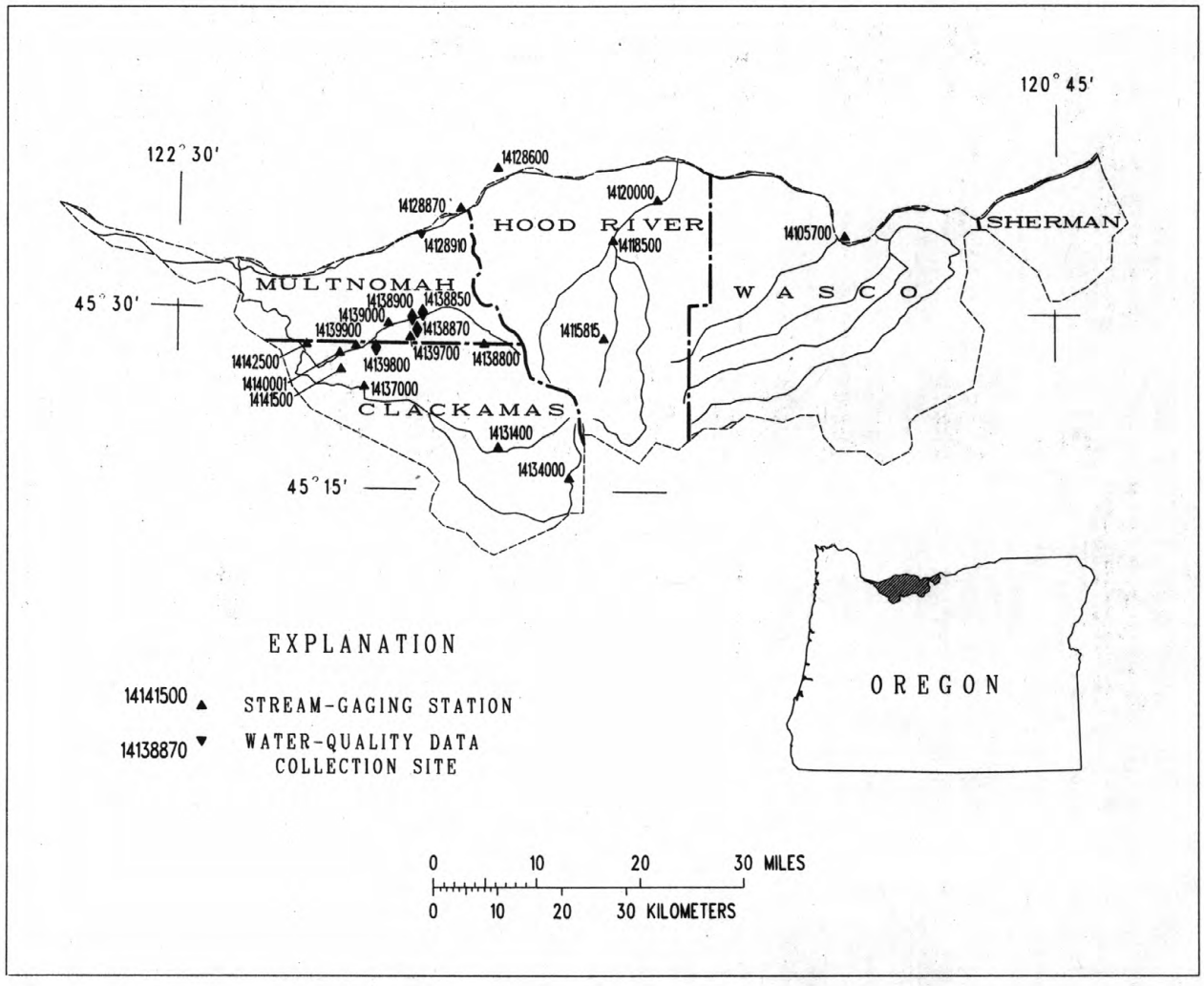

Figure 8.--Location of surface-water and water-quality stations in the Lower Deschutes River, Middle and Lower Columbia River, and Sandy River basins.

14105700 COLUMBIA RIVER AT THE DALLES, OR

LOCATION.--Lat 45°36'27", long 121°10'20", in SW 1/4 SW 1/4 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.--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.--110 years, 192,500 ft^3/s, 139,500,000 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, 245,000 ft^3/s May 11; maximum elevation, not determined; minimum daily discharge, 78,500 ft^3/s July 31.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	139000	93800	157000	146000	176000	117000	115000	153000	230000	114000	95400	133000
2	117000	111000	127000	139000	191000	128000	98300	147000	240000	97400	98700	143000
3	102000	108000	132000	158000	149000	129000	86700	184000	216000	111000	88200	101000
4	82200	114000	140000	190000	176000	122000	129000	193000	214000	88700	106000	103000
5	127000	111000	114000	165000	150000	119000	165000	162000	213000	92300	96700	102000
6	143000	113000	107000	158000	133000	122000	136000	169000	216000	138000	91100	139000
7	127000	103000	150000	203000	134000	148000	129000	178000	200000	130000	85000	111000
8	126000	82000	142000	180000	140000	152000	118000	169000	196000	123000	96200	126000
9	130000	105000	159000	140000	115000	109000	95300	170000	215000	124000	98800	109000
10	107000	100000	152000	165000	151000	132000	93000	203000	185000	108000	92200	117000
11	86700	108000	157000	163000	126000	157000	121000	245000	146000	114000	114000	113000
12	120000	134000	148000	176000	128000	114000	117000	234000	130000	119000	125000	99700
13	134000	117000	141000	181000	114000	99700	133000	211000	140000	124000	100000	100000
14	164000	99500	183000	169000	133000	130000	117000	204000	163000	128000	87800	105000
15	169000	106000	149000	151000	122000	123000	171000	213000	153000	125000	100000	117000
16	152000	122000	183000	132000	150000	131000	146000	200000	171000	97000	110000	112000
17	110000	133000	175000	127000	152000	122000	143000	224000	159000	79800	102000	96400
18	94100	115000	177000	146000	154000	108000	149000	216000	153000	92100	103000	96700
19	149000	132000	150000	161000	134000	97700	146000	229000	146000	107000	101000	109000
20	130000	119000	115000	160000	124000	93700	151000	227000	148000	136000	105000	124000
21	125000	112000	159000	175000	109000	109000	149000	220000	141000	116000	81500	117000
22	129000	106000	166000	170000	149000	122000	145000	190000	142000	124000	92500	123000
23	151000	124000	157000	145000	146000	137000	142000	182000	172000	95200	101000	132000
24	122000	113000	149000	148000	150000	177000	149000	226000	163000	84000	124000	89100
25	98600	135000	130000	163000	118000	147000	157000	231000	156000	101000	117000	93100
26	121000	140000	137000	151000	121000	102000	153000	235000	130000	108000	118000	123000
27	134000	109000	115000	130000	127000	132000	152000	228000	158000	93100	97800	103000
28	127000	107000	148000	116000	98400	145000	158000	166000	132000	93800	89500	113000
29	122000	96900	159000	107000	117000	154000	153000	151000	140000	93500	101000	110000
30	112000	128000	153000	131000	---	146000	150000	143000	108000	87300	130000	116000
31	92800	---	172000	148000	---	129000	---	211000	---	78500	122000	---
TOTAL	3843400	3397200	4603000	4794000	3987400	3954100	4067300	6114000	5076000	3322700	3170400	3376000
MEAN	124000	113200	148500	154600	137500	127600	135600	197200	169200	107200	102300	112500
MAX	169000	140000	183000	203000	191000	177000	171000	245000	240000	138000	130000	143000
MIN	82200	82000	107000	107000	98400	93700	86700	143000	108000	78500	81500	89100
AC-FT	7623000	6738000	9130000	9509000	7909000	7843000	8067000	12130000	10070000	6591000	6288000	6696000

CAL YR 1987 TOTAL 51871400 MEAN 142100 MAX 295000 MIN 82000 AC-FT 102900000
WTR YR 1988 TOTAL 49705500 MEAN 135800 MAX 245000 MIN 78500 AC-FT 98590000

MIDDLE COLUMBIA RIVER BASIN

14115815 CLEAR BRANCH BELOW LAURANCE LAKE, NEAR PARKDALE, OR

LOCATION.--Lat 45°27'44", long 121°39'04", in SE 1/4 SE 1/4 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 1986 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,790 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair. Flow regulated by Laurance Lake 0.3 mi upstream. Water is diverted from Laurance Lake for irrigation.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 125 ft^3/s Jan. 14, 1988, gage height, 6.70 ft; minimum discharge, 0.65 ft^3/s Oct. 9, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 125 ft^3/s Jan. 14, gage height, 6.70 ft; minimum discharge, 0.65 ft^3/s Oct. 9, gage height, 5.39 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	3.0	8.2	9.9	33	29	35	40	24	e9.0	8.6	11
2	1.3	3.1	9.1	9.9	33	29	37	34	24	e9.0	8.6	14
3	1.3	3.1	10	9.9	30	29	71	32	40	9.0	8.4	14
4	1.3	3.1	10	9.9	28	29	73	31	34	9.0	8.4	14
5	4.9	3.1	10	9.9	26	29	57	31	25	9.0	8.6	14
6	8.7	3.1	10	10	24	29	62	31	18	9.0	8.6	14
7	8.6	3.1	10	10	23	29	74	31	18	9.0	8.6	14
8	4.2	3.1	10	11	23	29	59	31	16	9.0	8.6	14
9	4.1	3.1	13	11	28	29	48	31	13	9.0	8.6	14
10	8.6	3.1	17	11	32	29	42	31	12	9.0	8.4	14
11	8.6	3.2	17	12	32	29	38	31	16	9.0	8.2	14
12	8.6	4.8	17	13	32	29	39	31	19	9.0	8.2	14
13	8.6	6.2	18	13	32	29	45	31	19	9.0	8.2	14
14	6.4	6.6	18	52	32	29	53	31	21	9.0	8.2	14
15	5.3	6.6	18	93	32	29	54	31	22	9.0	8.1	14
16	5.3	6.6	14	43	32	29	53	44	21	9.0	8.1	14
17	5.2	6.6	9.3	22	32	29	54	41	17	9.0	7.9	14
18	5.3	6.6	9.4	15	32	29	47	40	21	9.0	7.8	14
19	5.3	6.6	9.4	14	32	29	42	37	13	9.0	7.8	14
20	5.3	6.9	9.4	14	32	29	44	34	9.2	9.0	7.8	17
21	3.5	7.0	9.4	14	32	29	70	32	9.0	9.0	7.8	17
22	2.6	7.0	9.4	14	31	29	65	37	9.0	9.0	7.8	15
23	2.6	7.3	9.4	14	31	29	47	38	9.0	9.0	7.8	15
24	2.6	7.9	9.4	16	31	29	39	31	9.0	9.0	7.7	15
25	2.6	7.8	9.4	26	29	29	30	28	9.0	9.0	7.4	15
26	2.6	7.8	9.4	29	27	38	26	26	9.0	9.0	7.4	15
27	2.6	7.8	9.4	29	29	78	30	28	9.0	9.0	7.4	15
28	2.6	7.8	9.4	32	29	62	32	47	9.0	9.0	7.2	15
29	2.6	7.9	9.4	34	30	49	51	40	9.0	9.0	7.0	15
30	2.8	7.8	9.6	33	---	40	49	31	9.0	8.8	7.0	15
31	2.8	---	9.9	33	---	35	---	24	---	8.6	6.9	---
TOTAL	138.1	167.7	350.9	667.5	869	1027	1466	1036	492.2	278.4	247.1	432
MEAN	4.45	5.59	11.3	21.5	30.0	33.1	48.9	33.4	16.4	8.98	7.97	14.4
MAX	8.7	7.9	18	93	33	78	74	47	40	9.0	8.6	17
MIN	1.3	3.0	8.2	9.9	23	29	26	24	9.0	8.6	6.9	11
AC-FT	274	333	696	1320	1720	2040	2910	2050	976	552	490	857

CAL YR 1987 TOTAL 2962.2 MEAN 8.12 MAX 39 MIN 1.3 AC-FT 5880
WTR YR 1988 TOTAL 7171.9 MEAN 19.6 MAX 93 MIN 1.3 AC-FT 14230

e Estimated

14118500 WEST FORK HOOD RIVER NEAR DEE, OR

LOCATION.--Lat 45°35'55", long 121°38'05", in SE 1/4 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.--No estimated daily discharges. Records excellent. 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	104	109	529	185	405	753	718	655	710	221	163	122
2	105	107	791	179	381	652	994	622	680	266	156	123
3	105	96	2590	176	353	720	1740	634	805	281	155	126
4	103	94	1180	174	327	730	1260	592	668	237	157	129
5	101	94	751	174	308	771	991	563	576	230	156	130
6	101	93	903	169	295	726	1240	554	506	239	154	126
7	102	93	671	162	315	613	1230	530	501	216	148	124
8	104	92	549	166	441	591	953	508	445	213	145	117
9	102	96	3210	190	1830	747	805	527	417	215	146	116
10	100	95	4260	512	2250	620	725	519	411	212	151	114
11	98	98	1560	362	1480	549	709	576	379	220	147	112
12	96	127	965	313	1170	500	750	660	357	227	142	110
13	96	198	705	300	1130	462	836	735	340	304	140	111
14	95	205	571	1770	912	435	844	865	333	269	139	112
15	94	139	482	1890	972	411	774	722	338	235	140	111
16	95	173	424	1060	830	385	768	669	337	221	141	111
17	94	143	371	759	732	365	734	627	335	210	140	117
18	94	125	335	604	677	352	665	592	348	207	136	113
19	93	119	304	498	602	355	625	546	319	204	133	179
20	93	116	287	460	575	415	652	520	306	207	132	132
21	93	139	344	418	567	580	1020	498	298	205	129	120
22	93	176	299	393	566	539	815	510	306	196	128	115
23	93	239	271	415	524	861	665	484	304	195	127	113
24	93	256	251	380	480	836	615	438	271	189	129	119
25	92	249	236	357	444	1920	564	409	267	186	134	121
26	93	187	224	340	416	2200	522	386	257	189	134	129
27	93	163	215	327	398	1760	515	412	252	190	131	179
28	92	148	209	326	410	1180	604	588	238	181	131	133
29	92	138	204	463	512	1000	782	578	242	178	130	123
30	92	134	197	507	---	842	730	545	221	170	129	122
31	96	---	192	454	---	738	---	537	---	169	124	---
TOTAL	2997	4241	24080	14483	20302	23608	24845	17601	11767	6682	4347	3709
MEAN	96.7	141	777	467	700	762	828	568	392	216	140	124
MAX	105	256	4260	1890	2250	2200	1740	865	805	304	163	179
MIN	92	92	192	162	295	352	515	386	221	169	124	110
AC-FT	5940	8410	47760	28730	40270	46830	49280	34910	23340	13250	8620	7360

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	277.4	630.9	905.4	841.7	789.3	691.9	748.0	682.9	469.0	257.3	175.6	170.4
MAX	817.2	1499	2589	2362	1918	1391	1335	1305	1131	496.0	267.3	378.2
(WY)	1948	1956	1934	1953	1961	1972	1943	1949	1933	1955	1950	1959
MIN	96.7	109.1	201.8	191.4	228.8	385.7	287.5	312.3	194.6	140.5	109.0	108.8
(WY)	1988	1937	1977	1937	1977	1981	1941	1934	1940	1940	1941	1942

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	433		552	
HIGHEST ANNUAL MEAN			837	1974
LOWEST ANNUAL MEAN			267	1977
HIGHEST DAILY MEAN	4260	Dec 10	15000	Dec 23 1964
LOWEST DAILY MEAN	92	Oct 25	92	Oct 25 1987
INSTANTANEOUS PEAK FLOW	9000	Dec 10	a	Dec 24 1964
INSTANTANEOUS PEAK STAGE (FEET)	11.62	Dec 10	27.0b	Dec 24 1964
INSTANTANEOUS LOW FLOW	90	Oct 25, 29	90	Oct 25, 29 1987
10 PERCENTILE	823		1070	
50 PERCENTILE	304		400	
95 PERCENTILE	98		131	

a Discharge not determined
b From floodmarks

14120000 HOOD RIVER AT TUCKER BRIDGE, NEAR HOOD RIVER, OR

LOCATION.--Lat 45°39'20", long 121°32'50", in SE 1/4 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.--No estimated daily discharges. Records fair. Some daily fluctuation caused by diversion dam upstream from station and sawmill at Dee. Diversions for irrigation upstream from station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988, MEAN DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	230	264	789	363	672	1170	1260	1180	1140	440	358	265
2	230	268	1060	353	637	999	1610	1110	1090	509	320	270
3	238	238	4010	349	621	1050	2870	1100	1270	564	307	300
4	226	231	1650	345	575	1060	2100	1020	1120	460	303	313
5	223	230	1000	339	552	1130	1680	979	966	429	313	313
6	235	231	1320	329	529	1050	2010	949	884	429	287	290
7	246	229	935	325	544	911	2030	902	921	391	275	268
8	246	228	760	329	687	908	1600	869	834	383	275	228
9	231	231	4890	362	2430	1150	1380	908	799	420	289	218
10	243	223	6970	730	3160	973	1260	901	751	410	319	210
11	220	219	2480	566	2160	866	1250	1010	690	449	298	198
12	221	268	1510	511	1690	794	1300	1160	671	436	275	198
13	216	382	1130	484	1610	756	1430	1310	651	552	271	199
14	215	394	936	2490	1370	711	1480	1390	651	497	273	214
15	207	289	780	2960	1440	683	1410	1220	668	422	270	221
16	206	317	711	1580	1270	675	1430	1160	698	403	269	226
17	208	281	637	1180	1140	678	1420	1110	707	389	260	214
18	205	259	584	945	1050	661	1280	1040	736	385	252	214
19	205	254	538	791	952	664	1210	980	722	380	252	348
20	201	251	515	745	895	725	1270	954	675	400	265	269
21	201	271	572	691	879	898	1990	948	645	407	239	240
22	200	302	520	677	869	839	1600	985	666	395	240	229
23	203	402	484	702	826	1250	1340	960	668	403	247	242
24	207	389	455	641	783	1220	1210	867	584	380	274	252
25	205	392	434	620	739	2600	1110	823	563	383	311	261
26	205	322	423	603	723	3320	1030	785	532	389	316	293
27	202	293	411	590	695	2830	1020	829	527	398	302	373
28	214	277	405	595	702	1930	1230	1140	494	403	297	287
29	202	267	399	745	813	1640	1410	1060	469	401	293	285
30	214	265	391	803	---	1420	1320	936	435	385	285	289
31	245	---	387	735	---	1290	---	914	---	381	258	---
TOTAL	6750	8467	38086	23478	31013	36851	44540	31499	22227	13073	8793	7727
MEAN	218	282	1229	757	1069	1189	1485	1016	741	422	284	258
MAX	246	402	6970	2960	3160	3320	2870	1390	1270	564	358	373
MIN	200	219	387	325	529	661	1020	785	435	380	239	198
AC-FT	13390	16790	75540	46570	61510	73090	88350	62480	44090	25930	17440	15330

STATISTICS OF MONTHLY FLOW DATA FOR PERIOD OF RECORD, BY WATER YEAR (WY)

MEAN	488.1	1039	1524	1622	1616	1381	1312	1253	1006	634.3	425.4	404.1
MAX	928.5	1989	4109	3313	3367	2915	2358	2418	2439	1687	1088	803.9
(WY)	1900	1898	1978	1974	1982	1972	1916	1969	1899	1899	1899	1899
MIN	217.7	282.2	437.9	362.8	430.0	681.5	703.8	559.4	445.3	255.7	252.2	229.3
(WY)	1988	1988	1977	1979	1977	1977	1973	1973	1987	1977	1987	1987

SUMMARY STATISTICS	FOR 1988 WATER YEAR		FOR PERIOD OF RECORD	
AVERAGE FLOW	744		1051	
HIGHEST ANNUAL MEAN			1664	1899
LOWEST ANNUAL MEAN			465	1977
HIGHEST DAILY MEAN	6970	Dec 10	18000	Dec 13 1977
LOWEST DAILY MEAN	198	Sep 11	.00	Jan 1 1965
INSTANTANEOUS PEAK FLOW	15000	Dec 10	22300	Dec 13 1977
INSTANTANEOUS PEAK STAGE (FEET)	12.51	Dec 10	15.59	Dec 13 1977
INSTANTANEOUS LOW FLOW	191	Sep 12	136a	Sep 16 1915
10 PERCENTILE	1400		1960	
50 PERCENTILE	554		810	
95 PERCENTILE	213		283	

a Caused by temporary storage behind dam at Dee

14128600 COLUMBIA RIVER AT STEVENSON, WA

LOCATION.--Lat 45°41'58", long 121°52'02", in NW 1/4 SE 1/4 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, 77.53 ft May 15; minimum, 71.12 Oct. 22, June 13.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	76.17	73.87	74.86	73.38	72.29	72.66	76.08	73.24	74.72	76.20	74.63	75.15
2	76.16	74.46	75.33	75.04	73.35	74.15	75.95	74.21	74.97	76.36	75.65	76.06
3	76.18	74.81	75.57	75.64	74.67	75.22	76.17	74.48	75.38	76.14	73.97	74.84
4	76.23	75.13	75.33	75.36	74.04	74.75	76.04	73.93	74.94	76.44	72.97	74.89
5	76.32	74.41	75.39	75.48	74.09	74.87	75.25	73.76	74.46	75.98	72.89	74.94
6	76.60	74.54	75.63	75.02	73.74	74.33	74.90	73.45	74.16	75.13	73.60	74.54
7	76.42	74.25	75.34	74.44	72.66	73.45	75.86	73.87	75.03	76.96	72.89	74.85
8	76.55	74.66	75.54	74.35	73.36	73.75	75.51	73.35	74.68	76.10	73.61	74.92
9	76.26	75.10	75.70	74.68	73.23	73.97	76.38	73.76	74.76	75.36	73.52	74.31
10	76.33	75.33	75.74	74.93	73.17	74.04	76.54	74.16	74.96	75.45	72.80	74.04
11	76.08	75.05	75.54	76.09	74.02	74.78	75.30	73.36	74.64	75.46	73.07	74.28
12	76.79	74.74	75.96	76.53	74.69	75.41	75.69	74.32	74.81	75.77	72.69	74.50
13	76.50	75.37	76.11	76.68	74.48	75.53	76.25	75.31	75.77	76.15	72.88	74.68
14	76.17	74.85	75.63	76.54	74.52	75.52	76.27	73.81	75.14	76.43	73.12	74.47
15	76.38	75.55	75.97	74.94	73.43	74.12	76.33	74.17	74.94	76.43	73.66	75.01
16	76.44	74.74	75.83	76.42	72.56	74.33	76.87	73.32	74.77	75.82	73.33	74.32
17	75.88	74.17	74.59	76.41	74.19	75.30	76.76	74.63	75.63	76.05	74.02	74.78
18	75.06	74.14	74.43	76.04	73.89	74.76	75.95	74.47	75.26	76.07	74.40	75.07
19	76.47	73.98	75.28	75.72	73.86	74.84	75.43	74.41	74.92	76.08	72.54	74.18
20	76.48	74.44	75.11	75.65	73.60	74.72	75.42	74.12	74.86	75.95	73.81	74.87
21	74.73	72.62	73.33	76.03	74.52	75.28	75.33	73.75	74.59	75.49	74.55	75.08
22	73.28	71.12	72.13	76.13	74.58	75.17	75.00	73.49	74.34	75.58	73.38	74.72
23	75.15	72.59	73.50	75.38	73.42	74.37	75.29	73.52	74.47	75.41	73.31	74.22
24	76.48	75.13	75.57	75.57	73.96	74.91	75.46	74.05	74.84	74.78	73.81	74.40
25	76.33	75.65	75.99	76.05	73.87	74.95	75.47	73.44	74.54	75.21	73.25	74.29
26	76.38	75.18	75.95	76.23	74.13	75.52	74.70	73.12	73.82	75.92	73.24	74.52
27	76.14	74.44	75.49	76.11	73.94	74.44	74.70	72.98	73.77	76.38	74.80	75.73
28	76.36	75.38	75.76	74.23	72.32	73.12	74.05	73.38	73.74	75.65	73.07	74.49
29	76.21	74.81	75.51	74.07	73.19	73.64	75.81	73.94	74.79	75.86	75.18	75.61
30	76.05	74.74	75.24	76.21	73.43	74.78	75.42	74.31	74.67	75.93	74.77	75.32
31	74.76	73.41	73.83	---	---	---	75.68	73.54	74.38	75.74	74.81	75.15
MONTH	76.79	71.12	75.20	76.68	72.29	74.56	76.87	72.98	74.73	76.96	72.54	74.78

MIDDLE COLUMBIA RIVER BASIN

14128600 COLUMBIA RIVER AT STEVENSON, WA--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	75.73	73.78	74.81	75.73	73.64	74.53	75.28	74.01	74.54	76.85	75.22	75.82
2	76.01	73.08	74.48	76.02	74.01	75.00	75.75	74.27	74.81	76.89	75.87	76.43
3	75.94	73.56	74.85	76.95	74.48	75.40	76.14	75.31	75.76	77.17	76.05	76.53
4	75.75	73.47	74.75	76.97	74.77	75.45	76.00	74.51	75.46	77.03	74.71	75.89
5	75.67	72.88	74.44	75.47	74.52	74.98	76.52	75.80	76.32	76.50	74.29	75.00
6	75.32	73.54	74.06	75.43	74.31	74.83	76.44	73.67	74.61	75.37	73.02	74.08
7	75.35	73.46	74.34	76.36	74.73	75.36	74.76	72.72	73.64	76.69	74.68	75.34
8	75.80	74.50	75.11	76.37	73.10	74.70	75.10	72.93	74.11	76.43	75.48	75.82
9	75.24	73.55	74.37	76.47	74.72	75.31	74.88	73.85	74.29	76.45	74.52	75.52
10	76.24	74.26	75.35	76.00	74.67	75.35	74.35	73.63	74.03	75.61	73.90	74.48
11	76.16	74.98	75.42	76.44	74.48	75.33	74.70	72.95	74.02	76.99	75.55	76.35
12	75.44	74.17	74.76	76.35	75.81	76.08	75.38	72.98	74.44	77.42	75.83	76.56
13	76.18	75.29	75.78	76.00	74.26	75.00	76.36	73.12	74.31	77.06	75.95	76.45
14	76.12	75.17	75.57	75.45	73.14	74.32	75.91	74.21	74.85	76.54	74.75	75.63
15	76.51	75.08	75.93	74.76	73.52	74.31	76.83	72.66	74.41	77.53	75.69	76.45
16	76.88	75.04	75.91	74.72	73.69	74.33	76.76	73.89	75.49	76.71	74.38	75.64
17	76.84	75.20	75.96	74.57	73.66	74.16	76.44	73.51	75.07	76.84	75.38	76.12
18	76.34	73.54	75.09	74.80	73.68	74.39	76.77	73.89	75.38	76.16	74.83	75.68
19	76.23	73.92	75.21	74.65	74.21	74.40	76.53	74.16	75.55	77.17	75.04	76.20
20	76.02	73.76	74.79	74.37	73.43	73.80	76.66	73.98	75.39	76.95	75.84	76.51
21	75.70	74.06	74.60	74.11	73.00	73.34	76.89	74.09	75.44	76.66	74.83	75.51
22	76.24	73.23	74.68	73.83	72.08	72.58	76.65	74.85	75.63	75.84	74.91	75.32
23	76.00	74.01	74.97	75.40	73.01	73.82	76.45	74.75	75.40	76.05	75.11	75.56
24	76.00	72.58	74.24	77.23	74.44	75.61	76.01	73.93	74.92	76.51	74.24	75.61
25	76.14	73.82	74.61	76.76	73.94	75.03	76.92	74.74	75.88	75.94	73.83	74.88
26	75.30	73.08	73.99	75.92	74.30	74.79	76.98	76.03	76.58	76.30	72.96	74.34
27	75.10	73.27	74.02	76.42	75.06	75.65	76.81	76.14	76.52	77.14	73.11	75.01
28	74.90	73.13	73.79	76.44	74.81	75.43	76.34	75.57	76.04	76.89	73.86	74.86
29	75.13	72.35	73.14	75.85	74.64	75.06	76.45	75.09	75.81	75.40	74.82	75.09
30	---	---	---	75.37	72.46	73.40	76.42	75.57	76.07	75.27	73.75	74.51
31	---	---	---	74.59	73.32	73.97	---	---	---	76.80	73.86	75.37
MONTH	76.88	72.35	74.79	77.23	72.08	74.70	76.98	72.66	75.16	77.53	72.96	75.57

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	76.68	75.22	75.81	76.32	74.01	75.16	76.29	75.26	75.79	76.69	74.79	75.68
2	76.17	74.42	75.14	76.37	75.71	76.02	76.40	75.13	75.81	76.97	74.29	75.70
3	76.11	74.04	74.93	76.42	76.14	76.27	76.10	75.46	75.75	76.58	74.39	75.34
4	75.11	73.91	74.53	76.37	74.73	75.20	75.83	75.29	75.59	76.61	75.18	75.85
5	75.87	74.86	75.32	75.30	74.40	74.88	76.18	75.15	75.68	76.87	74.74	75.75
6	76.02	74.44	75.11	76.60	74.28	75.42	76.55	76.02	76.22	77.17	75.97	76.68
7	76.10	74.38	75.36	76.48	74.83	75.67	76.54	76.14	76.31	76.56	74.90	75.72
8	76.35	74.12	75.09	75.57	73.79	74.55	76.13	75.24	75.72	76.71	75.20	76.02
9	76.49	74.25	75.39	76.77	74.93	75.81	76.66	75.51	76.13	76.57	75.32	75.83
10	76.06	74.39	75.38	76.75	75.63	76.05	76.40	75.92	76.07	76.57	74.90	75.73
11	75.37	74.08	74.46	76.54	75.48	75.82	76.04	75.43	75.77	76.61	75.38	76.14
12	75.02	73.90	74.41	76.53	75.33	76.03	76.91	74.90	75.94	76.37	74.25	75.22
13	74.29	71.12	72.02	76.65	74.81	75.94	76.47	74.69	75.51	76.48	74.78	75.55
14	76.15	72.92	74.29	76.36	74.91	75.81	76.11	75.01	75.39	76.87	74.95	75.84
15	76.07	74.75	75.21	76.67	75.22	76.06	76.66	75.63	76.13	76.21	74.87	75.22
16	76.64	73.82	75.39	76.67	75.34	75.90	76.84	75.36	76.21	76.38	74.57	75.41
17	76.84	75.27	76.13	76.67	75.51	76.05	76.36	74.92	75.37	76.48	75.38	75.86
18	76.90	75.29	76.04	75.79	74.36	75.15	76.16	74.79	75.51	76.04	74.42	75.03
19	76.89	75.66	76.14	75.62	74.20	74.99	76.37	75.25	75.83	75.90	73.64	74.52
20	76.77	75.13	75.91	76.41	73.04	74.38	76.39	74.93	75.72	76.39	74.30	75.18
21	76.90	75.28	76.19	76.72	75.07	75.88	76.04	74.55	75.17	76.10	75.09	75.50
22	76.66	75.16	76.10	76.80	74.67	75.94	75.01	74.29	74.75	76.31	74.86	75.53
23	76.82	75.27	76.01	76.77	75.44	76.19	75.44	74.40	74.91	76.46	74.54	75.60
24	76.86	74.44	75.72	76.68	75.71	76.18	76.16	74.59	75.29	76.40	75.42	75.71
25	77.01	75.45	76.19	76.24	75.08	75.60	76.46	74.50	75.45	75.78	75.18	75.50
26	76.83	75.40	76.01	75.36	73.88	74.53	76.22	73.88	75.07	76.33	74.52	75.45
27	76.75	73.71	75.40	75.21	73.75	74.45	76.41	75.25	75.88	76.13	74.15	74.99
28	76.56	74.18	75.54	75.58	74.39	74.95	76.34	75.22	75.68	76.06	74.75	75.43
29	76.11	74.02	74.72	76.11	75.15	75.65	75.80	74.44	75.17	75.93	74.96	75.26
30	75.23	74.09	74.63	75.97	75.04	75.63	76.45	74.26	75.41	75.78	74.29	75.17
31	---	---	---	75.75	74.87	75.32	76.42	74.93	75.74	---	---	---
MONTH	77.01	71.12	75.29	76.80	73.04	75.53	76.91	73.88	75.64	77.17	73.64	75.55

YEAR MAXIMUM 77.53 MINIMUM 71.12 MEAN 75.13

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, 20.27 ft May 25; minimum, 7.20 ft Aug. 15.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	14.01	11.21	12.39	9.81	8.78	9.41	15.25	11.18	14.18	14.45	10.48	13.26
2	11.71	10.28	10.83	9.98	8.61	9.15	14.31	12.64	13.37	14.11	10.72	12.35
3	10.80	9.33	9.92	11.36	8.89	9.97	14.61	12.90	13.79	15.78	13.73	14.29
4	10.03	8.43	9.08	12.14	10.29	11.17	15.62	14.23	14.95	15.94	14.30	15.11
5	11.37	9.34	10.47	11.52	9.35	10.29	14.19	12.33	13.08	15.90	13.56	14.89
6	14.08	11.03	12.54	12.56	10.52	11.26	13.86	11.54	12.26	15.57	14.05	14.77
7	13.51	11.36	12.14	12.39	9.13	10.57	15.33	13.51	14.33	16.21	15.35	15.56
8	12.95	11.45	12.18	9.10	7.53	8.62	15.41	14.12	14.71	17.79	15.39	15.91
9	13.06	11.07	12.21	11.47	7.63	9.65	17.35	14.29	15.47	16.04	12.68	13.78
10	11.93	9.36	10.26	11.42	8.51	9.17	20.21	17.31	18.46	15.06	14.02	14.61
11	10.14	8.63	9.19	10.36	8.35	8.91	18.21	16.40	17.05	17.33	14.95	15.66
12	11.63	8.89	10.07	12.48	10.40	11.49	16.40	14.57	15.38	16.49	14.96	15.77
13	13.76	11.49	12.23	12.75	10.10	11.47	15.50	13.40	14.08	17.45	16.15	16.52
14	14.69	13.80	14.15	11.18	10.05	10.87	16.84	15.29	16.06	17.82	15.30	16.92
15	14.94	13.50	14.50	11.23	10.66	10.96	17.13	13.84	15.17	18.47	17.22	17.77
16	13.55	13.19	13.38	11.35	7.57	9.44	15.81	13.56	15.12	17.39	15.57	16.60
17	13.55	9.41	11.37	12.44	11.24	11.93	18.09	15.32	16.07	15.58	14.19	14.69
18	9.55	8.98	9.29	11.98	10.88	11.43	17.97	15.49	16.27	17.26	13.63	15.71
19	12.93	8.76	10.97	12.02	10.87	11.50	15.88	13.79	14.66	16.48	14.75	15.45
20	13.85	11.64	12.89	11.76	10.31	11.13	13.81	11.67	12.76	16.57	15.66	15.90
21	14.04	11.12	12.93	11.48	10.51	10.92	15.81	12.70	13.93	16.87	16.17	16.54
22	13.19	9.74	12.05	12.47	11.11	11.63	16.47	15.05	15.38	16.24	14.90	15.93
23	13.59	11.33	12.29	12.33	11.40	11.83	15.45	14.34	14.66	16.31	14.43	14.97
24	11.43	10.00	10.77	12.00	10.72	11.22	14.58	13.41	13.96	14.60	13.86	14.14
25	10.39	9.31	9.82	13.09	11.42	12.43	13.66	12.40	13.02	15.03	13.97	14.52
26	12.79	9.99	11.15	13.15	12.43	12.69	12.67	11.66	12.22	14.93	11.83	13.68
27	12.84	11.46	11.87	12.89	10.98	11.94	12.05	10.05	11.19	13.90	11.42	12.89
28	12.40	11.33	12.02	11.34	9.19	10.54	13.46	11.78	12.90	13.09	10.35	11.35
29	11.90	10.98	11.29	9.62	8.80	9.21	14.23	12.41	12.90	12.44	10.22	11.11
30	12.48	10.85	11.60	10.92	8.60	9.55	14.81	13.58	14.35	14.00	12.41	12.96
31	11.64	9.47	10.58	---	---	---	14.69	13.42	14.44	15.50	13.87	14.38
MONTH	14.94	8.43	11.50	13.15	7.53	10.68	20.21	10.05	14.39	18.47	10.22	14.77

LOWER COLUMBIA RIVER BASIN

14128870 COLUMBIA RIVER BELOW BONNEVILLE DAM, OR--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		FEBRUARY			MARCH			APRIL			MAY	
1	15.79	15.24	15.48	11.78	9.64	10.72	12.23	10.72	11.67	14.59	14.03	14.31
2	16.54	15.61	16.25	12.71	11.41	12.09	10.94	10.16	10.50	16.21	12.93	14.15
3	16.64	13.82	15.33	13.79	10.38	12.15	12.92	10.48	11.31	18.39	14.45	16.30
4	15.66	12.96	14.93	14.61	12.30	13.62	14.28	12.72	13.39	17.58	16.53	17.08
5	15.87	12.88	14.09	12.28	11.70	11.94	16.20	11.96	15.16	17.94	16.45	16.84
6	13.48	13.13	13.30	12.91	11.69	12.35	15.92	14.66	15.47	17.42	14.46	15.46
7	13.16	10.71	12.23	14.89	12.38	13.30	15.46	13.57	14.44	15.61	14.28	15.21
8	14.94	10.84	13.31	15.02	13.19	14.31	13.61	10.88	12.82	15.89	14.78	15.46
9	13.74	12.04	12.96	13.56	11.15	12.08	11.40	9.32	10.92	17.19	15.53	15.88
10	15.80	11.73	14.08	13.34	11.82	12.78	10.86	9.12	10.23	18.64	15.71	17.36
11	15.96	12.50	14.44	14.82	13.06	14.12	13.16	10.47	11.48	19.56	17.52	18.80
12	13.77	12.27	13.03	13.40	10.77	12.00	13.24	10.41	11.84	20.13	18.21	19.09
13	13.35	10.83	12.03	11.64	11.15	11.35	12.38	11.74	12.05	19.84	17.61	18.69
14	13.69	13.11	13.35	13.14	11.22	11.91	14.08	12.38	13.31	19.86	17.60	18.56
15	13.58	11.96	12.55	13.37	11.58	12.33	14.57	13.89	14.29	19.58	17.64	17.95
16	15.82	12.18	14.04	12.62	11.76	12.26	14.86	13.74	14.37	19.43	17.39	17.82
17	16.39	12.71	14.84	12.39	11.68	12.10	14.79	13.97	14.46	19.68	17.44	18.80
18	16.50	14.28	15.17	11.84	10.02	10.72	14.66	13.55	14.15	19.78	18.55	18.87
19	15.17	13.34	14.08	11.20	10.06	10.60	14.77	13.85	14.30	18.96	18.39	18.54
20	13.65	12.15	12.60	10.92	9.85	10.36	14.66	13.98	14.32	19.56	18.26	19.02
21	12.74	11.76	12.22	13.07	10.20	11.86	14.84	13.88	14.40	19.51	18.18	18.96
22	14.26	11.47	12.94	13.03	10.44	11.52	14.68	13.97	14.33	18.38	16.12	17.05
23	14.38	13.69	14.15	13.85	10.33	12.20	14.64	13.91	14.28	16.92	15.75	16.40
24	13.77	12.76	13.08	17.20	13.79	15.01	14.36	13.92	14.20	19.08	16.79	17.77
25	13.74	11.28	12.55	17.63	14.19	16.28	15.87	12.78	14.01	20.27	18.79	19.18
26	12.59	10.48	11.34	13.95	11.24	12.37	16.49	12.93	14.09	19.56	18.16	18.82
27	12.53	10.40	11.81	14.05	11.16	13.47	17.33	13.59	14.30	18.77	17.78	18.22
28	12.19	10.13	11.25	15.09	13.84	14.79	16.89	13.90	14.57	17.77	14.83	16.82
29	11.06	9.91	10.40	17.05	14.86	15.21	16.26	14.09	14.62	14.85	13.89	14.51
30	---	---	---	18.38	12.33	16.03	14.74	14.19	14.44	15.05	13.37	14.19
31	---	---	---	12.71	12.16	12.40	---	---	---	17.78	14.01	16.25
MONTH	16.64	9.91	13.37	18.38	9.64	12.72	17.33	9.12	13.46	20.27	12.93	17.17
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	19.88	17.95	19.25	10.79	9.73	10.22	10.61	7.78	9.17	13.04	12.43	12.79
2	19.94	18.95	19.45	10.68	9.58	10.02	10.95	9.18	9.83	13.43	11.72	12.84
3	20.05	18.73	19.58	11.63	9.56	10.71	10.16	8.32	9.15	13.70	9.69	11.11
4	19.23	18.12	18.62	11.73	9.68	10.57	11.06	9.04	10.04	10.88	9.08	9.83
5	18.91	17.45	18.10	10.22	8.54	9.36	11.10	8.40	9.32	11.99	9.06	9.79
6	18.94	17.29	18.19	12.76	9.14	11.28	9.44	8.09	8.68	14.67	10.21	12.56
7	18.74	16.90	17.61	15.32	11.76	12.62	9.79	8.14	8.86	14.61	10.89	11.83
8	17.39	16.61	16.98	12.88	11.18	11.96	10.84	8.62	9.70	12.15	9.82	11.43
9	18.80	17.10	18.01	11.25	10.14	10.83	9.76	7.49	9.11	12.14	10.68	11.12
10	18.00	15.68	17.32	11.70	10.35	11.02	10.43	7.39	9.41	11.78	9.80	10.97
11	15.54	13.20	14.69	11.61	9.86	10.94	11.77	7.72	10.79	12.44	10.32	11.81
12	13.58	12.78	13.16	13.30	10.19	11.34	12.00	9.90	11.34	10.33	9.19	9.64
13	15.09	13.43	14.25	13.12	11.05	12.05	12.08	9.72	10.78	10.18	8.47	9.36
14	13.45	11.86	12.62	13.09	11.47	12.16	10.11	7.72	8.78	11.65	9.34	10.01
15	14.79	12.51	14.24	12.94	10.52	11.94	10.67	7.20	9.32	13.02	10.58	11.95
16	15.23	14.42	14.77	12.31	8.62	10.07	11.06	8.97	10.34	11.49	9.65	10.31
17	15.16	14.11	14.49	9.70	8.24	9.08	11.99	8.57	10.82	11.02	9.27	9.94
18	14.57	13.50	14.17	9.86	8.46	9.34	10.34	7.97	9.31	11.06	9.65	10.41
19	13.96	13.34	13.64	12.19	8.70	10.42	10.48	8.29	9.63	11.20	8.01	9.67
20	13.84	13.25	13.60	11.95	9.69	10.76	11.44	8.76	9.92	11.62	10.20	11.19
21	13.50	12.93	13.25	11.47	10.24	10.90	10.30	7.98	9.25	12.02	9.88	11.25
22	14.02	12.22	13.08	12.05	10.63	11.46	9.73	7.68	8.80	11.91	9.20	11.34
23	15.30	13.95	14.62	11.76	8.68	9.44	10.28	7.68	9.15	12.40	11.78	12.05
24	15.41	14.32	14.66	9.33	8.33	8.73	13.25	8.17	11.03	12.04	8.90	10.19
25	14.88	13.40	14.06	11.38	8.55	10.21	12.95	10.84	11.73	11.06	8.02	9.71
26	13.67	13.18	13.41	11.29	10.06	10.89	12.96	10.82	11.63	12.73	10.35	11.35
27	14.59	12.81	13.53	10.06	8.72	9.51	11.00	9.26	10.23	12.71	10.21	11.59
28	14.08	10.72	12.86	10.06	8.03	9.22	11.65	8.67	10.12	12.38	8.74	10.61
29	14.08	13.15	13.76	10.61	7.90	9.18	11.28	9.08	10.35	12.67	9.85	11.17
30	13.33	10.75	11.53	9.88	8.65	9.22	13.44	10.50	11.77	11.67	9.92	10.94
31	---	---	---	9.42	7.71	8.56	12.99	11.54	12.07	---	---	---
MONTH	20.05	10.72	15.25	15.32	7.71	10.45	13.44	7.20	10.01	14.67	8.01	10.96

YEAR MAXIMUM 20.27 MINIMUM 7.20 MEAN 12.90

SUMMER LAKE BASIN

430701121040001 SILVER LAKE RANGER STATION, OR

LOCATION.--Lat 43°07'01", Long 121°04'00", in NE 1/4 SW 1/4 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 1987 TO SEPTEMBER 1988

DATE	TIME	TOTAL PRECIP-ITATION FOR DEFINED PERIOD (IN)	COL-LECTOR EFFI-CIENCY WET DEPOS. PERCENT	SPEC. CONDUC-TANCE CK.SOL.* ATM DEP WET TOT (US/CM)	SPEC. CONDUC-TANCE FIELD ATM DEP WET TOT (US/CM)	SPEC. CONDUC-TANCE LAB ATM DEP WET TOT (US/CM)	PH CK.SOL.* ATM DEP WET T (UNITS)	PH FIELD ATM DEP WET T (UNITS)	PH LAB ATM DEP WET T (UNITS)
OCT 27-NOV 03	1620	0.07	84	21.6	7.9	5.4	--	--	5.48
NOV 10-17	1645	0.24	76	21.0	4.1	3.4	4.33	5.01	5.34
NOV 24-DEC 01	1610	0.17	72	22.5	4.1	2.5	4.36	5.19	5.91
DEC 01-08	1615	0.91	108	22.5	2.8	1.8	4.36	5.24	5.57
DEC 08-15	1625	0.50	85	24.4	3.0	2.1	4.34	5.13	5.44
DEC 15-22	1605	0.12	60	22.8	3.8	2.7	4.28	4.86	5.91
DEC 22-29	1620	0.10	85	23.2	4.9	3.8	4.30	5.31	5.42
DEC 29 1987-JAN 05 1988	1645	0.25	89	21.0	4.5	2.4	4.29	5.06	5.60
JAN 05-12	1610	0.32	93	22.4	5.5	2.5	4.27	4.99	5.70
JAN 12-19	1615	0.20	79	23.5	6.4	2.6	4.37	6.04	5.89
JAN 26-FEB 02	1620	0.05	73	--	--	6.3	--	--	5.27
FEB 02-09	1630	0.16	104	22.6	4.1	2.6	4.35	5.13	5.96

DATE	CALCIUM ATM DEP WET DIS (MG/L)	MAG-NESIUM ATM DEP WET DIS (MG/L)	SODIUM ATM DEP WET DIS (MG/L)	POTAS-SIUM ATM DEP WET DIS (MG/L)	SULFATE ATM DEP WET DIS AS SO4 (MG/L)	CHLO-RIDE ATM DEP WET DIS (MG/L)	NI-TROGEN AMMON. ATM DEP WET DIS AS NH4 (MG/L)	NI-TROGEN NITRATE ATM DEP WET DIS AS NO3 (MG/L)	PHOS-PHOROUS ORTHO ATM DEP WET DIS AS PO4 (MG/L)
OCT 27-NOV 03	0.11	0.025	0.192	0.051	0.24	0.15	<0.02	0.30	<0.02
NOV 10-17	0.03	0.008	0.054	0.018	0.10	0.07	<0.02	0.17	<0.02
NOV 24-DEC 01	0.06	0.015	0.106	0.037	0.08	0.11	<0.02	0.13	<0.02
DEC 01-08	0.03	0.004	0.025	<0.003	0.05	<0.03	<0.02	0.06	<0.02
DEC 08-15	0.01	<0.003	0.018	0.003	<0.03	<0.03	<0.02	<0.03	<0.02
DEC 15-22	0.06	0.011	0.147	0.023	0.07	0.19	<0.02	0.16	<0.02
DEC 22-29	0.10	0.009	0.064	0.013	0.11	0.11	0.06	0.49	<0.02
DEC 29 1987-JAN 05 1988	0.03	0.006	0.053	0.007	0.21	0.05	0.03	0.04	<0.02
JAN 05-12	0.05	0.012	0.097	0.007	0.15	0.12	<0.02	0.11	0.09
JAN 12-19	0.05	0.009	0.074	0.021	0.10	0.07	<0.02	0.38	0.03
JAN 26-FEB 02	0.12	0.022	0.173	0.018	0.28	0.23	<0.02	1.18	0.05
FEB 02-09	0.09	0.014	0.068	0.011	0.14	0.10	<0.02	0.16	<0.02

* Measurements of a low ionic strength standard solution, with theoretical values of conductance 21.8 us/cm +/- 3 us/cm, pH 4.30 +/- 0.1, made prior to the corresponding sample measurement.

CHEMICAL QUALITY OF PRECIPITATION

SUMMER LAKE BASIN

430701121040001 SILVER LAKE RANGER STATION, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	TOTAL PRECIP-ITATION FOR DEFINED PERIOD (IN)	COL-LECTOR EFFI-CIENCY WET DEPOS. PERCENT	SPEC. CONDUC-TANCE CK.SOL.* ATM DEP WET TOT (US/CM)	SPEC. CONDUC-TANCE FIELD ATM DEP WET TOT (US/CM)	SPEC. CONDUC-TANCE LAB ATM DEP WET TOT (US/CM)	PH CK.SOL.* ATM DEP WET T (UNITS)	PH FIELD ATM DEP WET T (UNITS)	PH LAB ATM DEP WET T (UNITS)
FEB 23-MAR 01	1655	0.19	103	23.8	11.3	10.8	4.32	4.65	4.71
MAR 01-08	1637	--	--	21.8	8.0	7.7	4.34	4.78	5.00
MAR 15-22	1620	0.13	84	22.3	6.2	3.9	4.31	4.91	6.10
MAR 22-29	1645	0.13	62	22.6	6.4	2.6	4.31	4.86	6.02
MAR 29-APR 05	1606	0.05	50	--	--	16.7	--	--	6.70
APR 12-19	1530	0.65	107	23.2	11.6	7.0	4.29	4.75	5.29
APR 19-26	1525	0.85	98	22.7	3.4	2.2	4.35	5.04	5.30
APR 26-MAY 03	1524	--	--	21.6	9.6	5.4	4.35	4.75	5.69
MAY 03-10	1520	0.29	90	22.6	4.6	2.6	4.32	5.04	5.61
MAY 24-31	1550	0.35	95	22.5	5.1	2.9	4.36	4.91	5.46
MAY 31-JUN 07	1510	0.89	91	22.8	5.9	3.9	4.29	4.99	5.37
JUN 07-14	1550	0.01	175	--	--	11.7	--	--	5.73
JUN 14-21	1550	0.61	94	23.3	11.3	10.8	4.29	4.66	4.79

DATE	CALCIUM ATM DEP WET DIS (MG/L)	MAG-NESIUM ATM DEP WET DIS (MG/L)	SODIUM ATM DEP WET DIS (MG/L)	POTAS-SIUM ATM DEP WET DIS (MG/L)	SULFATE ATM DEP WET DIS AS SO4 (MG/L)	CHLO-RIDE ATM DEP WET DIS (MG/L)	NI-TROGEN AMMON. ATM DEP WET DIS AS NH4 (MG/L)	NI-TROGEN NITRATE ATM DEP WET DIS AS NO3 (MG/L)	PHOS-PHOROUS ORTHO ATM DEP WET DIS AS PO4 (MG/L)
FEB 23-MAR 01	0.06	0.007	0.072	0.004	0.77	0.05	0.07	0.46	<0.02
MAR 01-08	0.12	0.019	0.137	0.038	0.25	0.14	0.09	0.36	<0.02
MAR 15-22	0.15	0.027	0.053	0.019	0.37	0.09	<0.02	0.19	0.05
MAR 22-29	0.12	0.022	0.042	0.009	0.19	0.07	<0.02	0.08	0.05
MAR 29-APR 05	0.25	0.039	2.48	0.026	0.31	0.60	<0.02	<0.03	<0.02
APR 12-19	0.16	0.023	0.140	0.009	0.77	0.12	0.19	1.01	<0.02
APR 19-26	0.02	0.004	0.006	<0.003	0.10	<0.03	<0.02	0.14	<0.02
APR 26-MAY 03	0.24	0.042	0.065	0.032	0.60	0.12	0.04	0.84	<0.02
MAY 03-10	0.04	0.008	0.045	<0.003	0.23	0.05	<0.02	0.22	0.07
MAY 24-31	0.05	0.014	0.043	0.009	0.24	0.05	<0.02	0.13	<0.02
MAY 31-JUN 07	0.04	0.010	0.079	0.086	0.31	0.14	<0.02	0.23	<0.02
JUN 07-14	0.12	0.018	0.188	0.021	0.30	0.13	<0.02	<0.03	0.08
JUN 14-21	0.14	0.026	0.168	0.099	0.71	0.17	<0.02	<0.03	<0.02

* Measurements of a low ionic strength standard solution with theoretical values of conductance 21.8 us/cm +/- 3 us/cm, ph 4.30 +/- 0.1, made prior to the corresponding sample measurement.

SUMMER LAKE BASIN

430701121040001 SILVER LAKE RANGER STATION, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	TIME	TOTAL PRECIP-ITATION FOR DEFINED PERIOD (IN)	COL-LECTOR EFFI-CIENCY WET DEPOS. PERCENT	SPEC. CONDUC-TANCE CK.SOL.* ATM DEP WET TOT (US/CM)	SPEC. CONDUC-TANCE FIELD ATM DEP WET TOT (US/CM)	SPEC. CONDUC-TANCE LAB ATM DEP WET TOT (US/CM)	PH CK.SOL.* ATM DEP WET T (UNITS)	PH FIELD ATM DEP WET T (UNITS)	PH LAB ATM DEP WET T (UNITS)
SEP 13-20	1540	--	--	22.1	5.5	2.3	4.29	4.89	5.50
SEP 20-27	1550	0.03	91	--	--	7.8	--	--	6.47

DATE	CALCIUM ATM DEP WET DIS (MG/L)	MAG-NESIUM ATM DEP WET DIS (MG/L)	SODIUM ATM DEP WET DIS (MG/L)	POTAS-SIUM ATM DEP WET DIS (MG/L)	SULFATE ATM DEP WET DIS AS SO4 (MG/L)	CHLO-RIDE ATM DEP WET DIS (MG/L)	NI-TROGEN AMMON. ATM DEP WET DIS AS NH4 (MG/L)	NI-TROGEN NITRATE ATM DEP WET DIS AS NO3 (MG/L)	PHOS-PHOROUS ORTHO ATM DEP WET DIS AS PO4 (MG/L)
SEP 13-20	0.03	0.007	0.024	<0.003	0.11	0.03	<0.02	<0.03	<0.02
SEP 20-27	0.08	0.022	0.282	0.105	0.16	0.49	0.04	0.32	<0.02

* Measurements of a low ionic strength standard solution with theoretical values of conductance 21.8 us/cm +/- 3 us/cm, ph 4.30 +/- 0.1, made prior to the corresponding sample measurement.

CHEMICAL QUALITY OF PRECIPITATION

UPPER GRANDE RONDE RIVER BASIN

451328118304100 STARKEY EXPERIMENTAL STATION, OR

LOCATION.--Lat 45°13'28", long 118°30'41", in NE 1/4 NW 1/4 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 1987 TO SEPTEMBER 1988

DATE	TIME	TOTAL PRECIP-ITATION FOR DEFINED PERIOD (IN)	COL-LECTOR EFFI-CIENCY WET DEPOS. PERCENT	SPEC. CONDUC-TANCE CK.SOL.* ATM DEP WET TOT (US/CM)	SPEC. CONDUC-TANCE FIELD ATM DEP WET TOT (US/CM)	SPEC. CONDUC-TANCE LAB ATM DEP WET TOT (US/CM)	PH CK.SOL.* ATM DEP WET T (UNITS)	PH FIELD ATM DEP WET T (UNITS)	PH LAB ATM DEP WET T (UNITS)
OCT 27-NOV 03	1835	0.53	81	19.2	14.5	6.6	4.35	4.50	4.96
NOV 03-10	1800	0.02	25	--	--	13.0	--	--	5.81
NOV 10-17	1645	0.64	70	19.3	4.8	4.0	4.30	4.74	5.06
NOV 17-24	1749	0.17	82	19.5	5.8	1.8	4.33	4.72	5.51
NOV 24-DEC 01	1758	0.13	--	20.2	8.2	2.8	4.34	4.61	5.63
DEC 01-08	1606	0.49	92	21.3	4.1	1.3	4.36	5.00	5.58
DEC 08-15	1651	0.85	85	21.9	2.0	1.5	4.35	5.16	5.51
DEC 15-22	1627	0.26	59	22.3	3.6	2.5	4.35	5.16	5.68
DEC 22-29	1841	0.21	52	20.4	8.1	6.9	4.28	4.71	4.89
DEC 29 1987-JAN 05 1988	1745	0.22	52	20.6	5.1	3.4	4.29	4.90	5.22
JAN 05-12	1856	1.77	77	--	--	--	--	--	--
JAN 12-19	1746	0.72	85	21.2	2.6	1.6	4.34	5.14	5.70
JAN 26-FEB 02	1730	0.38	57	21.2	4.1	1.8	4.34	5.00	5.62
FEB 02-09	1756	0.36	64	20.6	4.1	1.9	4.36	5.02	5.91
FEB 09-16	1433	0.95	83	21.1	3.8	2.1	4.38	5.08	5.53

* Measurements of a low ionic strength standard solution, with theoretical values of conductance 21.8 us/cm +/- 3 us/cm, pH 4.30 +/- 0.1, made prior to the corresponding sample measurement.

UPPER GRANDE RONDE RIVER BASIN

451328118304100 STARKEY EXPERIMENTAL STATION, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DATE	CALCIUM ATM DEP WET DIS (MG/L)	MAG-NESIUM ATM DEP WET DIS (MG/L)	SODIUM ATM DEP WET DIS (MG/L)	POTAS-SIUM ATM DEP WET DIS (MG/L)	SULFATE ATM DEP WET DIS AS SO4 (MG/L)	CHLO-RIDE ATM DEP WET DIS (MG/L)	NI-TROGEN AMMON. ATM DEP WET DIS AS NH4 (MG/L)	NI-TROGEN NITRATE ATM DEP WET DIS AS NO3 (MG/L)	PHOS-PHOROUS ORTHO ATM DEP WET DIS AS PO4 (MG/L)
OCT 27-NOV 03	0.05	0.011	0.033	0.022	0.22	0.09	0.09	0.83	<0.02
NOV 03-10	--	--	--	--	--	--	--	--	--
NOV 10-17	0.01	0.004	0.035	0.007	0.07	0.04	0.02	0.14	<0.02
NOV 17-24	0.02	0.004	0.050	0.004	0.09	0.06	<0.02	0.11	<0.02
NOV 24-DEC 01	0.05	0.010	0.113	0.056	0.20	0.12	<0.02	0.27	<0.02
DEC 01-08	0.04	0.007	0.037	<0.003	0.04	0.05	<0.02	<0.03	<0.02
DEC 08-15	0.01	0.004	0.018	<0.003	0.04	0.07	<0.02	<0.03	<0.02
DEC 15-22	0.07	0.014	0.083	0.009	0.13	0.13	<0.02	0.12	<0.02
DEC 22-29	0.05	0.014	0.086	0.011	0.25	0.14	<0.02	0.56	<0.02
DEC 29 1987-JAN 05 1988	0.03	0.007	0.042	0.007	0.06	0.06	<0.02	0.04	<0.02
JAN 05-12	--	--	--	--	--	--	--	--	--
JAN 12-19	0.02	<0.003	0.053	0.009	0.06	0.04	<0.02	0.09	<0.02
JAN 26-FEB 02	0.03	0.003	0.037	0.003	0.09	0.04	<0.02	0.19	<0.02
FEB 02-09	0.06	0.007	0.083	0.030	0.14	0.10	<0.02	0.10	0.03
FEB 09-16	0.07	0.008	0.042	0.003	0.13	0.04	<0.02	0.09	<0.02

DATE	TIME	TOTAL PRECIP-ITATION FOR DEFINED PERIOD (IN)	COL-LECTOR EFFI-CIENCY WET DEPOS. PERCENT	SPEC. CONDUC-TANCE CK.SOL.* ATM DEP WET TOT (US/CM)	SPEC. CONDUC-TANCE FIELD ATM DEP WET TOT (US/CM)	SPEC. CONDUC-TANCE LAB ATM DEP WET TOT (US/CM)	PH CK.SOL.* ATM DEP WET T (UNITS)	PH FIELD ATM DEP WET T (UNITS)	PH LAB ATM DEP WET T (UNITS)
FEB 16-23	2049	0.09	53	20.9	21.1	5.9	4.28	4.33	5.14
MAR 01-08	1723	0.76	86	21.2	4.4	1.8	4.38	5.25	5.55
MAR 08-15	1718	0.84	70	20.9	3.6	2.7	4.36	4.99	5.58
MAR 15-22	1722	0.26	63	19.2	8.9	9.2	4.37	4.70	4.74
MAR 22-29	1656	1.50	86	19.7	4.0	2.6	4.35	5.18	6.07
MAR 29-APR 05	1902	0.48	101	19.7	7.6	2.6	4.30	4.90	5.38
APR 05-12	1714	0.10	65	--	--	7.9	4.39	4.09	4.99
APR 12-19	1655	0.38	89	20.2	13.6	6.2	4.34	4.64	5.58
APR 19-26	1700	0.67	62	19.6	10.6	4.1	4.36	4.65	5.10
APR 26-MAY 03	1747	0.85	91	19.3	6.3	3.6	4.34	4.95	5.31
MAY 03-10	1549	0.33	109	19.2	15.7	8.3	4.34	4.50	4.91
MAY 10-17	1714	0.31	114	19.8	6.4	3.0	4.33	5.00	6.11
MAY 17-24	1557	0.15	99	21.1	26.9	5.2	4.32	4.27	5.45
MAY 31-JUN 07	1548	1.00	83	19.9	5.6	2.8	4.31	4.87	5.52
JUN 07-14	1815	0.26	87	19.4	--	4.0	4.34	4.34	5.27
JUN 14-21	1652	0.09	111	19.7	14.3	11.2	--	--	5.47
JUN 21-28	1450	0.46	98	19.6	11.1	7.6	4.30	4.62	4.86

* Measurements of a low ionic strength standard solution, with theoretical values of conductance 21.8 us/cm +/- 3 us/cm, pH 4.30 +/- 0.1, made prior to the corresponding sample measurement.

CHEMICAL QUALITY OF PRECIPITATION

UPPER GRANDE RONDE RIVER BASIN

451328118304100 STARKEY EXPERIMENTAL STATION, OR--Continued

WATER QUALITY DATA, WATER OCTOBER 1987 TO SEPTEMBER 1988

DATE	CALCIUM ATM DEP WET DIS (MG/L)	MAG-NESIUM ATM DEP WET DIS (MG/L)	SODIUM ATM DEP WET DIS (MG/L)	POTAS-SIUM ATM DEP WET DIS (MG/L)	SULFATE ATM DEP WET DIS AS SO4 (MG/L)	CHLO-RIDE ATM DEP WET DIS (MG/L)	NI-TROGEN AMMON. ATM DEP WET DIS AS NH4 (MG/L)	NI-TROGEN NITRATE ATM DEP WET DIS AS NO3 (MG/L)	PHOS-PHOROUS ORTHO ATM DEP WET DIS AS PO4 (MG/L)
FEB 16-23	0.13	0.024	0.076	0.016	0.17	0.11	<0.02	<0.03	<0.02
MAR 01-08	0.06	0.006	0.040	0.003	0.10	0.05	<0.02	0.10	<0.02
MAR 08-15	0.06	0.013	0.063	0.011	0.21	0.10	<0.02	0.24	0.03
MAR 15-22	0.12	0.010	0.041	<0.003	0.18	0.06	<0.02	<0.03	0.04
MAR 22-29	0.10	0.014	0.252	0.025	0.22	0.07	<0.02	0.14	<0.02
MAR 29-APR 05	0.07	0.015	0.053	0.010	0.26	0.08	<0.02	0.14	0.02
APR 05-12	0.22	0.025	0.114	0.056	0.36	0.42	<0.02	0.59	<0.02
APR 12-19	0.25	0.033	0.111	0.040	0.60	0.13	0.20	1.03	<0.02
APR 19-26	0.04	0.007	0.023	<0.003	0.25	0.06	<0.02	<0.03	<0.02
APR 26-MAY 03	0.06	0.007	0.038	<0.003	0.32	<0.03	<0.02	0.28	<0.02
MAY 03-10	0.06	0.018	0.109	0.009	0.78	0.17	0.12	0.64	<0.02
MAY 10-17	0.12	0.012	0.317	0.019	0.30	0.10	<0.02	0.19	0.05
MAY 17-24	0.16	0.025	0.233	0.023	0.50	0.11	0.06	0.77	0.03
MAY 31-JUN 07	0.11	0.010	0.071	0.006	0.23	0.06	<0.02	<0.03	<0.02
JUN 07-14	0.05	0.011	0.093	0.026	0.23	0.08	<0.02	<0.03	0.03
JUN 14-21	0.58	0.095	0.252	0.399	0.95	0.33	<0.02	<0.03	<0.02
JUN 21-28	0.06	0.008	0.039	0.004	0.47	0.05	<0.02	0.63	<0.02

DATE	TIME	TOTAL PRECIP-ITATION FOR DEFINED PERIOD (IN)	COL-LECTOR EFFI-CIENCY WET DEPOS. PERCENT	SPEC. CONDUC-TANCE CK.SOL.* ATM DEP WET TOT (US/CM)	SPEC. CONDUC-TANCE FIELD ATM DEP WET TOT (US/CM)	SPEC. CONDUC-TANCE LAB ATM DEP WET TOT (US/CM)	PH CK.SOL.* ATM DEP WET T (UNITS)	PH FIELD ATM DEP WET T (UNITS)	PH LAB ATM DEP WET T (UNITS)
JUN 28-JUL 05	1430	0.35	99	20.8	7.0	7.2	4.34	4.87	4.87
AUG 09-16	1448	0.41	93	19.8	9.4	8.5	4.33	4.80	4.83
SEP 13-20	1410	0.41	99	21.0	6.7	2.5	4.28	4.80	5.49
SEP 20-27	1455	0.48	84	21.9	4.7	2.6	4.33	5.03	5.44

DATE	CALCIUM ATM DEP WET DIS (MG/L)	MAG-NESIUM ATM DEP WET DIS (MG/L)	SODIUM ATM DEP WET DIS (MG/L)	POTAS-SIUM ATM DEP WET DIS (MG/L)	SULFATE ATM DEP WET DIS AS SO4 (MG/L)	CHLO-RIDE ATM DEP WET DIS (MG/L)	NI-TROGEN AMMON. ATM DEP WET DIS AS NH4 (MG/L)	NI-TROGEN NITRATE ATM DEP WET DIS AS NO3 (MG/L)	PHOS-PHOROUS ORTHO ATM DEP WET DIS AS PO4 (MG/L)
JUN 28-JUL 05	0.10	0.010	0.068	0.003	0.32	0.05	<0.02	<0.03	0.08
AUG 09-16	0.08	0.015	0.054	0.030	0.50	0.08	<0.02	0.84	<0.02
SEP 13-20	0.03	0.006	0.064	0.004	0.17	0.05	<0.02	<0.03	<0.02
SEP 20-27	0.02	0.003	0.021	<0.003	0.10	0.04	<0.02	<0.03	0.02

* Measurements of a low ionic strength standard solution, with theoretical values of conductance 21.8 us/cm +/- 3 us/cm, pH 4.30 +/- 0.1, made prior to the corresponding sample measurement.

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 1988

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		WALLA WALLA RIVER BASIN				
Walla Walla River	Columbia River	Lat 45°55'40", long 118°22'40", in SW 1/4 NE 1/4 sec.12, T.5 N., R.35 E., Umatilla County, Hydrologic Unit 17070102, 100 ft upstream from bifurcation with Little Walla Walla River, 300 ft upstream from 9th Avenue (cemetery) bridge, just east of east boundary of city of Milton-Freewater.	---	1987	9- 7-88	*72
Little Walla Walla River (diversion from Walla Walla River)	Walla Walla River	Lat 45°55'42", long 118°22'43", in SW 1/4 NE 1/4 sec.12, T.5 N., R.35 E., Umatilla County, Hydrologic Unit 17070102, 50 ft downstream from 9th Avenue (cemetery) bridge, at east boundary of city of Milton-Freewater.	---	---	9- 7-88	61
Ford Branch (Little Walla Walla River diversion)	Little Walla Walla River	Lat 45°56'43", long 118°23'33", in NE 1/4 NE 1/4 sec.2, T.5 N., R.35 E., Umatilla County, Hydrologic Unit 17070102, just below weir that splits Little Walla Walla River into Ford Branch and Crockett Branch, 400 ft north of 8th Avenue in city of Milton-Freewater.	---	---	9- 7-88	27
Crockett Branch (Little Walla Walla River diversion)	.....do.....	Lat 45°56'44", long 118°23'33", in NE 1/4 NE 1/4 sec.2, T.5 N., R.35 E., Umatilla County, Hydrologic Unit 17070102, just below weir that splits Little Walla Walla River into Ford Branch and Crockett Branch, 400 ft north of 8th Avenue in city of Milton-Freewater.	---	---	9 -7-88	24
Mill Creek	Walla Walla River	Lat 45°59'24", long 118°02'58", unsurveyed, T.6 N., R.38 E., Umatilla County, Hydrologic Unit 17070102, 600 ft downstream from city of Walla Walla intake, and at mile 25.3.	---	---	10-19-87 12- 9-87 3-22-88 5-26-88 7-28-88	11 18 38 48 11
		JOHN DAY RIVER BASIN				
John Day River above Reynolds Creek, near Prairie City	Columbia River	Lat 44°24'20", long 118°35'20", Grant County, Hydrologic Unit 17070201, at Forest Service Road 264 crossing, and at mile 272.0	73.8	---	5-17-84 7-25-84 8-21-84 10- 2-84	c193 c64 c32 c56
14038500 John Day River above Indian Creek, at Prairie City	.....do.....	Lat 44°27'15", long 118°43'00", in SE 1/4 NE 1/4 sec.10, T.13 S., R.33 E., Grant County, Hydrologic Unit 17070201, on right bank 600 ft upstream from outlet of Prairie power canal, 0.3 mi downstream from Dixie Creek, 0.8 mi southwest of Prairie City, and at mile 262.0.	231	1925-68‡	5-17-84 7-25-84 8-21-84 10- 2-84	c958 c147 c53 c117
Dixie Creek	John Day River	Lat 44°28'50", long 118°42'40", Grant County, Hydrologic Unit 17070201.	---	---	8-21-84 10- 5-84	ce1.5 c3.6
Bear Creek	.....do.....	Lat 44°26'50", long 118°46'30", Grant County, Hydrologic Unit 17070201.	---	---	8-21-84 10- 5-84	ce1.5 c2.3

‡ Operated as a continuous-record gaging station.
* Base flow.
c Not previously published.
e Estimate.

Discharge measurements at miscellaneous sites during water year 1988--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		JOHN DAY RIVER BASIN--Continued				
Indian Creek	John Day River	Lat 44°41'30", long 118°47'50", NE 1/4 sec.13, T.13 S., R.32 E., Grant County, Hydrologic Unit 17070201.	30.8	1968	5-17-84 7-26-84 8-21-84 10- 2-84	c90 c5.2 c0.4 c7.2
Pine Creek	.....do.....	Lat 44°26'00", long 118°49'20", Grant County, Hydrologic Unit 17070201.	---	---	10- 5-84	c6.9
John Day River below Canyon Creek, at John Day	Columbia River	Lat 44°25'10", long 118°58'10", Grant County, Hydrologic Unit 17070201, at mile 246.0.	513	---	7-25-84 8-21-84 10- 2-84	c221 c66 c158
Beech Creek	John Day River	Lat 44°25'40", long 119°06'30", N 1/2 sec.28, T.13 S., R.30 E., Grant County, Hydrologic Unit 17070201.	106	1968	5-17-84 7-26-84 8-22-84 10- 3-84	c147 c7.0 c1.3 c8.0
John Day River below Beech Creek, at Mt. Vernon	Columbia River	Lat 44°25'05", long 119°06'54", Grant County, Hydrologic Unit 17070201, at mile 239.0.	686	---	5-17-84 7-26-84 8-22-84 10- 3-84	c1,280 c239 c60 c161
Birch Creek	John Day River	Lat 44°25'20", long 119°13'00", Grant County, Hydrologic Unit 17070201.	15.8	---	7-25-84 10 -5-84	ce20 c1.0
Moon Creek	.....do.....	Lat 44°24'40", long 119°13'30", Grant County, Hydrologic Unit 17070201.	8.3	---	7-26-84 8-24-84 10- 3-84	ce3.0 c1.4 c1.6
John Day River below Moon Creek, at Moores Crossing	Columbia River	Lat 44°26'05", long 119°18'59", Grant County, Hydrologic Unit 17070201, at mile 226.0.	846	---	7-26-84 8-22-84 10- 3-84	c253 c62 c184
John Day River above South Fork, near Dayville	.....do.....	Lat 44°28'07", long 119°31'39", Grant County, Hydrologic Unit 17070201, upstream from the South Fork, at mile 212.0.	950	---	7-27-84 8-22-84 10- 3-84	c253 c59 c194
South Fork John Day River at Dayville	John Day River	Lat 44°28'00", long 119°32'00", Grant County, Hydrologic Unit 17070201, at Dayville, at U.S. Route 28 crossing.	1,660	---	5-17-84 7-24-84 8-24-84	c883 c145 c54
Rock Creek	.....do.....	Lat 44°31'40", long 119°38'00", Wheeler County, Hydrologic Unit 17070201, west of Picture Gorge.	284	---	7-24-84 8-20-84 10- 4-84	c31 c13 c29
North Fork John Day River at Kimberly	.....do.....	Lat 44°45'20", long 119°38'19", Grant County, Hydrologic Unit 17070201.	2,620	---	5-16-84 7-18-84 7-24-84 8-23-84 10- 4-84	c7,710 c1,280 c711 c241 c359
John Day River at Spray	Columbia River	Lat 44°49'38", long 119°47'38", Wheeler County, Hydrologic Unit 17070201, at mile 171.0.	4,850	---	6- 8-84 7- 8-84 7-23-84 8-23-84	c9,450 c1,710 c1,060 c386

c Not previously published.
e Estimate.

Discharge measurements at miscellaneous sites during water year 1988--Continued

Stream	Tributary to	Location	Drainage area (mi^2)	Measured previously (water years)	Measurements Date	Measurements Discharge (ft^3/s)
		DESCHUTES RIVER BASIN				
14054100 Deschutes River below Sheep Springs, near La Pine	Columbia River	Lat 43°43'56", long 121°47'10", in SE 1/4 SE 1/4 sec.20, T.21 S., R.8 E., Deschutes County, Hydrologic Unit 17070301, on left bank about 500 ft upstream from Sheep Bridge, and about 15 mi northwest of La Pine.	256	f1938-48‡, 1950, 1952-57, 1960-87,	1-12-88 2-24-88 4-25-88 5-27-88 8-12-88	d296 d220 d305 d482 d571

‡ Operated as a continuous-record gaging station.
d Base flow from intervening springs can be obtained by subtracting flow of Deschutes River below Crane Prairie Reservoir.
f Published by State of Oregon Water Resources Department.

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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).

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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